

UNIVERSITY OF NEW ENGLAND

**Precarious ICE: Patterns and features
of methamphetamine-related
presentations to emergency departments
and police and paramedic experiences of
escorting patients under the influence of
methamphetamines-a mixed methods
study**

A Dissertation submitted by

Rikki Jones

For the award of Doctor of Philosophy

Year 2021

Abstract

Background: Acute behavioural disturbance (violence and aggression) and mental health illness (psychosis and paranoia) are negative side effects of methamphetamine use. In general, illicit use of methamphetamines in Australia has reportedly decreased but there has been a change in the use of methamphetamines with an increase noted in the use of the crystallised form of methamphetamines (also known as ‘ICE’). Illicit methamphetamine use, particularly “ICE”, leads to erratic and unpredictable behaviour in some people.

Aim: The first aim of this study was to explore the patterns and features of methamphetamine-related presentations to emergency department (ED) and callout events attended by police and paramedics. The second aim was to understand the nature and pattern of methamphetamine-related callouts attended by police and paramedics by exploring their perceptions of deservingness and their experiences of interacting with persons under the influence of methamphetamines.

Methods: A mixed methods explanatory sequential design was conducted. Quantitative data collection followed a convenience sampling approach and utilised both large datasets and a survey. Quantitative data were entered into a statistical software package (SPSS version 25) and analysed using descriptive and bivariate statistics. Quantitative findings guided the development of interview questions. Qualitative data collection adopted purposeful sampling and semi-structured interviews. Data were analysed using a thematic analytic approach. The pillar integration process was utilised in the final stage to integrate and interpret the overall study findings.

Results: This dissertation uniquely explored methamphetamine-related presentations and callout events using a mixed methods approach. To our knowledge this is the first study to look at this issue using this methodology, including ED’s, police and paramedics as an area of focus. The pillar integration process identified six main themes to interpret the separate streams of inquiry. Acuity, complexity of care, co-ordinated approach, deservingness and compassion, rural care, and prevalence of presentations/callouts. Features of presentations to ED had a higher acuity and mainly presented for poisoning/toxic effect. Interview data explored the features of presentations further, reporting methamphetamine-related callout events were complex, involved traumatic situations, and increased risk to safety of staff, patients

and families. Complexity of care was affected by an inability to communicate effectively with the patient, acute behavioural disturbances, co-occurring mental health issues, ineffectiveness of de-escalation techniques, and patients presenting in a state of crisis. The study reported a significant increase in presentations to ED which was confirmed by Victorian (VIC) ambulance data reporting an increase in methamphetamine-related callout events requiring transport to ED and a significant increase in co-attendance (police and paramedics) responding to methamphetamine-related callout events. Interview participants highlighted when co-responding to persons under the influence of methamphetamine, a standardised approach was lacking. The standardised approach needed to include a co-ordinated approach between police, paramedics and EDs to improve management and care provided, and streamline services. Survey results reported perceptions of deservingness provided an understanding of police and paramedics current perceptions and attitudes towards people who use methamphetamines. Interview participants reported despite complexity of care and the negative experience, participants expressed compassion towards persons under the influence of methamphetamines.

Conclusion: Methamphetamine-related callout events are increasing and there is an increased need for police and paramedics to transport patients to an ED for assessment. A standardised approach to coordinating care between police and paramedics in the pre-hospital environment and the emergency department is required to help improve care between services and streamline processes. It is important to ensure debriefing and support services are available to mitigate the dysfunctional affect methamphetamine use has on families (i.e. early recognition and support services), the traumatic effect on police and paramedics managing dangerous and unpredictable situations, and for patients who are presenting in states of crisis. In addition, the use of low stimulant, safe rooms or areas in EDs for fast tracking triage and rapid assessment of acute behavioural disturbance and patients experiencing psychosis could help to streamline care provided between pre-hospital and ED environments.

Key words: Methamphetamine, emergency nursing, perceptions of deservingness, pre-hospital emergency care, police and paramedics.

Certification of Dissertation

I certify that the ideas, experimental work, results, analyses, software and conclusions reported in this dissertation are entirely my own effort, except where otherwise acknowledged. I also certify that the work is original and has not been previously submitted for any other award, except where otherwise acknowledged.



19/01/2021

Signature of Candidate

Date

Acknowledgements

I started a PhD with a curious mind, a love of research and a notion I wanted to do research for the rest of my life. So, I enrolled and envisioned I would spend the next 4-6 years going about the task of research. What I did not have any idea about was the processes of conducting research or the challenges that I would face as a beginning researcher. Every process, every step on the journey was new, and the learning curve was steep, but an experience I would not have forgone. Completing a PhD is a long journey you choose to take, one that includes days of elation and days of disappointment. It is not a journey you take alone; your supervisors willingly follow and help to light the way, and your family (who never signed up for a PhD) travel the journey with you. This PhD is not only my achievement, but an achievement of many. It has taken a lot of perseverance and dedication to get the dissertation to this point, which never would have occurred without my supervisors and my support team; I dedicate this dissertation to them.

Firstly, I would like to thank my principal supervisor Professor Kim Usher AM. Her work ethic, professional commitment and guidance has been invaluable to my ability to complete this dissertation. Without her advice, quick feedback, and unwavering support, I would never have achieved a PhD or the many manuscripts published because of this research. Thank you for being the light in the dark.

I would like to thank Dr Cindy Woods (co-supervisor) for not only helping to guide my journey, but for helping me navigate my way through SPSS, structuring results and invaluable advice and knowledge on quantitative data analysis, statistics and statistical tests. My knowledge on statistics and SPSS is thanks mostly to her, she helped guide me to find the answers to my endless questions with patience and understanding. Thank you for your wealth of knowledge.

I would also like to thank Professor Debra Jackson (co-supervisor) for agreeing to join the supervisory team along the way. I appreciate the time you spent providing feedback and helping me to develop my writing skills; it was greatly appreciated. Your ability to conceptualisation qualitative data was invaluable, helping to guide me to get from codes on a page to strong meaningful themes that did justice to the participants' voices. Thank you for sharing your wealth of experience in this area.

I would also like to acknowledge the University of New England and the School of Health for the support offered to HDR students, the support offered to me as an early career academic undertaking research, and for the chance to take SSP leave to finalise this dissertation. Thank you also to the School of Health HDR student support group at UNE, for your assurance that we are all going through the same process, and confirmation that we all feel overwhelmed and out of our depth at times. A special thank you to my work colleagues, Zac and Fiona, for listening to my philosophical ramblings, being a sounding board for ideas, and reminding me that I would get there in the end.

Finally, I would like to acknowledge my unofficial support team, my husband and children, who shared the journey increasingly with me in the final days of writing up. Your ongoing support was pivotal to my success, and I offer special thanks for listening and understanding, and for accompanying me throughout this journey. Thank you all for sharing this experience with me.

Rikki Jones



Please be advised that this Thesis contains chapters which have been either published or submitted for publication.

The submitted version(s) of the following chapter(s) have been retained:

Chapter 1: Introduction

Jones, R., Woods, C., & Usher, K. (2020). The impact of media sensationalism and crisis framing on stigma and negative attitudes towards methamphetamine users. *International Journal of Mental Health Nursing*, 29(3), 319–321. Portico. <https://doi.org/10.1111/inm.12708>

Chapter 3: Literature review

Jones, R., Woods, C., & Usher, K. (2018). Rates and features of methamphetamine-related presentations to emergency departments: An integrative literature review. *Journal of Clinical Nursing*, 27(13–14), 2569–2582. Portico. <https://doi.org/10.1111/jocn.14493>

Chapter 4: Theoretical framework, Design & Method

Jones, R., Woods, C., & Usher, K. (2018). The challenges of researching drug-related emergency department presentations using reviews of medical charts. *Nurse Researcher*, 26(3), 27–31. <https://doi.org/10.7748/nr.2018.e1614>

Chapter 5: Patterns and features of methamphetamine-related Emergency Department presentations

Jones, R., Woods, C., Barker, R., & Usher, K. (2019). Patterns and features of methamphetamine-related presentations to emergency departments in QLD from 2005 to 2017. *International Journal of Mental Health Nursing*, 28(4), 833–844. Portico. <https://doi.org/10.1111/inm.12618>

Chapter 6: Patterns of methamphetamine-related callouts by VIC ambulance Service.

Jones, R., Usher, K., & Woods, C. (2019). Crystal methamphetamine's impact on frontline emergency services in Victoria, Australia. *Australasian Emergency Care*, 22(4), 201–205. <https://doi.org/10.1016/j.auec.2019.07.004>

Chapter 7: Perceptions of deservingness and attitudes

Downloaded from <https://rune.une.edu.au>, the institutional research repository of the University of New England at Armidale, NSW Australia.



Jones, R., Woods, C., & Usher, K. (2020). Methamphetamines: Cross sectional-survey exploring police and paramedic attitudes and perceptions of deservingness of care. *Nursing & Health Sciences*, 23(1), 157–166. Portico.
<https://doi.org/10.1111/nhs.12787>

Chapter 8: Complexity of care: Caring for the patient within the context of violence, abuse and danger

Jones, R., Jackson, D., Woods, C., & Usher, K. (2022). Complexity, safety and challenges: Emergency responders' experience of people affected by methamphetamines. *Nursing & Health Sciences*, 24(3), 535–544. Portico.
<https://doi.org/10.1111/nhs.12978>

No proof of publication could be located for the following chapters:

Chapter 2: Background: Methamphetamines

Chapter 9: Responding to methamphetamine related callouts: A Focus on safety

Chapter 10: Managing Care: Continually modifying care practices

Chapter 11: Integration of results & Discussion

Chapter 12: Implications, limitations & Conclusion

Table of Contents

TITLE PAGE.....	I
ABSTRACT II	
CERTIFICATION OF DISSERTATION.....	IV
ACKNOWLEDGEMENTS.....	V
TABLE OF CONTENTS	VII
LIST OF TABLES.....	XII
LIST OF FIGURES	XIII
TABLE OF APPENDICES	XIV
LIST OF ABBREVIATIONS	XV
SECTION ONE: INTRODUCTION, LITERATURE REVIEW & METHODOLOGY.....	1
CHAPTER 1. INTRODUCTION.....	2
1.1. INTRODUCTION	2
1.2. RATIONALE FOR THE STUDY.....	3
1.3. THEMES FOR THE RESEARCH	4
1.3.1. <i>Stigma and attitudes towards people who use drugs</i>	4
1.3.2. <i>Harm reduction</i>	9
1.4. THE RESEARCH	11
1.4.1. <i>Aims</i>	11
1.4.2. <i>Research question</i>	11
1.4.3. <i>Design</i>	12
1.5. OUTLINE OF DISSERTATION.....	12
1.6. SUMMARY OF CHAPTER	17
CHAPTER 2. BACKGROUND: METHAMPHETAMINES	20
2.1. INTRODUCTION	20
2.2. HISTORY OF METHAMPHETAMINES.....	20
2.3. METHAMPHETAMINES AND HOW THEY ACT ON THE HUMAN BODY?.....	21
2.4. SIDE EFFECTS	24
2.5. CYCLE OF METHAMPHETAMINE USE.....	24
2.6. CURRENT METHAMPHETAMINE USE IN AUSTRALIA	25
2.7. IMPACT OF METHAMPHETAMINES.....	28
2.8. SUMMARY OF THE CHAPTER.....	29
CHAPTER 3. LITERATURE REVIEW	30
3.1. INTRODUCTION	31
3.2. MANUSCRIPT: RATES AND FEATURES OF METHAMPHETAMINE-RELATED PRESENTATIONS TO EMERGENCY DEPARTMENTS: AN INTEGRATIVE LITERATURE REVIEW.....	31

3.2.1.	<i>Introduction</i>	32
3.2.2.	<i>Aim</i>	35
3.2.3.	<i>Methods</i>	35
3.2.4.	<i>Results</i>	37
3.2.5.	<i>Discussion</i>	51
3.2.6.	<i>Limitations</i>	55
3.2.7.	<i>Conclusion</i>	56
3.2.8.	<i>Relevance to clinical practice</i>	56
3.3.	SUMMARY	57
CHAPTER 4. THEORETICAL FRAMEWORK, DESIGN & METHOD		60
4.1.	INTRODUCTION	60
4.2.	THEORETICAL FRAMEWORK: PRAGMATISM	60
4.3.	THEORETICAL LENS: HEALTH PROMOTION	63
4.4.	RESEARCH DESIGN: EXPLANATORY SEQUENTIAL MIXED METHODS STUDY	66
4.5.	METHODS PHASE 1	68
4.5.1.	<i>Manuscript: The challenges of researching drug-related ED presentations using review of medical records</i>	69
4.5.2.	<i>Stage One</i>	77
4.5.3.	<i>Stage two</i>	80
4.5.4.	<i>Stage three</i>	82
4.6.	METHODS PHASE TWO	85
4.6.1.	<i>Recruitment</i>	86
4.6.2.	<i>Data collection</i>	87
4.6.3.	<i>Data Analysis</i>	88
4.7.	INTEGRATION OF THE DATA	89
4.8.	ETHICAL CONSIDERATIONS	90
4.9.	SUMMARY	91
SECTION TWO: PHASE ONE RESULTS		95
CHAPTER 5. PATTERNS AND FEATURES OF METHAMPHETAMINE-RELATED EMERGENCY DEPARTMENT PRESENTATIONS		96
5.1.	INTRODUCTION	97
5.2.	MANUSCRIPT: PATTERNS AND FEATURES OF METHAMPHETAMINE-RELATED PRESENTATIONS TO EDs IN QLD FROM 2005 TO 2017	97
5.2.1.	<i>Introduction</i>	98
5.2.2.	<i>Background</i>	99
5.2.3.	<i>Method</i>	100
5.2.4.	<i>Results</i>	105

5.2.5.	<i>Discussion:</i>	114
5.2.6.	<i>Limitations</i>	116
5.2.7.	<i>Conclusion</i>	117
5.2.8.	<i>Relevance to clinical practice</i>	118
5.3.	SUMMARY	118
CHAPTER 6. PATTERNS OF METHAMPHETAMINE-RELATED CALLOUTS BY VIC AMBULANCE SERVICE.122		
6.1.	INTRODUCTION	123
6.2.	MANUSCRIPT: CRYSTAL METHAMPHETAMINES IMPACT ON FRONTLINE EMERGENCY SERVICES IN VICTORIA, AUSTRALIA	123
6.2.1.	<i>Introduction</i>	124
6.2.2.	<i>Materials & Methods</i>	125
6.2.3.	<i>Results</i>	127
6.2.4.	<i>Discussion</i>	132
6.2.5.	<i>Strengths and weaknesses</i>	134
6.2.6.	<i>Conclusions</i>	134
6.3.	SUMMARY	135
CHAPTER 7. PERCEPTIONS OF DESERVINGNESS AND ATTITUDES 138		
7.1.	INTRODUCTION	139
7.2.	MANUSCRIPT: METHAMPHETAMINES: CROSS SECTIONAL-SURVEY EXPLORING POLICE AND PARAMEDICS ATTITUDES AND PERCEPTIONS OF DESERVINGNESS OF CARE.	139
7.2.1.	<i>Introduction</i>	140
7.2.2.	<i>Background</i>	140
7.2.3.	<i>Methods</i>	143
7.2.4.	<i>Data Collection</i>	144
7.2.5.	<i>Data Analysis</i>	145
7.2.6.	<i>Results</i>	146
7.2.7.	<i>Discussion</i>	151
7.2.8.	<i>Conclusion</i>	156
7.3.	SUMMARY	156
SECTION THREE: PHASE TWO RESULTS..... 160		
CHAPTER 8. COMPLEXITY OF CARE: CARING FOR THE PATIENT WITHIN THE CONTEXT OF VIOLENCE, ABUSE AND DANGER 161		
8.1.	INTRODUCTION	162
8.2.	MANUSCRIPT: COMPLEXITY OF CARING WITHIN THE CONTEXT OF VIOLENCE, ABUSE AND DANGER: POLICE AND PARAMEDICS EXPERIENCES OF CARING FOR PEOPLE AFFECTED BY METHAMPHETAMINES	163

8.2.1.	<i>Introduction</i>	163
8.2.2.	<i>Methods</i>	165
8.2.3.	<i>Discussion</i>	177
8.2.4.	<i>Conclusions</i>	181
8.2.5.	<i>Relevance to clinical practice</i>	181
8.3.	SUMMARY	182
CHAPTER 9. RESPONDING TO VIOLENCE ABUSE AND DANGER; FOCUS ON SAFETY		185
9.1.	INTRODUCTION	186
9.2.	MANUSCRIPT: METHAMPHETAMINES AND WORKPLACE VIOLENCE: POLICE AND PARAMEDICS EXPERIENCE.....	186
9.2.1.	<i>Introduction</i>	187
9.2.2.	<i>Methods</i>	189
9.2.3.	<i>Results</i>	192
9.2.4.	<i>Discussion</i>	200
9.2.5.	<i>Conclusion</i>	204
9.3.	SUMMARY	204
CHAPTER 10. MANAGING CARE: CONTINUALLY MODIFYING CARE PRACTICES.....		208
10.1.	INTRODUCTION	208
10.2.	RESULTS	208
10.2.1.	<i>Coordinated, standardised approach to care</i>	209
10.2.2.	<i>Managing care: Improving services and care environments</i>	212
10.2.3.	<i>Inexperience and staff needs</i>	217
10.3.	SUMMARY	220
SECTION FOUR: INTEGRATION & CONCLUSION		221
CHAPTER 11. INTEGRATION OF RESULTS & DISCUSSION		222
11.1.	INTRODUCTION	222
11.2.	OVERVIEW OF STUDY.....	223
11.3.	INTEGRATED RESULTS	225
11.3.1.	<i>Acuity</i>	227
11.3.2.	<i>Complexity of care</i>	229
11.3.3.	<i>Co-ordinated Approach</i>	234
11.3.4.	<i>Deservingness & compassion</i>	235
11.3.5.	<i>Rural care</i>	237
11.3.6.	<i>Prevalence of presentations</i>	238
11.4.	DISCUSSION OF FINDINGS	240
11.5.	SUMMARY	245

CHAPTER 12. IMPLICATIONS, LIMITATIONS & CONCLUSION	246
12.1. INTRODUCTION	246
12.2. IMPLICATIONS FOR KNOWLEDGE, PRACTICE AND FUTURE RESEARCH	246
12.2.1. <i>Future research</i>	250
12.3. LIMITATIONS TO THE STUDY	251
12.4. CONCLUSION	253
12.5. SUMMARY	254
REFERENCES	256
APPENDICES	269

List of Tables

TABLE 1-1 A LIST OF PUBLICATIONS	13
TABLE 1-2 CONFERENCE/EDUCATION PRESENTATIONS DISSEMINATING RESEARCH FINDINGS.....	16
TABLE 3-1 TABLE OF STUDIES CHARACTERISTICS	39
TABLE 3-2 <i>QUALITY APPRAISAL</i>	49
TABLE 5-1 TABLE OF PARTICIPATING HOSPITALS FROM QLD OVER 13 YEAR PERIOD	102
TABLE 5-2 COMPARISON METHAMPHETAMINES-RELATED INJURY PRESENTATIONS TO ALL OTHER INJURY-RELATED ED PRESENTATIONS	107
TABLE 5-3 COMPARISON OF DOCUMENTED METHAMPHETAMINE-RELATED INJURY PRESENTATIONS TO OTHER DOCUMENTED STIMULANT-RELATED INJURY PRESENTATIONS OVER 13-YEARS IN QUEENSLAND	110
TABLE 6-1 TRENDS IN ABSOLUTE NUMBERS OF METHAMPHETAMINE- AND ANY ILLICIT DRUGS-RELATED EVENTS ATTENDED BY AMBULANCE FROM 2011/12 TO 2016/17 IN METROPOLITAN AND REGIONAL VICTORIA, AUSTRALIA.	128
TABLE 6-2 CHARACTERISTICS OF CRYSTAL METHAMPHETAMINE-RELATED ATTENDANCES IN REGIONAL AND METROPOLITAN VICTORIA 2011/12 AND 2016/17.....	131
TABLE 7-1 PARTICIPANT CHARACTERISTICS	147
TABLE 7-2 PERCEIVED DESERVINGNESS MEANS	149
TABLE 7-3 PEARSON’S CORRELATIONS – ASSOCIATIONS BETWEEN AFFECT, ATTRIBUTIONS AND PERCEPTIONS OF DESERVINGNESS AND ENTITLEMENT.....	151
TABLE 8-1 OVERVIEW OF THEMES, SUBTHEMES AND THREADS FROM INTERVIEWS EXPLORING POLICE AND PARAMEDICS EXPERIENCE.....	168
TABLE 9-1 OVERVIEW OF THEMES, SUBTHEMES AND THREADS FROM INTERVIEWS EXPLORING POLICE AND PARAMEDICS EXPERIENCE.....	192
TABLE 11-1 RESEARCH QUESTIONS AND THE INTEGRATED THEMES	226
TABLE 11-2 ACUITY THEME: QUANTITATIVE AND QUALITATIVE DATA	227
TABLE 11-3 ACUTE BEHAVIOURAL DISTURBANCE: QUANTITATIVE AND QUALITATIVE DATA.....	230
TABLE 11-4 ELEMENTS OF MENTAL HEALTH: QUANTITATIVE AND QUALITATIVE DATA	233
TABLE 11-5 CO-ORDINATED APPROACH: QUANTITATIVE AND QUALITATIVE DATA	234
TABLE 11-6 DESERVINGNESS & COMPASSION: QUANTITATIVE AND QUALITATIVE DATA	237
TABLE 11-7 RURAL CARE: QUANTITATIVE AND QUALITATIVE DATA.....	238
TABLE 11-8 PREVALENCE OF PRESENTATIONS: QUANTITATIVE AND QUALITATIVE DATA	240

List of Figures

FIGURE 3-1 <i>PRISMA FLOW CHART</i>	36
FIGURE 4-1 SOCIOECOLOGICAL MODEL (SEM)	65
FIGURE 4-2 DIAGRAM OF EXPLANATORY SEQUENTIAL MIXED METHODS DESIGN USED IN STUDY	68
FIGURE 4-3 PILLAR INTEGRATION PROCESS USED IN THIS STUDY	89
FIGURE 5-1 METHAMPHETAMINE-RELATED PRESENTATIONS BY YEAR IN QUEENSLAND 2005-2017	112
FIGURE 6-1 CRYSTAL METHAMPHETAMINE-RELATED ATTENDANCES BY YEAR IN METROPOLITAN MELBOURNE AND REGIONAL VICTORIA – 2011/12 TO 2016/17	129
FIGURE 6-2 RATE OF CRYSTAL METHAMPHETAMINE-RELATED ATTENDANCES PER 100,000 POPULATION BY YEAR IN METROPOLITAN MELBOURNE AND REGIONAL VICTORIA – 211/12 TO 2016/17.....	129
FIGURE 7-1 RESPONSIBILITY ATTRIBUTIONS, AFFECT AND PERCEPTIONS OF DESERVINGNESS.	142
FIGURE 11-1 PILLAR INTEGRATION PROCESS	223
FIGURE 12-1 IMPLICATIONS FOR PRACTICE AND RESEARCH USING SEM FRAMEWORK AS A GUIDE.....	248

Table of Appendices

APPENDIX A: INTERNATIONAL CONFERENCE OF EMERGENCY NURSING 2017	270
APPENDIX B: PROGRAM EDUCATION EVENING ARRH 2018	274
APPENDIX C: AUSTRALIAN NURSING MIDWIFERY CONFERENCE 2019.....	275
APPENDIX D: INTERNATIONAL CONFERENCE OF EMERGENCY NURSING ORAL PRESENTATION 2019.....	278
APPENDIX E: UNE MEDIA ARTICLE PUBLISHED 20 TH AUGUST 2019	282
APPENDIX F: METHAMPHETAMINES RESEARCH UNE MEDIA VIDEO	285
APPENDIX G: QISU CUSTODIAN AGREEMENT	286
APPENDIX H: ETHICS APPROVAL QISU DATA COLLECTION 2016-17.....	288
APPENDIX I: ETHICS APPROVAL SURVEY & INTERVIEW DATA COLLECTION 2018-20.....	289
APPENDIX J: SURVEY: PERCEPTIONS OF DESERVINGNESS AND EXPERIENCE MANAGING PERSON UNDER THE INFLUENCE OF METHAMPHETAMINE (ICE)	290
APPENDIX K: EMAIL SENT TO PARTICIPANTS SURVEY DATA COLLECTION	297
APPENDIX L: PARTICIPANTS INFORMATION SHEET SURVEY DATA COLLECTION.....	299
APPENDIX M: PARTICIPANTS INFORMATION SHEET INTERVIEWS DATA COLLECTION	301
APPENDIX N: CONSENT FORM INTERVIEWS DATA COLLECTION	304
APPENDIX O: TELEPHONE INTERVIEW SCRIPT	305
APPENDIX P: TABLE REPRESENTING THE PILLAR INTEGRATION DATA RESULTS.....	307

List of Abbreviations

ABD	Acute Behavioural Disturbance
ADHD	Attention deficit hyperactivity disorder
ANOVA	Analysis of variance
BBB	Blood brain barrier
CNS	Central nervous system
COREQ	Consolidated criteria for reporting qualitative research
ED	Emergency department
EPHPP	Effective public health Practice Project
HREC	Human Research Ethics Committee
ICE	Crystallised form of methamphetamine
ICEN	International Conference of Emergency Nursing
IDRS	Illicit Drug Reporting System
IM	Intramuscular
IV	Intravenous
MDMA	3,4-methylenedioxymethampheta-mine
MVA	Motor vehicle accident
NDSH	National Drug Household Survey
NHMRC	National Statement on Ethical Conduct in Human Research
PA	Paramedic participant
PNS	Peripheral Nervous System
PP	Police participant
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-analysis
QISU	Queensland Injury Surveillance Unit
SAT	Sedation Assessment Tool
SDH	Social determinants of health
SEM	Socioecological model
SPSS	Statistical package for Social Science
STROBE	Strengthening the Reporting of Observational Studies in Epidemiology
TSI	Torres Strait Islander
UNE	University of New England
UNODC	United Nations Office on Drugs and Crime
VACIS	Victorian Ambulance Clinical Information System
WHO	World Health Organisation

Section one: Introduction, Literature Review & Methodology

Chapter 1. Introduction

1.1. Introduction

The history of drug use across all levels of society is extensive with use of psychoactive substances for religious and or medicinal purposes noted as early as 3300 BC (Crocq, 2007). What has changed over the centuries is the type of drugs used and the purpose of their use. In Australia in the late 1890's, opium was used as an active ingredient in a majority of commonly used medications until laws were introduced in the early 1900's to prevent and control opium use (Hamilton, 2001). By 1980's, heroin use, which had been increasing since 1960, had become a major health crisis due to rapidly increasing HIV/AIDS diagnoses related to intravenous (IV) administration of the drug. Between 1985-88, cocaine use increased due to a decrease in availability of heroin, and due to the epidemic use of cocaine in the United States of America (USA) Australians began to fear a similar cocaine epidemic in Australia but it failed to occur (McAllister & Makkai, 1991). By the 1990's the lack of heroin supply was offset by an increase in international importation of psychostimulants which began to dominate the Australian drug market (Hamilton, 2001).

Methamphetamine use has been reported in Australia since the 1990's (Cleary et al., 2017). The Australian Institute of Health and Welfare reported a decrease in the overall use of methamphetamines from 2.1% in 2013 to 1.4% in 2016 (Australian Institute of Health and Welfare, 2020a), however there has been a shift in the pattern of use to the more pure form of the drug (Australian Institute of Health and Welfare, 2020b). The methamphetamine-crystallised form of the drug, otherwise known as 'ICE', has become more popular among Australians (Australian Institute of Health and Welfare, 2020b). Despite the evidence that there seems to be a decrease in the use of methamphetamines overall, recent debate in the media has centred on claims around a perceived methamphetamine epidemic (Jones et al., 2020). This labelling of a methamphetamine epidemic isn't supported by statistics presented by Australian Institute of Health and Welfare (2017), however it did create public concern and resulted in much-needed attention on the drug that is having a lasting impact on our society.

Despite the reduction in use, the impact of methamphetamine use is extensive. Degenhardt et al. (2017) reported the adverse side effects of amphetamine dependence have a devastating social, physical and psychological impact on users. Vearey et al. (2012) argue that methamphetamines are a public health problem due to the cost of treatment for methamphetamine addiction, the cost of the adverse health related side effects of its use, the environmental and health impact associated with production of methamphetamine, and the crime and violence perpetrated by methamphetamine users. The impact of methamphetamine is not limited to the user; there is growing research to support that methamphetamines have a broader impact on the users' families and communities, law enforcement resources, health care systems and health professionals. It is the impact on emergency services/first responders' health care systems and health care professionals, which will be the focus of this research project.

1.2. Rationale for the study

Previous research on methamphetamines has focused on the experience of health care professionals treating patients who have presented with methamphetamine-related issues (Cleary et al., 2017), violent behaviours (Brecht & Herbeck, 2013; McKetin et al., 2014), barriers to services (Boeri et al., 2011), experience of users (Dyba et al., 2019; Haight et al., 2009), use of restrictive practices, and overdoses or toxicological related problems (Bunting et al., 2007; Wood et al., 2008). Previous research focusing on ED presentations included: methamphetamine-related presentations (Hendrickson et al., 2010; Richards et al., 1999), and psychiatric methamphetamine-related presentations (Pasic et al., 2007; Toles et al., 2006). To our knowledge, no previous research has focused on methamphetamine-related presentations to ED in more than one location, and over several years in Australia while looking at the pre-hospital environment and the ED environment.

Previous research on stigmatization, perceptions of deservingness and negative attitudes has focused on different population minority groups and presented varying results. Research on attitudes, and perceptions of deservingness has tended to focus on health professionals; attitude towards substance users (Kelleher & Cotter, 2009); and attitudes towards illicit drug users and intravenous (IV) drug users (Brener et al., 2010; van Boekel et al., 2013). Research has not focused on the pre-hospital

environment including both police and paramedics' attitudes towards methamphetamine-users who require transport to ED.

EDs are under resourced and overburdened, this creates an environment that is high-pressure and susceptible to staff burnout, and issues around inappropriate staff skill mix due to high staff turnover (McHale et al., 2013). With reports suggesting an increase in ED presentations and increased use of crystallised methamphetamine the number and acuity of methamphetamine-related presentations to ED is likely to continue to increase. This increase is likely to include an increase in challenging, unpredictable and acute behaviour disturbance (ABD) type presentations to ED, further affecting the ED environment. In addition to ED's and ED staff, police and paramedics in the pre-hospital environment are likely to experience an increase in callouts related to methamphetamine use (Australian Institute of Health and Welfare, 2017b).

While evidence is beginning to demonstrate an increase in crystal methamphetamine ('ICE') use in Australia, there is still little known about what impact this increase is having on emergency department (ED) presentations and pre-hospital callouts for police and paramedics related to methamphetamine use. Considering this, it is timely to explore the impact of methamphetamine-related presentations on EDs, and the experience of police and paramedics caring for persons under the influence of methamphetamines who require transport to ED for health care.

1.3. Themes for the Research

1.3.1. Stigma and attitudes towards people who use drugs

Health behaviours considered to be self-destructive, such as substance abuse, are often subjected to moralistic value judgments and stigma, (Richmond & Foster, 2003). Stigma is when disgrace or lesser status is attributed to certain conditions or people in society (Goffman, 1963; Lloyd, 2010). People who are labelled as drug addicts are often de-humanised, have a devalued social identity, considered less worthy because of the stigma associated with their condition (Birtel et al., 2017; Goffman, 1963) and the perceived idea that people who use drugs are responsible for their drug use (Skinner et al., 2007). Furthering this, stigma is a process that discredits individuals, attaches negative labelling, leads to inequalities (economic and social disadvantage) and discrimination (Birtel et al., 2017; Chang et al, 2016), which affects patients

willingness to disclose drug use to health professionals or engage in health care services (van Boekel et al., 2013). Stigma due to drug use is thought to be associated with applying blame or responsibility of the drug use on the person using the drug. In addition, Lloyd (2010) argues stigma can remain after the person has recovered from their addiction.

Research is showing an increasing body of evidence that health professionals hold negative attitudes towards people who use illicit substances, resulting in health professionals' avoidance, mistrust and suspicion, and the perception illicit drug users are less deserving of health care (Kelly & Westerhoff, 2010; Richmond & Foster, 2003; Skinner et al., 2007). Negative attitudes and value judgments are thought to have arisen from misleading information, misunderstanding the issues, lack of knowledge around drug use, a sense of frustration due to negative experience working with these patients, and an inability to manage these patients effectively and make lasting change (Chalmers et al., 2016; Hughes et al., 2011; Richmond & Foster, 2003). Negative attitudes and stigma negatively affect patients and health professionals' relationships, leading to a decrease in open communication, lack of trust and inability to develop therapeutic relationship, poor treatment outcomes, misdiagnosis or delay in diagnosis and treatment, and decreased quality of care provided (Takano et al., 2015; van Boekel et al., 2013).

Birtel et al. (2017) argues stigma and negative attitudes affect the patient in three aspects; the patients experience of discrimination and inequality related to stigma and negative attitudes, the patients' perception of how the public and health professionals perceive them, and the stigma and negative attitude the patient feels towards themselves as a result of perceived stigma and experience of stigma. This results in a decrease in self-esteem, feelings of shame, affects physical and mental health, and patients distancing themselves from society (Birtel et al., 2017; Kelly & Westerhoff, 2010; Takano et al., 2015). In addition, stigma can result in chronic stress due to a sense society is rejecting them, fear of experiencing stigma which is a barrier to accessing health care services, and can lead to treatment resistance (Salamat et al., 2019).

Stigma is thought to be a socially constructed idea, which can be influenced by societies views, and media (Lloyd, 2010). Increasing substance abuse education to help improve clinicians' skills and confidence in managing substance abuse,

increasing social support, ensuring services and support are available to assist staff working with people with addiction, changing public beliefs, and beliefs of responsibility for drug use can help to mitigate the stigma and negative attitudes (Richmond & Foster, 2003; van Boekel et al., 2013). Media and prevention education strategies are often used to discourage health behaviours, however, how media portrays substance abuse can lead to stigma and negative attitudes (Livingston, et al., 2012). The following article will discuss the impact of media sensationalism and crisis framing can have on public perceptions of people who use illicit drugs and stigma.

1.3.1.1. Editorial Manuscript: The impact of media sensationalism and crisis framing on stigma and negative attitudes towards methamphetamine users

Manuscript details

Authors:

Rikki Jones (BN, RN)

Dr Cindy Woods, (BEd, PhD)

Professor Kim Usher, (AM, RN, RPN, A/DipNEd, BA, BHSc, MNSt, PhD, FACN, FACMHN)

Citation information: Jones, R., Woods, C. & Usher, K. (2020). The impact of media sensationalism and crisis framing on stigma and negative attitudes towards methamphetamine users. *International Journal of Mental Health Nursing*, 29: 319-321. doi:10.1111/inm.12708

Manuscript

Methamphetamine use is a current focus point round the world, with the media labelling it as an epidemic or crisis that will have a lasting negative impact on our communities (Chalmers et al., 2016). In recent years however, the media has been challenged in regard to what has been termed crisis framing, or where the media seeks to sensationalise an issue such as the potential impact and use of methamphetamines (Usher et al., 2015). The media has been criticised for their sensationalism of methamphetamine use for a number of reasons including the sources they use to make their claims, including over-reliance on law enforcement officials that has the potential to reduce drug use to a narrow range of topics and interpretive frameworks rather than adopting a solution focused approach (Taylor, 2008). Regardless of the sources they use, the media is a pervasive persuader of public opinion and attitudes and frequent referencing of a particular drug alongside harmful acts can cause a reader to associate the two (Roach, 2012).

Crisis framing and the use of sensationalised headlines when reporting on methamphetamine use can have an impact on stigma, discrimination and negative attitudes (Usher et al., 2015). Lancaster (2011), reports the media as having four functions; to impact public opinion (media effect), agenda setting (select issues that believe are important while silencing others), framing the issue (impacts on what is said about the issues, so media can report about an epidemic of drug use-crisis framing), and influencing attitudes, policy and politic views. Media coverage can have a significant advantage to health issues, by highlighting areas of concern, drawing attention to issues that require policy change and government funding, and increasing public awareness. However, a disadvantage of media attention is that it can shape public opinion, increase public concern, and impact the development of stigma and negative attitudes (Hughes et al., 2011; Lancaster, et al., 2011). In fact, the media plays an important role in highlighting deviance (Denham, 2010) and encouraging audiences to develop particular responses and cognitive frames through which to attribute blame (Gideonse, 2016).

Previous research on the media's depiction of substance use confirms that media often present their own agenda on law enforcement, and crime and punishment using alarmist or fear/crisis framing, and negative value judgments to sway public attitudes towards substance use and government opinions to affect policy change (Hughes et al., 2011). Research conducted by Fan (1996) reported drug use crisis framing presented in the media increased public concern by 55% in the USA in 1994. Similarly, Hughes et al (2011) reviewed six years of media reports in six major Australian newspapers and found that amphetamines were more likely to be reported as crisis issues, reported in a negative light (bad moral evaluation), and reported as very costly to society. These media events are sometimes referred to as methamphetamine panics where media attention to the drug results in panic across the community, evidenced by the National Drug Strategy Household Survey which reported methamphetamine had overtaken alcohol as the substance of most concern, with rates reportedly doubling from 16% in 2013 to 40% in 2016 (Australian Institute of Health and Welfare, 2017b). This is significant considering alcohol is linked to higher mortality rates and larger numbers of emergency department presentations (Australian Institute of Health and Welfare, 2020a). What we know is panic results in stigma and negative attitudes towards methamphetamine users who then begin to perceive themselves as a deviant group (Gideonse, 2016)

Stigma is defined as something that marks an individual as a disgrace (Shortis, 2011). Goffman (1963) takes this definition further and discusses stigma as something that detracts from an individual's value as a human being or their belief of being human, thus they feel tainted. Extreme stigma is often associated with substance use, with individuals experiencing self-stigma (shame, fear and low self-esteem) as a result of societal views of their substance use (Salamat et al., 2019). Stigma often creates a negative attitude towards conditions and previous research on stigma and health professionals' attitudes has shown that health professionals often develop negative attitudes towards substance users and experience dissatisfaction working with substance using consumers (Chalmers et al., 2016; Salamat et al., 2019; Takano et al., 2015; van Boekel et al., 2013). For example, stigma has played a role in shaping health professionals' deservingness judgements (Skinner et al., 2007); that is, deservingness and entitlement to health care. All patients are entitled to, and deserve the same level of care, which is the belief most health care systems are built upon. However, when health professionals' perceptions of deservingness are negative, these attitudes are often perceived by the individual, impacting therapeutic relationships and communication with health professionals. It also impacts how an individual interacts with medical treatment and services (van Boekel et al., 2013). The impact of this stigma can result in individuals feeling fear and shame about substance use resulting in failure to disclose the use, failure to seek or delay in seeking medical treatment, and mistrust towards health care professionals (Salamat et al., 2019). This has a direct impact on the individual's willingness to seek assistance in managing their substance use.

Current research and academic debate is attempting to challenge what the media is labelling as a methamphetamine epidemic in order to alleviate the stigmatization associated with use of the drug. Progress is however slow and the pervasive role of the media is hard to overcome. Mental health nurses, drug and alcohol workers and other health professionals who work alongside substance users must remain aware of the potential for stigmatising attitudes portrayed by the media to impact their beliefs of deservingness and the quality of care they provide to substance users. It is also important to remain cognisant that the media power to depict substance users negatively may result in unintended consequences that actually hinder recovery for individuals.

1.3.2. Harm reduction

The effect of stigma associated with drug use and the fear of punitive action (criminal) may prevent some users from accessing treatment when it is needed, increasing the impact on their overall health. Harm reduction in Australia was adopted in 1985 (Wodak et al., 2012), and includes prevention, treatment, and management of negative side effects related to drug use. However, despite over 30 years of harm reduction, we still seem to be making little headway into making a difference.

In 2008, a program was initiated to change drug use in rural and remote areas of Australia (Australian Institute of Health and Welfare, 2008). This Illicit Drug Diversion Initiative (IDDI) program aimed to decrease the number of drug users incarcerated, increase the number of drug users accessing drug education, prevention and treatment programs, and provide more incentives to drug users to access services. Despite this program and other health promotion activities such as school drug education programs, drug treatment services and changes to legislation and law, there still remains a proportion of the population participating in illicit drug use (Australian Institute of Health and Welfare, 2008, 2016a). As a result of the considerable impact of methamphetamines, and the failure of previous programs to decrease drug use and the related impact, The National Drug Strategy 2017-2026 focused on developing a coordinated approach to drug use called harm minimisation (Department of Health, 2017). This approach includes three main areas of focus: reducing the demand for drugs, reducing the supply of drugs, and harm reduction (reducing the social and economic impact of drugs and the adverse health effects of drugs use). Harm minimisation approach was designed to be a balanced approach using all three pillars to help minimise the affect illicit drugs have on the community, however government bodies continue to spent money on supply reduction and less on prevention, treatment, hospitalisation and harm reduction (Wodak et al., 2012).

Debate about the moral and ethical views of harm reduction continues to occur. While some people believe abstinence is the only option and to advocate harm reduction is to approve the use of drugs (Carter et al., 2012) others argue, abstinence has never worked long term, as has been demonstrated with sex education programs and the use of 'propaganda' rather than an education approach (Cohen, 2012). The propaganda approach presents one view, which is usually abstinence, and the extreme consequences of not engaging in abstinence. Cohen (2012) states adolescents usually

ignore the information, already having an idea that the information presented is not a complete and accurate account of the issues. As with sex education in the past, and drug use or abstinence, this results in adolescents turning to their peers to discuss the issue with others who have experience of drug use (Cohen, 2012). As a result, a dialogue around reducing the harm of drug use, (i.e. what to do if your friend is having an drug overdose or is suicidal, how to ensure your safety when someone has taken a substance and becomes violent) is not often approached or is ineffectively.

Drug use has been evident in human history for thousands of years and is now considered, by some, as normal behaviour in society today despite the stigma and fear of punitive action (Erickson & Hathaway, 2010). Erickson and Hathaway (2010) discuss normalisation of drug use and harm reduction. Normalisation argues drug use already exists in large numbers in society and is firmly established making it a normal social activity, therefore criminal law designed to 'legislate' and control drug use is having minimal effect (Erickson & Hathaway, 2010; Measham & Shiner, 2009). Despite the minimal effect legislation and the law seems to be having on drug use in Australia, Governments and policy makers seem to continue to focus on drug use as an illegal activity and as a result, increase law enforcement efforts while also trying to prop up the health care system to manage the negative health effects of drug use (Frei & Wodak, 2017).

From a health care perspective, if we argue drug use is a normal behaviour, are we implying there is limited impact on your health when using drugs? If we argue drug use is illegal, are we implying that people who use drugs are less deserving of medical care than someone who has another health condition such as diabetes? After all, is not drug use another health behaviour? There should be no doubt that people who use drugs are entitled and deserving of health care. If we consider health behaviours, there are large numbers of people every day participating in health behaviours that may affect their longer-term health. Type 2 diabetes is one example. Poor nutrition or diet high in sugars can lead to the development of Type 2 diabetes, and while the public is aware of this, people continue to consume large quantities of sugar each year (Australian Bureau of Statistics, 2016a). Diets high in saturated fats is another health behaviour that has the potential to affect a person's health and can put the person at increased risk of obesity and heart attacks. Like drug use, diabetes, obesity and coronary heart disease have a substantial impact on society in both terms of cost and impact on the person (Australian Bureau of Statistics, 2016b).

Changing the focus of individual drug use away from criminal law and abstinence may have some impact on how society views people who use drugs and how people who use drugs engage with health care services to reduce the impact of drug use on the user and society. To help reduce the impact of methamphetamines, we must begin to question the impact of the stigma related to drug use, health professionals' negative attitudes towards illicit drugs users, including their perceptions of deservingness, and focus our efforts on harm reduction rather than abstinence.

1.4. The research

1.4.1. Aims

The first aim of the study was to quantitatively describe the patterns and features of methamphetamine-related ED presentations in Queensland in the period of 2005 to 2017, and the impact of crystallised methamphetamine-presentations on paramedics in Victoria from 2011/12 to 2016/17. The second aim of this study was to understand the impact of methamphetamine-related ED presentations on paramedics and police officers by exploring; perceptions of deservingness and attitudes towards persons who use methamphetamine, and the experiences providing care to persons under the influence of methamphetamines and required transport to ED's.

1.4.2. Research question

The research questions are:

1. What are the patterns and features of methamphetamine-related ED presentations?
2. What are the patterns and features of ambulance callout events related to crystal methamphetamines?
3. What are the perceptions of deservingness and attitudes (negative and positive attitudes) of police and paramedics who are required to transport patients to EDs for methamphetamine-related presentations?
4. What are the experiences of paramedics and police' called out to persons under the influence of methamphetamine and required transport to an ED?

1.4.3. Design

An explanatory sequential mixed methods design was used with two separate data collection phases. Quantitative data was collected in phase one (Queensland injury Surveillance Unit [QISU] data, VIC ambulance data, Survey-perceptions of deservingness) and qualitative data collected in phase two (interviews). The key themes identified in phase one were explored further in phase two of the study.

Phase One: *Stage one* A retrospective observational study design was utilized to describe the data collected on ED injury related presentations across Queensland by the QISU. Queensland was chosen, as the data from this State was freely available to the researcher. *Stage two* A population-based retrospective study design was also conducted using data collection from Ambo-AODstat to describe the crystal methamphetamine-related events attended by paramedics in Victorian Ambulance service. Victoria was selected as the data was freely available from Turning point (an addiction treatment, education and research centre in VIC). *Stage three* A cross-sectional survey of police and paramedics working across Western Australia (WA) design was utilised to collect quantitative data on the perceptions of deservingness and attitudes towards people who use methamphetamines. WA was selected as it was the only state in Australia where both the police force and ambulance services agreed to participate.

Phase two: Qualitative study design was utilised to gather qualitative data during semi-structured interviews of police and paramedics across Australia, using thematic analysis to analyse the data text gathered in this stage of the research. The population explored in phase two of this study were determined by the findings found in phase one stage one and two, police and paramedics were highlighted as disciplines that were potentially negatively impacted by methamphetamines-related callouts. In addition, previous research has focused on the experience of health professionals caring for persons under the influence of methamphetamines and limited research has focused on police and paramedics experience in co-attending methamphetamine related callouts.

1.5. Outline of Dissertation

This dissertation will be presented in both thesis-by-publication and traditional formats where a number of chapters will have been submitted for review and

publication. The journal articles have been embedded, where appropriate, within the chapters and any publications still under review have been noted. The choice to complete a dissertation by publication in addition to the traditional format was selected to help ensure research outputs and dissemination of the research findings. Table 1-1 outlines the publications contained in this dissertation. A discussion outlining the rationale for presenting each chapter in traditional and or publication format will follow the table of publications.

Table 1-1 A list of Publications

No.	Publications	Journal	Progress	Chapter location
1	The impact of media sensationalism and crisis framing on stigma and negative attitudes towards methamphetamine users	International Journal of Mental Health Nursing	Published March 2020	1
2	Rates and features of methamphetamine-related presentations to emergency departments: An integrative literature review	International Journal of Clinical Nursing	Published July 2018	3
3	The challenges of researching illicit drug- related emergency department presentations using reviews of medical charts	Nurse Researcher Journal	Published November 2018	4
4	Patterns and features of methamphetamine-related presentations to emergency departments in QLD 2005-2017	International Journal of Mental Health Nursing	Published July 2019	5
5	Crystal methamphetamine's impact on frontline emergency services in Victoria, Australia	Australasian Emergency care Journal	Published November 2019	6
6	Methamphetamines: Cross sectional-survey exploring Police and Paramedics attitudes and perceptions of deservingness of care.	Nursing and Health Science	Published October 2020	7
7	Complexity of caring, within the context of violence, abuse and danger: Police and paramedics experiences of caring for people affected by methamphetamines		Drafted	8
8	Responding to methamphetamine-related callouts: Police and paramedics experience caring for people affected by methamphetamines		Drafted	9

This dissertation is divided into four sections. Section one includes the introduction, literature review and methodology (chapters one, two three and four). Section two

presents the results from phase one of this study (chapters five, six and seven). Section two presents the results from phase two of this study (chapters eight, nine and ten). Section four includes the discussion of the integrated findings and the conclusion of this study (chapters eleven and twelve).

Chapter one is the introductory chapter which presents an introduction to the dissertation, discusses the themes for the research, and an overview of the study, aims, research questions and rationale. Embedded in chapter one is publication one, which is an editorial discussing the impact of media sensationalism on stigma and the potential impact it has on health care professionals' attitudes.

Chapter two is presented as a chapter, discussing the background of methamphetamines. The discussion will outline the history of methamphetamines, how methamphetamines work and the side effects on the human body. The chapter also outlines common cycles of use, impact of methamphetamines and the current statistics on methamphetamines use in Australia.

Chapter three is presented as a manuscript (publication two). Publication one is a literature review exploring the current literature on methamphetamine-related presentations to ED's. It reviews what is already known from previous research and identifies the current knowledge gap in the area.

Chapter four is presented as a chapter outlining the theoretical framework, methodology and methods underpinning the study. It presents a discussion on pragmatism, ethics, and socioecological framework of health promotion. An explanatory sequential mixed method design was used to explore the patterns and features of methamphetamine-related presentations to EDs and explore the experience of emergency services staff who manage persons under the influence of methamphetamines and required transport to an ED. The chapter outlines the components of the study, the setting, the participants, data collection methods, and the analysis techniques used in phase one and two. Included in chapter four is Publication three, which is a discursive manuscript outlining the challenges of conducting drug research using patients' medical records, and ensuring validity and reliability of the processes used to extract data. Some of these challenges were identified in the literature review process when critical analysis was conducted on the quality of research available in this area.

Chapter five is presented as a manuscript discussing the results of the analysis of the quantitative data collected by QISU in phase one. Publication four highlights several key findings that are explored further in phase two of the research. A key finding identified was methamphetamine-related injury presentations were more likely to be brought in by ambulance compared to other types of drug issues, prevalence of attendances increased in the final four years of the study.

Chapter six is presented as a manuscript discussing the results of quantitative data collected from VIC ambulance services in phase one. Publication five explored methamphetamine-related callout events in VIC. VIC ambulance data reported an increase in prevalence of crystal methamphetamine-related callouts and an increase in police and paramedic co-attendance. This study confirmed findings from QISU data was not isolated to QLD.

Chapter seven is presented as a manuscript, publication six, discussing the results of quantitative data collected via survey conducted in WA, undertaken to explore the attitudes of police and paramedics towards people who use methamphetamines. We chose to explore the perceptions of deservingness and attitudes of police and paramedics towards people who use methamphetamine because stigma, perceptions of deservingness and negative attitudes of health care professionals has been linked to a decrease in drug user's likelihood of accessing drug treatment and other health care services. Media plays a large role in how people who use drugs are perceived. This chapter finalises the results from phase one.

Chapter eight is presented as a manuscript, publication seven, discussing the results from Theme 1 (Complexity of care: Caring for the patient within the context of violence, abuse and danger) of the semi-structured interviews conducted with police and paramedics in phase two of this study.

Chapter nine is presented as a manuscript, publication eight, discussing the results from theme 2 (Responding to violence, abuse and danger: A focus on safety) of the semi-structured interviews conducted with police and paramedics in phase two of this study.

Chapter ten is presented as a chapter, discussing the results from Theme 3 (Managing care: Continually modifying practice and environments) of the semi-structured interviews conducted with police and paramedics in phase two of this study. This is the final theme from the interviews and finalises phase two of this study.

Chapter eleven is presented as a chapter outlining the integrated results presented in chapters five-ten. Using the pillar integration approach for mixed methods results linking the results of the study to the theoretical framework, outlining the implications to knowledge and practice. Chapter twelve will provide a conclusion to this dissertation.

As part of this dissertation, several publications have been presented at various conferences, to ensure dissemination of research findings. In addition, media articles and media video have been published with UNE, discussing the importance of the research and the research project we have undertaken. Table 1-2 outlines the format the research was presented in, the title of the presentation and additional media articles completed about this research project.

Table 1-2 Conference/Education presentations disseminating research findings

Presentation type & Title	Conference	Date & location
Poster presentation Rates and features of methamphetamine-related presentations to emergency departments: An integrative literature review (appendix A)	International Conference for Emergency Nurses ICEN 2017	11 th -13 th October 2017 Sydney
Oral Presentation Methamphetamines in ED. (appendix B)	Education evening Armidale Hospital	August 2018
Poster Presentation Difficulty translating research on illicit drug-related emergency department presentations using medical chart review for data collection (appendix C)	Australian Nursing and Midwifery Conference	May 2019 Newcastle
Oral Presentation The results of an observational study looking at Methamphetamine-related presentations to QLD emergency departments from 2005-2017. (appendix D)	International Conference for Emergency Nurses ICEN 2019	15-17 October 2019 Adelaide
Poster Presentation The impact of methamphetamine on frontline emergency services in Victoria, Australia (appendix D- Awarded Best poster- Finalist)	International Conference for Emergency Nurses ICEN 2019	15-17 October 2019 Adelaide
UNE Media Article Growing emergency the tip of the ICE-burg (appendix E)	UNE Website	August 2019
UNE Media Video Short Interview Rikki Jones & Professor Kim Usher (appendix F)	UNE	2019

1.6. Summary of chapter

This chapter has provided a brief introduction, outlining the themes for the research and an overview of the study, and the aims and research questions. It also provided a brief overview of the proposed theses including the chapters and publications. The following chapter will present the background on methamphetamines.

**Higher Degree Research Thesis by Publication
University of New England**

STATEMENT OF ORIGINALITY

We, the Research Master/PhD candidate and the candidate's Principal Supervisor, certify that the following text, figures and diagrams are the candidate's original work.

Type of work	Page number/s
Published Manuscript	6 - 8

Name of Candidate: Rikki Jones

Name/title of Principal Supervisor: Professor Kim Usher



13/10/2020

Candidate

Date



28/10/2020

Principal Supervisor

Date

**Higher Degree Research Thesis by Publication
University of New England**

STATEMENT OF AUTHORS' CONTRIBUTION

(To appear at the end of each thesis chapter submitted as an article/paper)

We, the Research Master/PhD candidate and the candidate's Principal Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated in the *Statement of Originality*.

	Author's Name (please print clearly)	% of contribution
Candidate	Rikki Jones	55%
Other Authors	Kim Usher	30%
	Cindy Woods	15%

Name of Candidate:

Name/title of Principal Supervisor:



Candidate

3/07/2020

Date



Principal Supervisor

25/09/2020

Date

Chapter 2. Background: Methamphetamines

2.1. Introduction

This chapter will provide a discussion outlining the background to methamphetamines. The background outlines the history of methamphetamines, how methamphetamines act on the human body, negative side effects, cycles of methamphetamine use, and impact of methamphetamines. In addition, this chapter will outline current methamphetamine use in Australia. A summary of the chapter will follow the main discussion.

2.2. History of methamphetamines

In 1885, ephedrine, a similar drug to epinephrine, was extracted from Ephedra (a herbal extract) (Vearrier, et al., 2012). In 1887 a German chemist first synthesised amphetamines and methamphetamine was first synthesised by a Japanese pharmacologist in 1893 (Anglin, et al., 2000). In the 1930-40's, methamphetamine was developed as an alternative to amphetamines and used as a medication in the United States of America (USA) for a range of health problems including asthma, narcolepsy, weight loss, schizophrenia, morphine addiction, heart block, seasickness and Parkinson's disease (Evren & Bozkurt, 2018; National Institute on Drug Abuse, 2013; Vearrier et al., 2012). It was also used by military personnel in Japan, America, Germany and Europe during the Second World War to improve performance, endurance and alertness to reduce combat fatigue (Evren & Bozkurt, 2018; Vearrier et al., 2012).

Use of methamphetamines continued to spread in the USA with reports of methamphetamines regularly prescribed in the 1940-50's (Anglin et al., 2000; Vearrier et al., 2012). Research in the late 1930s on amphetamines report on the negative and destructive effects of amphetamines on health (Vearrier et al., 2012). Despite the reports of negative impacts of meth/amphetamine use, by the late 1960s distribution of methamphetamine inhalers and tablets had peaked, with the USA alone reporting the production of over 31 million tablets a year (Vearrier et al., 2012). By the time the world had taken notice of the adverse side effects and the ease in which

users became addicted, the removal of methamphetamine from over the counter prescription did little to stop the reported ‘epidemic’ in both Japan and the USA between 1945-55 (Evren & Bozkurt, 2018). Eventually, methamphetamines were removed from use as a medication all together by 1971 (Rush & Walton, 2005; Vearrier et al., 2012).

Since it’s early removal from use as an inhalant and oral medication, the illegal use of methamphetamine had spread from the first epidemics in Japan and USA, to Europe, Korea, and Hawaii by the late 1980s (Anglin et al., 2000; Rush & Walton, 2005). By the late 1990’s it had spread into Australia, across Asia, Thailand, and finally into Africa (Degenhardt et al., 2008; Galbraith, 2015). Globally there is an estimated 27 million people who have reportedly used some form of amphetamines in the past 12 months (United Nations Office on Drugs and Crime, 2020).

2.3. Methamphetamines and how they act on the human body?

Methamphetamine (L-methamphetamine and D-methamphetamine) is a phenylethylamine which are a class of synthetic psychostimulants (Evren & Bozkurt, 2018; Vearrier et al., 2012), that have a similar chemical structure to other amphetamines (Courtney & Ray, 2014; Evren & Bozkurt, 2018; Scott et al., 2007). Methamphetamines are also known as, methylamphetamine, N-methylamphetamine, desoxyephedrine, and dimethylphenethylamine (Courtney & Ray, 2014; Degenhardt et al., 2017; Evren & Bozkurt, 2018). Methamphetamine also goes by a variety of different street names including, crystal meth, ICE (Rommel at al., 2015), crank, speed, yaba, batu, tweak, uppers, shabu, glass, tina, whiz, rabbit, biker’s coffee, and ox blood (Greene, et al., 2008; Vearrier et al., 2012). These terms are constantly changing and vary depending on location.

Methamphetamine has an addition of an N-methyl group which makes it more lipid soluble than other amphetamines, and this increases the ability of methamphetamine to rapidly transport across the blood brain barrier (BBB), increasing the effects it has on the central nerves system (CNS) and the peripheral nervous system (PNS) (Scott et al., 2007; Vearrier et al., 2012). Methamphetamine primarily effects neurotransmitter transporters in the brain, causing the release and prevents re-uptake of neurotransmitters in the brain resulting in an increased concentration of the

neurotransmitter (mainly dopamine, norepinephrine, and serotonin) in the synapses of brain nerve cells (Evren & Bozkurt, 2018; Scott et al., 2007). Positive effects of methamphetamine use include; immediate euphoria followed by hours of increased physical and mental capacity, stimulation and excitability and increased alertness/energy (Scott et al., 2007; Yu, et al., 2015). The neurotransmitter dopamine is involved in movement and coordination of the body, pleasure and motivation, and the reward or euphoria in the brain (Prakash et al., 2017; Vearrier et al., 2012). Methamphetamine is reported to increase the level of dopamine by over 600% (Tompkins-Dobbs & Schiefelbein, 2011) and may even increase it by as much as 1000% (Gordon & Jong, 2018). In comparison, sex, eating, and cocaine use only raises dopamine levels by around 300% (Gordon & Jong, 2018).

The neurotransmitter norepinephrine plays a role in alertness and produces the ‘flight’ or ‘fight’ response, sometimes resulting in increased aggression and unpredictable behaviour (National Institute on Drug Abuse, 2013; Vearrier et al., 2012). The neurotransmitter serotonin helps to regulate and stabilise moods, appetite and sleep patterns (Gordon & Jong, 2018). The sudden increase of neurotransmitters in the synapses and repeated high doses of methamphetamine associated with addiction can have a neurotoxic effect on brain cells. This results in an imbalance of neurotransmitters, destruction of neurotransmitter nerve terminals (Scott et al., 2007), neuronal degeneration in stratum, hippocampus and prefrontal cortex of the brain (Evren & Bozkurt, 2018; Yu et al., 2015), deficits in memory retention impacting users ability to learn, and deficits in higher order thinking (Anglin et al., 2000).

The purity, frequency of methamphetamine use, dosage and the route it is administered impacts the intensity and duration of methamphetamine effects on the CNS and PNS (Evren & Bozkurt, 2018; Stafford & Burns, 2015). The purity of methamphetamine is higher than other forms of psychostimulants and has a peak effect between 8-12 hour (Evren & Bozkurt, 2018) however, this is dependent on the form of methamphetamine used and what precursors were used to manufacture the drug. There are three main forms of methamphetamines. The powdered form (sometimes known as speed), usually a white chalky substance or pill; has the lowest average purity (average purity 10%) of all the methamphetamines and is often ingested or snorted (Degenhardt et al., 2008; Department of Premier and Cabinet, 2019; McKetin, et al., 2005). The base form, usually a yellow paste, is considered to

be twice the average purity of the powder (average purity 21%), and can be injected or ingested (Department of Premier and Cabinet, 2019; McKetin et al., 2005).

The crystallised form, also known as 'ICE', is a translucent white crystal and has the highest purity, with an average purity of 80% (purity usually between 60-90%) (Australian Institute of Health and Welfare, 2017b; McKetin et al., 2005; Peacock et al., 2019) and is considered to be more pure today than it was in the past (Council of Australian Governments, 2015). 'ICE' is usually smoked or injected (Department of Premier and Cabinet, 2019) and its higher purity is suggested to increase the risk of dependence and addiction rates (Courtney & Ray, 2014; Evren & Bozkurt, 2018). Smoking and injecting methamphetamine results in an instantaneous euphoria or 'high' making it more popular by these routes compared to snorting which can take up to five minutes to take affect and ingestion which takes approximately 20 minutes to get the desired affect (Anglin et al., 2000; Evren & Bozkurt, 2018). The main route of administration for methamphetamine is injection (powdered form of methamphetamine 94%, crystallised form of methamphetamine 97%) with smoking reported as the second most popular route of administration (24% powdered; 39% crystal) (Peacock et al., 2019).

Methamphetamines are manufactured in backyard laboratories with reports that 'ICE' is 'cooked' (manufactured) using around twenty kilograms of chemicals to make one kilogram of 'ICE' (Australian Institute of Health and Welfare, 2014; Commonwealth of Australia, 2015; Kinner & Degenhardt, 2008). The purity of methamphetamines is linked to the precursors and the chemicals used to produce the drug, and availability of these precursors and chemicals varies across regions and government regulation (Commonwealth of Australia, 2015), which is likely to have an impact on how the drug affects the user. This fluctuation in purity has the potential to cause users to overdose when a particularly stronger form of 'ICE' is on the market and produce less euphoria when the purity is significantly decreased. Recent reports by the Illicit Drug Reporting System (IDRS)(2019) suggests the cost of methamphetamine for all forms is the same per point but the average price per gram has decreased since 2013, making it cheaper than other drugs on the market, and more attractive to drug users.

2.4. Side effects

At very small doses, methamphetamines can have a very positive effect on the user (Hall, et al., 2009), however, repeated use of methamphetamine decreases the sensitivity (effect) of the drug resulting in the user requiring higher and more frequent doses to get the same effect, resulting in negative side effects and an addiction cycle that includes periods of depression and euphoria (Commonwealth of Australia, 2015; Hall et al., 2009; National Institute on Drug Abuse, 2013).

Short term effects of methamphetamine use include: hypertension, diaphoresis, chest pain, arrhythmias (tachycardia, prolonged QT interval, and supraventricular tachycardia (SVT)) (Greene et al., 2008), myocardial infarction, ischemic and haemorrhagic stroke (Scott et al., 2007), euphoria, increase in alertness, sleep disturbances, increased confidence, hyperactivity, and loss of appetite (Evren & Bozkurt, 2018). Long term effects of methamphetamine use (excluding the neurotransmitter imbalance, and degeneration of brain cells) include: aggression and violence, psychosis, hallucinations, anxiety, paranoia, depression, suicidal ideation, decrease in behavioural inhibitions, neurotoxicity, rapid tooth decay, dry mouth, skin lesions, and insomnia (Cloutier et al., 2013; National Institute on Drug Abuse, 2013; Vearrier et al., 2012). It can take up to two years for neurotransmitters, in particular dopamine, to return to normal after methamphetamine use (Anglin et al., 2000; National Institute on Drug Abuse, 2013). This impacts how the user feels euphoria without methamphetamine in their system (National Institute on Drug Abuse, 2013) and can make it difficult to escape the cycle of addiction.

2.5. Cycle of methamphetamine use

Methamphetamine withdrawal symptoms can begin as early as six hours post last dose and last for up to two weeks (Toles et al., 2006). There are several different phases/stages in methamphetamine intoxication and use including: rush, high, binge/tweaking, crash, and withdrawal (Rush & Walton, 2005; Scott et al., 2007). The rush phase lasts approximately 5-30 minutes and the user has an increase feeling of pleasure and euphoria, highly alert, with dilated pupils, (Hall et al., 2009; Rush & Walton, 2005). The high can last for up to 16 hours with the user becoming argumentative, and may experience paranoia and psychotic symptoms, hyperthermia, hypertension and dysrhythmias, an increased participation in risk taking behaviour

and experiencing an increased risk of hallucinations (Hall et al., 2009; Rush & Walton, 2005). Following the high, some users will engage in a bingeing or tweaking phase which may last anywhere from 4-24 hours for up to 15 days; this is considered to be the most dangerous phase (Hall et al., 2009; Rush & Walton, 2005; Scott et al., 2007) especially for emergency service personal interacting with users in the pre-hospital environments and in ED's. In this phase, the users continually administer methamphetamines to maintain the original high, increasing the dose and the frequency resulting in negative side effects including; increased sexual behaviours, repetitive movements, hyperactivity in behaviour and thought patterns, insomnia, anxiety, paranoia, irritability, violence and aggression, and increased craving for the drug (Rush et al., 2005; Scott et al., 2007).

The intensity of the binge/tweaking phase is followed by the crash phase where the user often sleeps excessively for 1-3 days, may be disorientated and confused, and often experience increased hunger (Hall et al., 2009; Rush et al., 2005). The final phase, withdrawal, is different for each user, can last 30-90 days and can begin after the binge phase or may not start until 2-14 days after the crash phase (Hall et al., 2009). During this phase the user becomes severely depressed, may experience suicidal ideation, increased violence and aggression, and experiences an inability to cope (Hall et al., 2009; Rush & Walton, 2005). The negative impact felt by the user during each phase is worsened by chronic or long-term use of methamphetamine, and often results in disturbance in sleep-wake cycle, inability to function within society with increased disorganised lifestyle patterns, increased risk of paranoid schizophrenia, flashbacks, repeated psychosis episodes, and poor judgment (Hall et al., 2009).

2.6. Current methamphetamine use in Australia

The National Drug Strategy Household survey 2014 and 2016 (Australian Institute of Health and Welfare, 2014, 2016) reported an increase in the number of Australians recently using illicit drugs (past 12 months) from 2.7 million to 2.9 million, with 8 million people (42%) admitting to using an illicit drug in their lifetime. The overall use of methamphetamine is reported to have decreased since its peak in 2001, with 3.4% admitted to using meth/amphetamines in their lifetime, reducing to 1.4% in 2016 and 1.3% in 2019 (Australian Institute of Health and Welfare, 2020b). However, in

2010, the use of the crystalized form of methamphetamines was reported at 22% of all meth/amphetamine forms used, representing an increase in 2019 to 50%, while in the same time period use of the powdered form of methamphetamine decreased from 51% in 2010, to 29% in 2013 and 20% in 2019 (Australian Institute of Health and Welfare, 2020b). The Australian Drug Trends 2019 (Peacock et al., 2019) reported 78% of people who use methamphetamine now use the crystallised form of methamphetamine, which is considerably higher than the report by the National Household Drug Survey (50%) (Australian Institute of Health and Welfare, 2020b). The National Drug Household Survey (Australian Institute of Health and Welfare, 2020b) reported weekly and daily use of crystalized form of methamphetamine increased from 12.4% in 2010, to 29% in 2019.

In 2013, lifetime use of crystal methamphetamine was higher in rural areas compared to metropolitan areas, this increased from 6.4% in 2006 to 8.3% in rural areas in 2013 while the city areas remained stable (Roche & McEntee, 2017). The wastewater drug monitoring program reported rural use of methamphetamine is far higher than the levels reported in metropolitan areas (Australian Criminal Intelligence Commission, 2019). The most common age group that currently uses methamphetamines is 20-29, with the second most common age group 30-39; however, while rates for these groups have decreased since 2001, the rate of use by the 40-49 age group has seen a slow but steady increase (Australian Institute of Health and Welfare, 2018).

In 2015 a National ICE taskforce was established to address the raising concern about methamphetamine use; in particular, the use of the crystal form of the drug ('ICE') (Commonwealth of Australia, 2015). The final report of the Taskforce stated methamphetamine availability now exceeded the supply of other amphetamines and the growth of the methamphetamine market in Australia was increasing at a rate higher than the global trend (Commonwealth of Australia, 2015). This was directly attributed to the increased demand for use (Commonwealth of Australia, 2015), despite the overall decrease in use of methamphetamines reported by the National Drug Household Survey 2019. The national surveys are not accurate as they rely on self-reporting of drug use which is impacted by stigma associated with drug use and 'socially desirable responses' (participants may deny drug use), due to illicit drug use being considered an illegal activity (Jones et al., 2019a; McGilloway & Donnelly, 2004). National surveys are thus only one way to determine rates of use; other ways to determine rates of use include incidence of drug-related overdoses, wastewater drug

monitoring, records of drug related ED and hospital presentations, and drug seizures. A recommendation from The National ICE Taskforce was to triangulate drug use rates by using ambulance data, and wastewater drug monitoring in addition to more frequent National surveys (Commonwealth of Australia, 2015).

Drug seizures, drug related deaths and waste water monitoring can be used to help support national surveys and get a better idea of the prevalence issue. For example, in 2017-18, there were a total of 31,204 seizures for amphetamine-type stimulants with a total weight of 5,064kgs (Australian Institute of Health and Welfare, 2020a). The number of unintentional deaths related to stimulants in this same year period (i.e. methamphetamines) increased from 250 in 2014 to 442 (Penington Institute, 2020) and the attributed of methamphetamine use to these death rates has reportedly quadrupled since 1999 (Australian Institute of Health and Welfare, 2020a). In addition, The National Wastewater Drug Monitoring program in Australia (Australian Criminal Intelligence Commission, 2019), reported Australians used an estimated 9,847kg of methamphetamines, which was higher than cocaine (4,115kg), and MDMA (1,162kg).

The number of amphetamine-related hospital admissions in Australia increased from 150 per million in 2006/2007 to over 250 per million in 2013 (Stafford & Burns, 2015). In NSW, methamphetamine-related ED presentations also increased from 531 in 2009/10 (Center for Epidemiology and Evidence, 2017) to 4,524 in 2017-18 (Center for Epidemiology and Evidence, 2020). The number of ED presentations related to amphetamines in 2009 was reported as 10,000, however in the 12 months of 2013-14 this number had risen to over 28,000 (Australian Institute of Health and Welfare, 2016a) and is likely to continue to increase with the increased use of 'crystal meth'. The number of treatment episodes for meth/amphetamines increased from 11% in 2007-08 to 27% in 2016-17 (Australian Institute of Health and Welfare, 2018) and potentially these rates may be far higher, with research reporting few methamphetamine users were actually engaging in treatment services (McKetin et al., 2017a). In addition, the number of discharges from hospital related to methamphetamines has increased from 3.1% in 2013-14 to 7.6% in 2017-18, and self-report methamphetamine-related mental health issues also increased from 29% in 2013-14 to 42% in 2017-18 (Australian Institute of Health and Welfare, 2018).

2.7. Impact of methamphetamines

While Australia may not be in an 'ICE' epidemic, people who use methamphetamines are using it in increasing amounts. The National ICE Action Strategy reported the community was significantly impacted by 'ICE' use (Council of Australian Governments, 2015). The areas of main concern included increased risk to frontline workers (police, paramedics, and ED staff) who have to manage ABD, to rural and remote communities who are considered more vulnerable and less likely to have services and resources available to manage drug related health issues, to families and children of users participating in risky behaviours and the personal cost of drug use, to criminal behaviour and organised crime, and to environmental impact related to the manufacturing process of methamphetamines (Council of Australian Governments, 2015). Methamphetamine is known to cause ABD (violent and unpredictable behaviour). Studies examining methamphetamine-related ED presentations reported patients presented with violent, aggressive or agitated behaviour (Bunting et al., 2007; Toles et al., 2006). ABD related to methamphetamines use has also been linked to an increase in assaults, especially domestic/family violence (Dowling & Morgan 2018).

This increased propensity of violence and aggressive behaviour is likely to have a direct impact on frontline emergency services such as police, paramedics and ED staff. Studies focusing on methamphetamine-related presentations to ED reported these presentations were more likely to have police involvement (Bunting et al., 2007; Pasic et al., 2007; Richards et al., 1999) and more likely to be transported to ED via ambulance (Richards et al., 1999). Methamphetamine-related presentations to ED are considered to require more complex care due to the increased safety risk, and the violent and unpredictable nature of these presentations (Cleary et al., 2017; Usher et al., 2017).

Methamphetamine is known to have a detrimental impact on user's physical, emotional and mental health. A study conducted by McKetin et al. (2017a) in the ACT, reported methamphetamine use was linked to an increased rate of reported mental health problems, as well as an increase in reported breakdown in relationships and social networks, and participation in risky behaviour and criminal activity. Added to the impact of methamphetamine is the lack of willingness of methamphetamine users to engage with health services, in particular treatment services. Barriers to accessing treatment include, users not wanting help to get off methamphetamine likely

due to the effect withdrawal has on them, waiting times for treatment services, lack of awareness around what services are available, treatment perceived as not effective for methamphetamines (McKetin et al., 2017b), a lack of access to treatment services in rural areas, and stigma associated with drug use or dependency (Roche & McEntee, 2017).

2.8. Summary of the chapter

This chapter has provided a discussion on the background on methamphetamines. Outlining the history of methamphetamines, how methamphetamine affects the human body, side effects and impact on use and the broader community. In addition, this chapter covered current methamphetamine use in Australia. The following chapter (three) will present the findings of the literature review.

Chapter 3. Literature review

Title of Article: Rates and features of methamphetamine-related presentations to emergency departments: An integrative literature review.

Authors:

Rikki Jones (BN, RN)

Dr Cindy Woods, (BEd, PhD)

Professor Kim Usher, (AM, RN, RPN, A/DipNEd, BA, BHSc, MNSt, PhD, FACN,

Manuscript submitted to: Journal of Clinical Nursing

Status of Manuscript: Published July 2018.

Submission dates: Accepted April 2018.

Citation information: Jones, R., Woods, C., & Usher, K. (2018). Rates and features of methamphetamine-related presentations to emergency departments: An integrative literature review. *Journal of Clinical Nursing*. doi:10.1111/jocn.14493

Signed:



Candidate



Principal Supervisor

3.1. Introduction

This chapter will present a review of the literature relevant to the study aims and research questions. An integrated literature review was conducted on methamphetamine-related presentations to emergency departments (EDs). This review followed the Preferred Reporting Items for Systematic reviews and Meta-Analysis (PRISMA) (Moher et al., 2009). A published manuscript will present the results of the literature review outlining the literature search, themes identified from the literature, a critique of the literature and a conclusion of the findings. The manuscript will be followed by a summary of the chapter.

3.2. Manuscript: Rates and features of methamphetamine-related presentations to emergency departments: An integrative literature review

Abstract:

Aims and objectives: To review the clinical impact methamphetamine has on emergency departments (ED) by assessing the available research on the rates and features of methamphetamine-related presentations. **Background:** Globally, methamphetamine availability, distribution and use has rapidly increased. As a result, the number of methamphetamine-related presentations to EDs has also increased. In this context, it is timely to review the rate and features of methamphetamine-related presentations to understand the impact of methamphetamine on EDs and facilitate the allocation of services, staff and resources. **Design:** An integrative literature review. **Methods:** This paper presents an integrated literature review, following the systematic review process as outlined in the PRISMA flow chart. Several databases were searched using a combination of search terms. Articles were measured against inclusion and exclusion criteria and the final ten articles were subjected to quality appraisal and outcomes reported. **Results:** Methamphetamine accounted for 2.3% or less of all ED presentations. The majority of methamphetamine users presenting to EDs were males, with a mean age 31-37. Methamphetamine-related presentations to ED were more likely to present with trauma, psychosis, and be placed on 24-hour psychiatric hold. Methamphetamine-related presentations were more likely to present

with agitation, aggression and homicidal behaviour and present to ED out of hours and accompanied by police compared with other ED substance-related presentations.

Conclusions: Several important themes were highlighted in this review that have an impact on ED services, resources and staff. Understanding the rate and patterns of methamphetamine-related presentations can help to provide evidence for policy development and staff education in ED. Relevance to clinical practice:

Methamphetamine-related presenters are more aggressive and agitated and more likely to be brought in by police. There is a need for policy development and staff training around these issues, and further research in this area using stronger study designs. Key words: Methamphetamine, emergency department, amphetamine, drug abuse, literature review

What does this paper contribute to the wider global community?

- Methamphetamine-related presentations are often acutely unwell, presenting with behaviour that is aggressive and violent, or with a psychiatric complaint, and the number of presentations is increasing. The increased acuity of the presentation affects the length of time they remain in ED. Policy development and resource allocations need to reflect this.
- Future research into methamphetamine-related ED presentations needs to strengthen the research design and methodology to ensure the validity and reliability of research findings. This will ensure the results can be generalised to the wider population of methamphetamine users and have an impact on clinical practice.

3.2.1. Introduction

Methamphetamine is a methyl derivative of amphetamine, designed as a synthetic substitute to ephedrine, and considered more addictive, faster acting and longer lasting than other illicit drugs (Cleary et al., 2017; Yu et al., 2015). It is available in three different forms; base (yellow paste), powder (white, chalky) and crystal (higher purity, worse side effects); and can be smoked, ingested or injected (Commonwealth of Australia, 2015; Degenhardt et al., 2017; Stafford & Burns, 2015). Reportedly, use of methamphetamine has not increased over recent years, however, a growing concern is the change from powdered and base forms of methamphetamine to the crystallised form of methamphetamine (“crystal meth” or “ice”) (Australian Institute of Health

and Welfare, 2017b; Degenhardt et al., 2017; United Nations Office on Drugs and Crime, 2015).

Methamphetamine has a similar molecular structure to dopamine and affects the central nervous system by stimulating the release of neurotransmitters dopamine, norepinephrine, and affecting the release of serotonin (National Institute on Drug Abuse, 2013; Vearrier et al., 2012; Yu et al., 2015). Dopamine is the reward system of the brain, which creates the 'euphoria' feeling. Methamphetamines stimulate this effect. However, repeated use of methamphetamine results in a reduction in dopamine production and storage by the body. The reduction in dopamine results in methamphetamine users' inability to feel pleasure or euphoria without the drug in their system (Cleary et al., 2017; Commonwealth of Australia, 2015; National Institute on Drug Abuse, 2013). Over time, the repeated use of methamphetamine reduces the drug's effect resulting in the need for more frequent higher doses to get the same result (Australian Institute of Health and Welfare, 2014).

The effects of methamphetamine can last up to 12 hours (depending on route of administration), with a half-life of 10 hours (Rosas-Hernandez et al., 2016).

Withdrawal symptoms can begin six hours after use and last up to two weeks, while the drug can still have an effect for up to four days post dose (Toles et al., 2006).

There are several phases to methamphetamine intoxication including rush, tweaking, crash, and withdrawal (Hall et al., 2009). During the rush phase users experience, intense euphoria, heightened sexual pleasure, increase in alertness and energy, dilated pupils, and obsessive behaviour (Hall et al., 2009). The tweaking phase can last from three days to 15 days, and is considered the most dangerous phase in the cycle (Hall et al., 2009). The user experiences an increase in cravings for methamphetamine, decreased sleep, decreased appetite, decreases of the euphoric effect related to methamphetamine, rapid eye movement, quick twitching muscle movement, increase in frustration, delusions, paranoia, and scattered thought patterns (Hall et al., 2009). During the crash phase, users may experience fatigue and sleepiness, and cravings (Hall et al., 2009). In the withdrawal phase, the user will have a decrease in energy, intense cravings, depression, suicidal ideation, psychosis, and vivid dreams (Hall et al., 2009; Yu et al., 2015). ED staff will be more familiar with the side effects of methamphetamine use such as aggression, psychosis, and suicidal ideation but may not fully appreciate the subtle side effects of methamphetamine use and how treatment in ED can be affected by the phase experienced by the user.

Globally there are an estimated 50 million users of methamphetamines (Rosas-Hernandez et al., 2016). This is supported by an increase in seizures of methamphetamine which is estimated to have risen to 170 tonnes globally in 2014, up 21% from 2009 (United Nations Office on Drugs and Crime, 2016). With the spread of methamphetamine globally, the increase in crystal-methamphetamine users, and the adverse side-effects linked to longer term use, methamphetamine is now considered a worldwide health crisis (Cleary et al., 2017; Degenhardt et al., 2017; Lappin et al., 2016; McKetin et al., 2017b). A report by the National Ice Taskforce (Commonwealth of Australia, 2015) into the current crisis in Australia outlined 38 recommendations including, research needed to improve guidelines that were evidence-based, and improvement in delivery of education to staff directly affected by methamphetamines (health care staff, paramedics, emergency nurses and doctors, mental health workers, and members of the police force). In addition, the World Drug Report (United Nations Office on Drugs and Crime, 2016) highlighted the need for drug prevention programs in health care including treatment, care and rehabilitation, and development of drug sensitive and non-stigmatising drug policies.

Research on methamphetamine has previously addressed violent behaviours (Brecht & Herbeck, 2013; McKetin et al., 2014), prevalence of illegal drug use but not specific to methamphetamine (Indig et al., 2010), overdoses or toxicological related problems (Bunting et al., 2007; Wood et al., 2008), experience of health care professionals treating patients who have presented with methamphetamine-related issues (Cleary et al., 2017), and treatment for methamphetamine abuse (Nickell et al., 2015). Despite the previous studies, it remains unclear what the impact of crystal methamphetamine use has had on emergency departments.

EDs are a high-pressure environment, with reports of increased risk of staff burnout, high turn-over of staff, concerns over staff skill mix, and the broader aspect of decrease in funding combine to produce an environment that is overburdened and under pressure (McHale et al., 2013). Due to the spread of methamphetamine globally, and the prevalence of crystal methamphetamine use, the number and acuity of methamphetamine-related presentations to ED is likely to continue to increase. A better understanding of the rates and features of presentations, and acuity of presentations, can help to identify the burden and impact methamphetamine is having on EDs and staff. An integrative literature review was conducted to review available evidence on methamphetamine-related presentations to EDs.

3.2.2. Aim

An integrative literature review was undertaken to critically review the clinical impact of methamphetamine on EDs by assessing the available evidence on the rates and features of methamphetamine-related presentations.

3.2.3. Methods

The number of articles included in this literature review was small. Thus, an integrative literature review was considered the most appropriate study design (Coughlan et al., 2013; Whitemore & Knafl, 2005). An Integrative literature review uses a systematic and rigorous approach to gain more depth and scope by including different methodologies to identify key concepts and themes within the area of study (Whitemore & Knafl, 2005).

3.2.3.1. Search strategy

This study followed the Preferred Reporting Items for Systematic reviews and Meta-Analysis (PRISMA) (Moher, et al., 2009) (see Figure 3-1) guidelines and included several meetings with a qualified librarian at the University of New England's Dixon library to discuss terms, search strategy and identify appropriate databases.

A search was conducted using EBSCO, PubMed, CINAHL, CINCH, and ProQuest databases using a combination of the following search terms: "methamphetamine"; "methamphetamine-related", "crystal meth or crystal methamphetamine"; "amphetamine", "amphetamine-related", "drug-related", "emergency department", "accident and emergency", "emergency services", and "presentations".

3.2.3.2. Inclusion criteria and study selection

Inclusion criteria: articles were included if they were available in English language peer-reviewed journals; referred to all or one form of methamphetamine (base, powder and 'crystal') excluding other forms of amphetamine; referred to the use of methamphetamines by adolescents and/or adults; and where the study was conducted in an emergency department (any designated ED or emergency service department including psychiatric EDs) in a hospital.

Exclusion criteria: articles were excluded if they could not be accessed in the English language; were not published in a peer-review journal; were not specific to

methamphetamines or it was unclear whether the target of the research was amphetamine or methamphetamine. There was no date range applied to the literature review due to the small number of articles identified in the literature search.

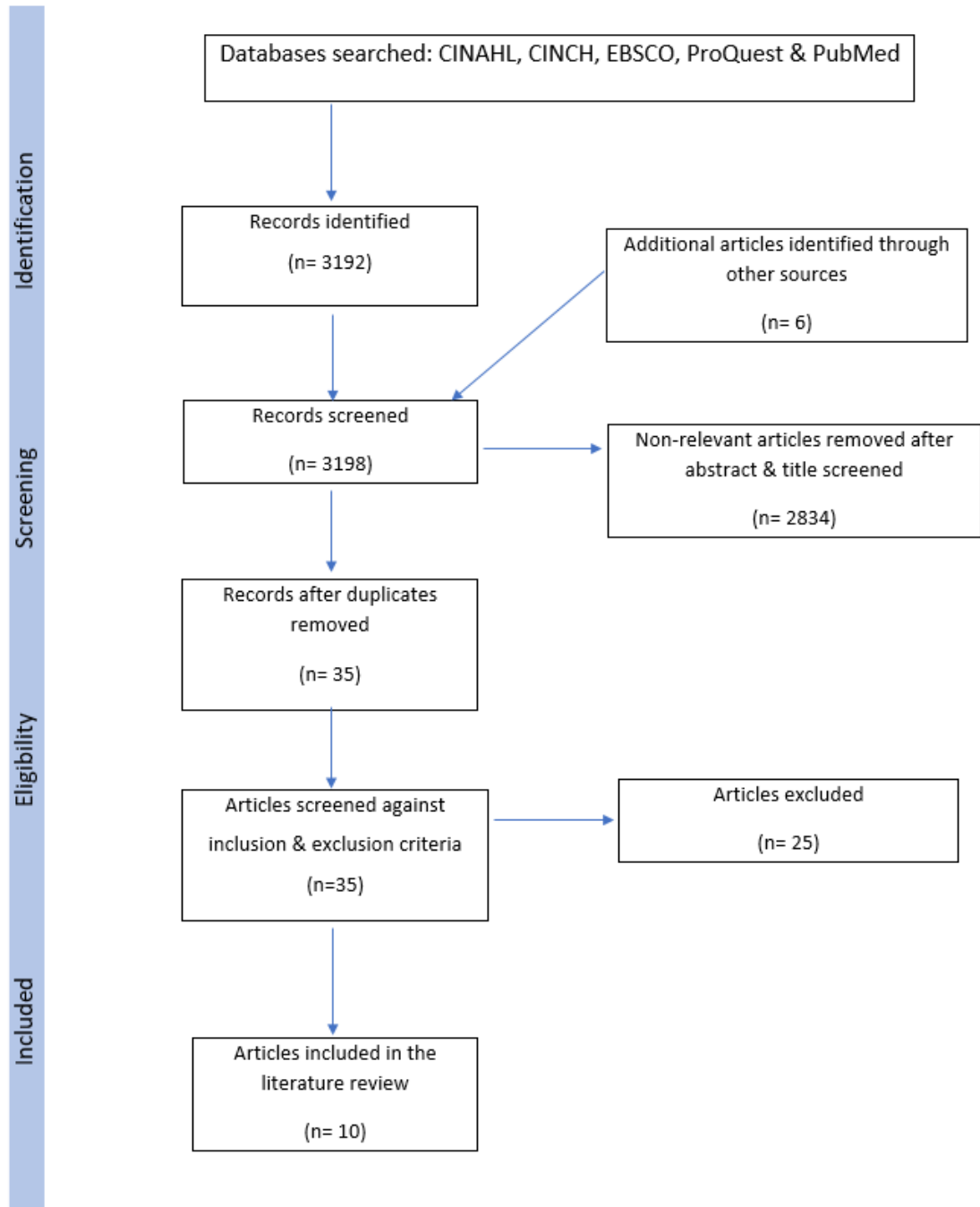


Figure 3-1 PRISMA flow chart

The search resulted in 3192 hits. The titles and abstracts were reviewed and articles that did not meet the inclusion criteria were excluded leaving 364 articles. The reference lists of identified articles were hand searched and a further six articles were added giving a total of 35 articles after duplicates were removed. The remaining 35

articles were reviewed by the research team (RJ, CW and KU) and a consensus reached; ten studies were included in the final literature review.

3.2.3.3. Data synthesis

A critique of the studies characteristics, methodological quality, and reported outcomes of the included studies was conducted. The results were presented under key themes identified by the studies and by other research in the topic area.

3.2.3.4. Quality assessment

The ten included studies were all quantitative studies with varied study designs; observational prospective cohort studies, observational studies, retrospective database analysis, and case-control study (see Table 3-1). The studies were subjected to quality appraisal using The Effective Public Health Practice Project (EPHPP) (Thomas, Ciliska, Dobbins, & Micucci, 2004) quality assessment tool for quantitative studies, assessing the integrity of the study focussing on validity, ethics and reliability (Coughlan et al., 2013; LoBiondo-Wood & Haber, 2014). Two of the researchers (RJ, CW) independently reviewed the articles, the results were then discussed, and a consensus was reached (see Table 3-2).

3.2.4. Results

All studies used convenience samples and were conducted in different locations in developed countries around the world. Seven studies were from the United States (Brandenburg, et al., 2007; Cloutier et al., 2013; Hendrickson et al., 2010; Hendrickson, Cloutier, & McConnell, 2008; Pasic et al., 2007; Richards et al., 1999; Toles et al., 2006), one in Australia (Bunting et al., 2007), one in Canada (Marshall et al., 2012), and one in the United Kingdom (Wood et al., 2008)(Table 3-1).

In eight of the ten studies, determination of drug use for recruitment into the study was subjective by the clinician (Brandenburg et al., 2007; Bunting et al., 2007; Cloutier et al., 2013; Hendrickson et al., 2010; Hendrickson et al., 2008; Pasic et al., 2007; Richards et al., 1999; Toles et al., 2006). Three of these studies used prior research to educate the clinicians on methamphetamine use signs and symptoms prior to and during data collection (Cloutier et al., 2013; Hendrickson et al., 2010; Hendrickson et al., 2008). Two studies used self-reporting to determine drug use (Marshall et al., 2012; Wood et al., 2008). All ten studies used one ED for data

collection, and four of the hospitals from which data were collected were located in known areas of high methamphetamine use (Bunting et al., 2007; Richards et al., 1999; Toles et al., 2006; Wood et al., 2008).

The number of participants varied from 60 methamphetamine-related ED presentations to 461 (N=2,200) with an average of 234. The studies looked at four different types of participants, street-involved youth (Marshall et al., 2012), overdoses presenting to ED (Wood et al., 2008), psychiatric methamphetamine-related presentations (Cloutier et al., 2013; Pasic et al., 2007; Toles et al., 2006), and methamphetamine-related presentations (Bunting et al., 2007; Hendrickson et al., 2010; Hendrickson et al., 2008; Richards et al., 1999).

The results reported include, percentage of ED presentations, diagnosis/chief complaint, psychiatric issues, ED presentation data, demographics, drug use data, and measurement of drug use.

3.2.4.1. Percentage of total ED population

Six of the ten studies reported the percentage of methamphetamine-related presentations compared to total presentations to ED over the study period with varying results. Methamphetamine accounted for approximately 2% of all ED presentations. The lowest result was 0.46% (Wood et al., 2008), and the highest result was 2.3% (Hendrickson et al., 2008), with an average across the studies of 1.47%. The variation in results is likely due to the location of the EDs and the participants. Wood et al.'s (2008) study was located in the United Kingdom in an area of known high MDMA use, focusing on gay night club attendees who predominantly were using MDMA at the time of the study and examined overdoses only, while Hendrickson et al.'s (2008) study was located in the United States, conducted over a longer period of time between 2006-2007 and examined all methamphetamine-related presentations. Hendrickson et al.'s (2008) study also educated clinical staff on clinical signs and symptoms of methamphetamine use before and during the study which could explain their higher result.

Table 3-1 Table of Studies characteristics

Author (year)	Study title	Study design	Location & ED	Year & length of time	Population, Sample size	Comparison groups
Brandenburg et al. (2007)	The association of pseudoephedrine sales restrictions on emergency department urine drug screen results in Oklahoma	Retrospective analysis Convenience sample	USA 1 ED in Oklahoma; St Francis hospital	2003-2005 28 months	Appro 5,000 Urine drug screens performed on ED presentations 10-22% where methamphetamine-positive urine drug screens	1; Urine drug screens performed 2; Methamphetamine-positive urine drug screens
Bunting et al. (2007)	Comparison of crystalline methamphetamine ("ice") users and other patients with toxicology-related presentations to a hospital emergency department	Observational prospective, convenience sample	Australia 1 ED in Sydney; St Vincent's hospital	2006 3 months	449 toxicology-related ED presentations 100 methamphetamine-related ED presentations	1; Methamphetamine-related 2; Other drug-related
Cloutier et al. (2012)	Methamphetamine-related Psychiatric Visits to an Urban Academic Emergency Department: An Observational Study.	Observational retrospective, convenience sample	USA 1 ED Portland; Oregon health & Science university hospital	2006-2007 12 months	1079 psychiatric ED presentations 130 methamphetamine-related psychiatric ED presentations	1; Methamphetamine-related, Psychiatric 2; Non-methamphetamine related, Psychiatric
Hendrickson et al. (2008)	Methamphetamine-related emergency department utilization and cost	Observational prospective, convenience sample	USA 1 ED Portland; Oregon health & Science university hospital	2006 5 months	15,038 ED presentations 353 methamphetamine-related ED presentations	1; Methamphetamine-related 2; Non-methamphetamine related
Hendrickson et al. (2010)	The association of controlling pseudoephedrine availability on methamphetamine-related emergency department visits	Retrospective analysis	2006 USA 1 ED Portland; Oregon health & Science university hospital	2006-2007 7 months	37,625 Ed presentations 714 methamphetamine-related ED presentations	Pre; 1 Methamphetamine-related, 2 Non-methamphetamine related Post; 3 Methamphetamine-related, 4 Non-methamphetamine related

Table 3-1 continued

Author (year)	Study title	Study design	Location & ED	Year & length of time	Population, Sample size	Comparison groups
Marshal et al. (2011)	Frequent methamphetamine injection predicts emergency department utilization among street-involved youth	Observational prospective cohort, convenience sample	Canada 1 ED in Vancouver; St Paul's hospital.	2006-2007 17 months	427 street-involved youth 211 methamphetamine-related ED presentations	1; Methamphetamine-related, daily drug use 2; Methamphetamine-related, less than daily use 3; Non-methamphetamine related
Pasic et al. (2007)	Methamphetamine users in the psychiatric emergency services: A case-control study	Case control	USA 1 ED in Washington; Harborview Medical Centre Psychiatric emergency services	2004-2005 6 months	60 methamphetamine-related ED presentations 60 random other ED presentations	1; Methamphetamine-related 2; Non-methamphetamine related
Richards et al. (1999)	Methamphetamine abuse and emergency department utilization	Observational retrospective, convenience sample	USA 1 ED California; Davis medical centre	1996-1997 6 months	32,156 ED presentations 461 positive methamphetamine ED presentations	1; Methamphetamine-related 2; Non-methamphetamine related
Toles et al. (2006)	Methamphetamine in emergency psychiatry	Observational retrospective, convenience sample	USA/Hawaii 1 ED Honolulu; The Queens medical centre	2002 3 months	904 psychiatric ED presentations 166 methamphetamine-related psychiatric ED presentations	1; Methamphetamine-related, Psychiatric 2; Non-methamphetamine related, Psychiatric
Wood et al. (2008)	What evidence is there that the UK should tackle the potential emerging threat of methamphetamine toxicity rather than established recreational drugs such as MDMA ('ecstasy')?	Observational retrospective, convenience sample	United Kingdom 1 ED London; St Thomas hospital	2005-2006 15 months	ED: total 1077 drug toxicity (overdose) ED presentations, 5 were methamphetamine-related toxicity (overdose) ED presentations Occupational drug screen; 254,440 drug screens, 3 detected methamphetamine. Drug seizures at gay clubs: 418 samples seized, 12 were crystalline methamphetamine UK poisons centre calls: 118 methamphetamine	1; Methamphetamine-related 2; MDMA-related

The results for percentage of methamphetamine-related presentations for the remaining studies were 1% (Bunting et al., 2007), 1.4% (Richards et al., 1999), 1.8% (Cloutier et al., 2013), and 1.9% (Hendrickson et al., 2010). Interestingly, the studies conducted in the United States had similar results (Cloutier et al., 2013; Hendrickson et al., 2010; Hendrickson et al., 2008), except for Richards et al. (1999) whose result was much lower. However, this may be due to the year in which the studies were conducted: 1996-1997 (Richard et al., 1999), and 2006-2007 (Hendrickson et al., 2010; Hendrickson et al., 2008; Cloutier et al., 2012). Awareness of methamphetamine as a drug with significant impact on health would have likely increased since 1999, as would the noting of substance-related ED presentations in medical records. Cloutier et al.'s (2012), Hendrickson et al.'s (2008) and Hendrickson et al.'s (2010), results are very similar due to the studies being conducted in the same hospital ED within an overlapping time period.

Brandenburg et al. (2007) reported percentage of methamphetamine-positive urine drug screenings from ED presentations compared to all urine drug screens conducted over the study period. Results for positive methamphetamine urine drug screens averaged between 10%-21% per month of all total urine drug screens conducted over the 28 months. This variance was a result of the range of drug urine screens conducted each month, with an average between 133-224. Clinicians' subjective decision to perform the urine drug screen would have affected these results and over time may have been impacted by change in clinical staff as well as policy on when to initiate a urine drug screen.

3.2.4.2. Diagnosis/chief complaint

Six of the ten included studies reported the diagnoses percentage of all methamphetamine-related presentations. The most commonly reported diagnoses across all included studies were trauma and psychiatric disorders. The results for trauma were 33% (Richards et al., 1999), and 18.4% (Hendrickson et al., 2010; Hendrickson et al., 2008). The studies were conducted in United States with Richards et al.'s (1999) study conducted nine years earlier than Hendrickson et al.'s (2008) and Hendrickson et al.'s (2010) studies, which may account for the varied results.

The results for psychiatric diagnosis varied by terms which makes it difficult to compare results. The results were: Richards et al. (1999) reported 8% presented following a suicide attempt; Pasic et al. (2007) reported 80% presented with psychosis; Toles et al. (2006) reported 47% presented with suicide ideation; 15% presented with schizophrenia; and 11% presented with depression; while Hendrickson et al.'s (2008) and Hendrickson et al.'s (2010) studies reported 18.7% presented with a psychiatric diagnosis; and Cloutier et al. (2012) reported 71% presented with a psychiatric diagnosis. However, three of the six studies looked specifically at psychiatric presentations only (Cloutier et al., 2013; Pasic et al., 2007; Toles et al., 2006), which altered the results as they did not record other types of methamphetamine-related presentations to ED. Richards et al.'s (1999) study did not record psychiatric complaints despite 14% of methamphetamine-related presentations reported in the study as being transferred to a psychiatric in-patient facility and a further 11.2% being kept in ED on 24-hour psychiatric hold. The failure to register these presentations as psychiatric diagnoses is likely due to the changes over time in how presentations are coded in ED.

All six of the studies compared methamphetamine-related to non-methamphetamine-related presentations, a comparison between methamphetamine and other drugs or alcohol would be more beneficial in proving the effect methamphetamine has on the users' mental health. The use of convenience sampling by all six studies limits the ability to generalise these results to the wider population of methamphetamine users.

3.2.4.3. Psychiatric issues/complaints

Of the ten included studies, six reported on methamphetamine-related presentations with a psychiatric diagnosis/complaint or history of psychiatric problem (Bunting et al., 2007; Cloutier et al., 2013; Hendrickson et al., 2008; Pasic et al., 2007; Richards et al., 1999; Toles et al., 2006). The results varied, with schizophrenia, depression, and suicidal ideation the most common reported complaints across the studies. The results show methamphetamine-related presentations are more likely to present with a psychosis, suicidal ideation or depression, and be held in ED on psychiatric hold for 24-hours. Compared to other psychiatric presentations, methamphetamine-related presentations are more likely to be suicidal and present with a psychosis, yet were less likely to have a psychiatric diagnosis. When comparing methamphetamine-related presentations to other drug-related presentations, methamphetamine users were more

likely to be placed on psychiatric hold, and presented more often with a psychosis. One of the ten studies (Bunting et al., 2007) compared methamphetamine-related presentations to other drug-related presentations. Overall, 27% of methamphetamine-related presentations presented with a psychosis compared to 3% for other drug-related presentations.

Three of the six studies reported the percentage of all psychiatric presentations that were methamphetamine-related. One study recorded 18% (Toles et al., 2006), a second study reported 9.6% (Hendrickson et al., 2008), and a third reported a much lower percentage of 7.6% (Cloutier et al., 2013). All three studies were conducted in the United States and specifically examined psychiatric presentations. Cloutier et al.'s (2012) and Hendrickson et al.'s (2008) studies were conducted in the same hospital in 2006, the only difference between the two studies was that Cloutier et al.'s (2012) study was conducted over 12-months while Hendrickson et al.'s (2008) study was conducted over seven months. Toles et al. (2006) measured drug use subjectively by clinician and added further participants by cross checking with urine drug screening. This may have ensured Toles et al.'s (2006) recruitment process was more accurate than the recruitment process used by Cloutier et al. (2012) and Hendrickson et al. (2008) who used clinician opinion only. This suggests that the length of time the study is conducted over and the measurement of drug use used to recruit participants in the study are likely to affect the reliability of the studies' findings.

3.2.4.4. Behaviour

Two of the ten studies reported on the behaviour of methamphetamine-related presentations. The results show methamphetamine-related presentations are more likely to be aggressive, agitated, and homicidal than other ED presentations including other drug-related presentations. Bunting et al. (2007) reported 41% of methamphetamine-related presentations were recorded as being violent, aggressive or agitated while in ED, compared to 3% of other drug-related presentations. Toles et al. (2006) reported 66% were aggressive or violent and a further 13 % were verbally abusive. The two studies were conducted in different countries, Bunting et al. (2007) was conducted in Australia in 2006 while Toles et al. (2006) was conducted in the United States-Hawaii in 2002. The year and location of these studies may reflect different reporting standards/procedures. Further comparison from other studies between behaviour of methamphetamine-related presentations and other drug-related

presentations would help to confirm that methamphetamine-related presentations are more aggressive and violent than other drug-related presentations.

3.2.4.5. ED Presentation Data

Reported ED presentation data included admission and arrival mode, length of stay, cost of service, and the number of times ED was accessed by the same participant. Four of the ten studies reported the admission rates (Marshall et al., 2012; Pasic et al., 2007; Richards et al., 1999; Toles et al., 2006) and three of the ten studies reported the mode of arrival (Bunting et al., 2007; Pasic et al., 2007; Richards et al., 1999). Admission and discharge percentages were different across the studies, the highest admission percentage was at 58%, (Richards et al., 1999), and the lowest was 3.5%. (Marshall et al., 2012). A change in hospital admission policy since 1999 is likely to have affected these results.

Methamphetamine-related presentations were more likely to arrive accompanied by police than other drug-related presentations and other psychiatric presentations, and less likely to be brought in by a friend/family (Bunting et al., 2007; Pasic et al., 2007; Richards et al., 1999). The results for police referral or accompanied by police were 12% (Richards et al., 1999), 57% (Pasic et al., 2007) and 24% (Bunting et al., 2007). The difference in the results is likely due to the year the studies were conducted and the location of ED, with two studies conducted in the United States and one study in Australia. Richards et al.'s (1999) study and Pasic et al.'s (2007) study were conducted in the United States however in different states and six years apart. The changes in police transportation policy/procedure over the six years and the differences between states may explain the different results.

Hendrickson et al. (2008) reported on the cost of methamphetamine-related ED presentations, which accounted for 2.4% of ED costs of all presentations over the 6-month period, and equated to over \$US2.6 million or \$US133,000 per week. Toles et al. (2006), Richards et al. (1999) and Pasic et al. (2007) reported the cost of utilization in terms of length of stay in ED and length of admission stay. Length of ED stay for methamphetamine-related psychiatric presentations was greater than other psychiatric presentations (Pasic et al., 2007; Toles et al., 2006). Hospital admission length of stay for methamphetamine-related presentations had similar results to other psychiatric

admissions in one study (Toles et al., 2006), however the results were lower in the second study (Richards et al., 1999).

One study (Marshall et al., 2012) recorded 38.2% (n = 163) of the participants accessed the ED at least once in the first 12 months of the study and accounted for 599 visits in that same 12-month period. However participants were paid for participation in the study and it was unclear if this occurred every time they presented to ED.

3.2.4.6. Demographics

Nine of the ten studies reported on the demographics of the methamphetamine-related presentations which includes, mean age, gender, and ethnicity. Seven of the ten studies reported the mean age of methamphetamine-related presentations (Cloutier et al., 2013; Hendrickson et al., 2010; Hendrickson et al., 2008; Marshall et al., 2012; Pasic et al., 2007; Richards et al., 1999; Toles et al., 2006). Marshall et al. (2012) reported the lowest mean age at 21, however the participants were aged between 14-26. The mean age ranged (excluding Marshall et al., 2012) from 31.4 (Pasic et al., 2007) to 36.6 (Hendrickson et al., 2008). Interestingly, the studies with sample sizes less than 170 recorded mean age lower than 34 while the studies with sample size greater than 200 reported mean age above 36, suggesting sample size impacted on the mean age reported or age trends are able to be identified with larger studies conducted over longer period of time. Bunting et al. (2007) did not report a mean age, instead reporting the most common age group as 26-30.

The majority of methamphetamine-related presentations were male, and the percentage was similar across the eight studies that reported gender. Pasic et al. (2007) reported the highest percentage of males at 85% which examined methamphetamine-related psychiatric presentations, and Hendrickson et al. (2008) recorded the lowest percentage at 61%. One study (Bunting et al., 2007) compared other drug-related ED presentations with methamphetamine-related presentations and the results were 63% male compared with 67% male respectively.

Six of the included studies reported ethnicity (Cloutier et al., 2013; Hendrickson et al., 2010; Hendrickson et al., 2008; Pasic et al., 2007; Richards et al., 1999; Toles et al., 2006). Methamphetamine users were reported as mostly Caucasian in five of the six studies. Results ranged from 71% (Pasic et al., 2007) to 83% (Cloutier et al., 2013)

Caucasian presentations. Toles et al. (2006) reported 25% of the participants were Caucasian, which is much lower than the results of the other five studies.

These results are likely affected by the location of the study, with a mainly Caucasian population in the general area. Toles et al.'s (2006) study was conducted in Hawaii where only 22.1% of the population are Caucasian (United States Census Bureau, 2017b), Pasic et al.'s (2007) study was conducted in Seattle, Washington (United States), where 61.3% of population (United States Census Bureau, 2017a) are Caucasian, Cloutier et al. (2013) conducted their study in Portland, Oregon (United States), where 70% of the population (United States Census Bureau, 2016) are Caucasian. These findings may not represent the ethnicity of the methamphetamine user population due to the location of the studies in areas where Caucasians are overrepresented.

3.2.4.7. Drug use data

Two studies reported the method of drug administration. Marshall et al. (2012) reported 84.8% (n=189) used methamphetamine by route other than injection, and 15.2% (n=65) used methamphetamine by injection. Bunting et al. (2007) reported 56% (n=56) of methamphetamine use was by injection. Frequency of methamphetamine use was reported by only one study. Marshall et al. (2012) reported 49.4% used methamphetamine in the last six months, 33.8% used daily and reported an association between increased frequency of methamphetamine use with the number of times ED was accessed.

Drug use was reported by Wood et al. (2008) as drug seizures, occupational drug screening, and number of drug-related poisons information calls. Drug seizure data were collected from clubs in London, United Kingdom, located in areas of high recreational drug use. A total of 418 samples were collected in a 4-month period, and 2.9% of these were crystalline in nature (methamphetamine). A total of 254,440 occupational urine drug screens over a seven-year period in London detected three methamphetamine positive samples and 147 MDMA samples, with increased numbers in the last three years. Methamphetamine-related poisons calls were reported as five to eight per year with an increase to 16 per year in 2006, representing 1.23% of all drug related poisons calls in the United Kingdom. The data presented by Wood et al.

(2008) was not linked to the presentations and the study was conducted in an area known for high MDMA use, which likely affected the reliability of the study's results.

3.2.4.8. Measurement of drug use for recruitment

Drug use measurement was reported in nine of the ten studies. Most studies used subjective measurements by clinicians to determine if a presentation was methamphetamine-related, with the clinician either subjectively linking patients' diagnosis or behaviour to drug use or subjectively deciding to administer a urine drug screen. Three studies educated staff on signs and symptoms of drug use (based on current research literature) prior to and during the study, with 43% of participants verbally confirming drug use when questioned (Cloutier et al., 2013; Hendrickson et al., 2010; Hendrickson et al., 2008). Two studies used more than one method of drug measurement. Toles et al. (2006) and Richards et al. (1999) both used subjective measure by clinicians then confirmed this with a urine drug screen. How drug use is measured affects the number of presentations identified and recruited into the study, using only subjective clinician opinion limits the generalisability of the study's findings as large numbers of presentations may have been missed. Other methods of measuring drug use include self-report and urine drug screening, however, these methods also have inherent errors. Self-reporting is approximately 43% accurate (McGilloway & Donnelly, 2004), while urine drug screens are known to have false positive and false negative results (Saitman et al., 2014). There is no measurement for drug use that is 100% accurate, so a combination of all three methods could help to ensure that presentations are not missed or included when they should not be.

3.2.4.9. Quality assessment

The methodological quality of included studies varied with some moderate and strong elements. Overall evaluation of the studies resulted in the following: one study was considered strong, one study was deemed to be weak, and eight studies were evaluated as moderate quality, as outlined in Table 3-2.

The results of these studies indicate important findings related to methamphetamine and presentations to EDs. However, strengthening the design of these studies would improve the rigor and validity of the results. The included studies did not report sample size calculation, with the majority of the studies using length of time the study

was conducted over as a limiting factor for sample size. The studies included one ED for data collection only, were conducted in urban locations, while four (Bunting et al., 2007; Marshall et al., 2012; Toles et al., 2006; Wood et al., 2008) of the studies were conducted in known high drug use areas. In most of the studies, Caucasians were overrepresented in the sample population, while other ethnic groups were underrepresented. Therefore, the samples are unlikely to be representative of all methamphetamine users, which affects the ability of the findings to be generalised to the wider population.

Table 3-2 Quality appraisal

Author	Design & Data Collection	Selection bias	Study design	Confounders	Blinding	Data collection methods	Withdrawal & drop outs	Final score
Brandenburg et al. (2007)	Quantitative, Retrospective analysis	Strong	Moderate	Weak	Moderate	Strong	Moderate	Moderate
Bunting et al. (2007)	Quantitative, Prospective observational	Strong	Moderate	Weak	Moderate	Strong	Moderate	Moderate
Cloutier et al. (2012)	Quantitative, Retrospective observational	Strong	Moderate	Weak	Moderate	Strong	Moderate	Moderate
Hendrickson et al. (2008)	Quantitative Prospective observational	Strong	Moderate	Weak	Moderate	Strong	Moderate	Moderate
Hendrickson et al (2007)	Quantitative, Retrospective analysis	Strong	Moderate	Weak	Moderate	Strong	Moderate	Moderate
Marshall, et al. (2011)	Quantitative, Prospective cohort	Moderate	Moderate	Strong	Weak	Strong	Weak,	Weak
Pasic, et al. (2007)	Quantitative, Case control study	Strong	Moderate	Weak	Moderate	Strong	Moderate	Moderate
Richards et al. (1999)	Quantitative Retrospective observational	Strong	Moderate	Weak	Moderate	Strong	Moderate	Moderate
Toles et al. (2006)	Quantitative, Retrospective observational	Strong	Moderate	Strong	Moderate	Strong	Moderate	Strong
Wood et al. (2008)	Quantitative, Retrospective observational	Strong	Moderate	weak	Moderate	Strong	Moderate	Moderate

Selection bias included subjective measurement of drug use by clinicians to recruit participants into studies, and the use of convenience sampling which is reliant on participants presenting to ED (Ramcharan, 2013). These methods cannot guarantee all presentations that were included in the samples were methamphetamine-related and that large number of presentations were not excluded (Hendrickson et al., 2008). Selection bias was measured as moderate (EPHPP) for most studies.

Validity of study designs was affected by lack of blinding in several studies (LoBiondo-Wood & Haber, 2014; Ramcharan, 2013), and payment for participation in one study (Marshall et al., 2012). Blinding was measured as moderate (EPHPP) for most studies. Validation of data collection tools was assumed. Very few studies discussed the validity and reliability of the data collection tools or conducted tests/trials to see if medical records were reliably able to record, predict or capture drug use and its effects. Data collection method was measured as strong (EPHPP) for all studies. Withdrawals and dropouts for eight of the studies were not applicable (according to EPHPP tool) as they were cross-sectional studies with a single measurement, this measured the studies as moderate (EPHPP) (LoBiondo-Wood & Haber, 2014; Ramcharan, 2013). The cohort study (Marshall et al., 2012) reported they did not record dropout or withdrawals and were unable to identify if participants presented to other EDs in the area over the period of the study. Ethics was under-reported by most studies with one study (Wood et al., 2008) not discussing ethics approval.

The main aim of the selected studies was to measure endpoints or outcomes (Coughlan et al., 2013). Limitations in the methodology of the research design can affect the studies' ability to measure these end points and show a causative relationship between methamphetamine use and the ED visit (Coughlan et al., 2013). Several methodological limitations were noted in data collection stages of the studies included in this review. These include, the method used to identify drug use for recruitment and the use of patients' medical charts to collect data. There is no methodological standard of measure to accurately determine drug use. Validation of drug use through either urine immunoassay, serum gas chromatography or mass spectrophotometry only identifies that the patient has been exposed to the drug in the last several days but will not establish a relationship between methamphetamine use and the current ED visit (Cloutier et al., 2013; Hendrickson et al., 2008). There is

uncertainty about the accuracy of health data collected from medical records. Medical records are intended to communicate clinical information, not measure drug use. If methamphetamine consumption is not clinically relevant to the treatment of the patient, it is unlikely to be documented, and a medical record review may substantially underestimate methamphetamine-related presentations.

3.2.5. Discussion

Methamphetamine is available worldwide. Increased distribution, increased use of the crystallised form of methamphetamine, and the acuteness of the presentations has the potential to impact on already overburdened EDs in both urban and rural locations. The purpose of this literature review was to review the available evidence, quality of evidence and present the outcomes of findings on the rates and features of methamphetamine-related ED presentations.

The findings suggest that methamphetamine related presentations, account for 2.3% or less of all ED presentations, they are more likely to present with psychiatric complaints than other drug-related presentations, are more likely to be aggressive and violent while in ED and are more likely to present with police escort than other drug-related presentations. However, in the majority of the selected studies, participants' drug use history in the studies was not established therefore a causative relationship between drug use and the presentation is unlikely to be evidenced. Only two of the ten studies recorded drug use history, while the remainder of the studies did not note this as a limitation.

The number of methamphetamine-related presentations across the ten studies were similar and does not predict a growth in methamphetamine use, numbers of ED presentations or an increase in the percentage of methamphetamine-related ED presentations. These results are similar to other research on amphetamine-related ED presentations (Gray et al., 2007; Indig et al., 2010), and drug-related ED presentations (Liakoni et al., 2015). However, the studies were conducted between 1996 and earlier than 2007, when methamphetamine use was reported to have decreased (Stafford & Burns, 2015), which supports the findings in the included studies, but may not be generalizable to the methamphetamine user population today.

The number of ED presentations for methamphetamine dropped between 2005 and 2007 with less than 68,000 recorded across United states of America (Mattson, 2014),

and 10,000 recorded in Australia in 2009 (Australian Institute of Health and Welfare, 2016a). However, ED presentations for methamphetamine use have increased since 2007 with the number of methamphetamine presentations in USA in 2011 recorded at 102,961 (Mattson, 2014) and in Australia in 2013-14, 28,900 amphetamine/methamphetamine presentations were reported (Australian Institute of Health and Welfare, 2016a). With this increase in numbers presenting to ED, the percentages of methamphetamine-related ED presentations may have also changed since these studies were conducted (between 1996-2007). In addition, the World Drug Report (United Nations Office on Drugs and Crime, 2016) stated the areas of main concern for methamphetamines were North America, east and south-east Asia, and Oceania (Australia).

The location of the included studies may also have affected the percentages of presentations. Seven of the ten studies were conducted in the United States in urban hospitals. Not one of the ten studies looked at presentations to rural or remote EDs. The selected articles were published between 1999-2012, with no research conducted since 2010. The increased use of crystal methamphetamine, increase in distribution and backyard methamphetamine laboratories found in rural areas, and the change in the chemicals available to make methamphetamine mean the results of the studies (many prior to 2010) included in this review are unlikely to be representative of the population of methamphetamine users today.

The overrepresentation of Caucasian ED presentations may suggest that Caucasians are more likely to present at hospitals, while other ethnicities may choose not to present due to many reasons including, lack of health insurance or underinsured, or their ethnicity for some reason was not reported by the patient or undocumented by clinical staff. This suggests that non-Caucasians methamphetamine users are choosing, for whatever reason, to remain untreated in the community. This has the potential to impact not only on the user themselves but on the wider community including their immediate family and social networks. A United States survey of substance use and emergency room utilisation found that Caucasians were more likely to use the ED compared with Hispanics (Cherpitel, 2003). Further research is needed to understand the reasons why non-Caucasians present at a lower rate, and whether health insurance may be a factor, or whether imprisonment is a factor in lower

presentations given the frequency of police involvement in methamphetamine-related ED presentations.

The reported outcomes of the included studies linked methamphetamine use to a diagnosis of trauma, skin infections, psychiatric diagnosis, dental disorders, abdominal pain or chest pain, with trauma related to drug use and psychiatric diagnosis as the most common. Research on amphetamine-related ED presentations reported similar diagnosis for trauma and psychiatric diagnosis, but did not report a diagnosis of skin infections, dental disorders, abdominal pain or chest pain (Baberg et al., 1996; Gray et al., 2007). However, the World Drug Report (United Nations Office on Drugs and Crime, 2016) states the impact of methamphetamine is not limited to these types of diagnoses.

Drugs, including methamphetamine, impact health and society in many ways, including disability, premature death, trauma, suicide, overdose, transmission of infectious disease (HIV and hepatitis C), domestic violence, and high risk sexual practices resulting in sexually transmitted diseases, more particularly with gay and transgender users (United Nations Office on Drugs and Crime, 2016). Presentations to EDs due to domestic violence, sexually transmitted diseases or from sexual acts may have been missed due to the stigmatisation of admitting to drug use by an individual or their partner (United Nations Office on Drugs and Crime, 2016).

Research reviewing literature on injuries sustained due to methamphetamine included injuries that were not reported in the included selected studies (Sheridan et al., 2006). Injuries included domestic violence, injuries as a result of manufacturing (burns, chemical inhalation, headaches, eye irritation and poisoning), and injuries to children whose carers' were using methamphetamine (neglect, malnutrition and abuse). Interestingly, motor vehicle accidents (MVA) attributed to methamphetamine use is also not represented in the included articles. Studies reviewing the risk of MVA due to methamphetamine use suggest that the behaviour associated with methamphetamine use puts the driver at more risk of having an accident while under the influence (Hayley et al., 2016; Sheridan et al., 2006).

Methamphetamine-related presentations had increased numbers of psychiatric complaints and unpredictable behaviour while being treated in ED compared to all other presentations including other drug-related presentation. Studies discussing information on methamphetamine presentations to EDs support these findings

(Brackins et al., 2011; National Institute on Drug Abuse, 2013; Vearrier et al., 2012). Two studies on amphetamine-related ED presentations reported similar results for psychiatric complaints (Gray et al., 2007; Indig et al., 2010). However, the exact contribution of methamphetamine use to psychiatric diagnosis is not fully known. There is limited data included on the participants' psychiatric history, if there was a pre-existing psychiatric history before methamphetamine use, or if the frequency of methamphetamine use impacted on the severity of psychiatric symptoms.

A study (Lappin et al., 2016) researching the difference in psychotic symptoms and psychiatric illness in crystal methamphetamine users, other methamphetamine users, and other drug users, found that crystal methamphetamine users are at a greater risk of addiction and psychotic symptoms, while psychiatric illness such as schizophrenia were the same as other methamphetamine users but more prevalent than in other drug users. These results combined with the findings from this literature review and other research on psychiatric issues in methamphetamine users suggest that psychosis and psychiatric complaints are a growing concern in methamphetamine users (McKetin et al., 2017b).

Behaviour of methamphetamine users is widely reported. However, only two studies (Bunting et al., 2007; Toles et al., 2006) in this review looked at behaviour directly, and their results confirm what was already known; people who use methamphetamine and present to EDs are more aggressive and more agitated than users of other drugs who present to EDs (Vearrier et al., 2012). This is also confirmed by previous research recording violent and aggressive behaviour at approximately 50% (Brecht & Herbeck, 2013; McKetin et al., 2014). Cleary et al. (2017) interviewed staff working in EDs to gauge their experience with methamphetamine presentations. Several issues of concern were highlighted including that methamphetamine patients are unpredictable, aggressive and violent, ED staff felt they lacked the training and expertise to deal with not just the behaviour but the emotional dysregulation that often comes with psychosis and patients' past traumatic experiences, and expressed concern that mental health assessment by the mental health team cannot take place in ED because the patients are intoxicated (under the influence of a substance).

Police presence in EDs can help to manage difficult behaviour, however none of the included studies reporting on 'brought in by police' discussed why the police presence was needed or if police remained in ED with these patients. More understanding of

why police presence was required and how they can assist in dealing with difficult behaviours in ED is needed to clarify this issue for clinical staff.

None of the studies included in this review looked at treatment given to patients while in ED. Lappin et al. (2016) argues early interventions and treatment are essential in helping to prevent and treat methamphetamine use. EDs are often a first point of contact for some patients, using this point of contact to refer patients to mental health or substance abuse services can play a role in early intervention. Having ED staff who are not trained in substance abuse and associated behaviours can make treating these patients more difficult and time consuming. There is a need for clinicians to understand the reason for the behaviour, and the mental state methamphetamine users present with, in order to ensure the safety of ED staff, the patient, and other patients currently in the ED, and to reduce stigmatisation that is associated with these kinds of presentations (United Nations Office on Drugs and Crime, 2016).

Future research should consider strengthening the study design by using more than one ED for data collection, increasing sample size, using random sampling, extending the data collection time period, considering the ethnic population of the surrounding area of the EDs used for data collection, and comparing methamphetamine to other drugs as well as non-drug related presentations. The lack of a standard validation method of measuring drug use is an inherent weakness, thus using more than one method to measure drug use (clinician's subjective decision, urine drug screen and self-reported drug use) is required to strengthen the validity and reliability of the results. All included studies were quantitative, so future research needs to consider qualitative data or a combination of both quantitative and qualitative data to gain insight into the emotional, psychological and physical effect methamphetamine has on the user, clinicians and the rest of the community.

3.2.6. Limitations

A number of limitations to this review are acknowledged. The articles included in this review ranged from (1999-2012) and are possibly not representative of today's population due to the change in technology, trends, and lifestyles, as well as availability of raw materials, law enforcement, and border control priorities. Studies were excluded if they used the general term amphetamines with no specific discussion in the results for methamphetamines. Amphetamine was included as a search term to identify any research studies that were amphetamine-related but included results on

methamphetamine-related ED presentations. Only articles published in English language, peer-reviewed journals were included in the original search which excluded a variety of potentially useful sources including journal articles published in languages other than English, books, reports and other grey literature. Further, the criteria used to guide the inclusion and exclusion of articles resulted in mainly studies from the United States (7/10) being included in the integrative literature review. Nearly all of the studies were conducted in areas of high Caucasian populations, therefore other populations were underrepresented. However, the application of the PRISMA systematic approach, and the high level of consensus achieved between the reviewers, suggests the outcomes may provide some guidance to the current rates and features of methamphetamine-related presentations to EDs. The quality of the studies included in this review were generally moderate, restricting their ability to measure the main outcomes due to bias, and limiting the impact and the validity of the findings.

3.2.7. Conclusion

The results show that methamphetamine-related ED presentations are likely to place a considerable burden on emergency services and the health system. People who use methamphetamine are more likely to arrive at EDs accompanied by or requiring police, present with psychosis, suicidal ideation, and are more aggressive and agitated. These findings suggest that methamphetamine users are presenting as more acutely unwell and possibly during the withdrawal and tweaking phases when the symptoms of methamphetamine use are at their worst. When symptoms are less heightened, methamphetamine use may go unnoticed, resulting in an underestimation of presentations and could mean substance abuse services, and referral to drug and alcohol services may not be considered. Developing appropriate treatment protocols for psychosis, and ensuring qualified staff (trained substance abuse clinicians) are available after hours, can help to reduce the burden and impact methamphetamine has on EDs. Further research on the utilisation of substance abuse services and mental health services in EDs are needed to help develop policy and procedures that improve safety and quality of care.

3.2.8. Relevance to clinical practice

People who use methamphetamine and present to EDs are more aggressive, agitated and violent than other presentations, and are more likely to be brought in by police.

Methamphetamine presentations are more acutely unwell than other drug-related presentations, placing more strain on EDs. With the increase in availability and use of crystal methamphetamine, EDs are likely to see an increased rate of mental illness that cannot be assessed and managed by available mental health services due to intoxication. Better planning and development of services around these issues are needed including training and services to help support ED staff to deal with unpredictable behaviours, and the incorporation of staff experienced in substance abuse management into EDs.

End of manuscript

3.3. Summary

This chapter provided an outline and critique of the literature on methamphetamine-related presentations to EDs. Several important themes were highlighted in this review; methamphetamine-related presentations required police involvement, behaviour disturbances of these presentations included aggression, violence and agitation, and a proportion of people under the influence of methamphetamine presented with psychosis and suicidal ideation. While most of the studies included in this review were considered to be of moderate quality, there were issues highlighted with research design. These included the following: most studies used one ED for data collection, selection bias due to subjective measurement of drug use, lack of discussion on sample size calculation, and lack of discussion on validity and reliability of data collection tools to measure the outcomes/end points. These issues will be considered when designing this research project. The following chapter (four) will discuss the theoretical framework, methodology and methods utilised in this study.

**Higher Degree Research Thesis by Publication
University of New England**

STATEMENT OF ORIGINALITY

We, the Research Master/PhD candidate and the candidate's Principal Supervisor, certify that the following text, figures and diagrams are the candidate's original work.

Type of work	Page number/s
Published Manuscript	31 - 57

Name of Candidate: Rikki Jones

Name/title of Principal Supervisor: Professor Kim Usher



13/10/2020

Candidate

Date



28/10/2020

Principal Supervisor

Date

**Higher Degree Research Thesis by Publication
University of New England**

STATEMENT OF AUTHORS' CONTRIBUTION

We, the Research Master/PhD candidate and the candidate's Principal Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated in the *Statement of Originality*.

	Author's Name (please print clearly)	% of contribution
Candidate	Rikki Jones	60%
Other Authors	Kim Usher	20%
	Cindy Woods	20%

Name of Candidate: Rikki Jones

Name/title of Principal Supervisor: Professor Kim Usher



3/07/2020

Candidate

Date



6/09/2020

Principal Supervisor

Date

Chapter 4. Theoretical framework, Design & Method

4.1. Introduction

This chapter will provide an overview of the theoretical framework, methodology and methods used in this study. The theoretical framework will outline pragmatism as the paradigm (philosophical assumptions) used to build this research project. The theoretical lens outlines socioecological model (SEM) of health promotion and the advantages of using SEM to view the findings of this study. The methodology will discuss explanatory sequential mixed methods as the research design, the methods used for phase one and phase two, how data were analysed for phase one and phase two, and finally it will discuss how data (quantitative and qualitative) were integrated using Pillar integration to interpret and present the final results of the study. A published manuscript is embedded within this chapter, addressing the challenges of conducting research using medical records for data abstraction.

4.2. Theoretical framework: Pragmatism

The theoretical framework refers to the paradigm (philosophical assumptions), used to build the research project, guide the critical inquiry, outline how a phenomenon or research questions can be understood and shapes the research process (Bradshaw et al., 2017; Creswell & Plano Clark, 2018; Weaver & Olson, 2006). A paradigm is the researcher's belief about how knowledge is created (Morgan, 2007) and a tool to help guide the selection of a research design and a methodology. Kuhn (1922-1996) developed the idea further, suggesting a paradigm as a philosophical concept or foundation helping researchers to make sense of the world and reality around them (Kelly et al., 2018).

There are four philosophical assumptions which shape each paradigm. These include; ontology (how reality is viewed, the nature of reality and what can be discovered), epistemology (nature and existence of truth, developed and how we learn from the world), axiology (nature of ethics and the values behind the research), and

methodology (how knowledge is generated and the way research is conducted) (Biddle & Schafft, 2015; Bradshaw et al., 2017; Halcomb, 2018; Kelly et al., 2018). There are many different paradigms used in research, however, Creswell and Plano Clark (2018) discuss three main paradigms which are often associated with the three main methodologies (quantitative, qualitative and mixed methods) used in research. These are, constructivism (qualitative), post-positivism (quantitative), and pragmatism (Creswell & Plano Clark, 2018). Constructivism looks at reality and knowledge as affected and constructed by society. Constructivist researchers believe that to understand a phenomenon or answer a research question, you need to understand and explore the experiences of participants, thus research is considered subjective (Creswell & Plano Clark, 2018). Post-positivism looks at reality and knowledge as independent of society and the individual experiences, research is thus considered as objective and not affected by the individual experience (Liamputtong, 2013). Pragmatism, in its simplest form, focuses on the research question rather than the pursuit for the actual truth. Knowledge can be generated in different ways and through different sources, it can use any methodology to answer the research question, however, is often associated with mixed methods research (Creswell & Plano Clark, 2018; Feilzer, 2010; Florczak, 2014; Halcomb, 2018).

Previous researchers and philosophers have argued the value of one paradigm over the other and support one methodological approach to research (either quantitative or qualitative) as the only way to achieve valid results (Florczak, 2014; Shannon-Baker, 2016). The arguments around which paradigm or method was better, led to a period of time referred to as the 'paradigm wars', which led to the idea that perhaps using both quantitative and qualitative methodologies would negate the disadvantages of both forms of research (Feilzer, 2010; M. Kelly et al., 2018; Shannon-Baker, 2016). A third method, called mixed methods was developed (Shannon-Baker, 2016), however, the paradigms at the time did not fit philosophically with this new methodology, so a new paradigm, pragmatism, was developed (Tashakkori & Teddie, 2010). Pragmatism will be used as part of the philosophical foundations underpinning the theoretical framework for this study.

Early pragmatists believed there was not one singular scientific method you could use to find the truth in reality (Mackenzie & Knipe, 2006). Pragmatists instead argued inquiry should focus around the research question and what methods and methodology

would best answer the question (Mackenzie & Knipe, 2006). The design of the research, and selection of methods for data collection and analysis are structured to achieve the objectives of the study, to do “what works”, rather than focus on which methodology was superior (Biesta, 2010; Feilzer, 2010; Johnson & Onwuegbuzie, 2004; Mackenzie & Knipe, 2006; Pleasants, 2003). Some researchers suggested pragmatism is a form of practical research, however, there is more to pragmatism than this simple interpretation which sometimes renders it as an approach rather than a paradigm constructed by philosophical assumptions (Hall, 2013; Morgan, 2014).

Much criticism has been directed at pragmatism due, in part, to the simplification of pragmatism to a “what works” approach (Denzin, 2012; Hall, 2013). Issues arise when researchers approach pragmatism in a simplified way, when reflection, true integration and interpretation is lost or sacrificed to expediency and doing what works (Denzin, 2012; Hall, 2013). This approach can impact the quality and validity of the research findings (Hall, 2013). Morgan (2014) argues this simplistic view of pragmatism hinders its link to philosophy and the philosophical assumptions that are used to help guide the research process. Pragmatism is therefore a paradigm; it is not simply a practical approach to research but a philosophical view or foundation to build research upon.

An initial idea of pragmatism was put forward by Charles Sanders Pierce in early 1870’s, and further developed by philosophers William James (1898), Chauncey Wright, John Dewey, C.I. Lewis, Richard Rorty, (Miask, 2013), G. Stanley Hall (Leary, 2009), Hilary Putnam, Susan Hack, and F.S.C. Schiller, (Rescher, 2005). From its initial conception by Pierce and later James, pragmatism developed into two separate versions referred to as the ‘soft’ and ‘hard’ versions of pragmatism (Rescher, 2005). The main difference of argument between these two versions of pragmatism is around the idea or existence of an “actual truth” and knowledge (Misak, 2013; Rescher, 2005).

Pierce’s view of pragmatism, later referred to as the “hard view” of pragmatism, argued truth was objective and measurable, not influenced by individual humans (Misak, 2013), and the search for truth is about the whole of the human race not the individual (Misak, 2013). Rescher (2005) suggests the hard view of pragmatism is objective and focuses on the needs and interests of the broader community, the world

around us, and the impact the world has on humans (Rescher, 2005). This study will use instead the 'soft' version of pragmatism as discussed below.

Rorty, James and Dewey subscribed to the 'soft' version of pragmatism which posited that truth is not reality or linked to reality, because reality is not independent of what we think about reality (Morgan, 2014; Rescher, 2005), and knowledge is only possible or 'plausible' (Florczak, 2014; Ormerod, 2006). Misak (2013) believes this is the heart of pragmatism, there is not a fixed or "actual truth", truth is changed by the experience of the person viewing it and by the lens of time we see it through. Denzin (2012) argued pragmatism is a theory of truth, truth cannot be discovered without first someone experiencing the problem, and pragmatism is about human experience. However, pragmatism is more than just an explanation of reality and how we see the world around us, it is about how research applies to the world and how it makes a difference to reality (Creswell & Plano Clark, 2018; Feilzer, 2010; Shannon-Baker, 2016). Dewey (Tebes, 2012), argued our experience helps to develop and define our knowledge, and this experience is gained from interacting with one's environment. This approach is flexible and variable and relies on subjectivity and abandons the notion of objectivity (Rescher, 2005). In this study, the flexible 'soft version' of pragmatism will allow the research team to use a mixed methods approach to look at the phenomenon, combining quantitative and qualitative approaches in data collection and data analysis, to fully understand the phenomenon under study.

4.3. Theoretical Lens: Health promotion

Health is defined by World Health Organisation (WHO) as not only an absence of disease or illness but a state of 'mental, physical and social wellbeing' (World Health Organisation, 2018). Naidoo and Wills (2009) also include the sexual, emotional and spiritual aspects of an individual. Irvine (2010) expanded this definition, to include that health is a flexible concept changing with the individuals' experience of health, their understanding of health and the world in which the individuals live.

There are several factors which affect health, these are known as social determinants of health (SDH) (Egger et al., 2013; Keleher & MacDougall, 2009; Stokols, 1996). SDH are considered the 'root cause' of illness or health problems in the general public (Golden et al., 2015) SDH include individual factors (background, culture, wealth, attitudes of health, age, gender and health behaviours), environmental factors

(landscape, chemicals, climate and human-made factors), socioeconomic factors (education, health education, employment, family, neighbourhood and access to services/support), biological factors (genetics, risk markers), and biomedical factors (body weight, blood pressure, immunisation status, cholesterol levels) (Australian Institute of Health and Welfare, 2016; Egger et al., 2013; Golden & Earp, 2012). The SDH can predict health trends and need to be incorporated into any approach used to improve health and health inequalities (Egger et al., 2013; Irvine, 2010).

Health promotion is a preventative concept developed to help communities address the inequalities and SDH (Egger et al., 2013), to achieve an optimal state of health for individuals and the population. Health promotion is defined as educational and environmental supports enabling people to achieve a complete state of health (emotional, sexual, spiritual, social, mental and physical) (Egger et al., 2013; Keleher & MacDougall, 2009; Tountas, 2009; World Health Organization, 1986). This concept has developed since the first health promotion frameworks were introduced in 1978 by the WHO Alma Ata declaration. The Ottawa charter in 1986 (World Health Organization, 1986), Jakarta declaration in 1997 (World Health Organization, 1997) and Bangkok charter in 2005 (Stokols, 1996; Tountas, 2009; World Health Organization, 2005) have helped to shape and change this concept to what it is today. Before these developments, health promotion theories and health care focused on the individual and the individual determinants of health, with little thought to the social and environmental factors (Bandura, 1998; Egger et al., 2013; Golden et al., 2015; Stokols, 1996). Health promotion theorists now understand, to achieve health and change in health behaviour the focus must include the social and ecological environments the individual is embedded in (Golden & Earp, 2012; Golden et al., 2015; Stokols, 1996).

For this study, drug addiction and illicit drug use is considered a health behaviour, resulting from a combination of factors including individual, community, family, peer group, environmental, social and cultural aspects (Catford, 2001; Galea, Ahern, et al., 2003; Galea, et al., 2004; Galea & Vlahov, 2002). Thus, research on drug-related presentations to emergency departments and drug-related Ambulance attendance events in the pre-hospital environment, needs to look at the topic from both an individual and wider community perspective to facilitate policy development, development in health care and services, and behavioural and environmental change

(Golden et al., 2015; Naidoo, 2009). There are different models used to effect change at an individual and community level, however, for the purpose of this study the Socioecological Model (SEM) of health promotion will be used as the theoretical lens.

The SEM of health promotion recognises the individual exists within a community, and interventions need to address the individual as well as the environment and societal structure in which the individual lives (Golden & Earp, 2012). The SEM theorises a reciprocal relationship exists between the individual and the broader environment (Golden et al., 2015) and advocates for preventative strategies to be aimed at all levels, micro to macro system, rather than focusing on one area (Connell et al., 2010). Figure 4-1 depicts the SEM framework for health promotion which is widely used in health promotion (Golden & Earp, 2012).

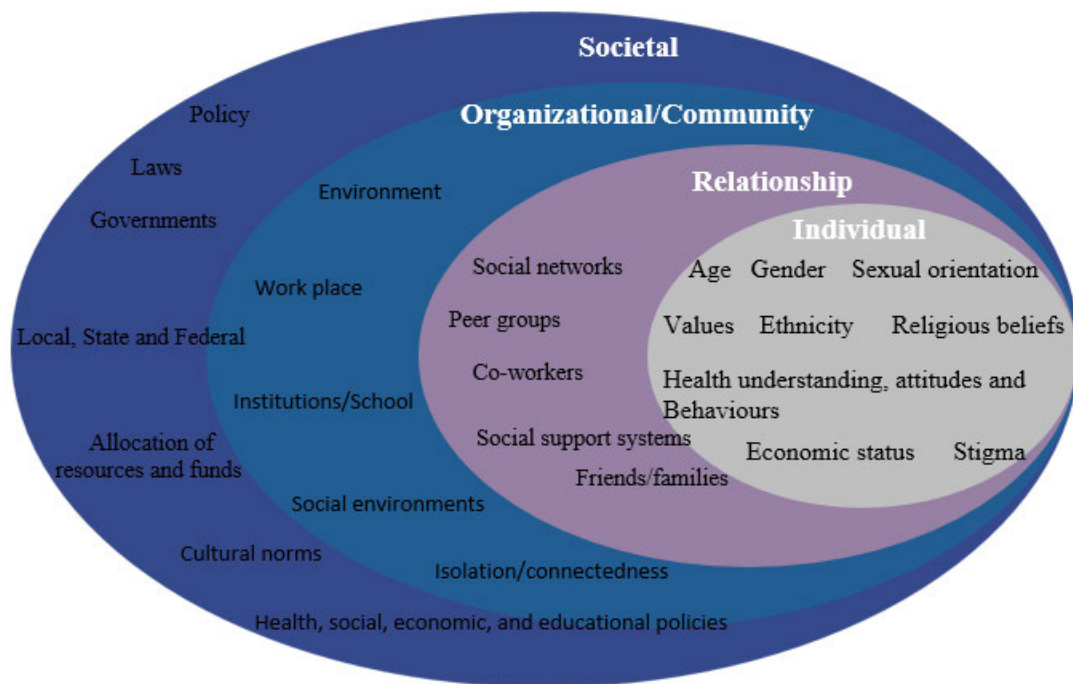


Figure 4-1 Socioecological Model (SEM)

SEM - Adapted from Socioecological Framework for health promotion (Center of disease control and prevention, 2013).

Connell et al. (2010) argues the SEM of health promotion can provide a more effective multi-faceted approach to interventions for substance use prevention and treatment rather than an approach focusing solely on the individual. In the case of this study, a health promotion SEM framework can provide a platform for understanding drug use behaviour and ways of preventing harm related to drug use. It can work alongside the pragmatism paradigm using a mixed method approach to explore the research question. Utilizing an explanatory sequential mixed method design can assist

in understanding the broader aspect of drug-related pre-hospital ambulance attendance events and emergency department presentations as well as focus on individual experience.

4.4. Research Design: Explanatory sequential mixed methods study

Mixed methods research was originally described as ‘multiple ways of seeing’ (Greene, 2007 cited by Creswell & Plano Clarke, 2018. p.1) and uses both qualitative and quantitative data to explore the research question (Creswell & Plano Clark, 2018). It allows the researcher to use the research question to guide how the research is conducted without limitations associated with using only one method (Creswell & Plano Clark, 2018). Using mixed methodologies (quantitative and qualitative) can strengthen the flaws often associated with a singular methodology approach, strengthening the research design (Kelly et al., 2018; Tashakkori & Teddie, 2010).

There are multiple ways to incorporate mixing methods into research including; through the philosophical or theoretical framework, methods of data collection and analysis, overall research design, and discussion of research findings (Shannon-Baker, 2016). In this study, mixed methods are incorporated into the theoretical framework, with pragmatism as the philosophical foundations used to guide the research process, through the use of both quantitative and qualitative data collection methods, and the integration and analysis of quantitative and qualitative data.

To design and conduct a mixed methods study, a process or specific mixed methods design is used to ensure the study is true mixed methods not just a combined methods approach (Creswell & Plano Clark, 2018; Florczak, 2014). Explanatory sequential mixed methods design was used in this study, with two separate phases for data collection. The aim of explanatory sequential mixed methods research is to use the initial quantitative findings outlined in phase one to inform the development of phase two and to explore the phenomenon more deeply to gain a fuller understanding, through qualitative data collection (Creswell & Plano Clark, 2018; Florczak, 2014). This process fits with the pragmatism philosophy (reality is independent of humans but perception of reality and knowledge is shaped by our experiences).

There are inherent disadvantages with explanatory sequential mixed methods design, these include: qualitative phase can only be designed or conceptualised after the collection of the quantitative phase (increasing the time over which the study is conducted), requires key themes identified in phase one to be followed up in phase two, and the research needs to identify what participants will be appropriate (Creswell & Plano Clark, 2018). However, following a structured process the disadvantages can be negated and can assist with writing up of results and integrating the data to ensure it is a true mixed methods study (Creswell & Plano Clark, 2018; Feilzer, 2010). Figure 4-2 shows how the explanatory sequential mixed methods design is used to collect data and analyse the findings, and was developed following the sequences as outlined by Creswell & Plano Clark (2018). The phases of data collection, analysis, and integration of results will be further discussed in the methods and integration sections of this chapter.

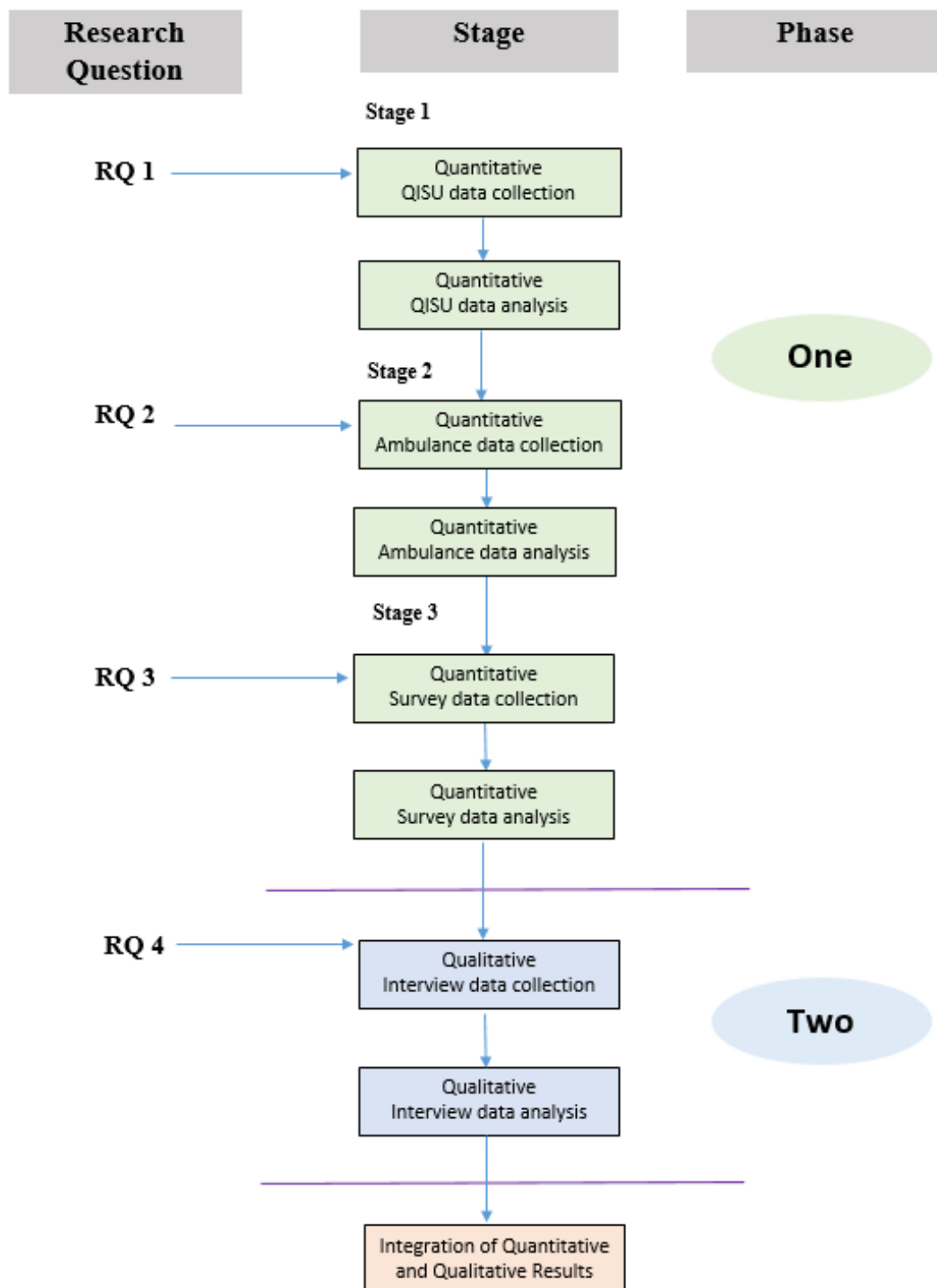


Figure 4-2 Diagram of explanatory sequential mixed methods design used in study

4.5. Methods Phase 1

Quantitative data were collected in three stages in phase one. *Stage one* utilised data collected by the QISU database to explore the patterns and features of methamphetamines-related injury presentations to emergency departments (ED). *Stage two* utilises Ambo-ADOstat ambulance data to explore ambulance attendance

events related to methamphetamines. *Stage three* collected data on police and paramedics perceptions of deservingness and attitudes towards persons who use methamphetamines. Data abstraction from patients' medical records are used in the first two stages of phase one for data collection. The following journal article outlines the challenges of researching drug-related presentations using data abstracted from patients' medical records.

4.5.1. Manuscript: The challenges of researching drug-related ED presentations using review of medical records

Manuscript Details

Authors:

Rikki Jones (BN, RN)

Cindy Woods (BEd, PhD)

Professor Kim Usher AM (RN, RPN, A/DipNEd, BA, BHScMNSSt, PhD, FACN, FACMHN)

Citation information: Jones, R., Woods, C., & Usher, K. (2018). The challenges of researching drug-related emergency department presentations using medical records. *Nurse Researcher*. doi:10.7748/nr.2018

Manuscript

Abstract

Background: Health research through medical chart review is a useful strategy to understand reasons for presentations related to the impact and burden of illness, disease and substance abuse. The research design and methods used can, however, impact the validity and reliability of research in this field. Ensuring a strong study design and appropriate methodologies are used is vital when conducting research that has an impact. **Aim:** To highlight some of the challenges nurse researchers face when designing and conducting research using a medical chart review. **Discussion:** This paper provides an approach for conducting retrospective chart review research, and potential solutions to inherent challenges involved in medical chart review. Using a systematic and scientific approach can maximise the benefits, minimise the limitations, and improve the rigour and impact of nursing research. **Conclusion:** This paper advances methodological discourse about the challenges inherent when using medical records for data collection. Despite the inherent challenges, medical records are an important source of information about injury, disease and substance abuse. **Implications to practice:** Nursing staff may face challenges in conducting research using patient medical records. The quality of data that is abstracted from medical

charts is impacted by the data abstraction process used, and the quality and accuracy of clinical documentation. Key words: data abstraction, illicit drugs, medical chart review.

4.5.1.1. Introduction

Nursing as a profession has been developing and changing for decades. Translating nursing research into practice has played an essential part in instigating this change (Curtis et al., 2017). However, there are issues and challenges with research designs that prevent research being translated into practice. Methodology and study design that limit the validity of research findings are considered one of these issues (Curtis et al., 2017). Nurse researchers need to be aware of these issues when designing and selecting methods for research.

Health Research examining prevalence of illness/disease/substance abuse, improving care, and availability and use of services, can help to decrease the impact and burden health care systems are currently facing (McHale et al., 2013). Research in this area often uses medical chart review as a method by which data is collected from patients' electronic or paper-based medical charts (Kaji et al., 2014). However, data abstraction using medical chart review only describes part of the phenomenon of study due to a number of methodological issues. Incomplete documentation, unrecorded information, missing paper-based records, difficulty understanding or interpreting information found in medical charts, variance in the quality of information recorded by clinicians, and the difficulty establishing cause and effect are all limitations of using medical chart review (Gearing et al. 2006). As a result of these limitations, data from medical chart reviews may not accurately measure patient end points or outcomes, which is a recognised research design flaw (Kaji et al. 2014). These limitations in this method of data collection are ones which the nurse researcher not only needs to be aware of, but must plan to address wherever possible to ensure the research is robust (Kaji et al., 2014).

The aim of this article is to highlight some of the challenges nurse researchers face when designing and conducting research using medical chart review and discuss potential solutions, associated with research using patients' medical charts for data collection. Illicit drug use presentations in EDs is used as an example.

4.5.1.2. Data Collection

Data abstraction process: Data abstraction is the process used to collect data from medical charts (Kaji et al., 2014). Data abstraction as a data collection method is frequently used because it is relatively easy to access medical charts, it can be done retrospectively, and it is time and cost effective (Kaji et al., 2014). Data can be abstracted from progress notes (nursing, medical and other allied health notes), ED database (which includes triage notes, diagnosis), surgical and diagnostic reports, and admission and discharge papers (Gregory & Radovinsky, 2012). However, there are inherent issues with using this form of data collection. Medical charts were primarily designed to communicate clinical information; not for the purpose of research.

Despite the auditing processes medical charts undergo, and the coding practices that standardise medical charts, accuracy of the information recorded in medical charts is uncertain due to its reliance on clinicians recording clinically relevant information. For example, if drug use is not considered to be clinically significant (that is, the clinician may not believe it to be related to the presentation), it is unlikely to be documented, which can lead to coding and diagnosis errors (Kaji et al., 2014). Documentation in the medical charts is subjective to each clinician and is affected by clinicians' level of assessment skills, experience, and documentation preferences (Kaji et al., 2014). Medical charts can also have missing documents/information, inconsistent/conflicting information, and illegible information which affects the amount and quality of data that can be abstracted (Kaji et al., 2014; Zozus et al., 2015). These factors can affect which medical charts are included or excluded from a study and may lead to an underestimation in the incidence and patterns of presentations. In addition, documentation is a legal and professional requirement. Ensuring that medical charts are updated regularly, contain accurate information and do not contain missing or illegible information will assist not only with clinical research, but will also ensure the clinician has fulfilled their legal and professional obligations.

Researchers are unable to control what is documented in medical charts for each presentation, this falls to clinical staff working in the department. This is an important issue of which clinical staff need to be aware. To ensure change in clinical practice, policy, and procedures through the adoption of evidence-based practice, clinical staff need to consider their documentation practices and its impact on the quality of care

and clinical communication as well as the quality of information available for research. While it is important to highlight that departments are often busy and under extreme pressure, documentation in triage notes, progress notes, and notes recording patients' history and physical assessment need to remain as accurate and legible as possible (Polnaszek et al., 2016).

A lack of validated and reliable frameworks to guide data abstraction and limited discussion around the abstraction techniques used in research, can introduce bias and impact the quality of data collected (Polnaszek et al., 2016). Polnaszek et al. (2016) and Kaji et al. (2014) discussed the use of medical charts and identified that most research failed to discuss blinding of abstractors, abstractor training and inter-rater reliability and if a standardised data abstraction form/tool was used. Unblinded data abstractors can lead to abstractor bias, a systematic error in the data collection process. For example in the case of contradictory chart entries, an abstractor who has knowledge of the desired variable may record that value while ignoring the contradictory evidence (Kaji et al., 2014). However, blinding of researchers can be cumbersome and may not be necessary providing data abstraction rules, study protocols and guidelines are well defined, abstractors are carefully trained to use the data abstraction instrument, and inter-rater reliability and agreement are assessed on an ongoing basis (Kaji et al. 2014).

Time frame for data collection: Limiting the length of time over which data is collected can impact the study outcomes and have substantial impact on the generalisability of the study's findings (Kaji et al. 2014). If the study design does not allow for enough time to generate quality data, it cannot be guaranteed that the results are due to the phenomenon and not to chance alone (Hedt & Pagano, 2011). In addition, it is important to be aware of seasonal changes in different settings which can impact on the incidence of presentations. For example, collecting data only on Friday and Saturday nights, around public holidays or tourist destinations, will not accurately represent the incidence of alcohol and drug-related ED presentations because alcohol and drug-related presentations significantly increase during these periods (VicHealth, 2012).

Location of data collection: A similarly important issue for the researcher to consider is the location of the data collection sites. For example, if attempting to use medical charts of emergency department presentations to determine the rate of illicit drug

presentations, the use of one emergency department, or selecting an emergency department in an area of known illicit drug use, may increase the risk of bias and affect the validity and generalisability of the research findings (Rimando et al., 2015).

4.5.1.3. Sampling

The researcher needs to be aware of the different sampling techniques and be able to clearly define the target population under study prior to the research being conducted (Aglipay et al., 2015). A question the researcher needs to consider with sampling is, are minority groups or marginalised groups a part of the target population?

Normally, a sample needs to be representative in order to generalise the findings. Ensuring hard to reach populations such as marginalised or minority groups are included in the sample population can be challenging (Aglipay et al., 2015). Medical chart reviews can be a way of reaching these populations or gather a snapshot of the data. For example, in illicit drug research, the target population is often difficult to reach, and at times hard to sample as it requires the patient to admit to drug use. Drug use is illegal in many countries, which may cause the patient to make a ‘socially desirable response’ when asked if they have consumed any drugs (McGilloway & Donnelly, 2004). As a result, the patient’s response may not accurately represent whether they are intoxicated or not, or whether their presentation is drug-related. Whereas a chart review is likely to include information about any toxicology screening performed, making identification of this population more accurate.

Sampling refers to the method by which medical charts are selected from the target population. Convenience sampling is the most common method used in health research as researchers are reliant on participants presenting to hospitals. This method selects eligible cases based on diagnosis over a specific time frame (Gearling et al. 2006). Convenience sampling is however more vulnerable to bias than other sampling techniques, and as a result, limits generalizability of the study’s findings to the wider population (Hedt & Pagano 2011). In the example given above the researcher would need to consider how drug use is recorded in the medical charts and how it is measured (self-reporting, toxicology screening or subjective clinician’s judgment), to ensure the convenience sample is representative of the population under study.

4.5.1.4. Recruitment

Understanding your target population, clearly identifying variables or end points that will be measured, and carefully considering ethical implications will assist the researcher to decide how recruitment will take place (Toles & Barroso, 2014). For example, recruitment for studies focusing on illicit drug use often rely on some form of drug use measurement to determine what the patient has taken, if anything, in order to decide whether they should be recruited into the study. A recent literature review (Jones et al. 2018) identified that researchers relied on validating drug use through a number of approaches: urine immunoassay or serum gas chromatography, (blood is vaporised and analysed) or mass spectrophotometry (identifies the chemical ions in a sample) which are time consuming and expensive (Rana et al., 2014); self-reporting of drug use, which is not 100% accurate as described above (Sloan et al., 2004); clinician opinion, which is reliant on clinical expertise in recognising drug use signs and symptoms (Kaji et al. 2014). All of these approaches, when used alone may not be accurate impacting which medical charts are recruited in the study and which ones are excluded.

4.5.1.5. Improving research quality

Despite the challenges highlighted, medical chart reviews may be the only available option for some research projects. Understanding the challenges and limiting the impact they have on study design and methodology can improve the validity and robustness of the study.

Data collection: Zozus et al. (2015) discussed the factors that decrease the accuracy of medical charts in research. These include; missing information, errors and inconsistencies, conflicting information, focus on documenting abnormal results and excluding normal results, illegible records, and variability of documentation practices and assessment skills. Accurate and consistent documentation is a legal and professional requirement, yet it is not always the focus of nursing or medical care. Taking additional steps prior to commencing research may help to reduce the amount of inaccurate, missing or illegible data recorded in medical charts. This may involve, reviewing a small number of medical charts from the participating sites to identifying any issues with documentation and the impact it may have on data abstraction. If issues are identified the researchers can have a discussion or organise training with

clinical staff around documentation practices. This may ensure a more structured similar approach is used throughout data collection.

The data abstraction process needs to be clearly defined prior to research commencing. This includes; detailing the abstraction method and form/tool, the abstraction environment, the abstractors and quality control of the abstraction process (Kaji et al. 2014; Zozus et al. 2015). Gregory and Radovinsky (2012) discuss the importance of developing a data abstraction form/tool. The process includes the development of a data abstraction form/tool that collects and records the variables under study, pilot testing the tool and making changes as needed, developing a coding manual to ensure variables are able to be recorded accurately and consistently, ongoing training of abstractors and testing inter-rater reliability and agreement of data abstraction (Gregory & Radovinsky 2012; Kaji et al. 2014; Polnaszek et al. 2016). In addition, transparent reporting of the abstraction process is necessary and should include; abstractor training and previous experience, assessing inter-rater reliability and agreement of chart abstraction, and reporting how medical charts were validated to ensure outcomes, end points and variables are accurately recorded (Gregory & Radovinsky 2012; Kaji et al. 2014; Polnaszek et al. 2016). This can help to reduce the inaccuracy of using medical charts for data collection and limit the number of factors that impact the quality of the data abstraction process (Kaji et al., 2014).

When selecting abstractors, researchers need to consider their data abstractor experience, research experience, and if they have a health care background (Gregory & Radovinsky, 2012). Training of abstractors should include how to use the abstraction tool/form, how to manage missing or inconsistent data in patients' medical charts, and how to enter and code the collected data (Gregory & Radovinsky, 2012; Kaji et al., 2014). Inter-rater reliability testing refers to the use of two abstractors independently abstracting data from medical charts, identifying differences between the two abstractors' results, and coming to an agreement, (Kaji et al., 2014). This can be time consuming but will improve the quality of data abstraction and reliability of the study's findings.

Location and length of time: Decisions about the number of sites (locations) and the length of time over which the study will be conducted are important considerations. Zozus et al. (2015) identified several factors in location and length of time over which the study is conducted that impacted the accuracy of data abstraction. These include,

unfamiliarity with the location, poor relationship with clinical staff, limited time available for data collection and interruptions to data abstraction. The researchers need to allow time for consultation with stakeholders (management and clinicians), consider how they develop a relationship with the clinical staff who may be asked to prospectively record data for later chart review, consider how they can facilitate training of the staff around documentation, and if applicable discussing how to identify participants. Consideration around the number of medical records required, the sample size calculation as well as the time required to gather meaningful data should occur before deciding on the length of time over which the study will be conducted. In addition to this, collecting data from more than one hospital/department across a variety of settings, such as metropolitan, regional and rural/remote areas, will ensure the sample is representative of the population. This will improve generalisability of results if this is the aim of the research.

Sampling and Recruitment: When considering how to collect a sample, the researcher needs to understand the target population to help guide which sampling technique will be used. If a convenience sample is used, consider using a larger sample sizes and/or a sample size calculation, increasing the data collection time, or selecting a random sample of eligible medical charts from the convenience sample, to assist in reducing sampling biases (Hedt & Pagano, 2011; Landorf, 2013; LoBiondo-Wood & Haber, 2014).

Recruitment of medical charts into the study requires a clearly defined inclusion and exclusion criteria to ensure all records selected meet the inclusion criteria and that no records are inadvertently excluded. In addition, the researcher needs to identify who will be recruiting participants or how they will be identified. For example, Cloutier et al. (2013) trained medical practitioners in EDs to identify if a presentation was drug-related based on their knowledge of signs and symptoms of drug use. Cloutier et al. (2013) also implemented a compulsory question into the electronic triage record (Is this ED visit directly or indirectly related to methamphetamine use?) which electronically flagged the patient's record if a positive response was entered. Training clinicians on recognising signs and symptoms of drug use, and how to respond to the question at triage if they were not sure, occurred prior to and during data collection. This helped to ensure medical charts were correctly identified for inclusion into the study, improving the reliability of the study's findings.

Medical chart reviews provide important data for research purposes and quality improvement. Despite the inherent challenges, a strong study design and appropriate methodologies are vital for conducting research that has an impact.

4.5.1.6. Conclusion

This article provides an overview of the challenges and potential solutions related to medical chart review in research, using illicit drug-related presentations as an example. Our recommendations for improving the chart review procedure for this cohort of patients includes validation of medical charts to record the phenomenon of study, clearly describing the methods followed during data abstraction, including assessment of inter-rater reliability and agreement, consideration of blinding of the abstractor to the research question/hypothesis, using a structured data abstraction form/tool to ensure accuracy and consistency of data collection, and comprehensive training of data abstractors. In addition, using two or more hospitals/departments for data collection, avoiding hospitals/departments located in areas where potential participants may be overrepresented, and using more than one method to identify potential participants for recruitment will strengthen study designs. More robust study design and methods will increase the quality and impact of nursing research.

End of manuscript

4.5.2. Stage One

A retrospective observational study was undertaken using injury surveillance data collected from hospital ED across Queensland. Hospital participation across QLD varied over the 13-years study period. Observational studies establish frequency, patterns and occurrence of a phenomenon (DiPietro, 2010) over a period of time. This approach allowed data to be gathered on the patterns and features of methamphetamine-related presentations. QLD was selected as it had a readily available database for the research team to use, which was not available in other states.

4.5.2.1. Recruitment

Participants

The study population included patients aged 12-60 years. Cases identified as under 12 years of age were excluded due to the likelihood these were prescription related issues or accidental consumption rather than abuse. The study was conducted in Queensland, over a 13-year period from 2005 to 2017. Hospitals participation in QISU data collection varied over the 13-years of the study with an average of 16 hospitals participating from across seven health services and up to maximum of 26 hospitals participating at any given time. QISU data represent approximately 20% of adult ED injury attendances (Queensland Injury Surveillance Unit [QISU], 2009). QISU identified methamphetamine-related presentations from triage notes and diagnosis codes.

Sample

The sample size for stage one was determined by the number of methamphetamine-related ED presentations identified during the study period. Convenience sampling (non-probabilistic) was used to analyse the medical records of cases who presented to the ED department (Creswell & Plano Clark, 2018).

Inclusion/exclusion criteria

Presentations identified as methamphetamine-related injury presentations (an injury occurred due to methamphetamines use which resulted in the patient presenting to an ED) to an ED during the 13-year period were required to be aged 12 years or older to be included into the study. Any presentation under the age of 12-years were excluded from the study.

4.5.2.2. Data collection

Data from ED were sourced from the QISU database. The QISU database uses both electronic and hard copy sources to gather standardised data on injury-related presentations from participating public hospital emergency departments across Queensland (Hides et al., 2015; Usher et al., 2017). Data were collected from more rural and regional locations and were deficient in Metropolitan data. Routine ED data variables collected include: demographics (age, sex, ethnicity); service delivery (mode

of separation, date, time) triage category, diagnosis code (ICD 9 or 10AM [Australian Modification]); and injury surveillance coded data (nature of injury, location when injured and intent). A total of 458,423 documented injury related presentations aged 12-60 years (no presentations over 60 were recorded as methamphetamine-related) were identified between May 2005 and December 2017, with a total of 250 related to methamphetamines.

4.5.2.3. Data analysis

Data for stimulant-related injury presentations were received from QISU in excel format, data were cleaned and imported into SPSS version 24 (IBM SPSS Inc., Armonk, NY, USA). Service delivery variables (date, time, mode of separation and triage), demographic variables (age, sex, and ethnicity), and mechanism and nature of injury variables were described using means, percentages, standard deviation and confidence intervals (summary univariate statistics). The relationship between drug type and service delivery variables, demographic variables, and mechanism and nature of injury variables were described using bi-variate analysis. Chi-square tests, z tests and analysis of variance (ANOVA) with Tukey's post hoc testing were used to determine if there were relationships between drug type (methamphetamine n = 250 and other stimulants n = 314), demographic variables (age, gender, ethnicity), and some service delivery variables (triage and year). Data are described as a proportion of all ED presentations due to variable hospital ascertainment rates and z-tests were conducted to compare population proportions to determine statistical significance. A p value of <0.05 was considered statistically significant. Data are visually represented using tables and figures. The triage notes (included in the QISU data) were searched to identify key terms used. Terms included behaviour, psychiatric complaints, psychosis, brought in by ambulance, and brought in or accompanied by police.

Several variables were recoded prior to analysis occurring. Drug type were recoded into two categories with terms 'Ice', 'meth', 'methamphetamine', 'dextromethamphetamine' and 'methamphetamine' coded together under methamphetamine = 1; amphetamine, speed, MDMA, ecstasy, dexamphetamine, and dextroamphetamine were recoded together under other stimulants = 0. It was beyond the scope of this study to determine if speed was amphetamine or methamphetamine due to the term speed originally associated with amphetamine however recently the term is used in reference to the powdered form of methamphetamine, so to err on the

side of caution it was coded under other stimulants. In addition, it was also beyond the scope of this study to determine if dextroamphetamine, and dexamphetamine (usually prescribed forms of methamphetamines for the treatment of attention deficit hyperactivity disorder [ADHD]) presentations were illegally obtained or prescription medication, therefore a cautious approach was taken and it was coded under other stimulants.

Indigenous status was recoded into two categories, terms coded as Aboriginal not Torres Strait Islander (TSI), TSI not Aboriginal, Aboriginal and TSI were combined as Indigenous = 0; and terms coded as not indigenous = 1. Age groups were recoded into five-year intervals to allow for standardised analysis, except for the 12-14 age group. Modes of separation were recoded into three categories with admission and transferred to another hospital coded together as admission = 1, discharge = 2, and did not wait, unspecified and left after treatment commenced were coded together as other = 3. Injury intent were collapsed for statistical purposes with 'intent not specified', 'other specified', and 'other' coded together as other = 1, 'sexual assault', 'unspecified assault' and 'maltreatment by spouse or partner' coded together under assault = 2; accident = 3, intentional self-harm = 4, and undetermined = 5. Nature of injury were collapsed for statistical purposes with asphyxiation = 1, poisoning/toxic effect = 2, all fractures were coded together under fracture = 5, all open wounds were coded together under open wound = 4, and all other terms coded together under other = 5. The STROBE checklist was used to report the findings (chapter five).

4.5.3. Stage two

A population-based retrospective study was undertaken using Ambo-AODstat data from ambulance services across Victoria (VIC). This design allowed the researcher to look back in time at crystal methamphetamine-related ambulance attendance events over a six-year period to examine one of the key themes identified in Phase one, *Stage one*.

Data for Ambo-AODstats are sourced from the Turning Point Ambo Project. Ambulance Victoria and Turning Point's Population Health Research team work in collaboration to examine drug-related events attended by Ambulance Victoria paramedics. This collaborative project is funded by the Victorian Department of Health and Human Services. Electronic data is extracted from the Victorian Ambulance Clinical Information System (VACIS) database, analysed and reported

using an online platform (Ambo-AODstats) to provide interactive statistics. VACIS is used by all Ambulance Victoria paramedics across all regions of Victoria to record information about the emergency events they attend, resulting in an Electronic Patient Care Record (ePCR).

Victoria was selected due to availability data for the research team to use and to determine if the results from stage 1 were isolated to the state of QLD. The Victorian data will allow the research team to determine if VIC is experiencing an increase number of callouts related to methamphetamines which is reported in the QLD ED injury related data.

4.5.3.1. Recruitment

Participants/Sample

The sample size for *stage two* was determined by the number of crystal methamphetamine-related ambulance attendance events identified during the study period. Convenience sampling (non-probabilistic) was used to analyse the medical records of cases who required ambulance assistance (Creswell & Plano Clark, 2018).

Inclusion/exclusion criteria

All ambulance attendance events identified as related to crystal methamphetamines were included in the study and any presentation identified as not a drug-related attendance event were excluded.

4.5.3.2. Data collection

Data on ambulance attendance events were sourced from Turning point (Ambo-AODstats) and included information on specific drug-related presentations including crystal methamphetamines, from all regions across VIC. To identify drug-related ambulance attendance events and specific drug attribution was reliant on; patient self-report or report by others at the scene, and paramedics' clinical assessment. The Ambulance Victoria and Turning Point's Population Health Research team extract data related to the specific drugs or substances involved as well as standardised information including patient demographic details, day/time of attendance, location (e.g., Local Government Area, regional/metropolitan), type of location (e.g., public space), police co-attendance, transport to hospital and clinical data. Data for

methamphetamine-related ambulance attendance events were analysed for all ages over a six-year period.

4.5.3.3. Data analysis

Data analysis was performed using descriptive and inferential statistics (frequency, percent and rates per 100,000 population). Descriptive statistics from an observed population are used to describe and characterise the sample using basic analysis such as central tendency (Etchegaray & Fischer, 2009; Fisher & Marshall, 2009; Marshall & Jonker, 2010). Bivariate analyses compared drug type (crystal methamphetamine-related events to any illicit drugs-related events) to demographic variables (age, sex) location variables (metropolitan/regional), police co-attendance and transport to hospital. Z-tests were used to compare bivariate analyses and changes in ambulance attendance events over time. Statistical tests were performed using EpiTools epidemiological calculator (Sergeant, 2013). A p value of <0.05 was considered statistically significant. The STROBE checklist was used to report the findings (chapter six).

4.5.4. Stage three

A cross-sectional survey was undertaken in Western Australia (WA) to survey police and paramedics' perceptions of deservingness and attitudes towards persons under the influence of methamphetamines who required transport to an ED (appendix J). The survey collected participants' characteristics and used a 5-point Likert scale to measure participants' perceptions of deservingness and attitudes. The online survey was hosted by Qualtrics. The advantages of using an online survey include; cost effective, increases the number of potential participants, can decrease data collection time, and increases the accuracy and efficiency of data collection and analysis (Cantrell & Lupinacci, 2007).

While it would have been beneficial to conduct this stage of the research across all states and territories of Australia, the research team could only gain permission from WA police force and ambulance services.

4.5.4.1. Recruitment

An email inviting participants to access and complete the survey was circulated by WA police force and WA St Johns Ambulance service. The email contained

information on the purpose of the survey, and how to access and complete the survey (appendix K). An Information sheet (appendix L), consent and eligibility criteria were embedded in the survey, and participants were required to read the information sheet, give consent and meet the eligibility criteria before the survey commenced.

Recruitment occurred over six months (February 2019 to July 2019).

Participants

Participants included paramedics and police officers who were currently employed by St Johns ambulance service in WA or the WA police force. Participants had to meet the eligibility criteria which was embedded in the survey (see appendix J).

Sample size

Participants were recruited from across WA using a convenience sampling technique. A sample size was determined using online calculator G*power software, calculating the statistical power for independent sample t-test for two groups (Faul et al., 2007). A medium effect was specified with 5% error probability and 95% power, and the sample size was calculated at $n = 210$ (using the reported number of employed police officers and paramedics in WA).

Inclusion/exclusion criteria

Participant inclusion criteria included; currently employed by either St Johns ambulance service in WA or WA police force, able to read and write English, and experience caring for persons under the influence of methamphetamines requiring transport to ED. Participants exclusion criteria included; did not give consent, unable to read or write English, no experience managing person under the influence of methamphetamines requiring transport to ED, and not currently employed by police or paramedics in Australia. If consent was not given or eligibility criteria were not met, the survey ended and the participant was thanked for their time.

4.5.4.2. Data collection

The survey consisted of two parts. Part one collected participant characteristics variables; demographics (age, gender, ethnicity), field of work (ambulance service/police service), years of experience, location (rural-remote/metropolitan), how frequent the participant cared/managed persons under influence of methamphetamine

and the participants' perceptions of how difficult persons under the influence of methamphetamines were to care for.

Part two measured participants' responses to eight questions using a 5-point Likert scale. The eight questions have been used in previous research, first by Feather and Johnstone (2001) and later by Skinner et al. (2007). Validity and reliability for the survey was reported by Skinner et al. (2007) for registered nurses and internal consistency was found to be acceptable for negative ($\alpha = .60$) and positive ($\alpha = .60$) affective items. The current study found very good consistency and reliability measured by Cronbach's alpha for positive ($\alpha = .85$) and negative ($\alpha = .90$) affective responses to drug use. The eight questions measure: perceived responsibility for drug use (life circumstances, and personal responsibility, 1 = not at all responsible to 5 = very responsible); negative affect (anger and disappointment towards users, 1 = not at all angry/disappointed to 5 = very angry/disappointed); positive affect (sympathy and concern towards user, 1 = not at all sympathetic/concerned to 5 = very sympathetic/concerned); perceptions of deservingness and entitlement (deserves same medical care as others and entitled to the same medical care, 1 = not at all deserving/entitled to 5 = very deserving/entitled).

In addition, participants were asked if they would like to be involved in future research, with an option to add their email address to receive information about potential participant in future interviews (phase two of this research).

4.5.4.3. Data analysis

Quantitative data collected from the survey were analysed using SPSS version 25 (IBM SPSS Inc., Armonk, NY, USA). Participant characteristic variables in part one (demographics [age, gender], years' experience, field work in [police or ambulance], location [rural/remote, metropolitan], frequency managing methamphetamines, difficult to manage), were described using summary univariate statistics (means, percentages, standard deviation and confidence intervals where possible). In part two Likert responses (attitudes and deservingness scale) were analysed and described using means and standard deviation. The relationship between participant characteristics, and the attitudes and deservingness scales were described using bivariate analysis and differences between groups were assessed using t-tests. The relationship between negative (anger and disappointment) and positive (sympathy and

concern) affective variables were assessed using Pearson's correlation coefficient to determine the strength and direction of associations. Overall positive and negative affective indices were created by averaging the two positive affective responses and the two negative affective responses. Mean responsibility, affective indices and perceptions of deservingness responses from participants were compared using ANOVA with Tukey's post hoc testing and an independent t-tests. A p value of <0.05 was considered statistically significant.

Participant characteristics were recoded prior to analysis. Age grouping were recoded into five-year intervals to allow for standardised analysis, 24 or below = 1, 25-29 = 2, 30-34 = 3, 35-39 = 4, 40-44 = 5, 45-49 = 6, 50-54 = 7, 55-59 = 8, and 60+ = 9.

Ethnicity were recoded into three categories with terms coded as Aboriginal not Torres Strait Islander (TSI), TSI not Aboriginal, Aboriginal and TSI combined as Indigenous = 1, European remained the same = 2, and Asian, African and other coded together as other = 3. Location was recoded into two categories with terms rural and remote coded together as rural/remote = 1, metropolitan remained the same = 2.

Years' experience was recoded into five-year intervals to allow for standardised analysis, 1-5 = 1, 6-10 = 2, 11-15 = 3, 16-20 = 4, 21-25 = 5, 26-30 = 6, 31+ = 7.

Difficult to manage were recoded into three categories with terms definitely more difficult and probably more difficult coded together as yes = 1, unsure remained the same = 2 and terms probably not and definitely not more difficult coded together as no = 3. The STROBE checklist was used to report the findings (chapter seven).

4.6. Methods Phase two

Qualitative research design utilising semi-structured interviews to explore human experience caring for persons under the influence of methamphetamine and requiring transport to an ED. Police and paramedics were chosen as this was highlighted in phase 1 stage 1 as an area requiring further exploration. This approach allowed the research team to gather specific human experience reports from police and paramedics across Australia. Semi-structured interviews are designed to purposefully gather subjective data (McIntosh & Morse, 2015) and are a commonly used form of interviewing in qualitative data collection methods (Kallio et al., 2016). Semi-structured interviews can be altered to suit the research question and adjusted to suit participants' responses (Kallio et al., 2016). However, semi-structured interviews

require previous knowledge of the phenomenon under study (Kallio et al., 2016). In the case of this study phase one informed the structure of the interview questions for phase two.

The semi-structured interviews were conducted across Australia. Expanding the research from QLD, VIC and WA (locations used in phase one) in this phase allowed the research team to report more broadly on the experience of police and paramedics caring for persons under the influence of methamphetamines.

4.6.1. Recruitment

Recruitment occurred across Australia, with participants from five of the eight states agreeing to participate in the study. Recruitment occurred through two methods; 1- participants from phase one *stage three* indicated their interest in participating in an interview (a question in the survey asked participants to add their email address to the box provided if they wished to participate in an interview), 2- participants emailed the research team in response to a social media advertisement sent out via twitter and Facebook. Participants were emailed the information sheet (see appendix M), consent form (see appendix N) and the interview questions (appendix O) prior to interview being scheduled. Interviews were scheduled at the participants' convenience and occurred from May 2019 to July 2020.

4.6.1.1. Sample

A purposeful sampling technique was utilised to recruit participants into this study. The sample size was determined by data saturation. Interviews continued until the research team decided data saturation had occurred (no generation of new codes/themes) (Fusch & Ness, 2015).

4.6.1.2. Participants/Inclusion exclusion criteria

Participants included police and paramedics from across Australia who had experience caring for persons under the influence of methamphetamines and required transport to ED. Participants had to meet the eligibility criteria to be included in this study.

Participant inclusion criteria included; currently/recently employed as a police officer or paramedic in Australia, have experience caring for persons under the influence of

methamphetamines, and gave consent to participate in the interview. Participant exclusion criteria included; did not give consent, no experience managing person under the influence of methamphetamines requiring transport to ED, and not recently/currently employed as a police officer or paramedic in Australia.

4.6.2. Data collection

The semi-structured interviews were used to collect details on participant characteristics, location (rural, remote or metropolitan), profession (police or paramedics) and the participants' experiences. The interview questions were developed from the findings reported in phase 1 of this research project and to expand on the findings from phase 1 stage 3. The open-ended interview questions allowed the research team to gather data on police and paramedics' experiences of caring for persons under the influence of methamphetamine who required transport to an ED, the challenges of caring/managing persons under the influence of methamphetamines, and the reasons for transport to ED. The interview gathered participant characteristic data on profession and location (rural, remote or metropolitan) at the commencement of the interview. Semi-structured interviews were guided by six standard questions to ensure the rigor of the interview process and the ability to analyse interviews under common themes (Nowell, Norris, White, & Moules, 2017). The semi-structured interview questions were approved by the research ethics committee prior to the recruitment process (appendix O; Interview telephone transcript) and were altered accordingly due to a discussion had by the research team after review of the first two interviews.

Interview question included;

1. Can you tell me about your experiences managing/caring for persons under the influence of methamphetamine requiring transport to EDs?
2. Can you explain or discuss the nature of difficulties you have experienced when dealing with persons under the influence of methamphetamines and how this differs from other drugs or intellectual/mental health issues?
3. What are some of the reasons or issues you are called to assist or to help transport patients to ED due to methamphetamines?
4. For what reasons or what issues are you called to ED to help manage persons presenting due to methamphetamines?
5. Can you explain/discuss what may help you to manage/care for persons under the influence of methamphetamines better/safely?

6. Is there any further training or education you feel is required to help you manage/care for persons under the influence of methamphetamines?
7. Is there anything else in relation to methamphetamine-related presentations you would like to share before we finish this interview?

Interviews were conducted via phone and arranged accordingly to suit the participant's preferences (date and time). A total of 18 interviews (Police n = 10, Paramedics n = 8) were conducted with a total of 405 minutes of data collected, an average of 22.5 minutes per interview with the duration of the interviews ranging from eight minutes to 37 minutes. All interviews were digitally audio recorded and transcribed verbatim. Transcribed was undertaken by an approved transcription services before analysis occurred.

4.6.3. Data Analysis

The interview transcripts were thematically analysed. Thematic analysis allows the researcher to use a flexible approach to delve into the rich data text to interpret meaning of experiences and generate codes to group together under themes (Clarke & Braun, 2017). However, flexibility and researchers' preconceived ideas of themes (gained from previous study of the phenomenon) can impact the quality of research (Nowell et al., 2017). Hence, a six-step process was followed to ensure rigorous and high quality analysis was undertaken, increasing credibility, transferability, dependability and confirmability of the study findings (Clarke & Braun, 2017; Nowell et al., 2017), this process ensured a rigorous analysis of the interviews occurred (Nowell et al., 2017). The steps involved familiarisation with the data, identifying initial codes, searching for codes within data and developing connections between codes to create common themes, reviewing themes with the research team until consensus is reached, and writing up the results (Nowell et al., 2017). In this study, the interviewer initially coded the data, then discussed codes with an experienced research team member to confirm/add/collapse codes and then group codes into themes until a consensus was reached by the research team (Clarke & Braun, 2017). The COREQ checklist was used to report the findings (chapter eight, nine and ten).

4.7. Integration of the data

Mixed methods research involves two forms of data collection and analysis, results of both the quantitative and qualitative data are presented separately, however, for a study to be truly mixed methods, integration of the results needs to occur (Creswell & Plano Clark, 2018; Feilzer, 2010; Younas et al, 2019). There are four key elements to data integration which include; 1- integration intent (how the integration will occur), 2- procedure of integration (what procedure did you follow during integration: Pillar integration), 3- presentation of integrated data (how will the integrated results will be presenting) and 4- interpreting the findings (how will the integrated findings be interpreted)(Creswell & Plano Clark, 2018). The

In this study, the intent of integration is used to link phase one results with phase two results by expanding on the quantitative results presented in phase one (chapter five, six and seven) with the qualitative results presented in phase two (chapters eight, nine and ten). This study used Pillar integration, a form of joint display to, guide integration of data, analyse the data and present the integrated findings (Johnson et al., 2017). Joint display is an acceptable method of integration used with explanatory sequential mixed method designs and for comparing different data sets (Creswell & Plano Clark, 2018; Younas et al., 2019).

Pillar integration uses a four stage process (listing, matching, checking and pillar building)(Johnson et al., 2017) to outline the key findings from quantitative data and qualitative data and present them together under common themes or pillars to determine meaning, (Creswell & Plano Clark, 2018; Johnson et al., 2017; Younas et al., 2019). Figure 4-3 outlines the pillar building process used for integration of data, as outlined by Johnson et al. (2019).

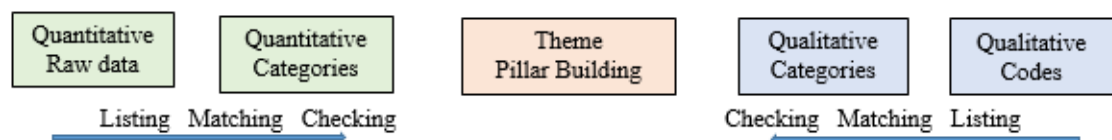


Figure 4-3 Pillar integration process used in this study

The listing stage (stage one) involves gathering raw quantitative data and qualitative codes into a table and allocating them to specific categories (Johnson et al., 2017).

The matching stage (stage two) involves matching up the quantitative and qualitative categories and identifying categories that have no match (Johnson et al., 2017).

Patterns, similarities and contradictory results were highlighted in this stage which will be discussed in the integrated findings (presented in chapter eleven). The checking stage (stage three) involves checking to ensure all data and categories are accurate and all non-matching categories have no match (Johnson et al., 2017). The final stage, Pillar building, (stage four) involves building themes the categories can be synthesised under to interpret the overall research findings (Johnson et al., 2017).

4.8. Ethical Considerations

In 1964 the World Medical Association released the Helsinki declaration which outline ethical regulations pertaining to medical research, since then ethical regulations and codes of conducts have developed to incorporate all researchers (Ramcharan, 2013). In Australia, research must follow the National Health and Medical Research Council Ethics Guidelines (NHMRC). The purpose of the NHMRC is to ensure research is conducted ethically, participants are treated with respect, participants rights are protected and protected against harm (physically, mentally or psychologically), and to pre-empt and identify any ethical issues that may arise during the research study (National Health and Medical Research Council, 2018).

There are several guiding ethical values researchers need to understand and follow. These include: respect, autonomy, beneficence, justice, and merit and integrity (National Health and Medical Research Council, 2018; Ramcharan, 2013). Autonomy is respected by maintaining participants confidentiality, gaining written or verbal informed consent (information must be provided to the participants about the research prior to consent being given), consent can be withdrawn by the participant at any time and data must be stored according to the NHMRC guidelines (National Health and Medical Research Council, 2018; Ramcharan, 2013). Merit, integrity and beneficence ensures studies are conducted, designed, and data used to benefit the wider community and build on knowledge in the field (Ramcharan, 2013). No harm, discomfort or inconvenience is to be done to the participants during the research process, and risks associated with conducting the research will be managed according to NHMRC guidelines (National Health and Medical Research Council, 2018). Justice ensures research results are made available to the participants, a fair recruitment process is used and no exploitation of participants occurs during the research process (National Health and Medical Research Council, 2018). Non-maleficence ensures

research does not put the participants or researchers at risk in any way including; psychological, physical or practical (time wasting) (Ramcharan, 2013).

In the case of this study, qualitative and quantitative data were collected about participants' views and experience. The value of autonomy, merit, integrity, informed consent, and respect were acknowledged and maintained throughout the research process according to the guidelines outlined in chapter 3.1 from the NHMRC (National Health and Medical Research Council, 2018). Data were stored according to the regulations as outlined in chapter 3.1 from the NHMRC (National Health and Medical Research Council, 2018). Informed consent was gained from participants in phase one stage three (survey) and phase two of this study (interviews), however consent was waived for quantitative data collected in phase one from stage one (QISU data collected was de-identified) and stage two (Victoria [VIC] Ambo-ADOstat as data were shared in a public domain) as outlined in chapter 2.3 from NHMRC guidelines (National Health and Medical Research Council, 2018). In addition, consent was gained from the Custodian of the QISU database prior to the study commencing (appendix G). Data collected during the research was used to generate knowledge and improve practice around methamphetamine-related presentations to EDs and methamphetamine-related callout events in the pre-hospital environment. Participants in phase two were offered a copy of their interview transcript and the opportunity to make comments or corrections, and final results were published and made available to participants. University of New England's Human Research Ethics committee gave approval to conduct the QISU study (HE16-232 [appendix H]) and collect survey data and conduct semi-structured interviews (HE18-209 [appendix I]).

4.9. Summary

This chapter has outlined the theoretical framework, theoretical lens and methodology utilised in this study. Pragmatism (theoretical framework) and health promotion (theoretical lens) were both discussed and reasoning was provided as to why these were suited for this study. The methodology outlined the aim, the research question, study design, data collection methods, and data analysis for both phase one and two. Inclusion and exclusion criteria were outlined for all stages of the recruitment process, and sampling size and population was addressed. A published manuscript was included in this chapter focusing on the challenges associated with using patients'

medical records for data collection. Ethical considerations were also discussed in detail and approval to conduct each stage of the study was included. This concludes section one of the dissertation, section two will contain the chapters presenting (chapters five, six and seven) the results from phase one of this study.

Chapter five presents the findings from the data collected by QISU on documented methamphetamines injury-related presentations to ED in QLD. Key themes identified in *stage one* of phase one were explored further in *stage two* of phase one (chapter six).

**Higher Degree Research Thesis by Publication
University of New England**

STATEMENT OF ORIGINALITY

We, the Research Master/PhD candidate and the candidate's Principal Supervisor, certify that the following text, figures and diagrams are the candidate's original work.

Type of work	Page number/s
Published Manuscript	69 - 77

Name of Candidate: Rikki Jones

Name/title of Principal Supervisor: Professor Kim Usher



Candidate

13/10/2020

Date



Principal Supervisor

28/10/2020

Date

**Higher Degree Research Thesis by Publication
University of New England**

STATEMENT OF AUTHORS' CONTRIBUTION

(To appear at the end of each thesis chapter submitted as an article/paper)

We, the Research Master/PhD candidate and the candidate's Principal Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated in the *Statement of Originality*.

	Author's Name (please print clearly)	% of contribution
Candidate	Rikki Jones	60
Other Authors	Kim Usher	20
	Cindy Woods	20

Name of Candidate: Rikki Jones

Name/title of Principal Supervisor: Professor Kim Usher



Candidate

7/10/2020

Date



Principal Supervisor

7/10/2020

Date

Section Two: Phase One Results

Chapter 5. Patterns and features of methamphetamine-related Emergency Department presentations

Title of Article: Patterns and Features of methamphetamine-related presentations to EDs in QLD from 2005 to 2017

Authors:

Rikki Jones (BN, RN)

Dr Cindy Woods (Bed, PhD)

Dr Ruth Barker (MBBS, FRACP, MPH)

Professor Kim Usher AM, (RN, RPN, A/DipNEd, BA, BHSc, MNSt, PhD, FACN, FACMHN)

Manuscript submitted to: International Journal of Mental Health Nursing

Status of Manuscript: Published 9 June 2019

Submission dates:

Citation information: Jones, R., Woods, C., Barker, R., & Usher, K. (2019). Patterns and features of methamphetamine-related presentations to emergency departments in QLD from 2005 to 2017. *International Journal of Mental Health Nursing*, 28(4), 833-844

Signed:


Candidate


Principal Supervisor

5.1. Introduction

This chapter will present a discussion on the results from the quantitative data collected by QISU from 2005 to 2017 on methamphetamine-related injury presentations to EDs in QLD. A published manuscript will present the results and discussion, using the latest word document of the manuscript prior to publication. The QISU database were selected as it included more than one ED for data collection, EDs were from a variety of locations including urban and rural hospitals, and the data was available over a 13-year period. In addition, the database was accessible by the research team, the QISU custodian granted access to the database (appendix K) and the UNE Human Research Ethics Committee (HREC) (HE16-232, appendix L) approved ethics. A chapter summary will follow the manuscript summarising the key findings to be followed up in phase one *stage two* and phase two of this study. QISU results manuscript

5.2. Manuscript: Patterns and features of methamphetamine-related presentations to EDs in QLD from 2005 to 2017

Abstract

This study explores the patterns and features of methamphetamine-related presentations to emergency departments (EDs) in Queensland. Despite an overall decrease in use of methamphetamine in Australia, an increase in the use of the crystalized form of methamphetamine has been noted over recent years. A descriptive observational study was utilised to analyse Emergency Department (ED) injury surveillance data sourced from Queensland injury surveillance unit (QISU) from 2005-2017. Data were analysed for presentations related to stimulants (n = 571) with methamphetamine (n=249) included as a sub category. Descriptive statistics were used to identify patterns and features of presentations related to methamphetamines. The relationship between demographic variables, service type variables, and drug type was assessed using chi square and z tests. Results included; 84.3% of methamphetamine-related presentations were allocated a triage score of 1, 2 or 3; 14.9% of all methamphetamine-related presentations required police involvement. 18% were brought in by ambulance; and 15.7% exhibited behaviour that was either,

agitated, aggressive or violent in nature. Methamphetamine-related presentations more frequently required police or ambulance services and more often included aggression or agitation. Methamphetamine-related presentations to ED have a high acuity and often require other emergency resources, police and ambulance. There is a need to develop policy for managing aggressive and agitated people presenting to EDs as a result of methamphetamine use and to further explore the experience of personnel (police and ambulance) managing persons under the influence of methamphetamines. A public health intervention targeting the increasing numbers of patients presenting to emergency services is also required. Key words: methamphetamine, 'Ice', emergency department, methamphetamine-related, presentations

5.2.1. Introduction

The estimated number of illicit drugs users worldwide is between 149-271 million people, with an estimated 15-39 million people using cocaine, opioids, or a form of amphetamine (Degenhardt & H. Hall, 2012). In 2010-2014 the use of methamphetamine stabilised in Australia (Stafford & Burns, 2015), however, use is moving from the base and powder forms of methamphetamine towards the crystalized form of methamphetamines (Australian Institute of Health and Welfare, 2016a; Degenhardt et al., 2017; Stafford & Burns, 2015; Woods & Usher, 2017). In 2010, the crystalized form of methamphetamine (crystal meth/ice) accounted for 22% of all meth/amphetamine use, increasing to 50% by 2015, and 57% in 2016 in Australia (Australian Institute of Health and Welfare, 2017b). The National Ice Taskforce was established in Australia in 2013 to address the growing concern over methamphetamine use (Commonwealth of Australia, 2015). The final report from the National Ice Taskforce made 38 recommendations including; improvement and development of guidelines informed by research including, the inclusion of ice/psychostimulant education in medical curricula, further education for staff directly affected or in-contact with users of methamphetamine (emergency staff, paramedics and police force), and improved services and interventions for EDs (Commonwealth of Australia, 2015).

In the Australian drug trends 2014 report (Stafford & Burns, 2015), the number of amphetamine-related hospital admissions in Australia in 2006/2007 was reported to be 150 per million people, this increased to over 250 per million people in 2013. In NSW the estimated number of methamphetamine-related ED presentations (data gained

from across NSW rural and urban areas) has rapidly increased from 531 in 2009/10 to 4,478 in 2016/17 (Center for Epidemiology and Evidence, 2017).

If the reports from New South Wales (NSW) on methamphetamine-related ED presentations (Center for Epidemiology and Evidence, 2017) and the growing use of the crystalized form of methamphetamine are indicative of the growing trend in Australia, the potential to impact already over stretched emergency services is considerable. A study by Cleary et al., (2017) focused on health professionals experience looking after people who presented to EDs due to methamphetamine use. Clinicians interviewed in the study reported that these individuals exhibited behaviour that was challenging and unpredictable, identified a lack of training on how to manage these types of presenters, and described how these presenters often required extra time, resources and staff to manage them in the ED. Thus, further research into the patterns of methamphetamine-related ED presentations is warranted. This article reports the findings of a study exploring the patterns and features of stimulant related presentations with specific analysis of methamphetamine-related ED visits in Queensland (QLD) over a thirteen-year period (2005-2017).

5.2.2. Background

Methamphetamine is a recreational psychostimulant, considered to be more potent, more addictive, and faster acting than other amphetamines (Cleary et al., 2017; Cloutier et al., 2013; Degenhardt et al., 2014; Vearrier et al., 2012). It is most commonly available in three forms: base, powder and crystal methamphetamine. The crystalized form has a higher purity and is able to be smoked, injected, and/or ingested which allows for rapid affect and easy use (Commonwealth of Australia, 2015; Degenhardt et al., 2017; National Institute on Drug Abuse, 2013).

Methamphetamine affects the release, production and storage of neurotransmitters in the brain (mainly dopamine, serotonin and norepinephrine) which results in a feeling of euphoria, a decrease in fatigue, and an increase in alertness and endurance, (Cleary et al., 2017; Commonwealth of Australia, 2015; Vearrier et al., 2012). Continued use of methamphetamine causes a decrease in the brain's ability to release, store and produce these neurotransmitters, resulting in the user's inability to feel euphoria (anhedonia) without methamphetamine in their system (National Institute on Drug Abuse, 2013; Vearrier et al., 2012; Yu et al., 2015). This predisposes the user to repeated dosing. However, habituation to the drug decreases the psychostimulant

effect on the brain, prompting the user to increase the amount and frequency of doses, which in turn produces a pattern of addiction, and financial and social deterioration, that is hard to escape (Australian Institute of Health and Welfare, 2014; Commonwealth of Australia, 2015; National Institute on Drug Abuse, 2013).

The adverse health effects of methamphetamine include psychosis, severe depression, suicidal ideation, aggression, delusions, sleep deprivation, decrease in weight and appetite, sores from picking, infections and sepsis (Hall et al., 2009; Yu et al., 2015). However, the impact of methamphetamine is not limited to just the user. Often it is the family/social group and the wider community, such as emergency services, that feel the impact of methamphetamine use (Degenhardt et al., 2014). In this respect, it is timely to explore the impact methamphetamines has on EDs, in particular, the pattern and features of presentations to EDs. Previous Australian studies on methamphetamine-related presentations to EDs were conducted in one ED only and analysed over a short time frame (Bunting et al., 2007). This study analysed methamphetamine-related injury presentations across participating EDs in QLD, over a thirteen-year period.

5.2.3. Method

5.2.3.1. Design

A retrospective observational study was undertaken using Queensland Injury Surveillance Unit (QISU) data. QISU collects injury surveillance data from a representative sample of metropolitan, regional, and rural QLD hospital EDs. Not all hospitals participate in QISU data collection and participating hospitals have varied over time; (28 hospitals have participated across 7 health services with approximately 16 hospitals participating at any given time). QISU data are estimated to represent 20% of adult ED injury attendances (Queensland Injury Surveillance Unit [QISU], 2009). The STROBE check list was used to report the results of this study. Ethical approval was gained from the University of New England Human Research Ethics Committee (HE16-232, appendix L).

5.2.3.2. Setting

Queensland has a population of 4,883,739 in 2016 (Australian Bureau of Statistics [ABS], 2017). Queensland covers approximately 1.85 million km² (Australian Bureau

of Statistics, 2004), with over 50% of the population distributed along the coast line in urban areas and concentrated in Gold Coast and Brisbane regions (Queensland Government Statistician's Office, 2016).

5.2.3.3. Data collection

QISU collects level 2 National Data Standards for Injury Surveillance (NDS-IS) injury data. Not every injury case is captured at participating EDs. Data items include routine ED data: demographics (age, sex, ethnicity); service delivery (date, time, mode of separation, and triage category), and diagnosis code (ICD 9 or 10AM [Australian Modification]); as well as injury surveillance coded data: e.g. nature of injury, location when injured and intent. The triage text narrative describing the reason for presentation is also included and allows further descriptive analysis to identify the following; drugs used, police/ ambulance involvement. During the study period (May 2005-December 2017) QISU data collected 507,473 documented injury presentations through participating EDs. Of these, 571 presentations were identified as being related to stimulant use. Ages of participants included in the study ranged from 12-60 years. Cases under 12 years of age were excluded as stimulant use was more likely to be by prescription than abuse. Cases involving methamphetamine use were identified within the QISU database by searching for relevant diagnostic codes and text mining (including lay terms) of the triage narrative. This data set does not include all EDS in QLD and in particular is deficient in urban adult data (Table 5-1).

Table 5-1 Table of participating hospitals from QLD over 13 year period

Participating Hospitals	Year each hospital participated												
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Rural/Remote Hospitals													
Capricorn Coast Hospital	x	x	x	x	y	y	y	y	y	y	y	y	y
Dysart Hospital	y	y	y	y	y	y	y	y	y	y	y	y	y
Sarina Hospital	y	y	y	y	y	y	y	y	y	y	y	y	y
Clermont Hospital	y	y	y	y	y	y	y	y	y	y	y	y	y
Cherbourg Hospital	x	x	x	x	y	y	y	y	y	y	y	y	y
Collinsville Hospital	x	x	x	x	y	y	y	y	y	y	y	y	y
Hughenden Hospital	x	x	x	x	x	y	y	y	y	y	y	x	x
District Hospitals													
Innisfail Hospital	x	x	x	x	y	y	y	y	y	y	y	x	x
Mareeba hospital	y	y	y	x	y	x	x	x	x	x	x	x	x
Warwick Hospital	x	x	x	y	y	y	y	x	y	y	y	y	y
Moranbah Hospital	y	y	y	y	y	y	y	y	y	y	y	y	y
Proserpine Hospital	y	y	y	y	y	y	y	y	y	x	y	x	x
Mount Isa Hospital	y	y	y	y	y	y	y	y	y	y	y	y	y
Maryborough Hospital	x	x	x	x	y	y	y	y	y	y	y	y	y

Y = participated in that year, X = did not participate

Table 5-1 continued

Participating Hospitals	Year each hospital participated													
Urban														
Bundaberg Hospital	x	x	x	x	x	y	y	y	y	y	y	y	y	y
Gold Coast Hospital	x	x	y	y	y	y	x	x	x	x	x	x	x	x
Mackay Hospital	y	y	y	y	y	y	y	y	y	y	y	y	y	x
Mater Mackay Hospital	y	y	y	y	y	y	y	y	y	y	y	y	y	y
Mater Children's Hospital	y	y	y	y	y	y	y	y	y	y	y	x	x	x
Logan Hospital	y	y	x	x	y	x	x	x	x	x	x	x	x	y
Lady Cilento Hospital	x	x	x	x	x	x	x	x	x	y	x	x	x	x
Princess Alexandra Hospital	y	y	y	x	x	x	x	x	x	x	x	x	x	x
Queen Elizabeth II Hospital	y	y	y	y	y	y	x	x	x	x	x	x	x	x
Redland Hospital	y	y	y	y	x	x	x	x	x	x	x	x	x	x
Royal Brisbane and Womens Hospital	x	x	x	x	x	x	y	y	y	y	y	y	y	y
Royal Childrens Hospital	y	y	y	y	y	y	y	y	y	y	x	x	x	x
Townsville Hospital	y	y	y	y	y	y	y	y	y	y	y	y	y	x

5.2.3.4. Data Analysis

Prior to analysis, several variables were recoded into a numeric format for statistical analysis. Indigenous status was recoded into two categories with terms coded as Aboriginal not Torres Strait Islander (TSI), TSI not Aboriginal, Aboriginal and TSI combined as Indigenous = 0; and terms coded as not-indigenous = 1. Drug type was recoded into two categories. 'Ice', 'meth', 'methamphetamine', 'dextromethamphetamine' and 'methamphetamine' were coded together under methamphetamine = 1; amphetamine, speed, MDMA, ecstasy and all other terms (dexamphetamine, dextroamphetamine,) were recoded together under other stimulants = 0. Speed is increasingly being referred to as the powdered form of methamphetamine, however in previous years it was thought to be the powdered form of amphetamine. As the study cannot determine if speed was amphetamine or methamphetamine it has been placed in the other stimulant group. In addition, dextroamphetamine, and dexamphetamine are sometimes prescribed for the treatment of attention deficit hyperactivity disorder (ADHD), the study is unable to identify if the presentations related to these drugs were associated with prescribed or illegally obtained medication. Mode of separation was recoded into three categories, as a result these were included in the other stimulant group. Admission and transferred were coded as admission = 1. Discharge was coded as discharge = 2. Did not wait, unspecified and left after treatment commenced were coded together as other = 3. Age group categories were recoded to five-year intervals to allow for standardised analysis, except for the 12-14 age group. Injury intent and nature of injury categories were collapsed down for statistical purposes. Injury intent; 'intent not specified', 'other specified', and 'other' coded together as other = 1, 'sexual assault', 'unspecified assault' and 'maltreatment by spouse or partner' coded together under assault = 2; and accident, intentional self-harm, undetermined remained the same (accident = 3; intentional self-harm = 4, undetermined = 5). Nature of injury; asphyxiation and poisoning remaining the same (asphyxiation = 1, poisoning/toxic effect = 2); all fractures were coded together under fracture = 5; all open wounds were coded together under open wound = 4; all other terms coded together under other = 5. Quantitative data were analysed using SPSS version 24 (IBM SPSS Inc., Armonk, NY, USA). Summary univariate statistics (means, percentages, standard deviation and confidence intervals where possible) were used to describe demographic variables

(age, sex, and ethnicity), service delivery (date, time, mode of separation and triage), and mechanism and nature of injury variables. Bi-variant analysis was used to describe the relationship between drug type and demographic variables, service delivery variables, and mechanism and nature of injury variables. Triage description free text for methamphetamine-related ED presentations was searched to identify key terms in the text to compare behaviour, psychiatric complaints, psychosis, brought in by ambulance, and brought in or accompanied by Queensland police.

The relationship between drug type (methamphetamine $n = 249$ and other stimulants $n = 322$), age, gender, ethnicity, triage and year was assessed using chi-square test, z tests and ANOVA with Tukeys post hoc testing. Z tests were conducted to compare population proportions to determine if there was a significant difference. A p value of <0.05 was considered statistically significant.

5.2.4. Results

5.2.4.1. Results: Methamphetamine-related documented injury presentations compared to all other documented injury-related presentations 2005-2017

% ED presentations

A total of 250 documented injury presentations to EDs in QLD between 2005 and 2017 were related to methamphetamine (Table 5-2). Methamphetamine-related injury presentations accounted for 0.05% ($n = 250$) of all documented injury presentations aged between 12 and 64 ($n = 458,423$) presenting to hospitals in QLD between 2005-2017. Notably, 92.8% ($n = 232$) of methamphetamine-related documented injury presentations presented in the last four years of the study. The percentages for these four years are as follows; 2014 13.2%, ($n = 33$), 2015 33.2% ($n = 83$), 2016 25.6% ($n = 64$) and 2017 20.8% ($n = 52$). Presentations increased significantly over this period, $z = 19.1$, $p < 0.05$, CI .76-.94.

Demographics

Table 5-2 shows a comparison of methamphetamine-related documented injury presentations and all other documented injury presentations between 2005-2017. The majority of methamphetamine-related documented injury presentations were aged between 20 and 34 years (62.8% $n = 157$) and were predominately male (65.2%, $n =$

163). For all other documented injury presentations, a significantly lower proportion (31.4%, n = 159,595) were aged between 20 and 34 years ($z = 10.7, p < 0.05, CI .25-.37$), and these presentations were predominantly male (62.6%, n = 317,542). The most frequent age groups for methamphetamine-related documented injury presentations were 20-24 years (22.4%, n = 56) followed by 25-29 years (20.8%, n = 52). For all other documented injury presentations, the percentages for these age groups were, 12.9% 20-24 (n = 65,599), ($z = 4.5, p < 0.001, CI .05-.13$), and 10.3% 25-29 years (n = 52,492), ($z = 5.5, p < 0.001, .06-.14$).

Triage

Methamphetamine-related documented injury presentations had a higher acuity on presentation to ED. The majority (84.4%, n = 211) of methamphetamine-related documented injury presentations were triaged into categories, 1 (resuscitation 2.8%, n = 7), 2 (emergency 28.1%, n = 70) and 3 (urgent 53.6%, n = 134). All other documented injury presentations were predominantly (82.2%, n = 417,298) triaged into category 3 (urgent 27.8%, n = 141,236) and 4 (semi-urgent 54.4%, n = 276,062). A Z tests for methamphetamine-related documented injury presentations triaged categories 1, 2 and 3 compared with other documented injury presentations showed methamphetamine-related presentations were significantly higher in acuity than all other injury presentations ($z = 16.2, p < 0.05, CI = .43-.55$).

Mode of separation

A greater proportion of methamphetamine-related documented injury presentations (31.6%, n = 79) were admitted to hospital when compared with other documented injury presentations (14.6%, n = 74,225), and when these admission rates were compared using a z-test, this was considered statistically significant ($z = 7.6, p < .0001, CI = .12-.21$). The majority of all other documented injury presentations (82.9%, n = 415,659) and methamphetamine-related documented injury presentations (60.8%, n = 152) were discharged following treatment.

Table 5-2 Comparison methamphetamines-related injury presentations to all other injury-related ED presentations

		Methamphetamine (250) n (% of methamphetamine-related)	Other presentations n = 507, 463 (% of all presentations)
Gender	Female	87 (34.8)	189,798 (37.4)
	Male	163 (65.2)	317,542 (62.6)
	unspecified	-	133 (0.03)
Triage % (n=)	1-immediate	7 (2.8)	4750 (0.9)
	2- emergency (10minutes)	70 (28)	34,553 (6.8)
	3- urgent (30 minutes)	134 (53.6)	141,236 (27.8)
	4- semi-urgent (60 minutes)	37 (14.8)	276,062 (54.4)
	5- non-urgent (120 minutes)	2 (0.8)	50,129 (9.9)
	unspecified	0	734 (0.1)
Mode of separation	Admitted	79 (31.6)	74,225 (14.6)
	Discharged	152 (60.8)	415,659 (81.9)
	Other	19 (7.6)	17,589 (3.5)
Drug by age group	12-14	4 (1.6)	65,117 (12.8)
	15-19	34 (13.6)	72,805 (14.3)
	20-24	56 (22.4)	65,599 (12.9)
	25-29	52 (20.8)	52,492 (10.3)
	30-34	49 (19.6)	41,504 (8.2)
	35-39	26 (10.4)	36,951 (7.3)
	40-44	17 (6.8)	33,915 (6.7)
	45-49	7 (2.8)	28,998 (5.7)
	50-54	2 (0.8)	24,990 (4.9)
	55-59	1 (0.4)	20,265 (4)
	60-64	2 (0.8)	15,787 (3.1)

Table 5-2 continued

		Methamphetamine (250) n (% of methamphetamine-related)	Other presentations n = 507, 463 (% of all presentations)
Year			
	2005	-	21,075 (4.1)
	2006	-	23,394 (4.6)
	2007	-	22,255 (4.3)
	2008	7 (2.8)	32,241 (6.3)
	2009	-	37,094 (7.3)
	2010	2 (0.8)	39,146 (7.7)
	2011	1 (0.4)	35,950 (7.1)
	2012	1 (0.4)	41,019 (8.1)
	2013	7 (2.8)	46,900 (9.2)
	2014	33 (13.2)	56,358 (11.1)
	2015	83 (33.2)	61,871 (12.2)
	2016	64 (25.6)	48,269 (9.5)
	2017	52 (20.8)	41,901 (8.3)

5.2.4.2. Results: Methamphetamine compared to other stimulants 2005-2017

% ED presentations

A total of 564 presentations to EDs related to amphetamine-type stimulants were identified between 2005 and 2017. Table- 5-3 shows a comparison of methamphetamine-related documented injury presentations (43.3%, n = 250) to other stimulant-related documented injury presentations, which were significantly higher (55.7%, n = 314) between 2005 and 2017 ($z = 4.2$ $p < 0.0001$, CI .06-.18). Of the other stimulant-related documented injury presentations, 217 were related to amphetamine (69.1%), and 97 were related to 3,4-methylenedioxymethamphetamine (MDMA) (30.9%).

Drug type by year

Figure 5-1 shows the number of stimulant-related documented injury presentations by year and type. The total number of stimulant-related documented injury presentations increased over the 13-year period with one presentation in 2005 and 119 (21.1%) presentations in 2017. Prior to 2014, only 18 (7.2%) presentations to ED were related to methamphetamines, however this increased from 2014 with 92.8% (n = 232) of all methamphetamine related presentations between 2014-2017. A comparison was conducted using a z test which showed a statistically significant increase in presentations over this time period ($z = 19.1$, $p < 0.05$, CI .76-.94.). Presentations in 2015 (n = 117) were predominantly methamphetamine-related (70.9%, n = 83) and 29.1% (n = 34) were related to other stimulants. However, the number and location of hospitals participating each year varied which will impact the results and therefore these figures should be interpreted with caution.

Table 5-3 Comparison of documented Methamphetamine-related injury presentations to other documented stimulant-related injury presentations over 13-years in Queensland

		All stimulant-related (564) n (%)	Methamphetamine (250) n (% of methamphetamine-related)	Other stimulant drugs (314) n (% of other drug-related)	Chi Square P value
Gender	Female	212 (37.6)	87 (34.8)	125 (39.8)	0.222
	Male	352 (62.4)	163 (65.2)	189 (60.2)	
Age M	{SD}	27.12 {8.866}	28.44 {8.853}	26.09 {8.707}	0.001
	{CI}	{26.39-27.85}	{27.34-29.55}	{25.13-27.04}	
	Female M {SD}	24.98 {8.756}	26.54 {8.975}	23.87 {8.407}	
	{CI}	{23.80-26.17}	{24.63-28.45}	{22.39-25.34}	
	Male M {SD}	28.41 {8.693}	29.46 {8.845}	27.53 {8.614}	
	{CI}	{27.50-29.32}	{28.12-30.80}	{26.32-28.75}	
Ethnicity	Non-indigenous	479 (84.9)	198 (79.2)	281 (89.5)	0.001
	Indigenous	85 (15.1)	52 (20.8)	33 (10.5)	
Triage % (n=)					0.109
	1-immediate	21 (3.7)	7 (2.8)	14 (4.5)	0.044
	2- emergency (10minutes)	149 (26.4)	70 (28)	79 (25.2)	
	3- urgent (30 minutes)	281 (49.8)	134 (53.6)	147 (46.8)	
	4- semi-urgent (60 minutes)	109 (19.3)	37 (14.8)	72 (22.9)	
	5- non-urgent (120 minutes)	4 (0.7)	2 (0.8)	2 (0.6)	
Day % (n=)	Monday	93 (16.5)	46 (18.4)	47 (15)	0.210
	Tuesday	44 (7.8)	24 (9.6)	20 (6.4)	
	Wednesday	52 (9.2)	28 (11.2)	24 (7.6)	
	Thursday	64 (11.3)	32 (12.8)	32 (10.2)	
	Friday	70 (12.4)	32 (12.8)	38 (12.1)	
	Saturday	103 (18.3)	42 (16.8)	61 (19.4)	
	Sunday	138 (24.5)	46 (18.4)	92 (29.3)	
	Mode of separation				
	Admitted	160 (28.4)	79 (31.6)	81 (25.8)	0.210
	Discharged	352 (62.4)	152 (60.8)	200 (63.7)	
	Other	52 (9.2)	19 (7.6)	33 (10.5)	

Table 5-3 continued

		All stimulant-related (564) n (%)	Methamphetamine (250) n (% of methamphetamine-related)	Other stimulant drugs (314) n (% of other drug-related)	Chi Square P value
Drug by age group	12-14	12 (2.1)	4 (1.6)	8 (2.5)	0.001
	15-19	112 (19.6)	34 (13.6)	78 (24.8)	
	20-24	142 (25.2)	56 (22.4)	86 (27.4)	
	25-29	97 (17.2)	52 (20.8)	45 (14.3)	
	30-34	92 (16.3)	49 (19.6)	43 (13.7)	
	35-39	52 (9.2)	26 (10.4)	26 (8.3)	
	40-44	32 (5.7)	17 (6.8)	15 (4.8)	
	45-59	16 (2.8)	7 (2.8)	9 (2.9)	
	50-54	6 (1.1)	2 (0.8)	4 (1.3)	
	55-59	1 (0.2)	1 (0.4)	0	
	60-64	2 (0.4)	2 (0.8)	0	
Injury intent	Accident	231 (41)	106 (42.4)	125 (39.8)	0.879
	Assault	32 (5.7)	15 (6)	17 (5.4)	
	Intentional self-harm	111 (19.7)	44 (17.6)	67 (21.3)	
	Other	148 (26.2)	66 (26.4)	82 (26.1)	
	Undetermined	42 (7.4)	19 (7.6)	23 (7.3)	
Nature of Injury	Asphyxiation	7 (1.2)	4 (1.6)	3 (0.9)	0.828
	fracture	19 (3.4)	8 (3.2)	11 (3.5)	
	Open wound	42 (7.4)	18 (7.2)	24 (7.6)	
	Other	92 (16.3)	45 (18)	47 (15)	
	Poisoning/toxic effect	404 (71.6)	175 (70)	229 (73)	
Body region	Arm	19 (3.4)	13 (5.2)	6 (1.9)	
	Abdomen	4 (0.7)	1 (0.4)	3 (1)	
	Chest	7 (1.2)	4 (1.6)	3 (1)	
	Face	11 (2)	5 (2)	6 (1.9)	
	Foot	17 (3)	5 (2)	12 (3.8)	
	Hand	9 (1.6)	5 (2)	4 (1.3)	
	Head	28 (5)	9 (3.6)	19 (6.1)	
	Leg	5 (0.9)	3 (1.2)	2 (0.6)	
	pelvis	7 (1.2)	4 (1.6)	3 (1)	
	Shoulder	4 (0.7)	2 (0.8)	2 (0.6)	
	Other	453 (80.3)	199 (79.6)	254 (80.9)	

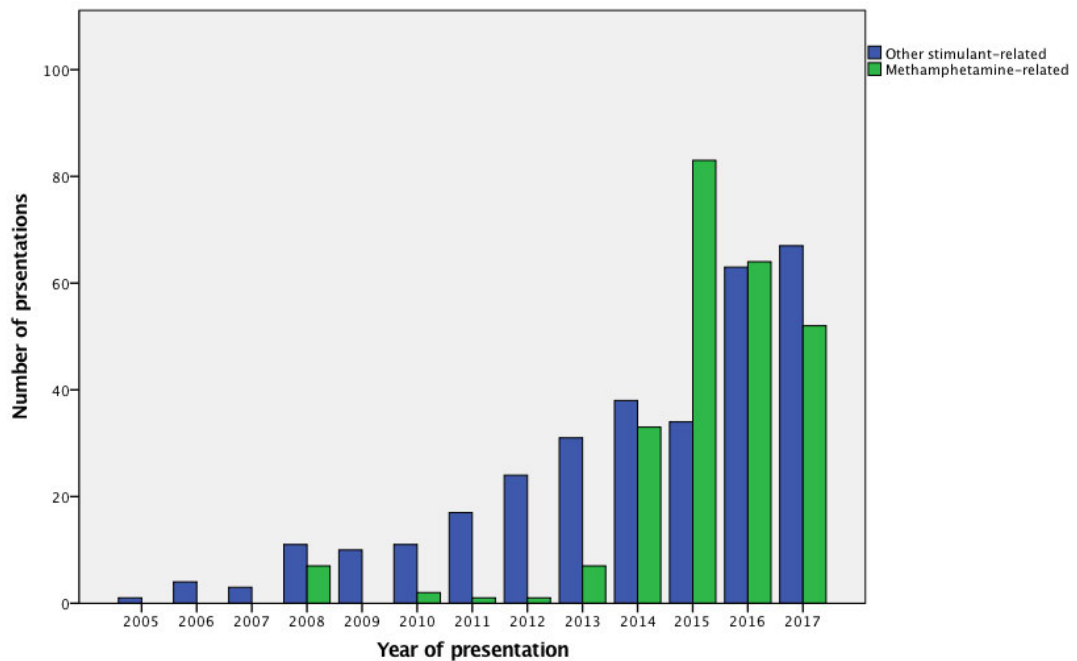


Figure 5-1 Methamphetamine-related presentations by year in Queensland 2005-2017

Demographics

The demographics of methamphetamine-related documented injury presentations are presented in the table 5-3. A one-way ANOVA with tukey’s post hoc testing conducted to compare the mean age between stimulants found a significant difference, with a higher mean age (28.44 years) for methamphetamine-related injury presentations compared with other stimulant-related presentations (26.09 years) ($F = 10.16, p < 0.001$). Significantly more males (65.2%, $n = 163$) than females accounted for (34.8%, $n = 87$), presented to ED with a methamphetamine-related injury ($z = 6.8, p < .0001, CI .21-.39$). There was no statistical difference between male methamphetamine-related documented injury presentations (65.2%, $n = 163$) and other male stimulant-related documented injury presentations (60.2%, $n = 189$) ($z = 1.2, p > 0.05, CI .03-.13$). Female methamphetamine-related documented injury presentations (34.8%, $n = 87$) and other female other stimulant-related documented injury presentations (39.8%, $n = 125$) was not statistically significant ($z = 1.2, p > 0.05, CI .30-.13$).

The most frequent age group for methamphetamine-related documented injury presentations was bimodal, (20-24 [22.5%, $n = 56$] and 25-29 [20.8%, $n = 52$]). Ethnicity for methamphetamine-related documented injury presentations were predominantly non-indigenous (79.2%, $n = 198$). However, this was significantly

lower than other stimulant-related documented injury presentations (89.5%, n = 28) (χ^2 (1, n = 564) = 11.5, p < 0.001).

Triage category

Triage category is a measure of the acuity of the presentation. For methamphetamine-related documented injury presentations 84.4% (n = 211) were triaged as category 1 - immediate (2.8%, n = 7), category 2 - emergency treat within 10 minutes (28 %, n = 70), or category 3 - urgent treat within 30mins (53.6%, n = 134) (Table 3). This was proportionately higher than other stimulant-related documented injury presenters with 77.1% (n = 240) triaged to category 1 (4.5% n = 14), category 2 (25.2%, n = 79) or category 3 (46.8%, n = 147). When looking at the nature of injury by triage code for methamphetamine-related documented injury presentations, the most frequently recorded nature of injury was poisoning/toxic effect (triage category 1 n = 7, 100%; triage category 2 n = 52, 74.3%; triage category 3 n = 92, 68.7%), indicating that high triage acuity in this group was associated with intoxication alone.

Service delivery

The day of the week for presentations shows a greater proportion (53.6%) of methamphetamine-related documented injury presentations presented either on a Saturday (16.8%, n = 42), Sunday (18.4%, n = 46), or a Monday (18.4%, n = 46) compared with other stimulant-related documented injury presentations with 63.7% presenting on either Saturday (19.4%, n = 61), Sunday (29.3%, n = 92) or Monday (15%, n = 47). A comparison of stimulant type and day of presentation using chi square was considered statistically (χ^2 (6, N = 564) = 12.9, p < 0.05).

Admission rates (table 5-3) for methamphetamine-related documented injury presentations was higher (31.6%, n = 79) than the admission rate for other stimulant-related documented injury presentations (25.8%, n = 81), but the difference was not significant.

Police flag and Assault flag

For methamphetamine-related documented injury presentations, police flag (police were involved) was identified in 37 cases (14.8%). This was higher than other stimulant-related documented injury presentations with 6.4% (n = 20) recorded as police flag, (χ^2 (1, N = 564) = 10.9, p < .001). Of the methamphetamine-related

documented injury presentations that had a police flag, 70.3% (n = 26) were male while only 29.7% (n = 11) were female. This was considered statistically significant (z = 9.1, p < 0.05, CI .31-.49).

Assault was identified as a contributing factor for 8.4% (n = 21) of methamphetamine-related injury presentations and 5.4% (n = 17) of other stimulant-related documented injury presentations.

Free triage text

Triage text for methamphetamine-related documented injury presentations was analysed and the following themes were identified; behavioural problems, brought in by ambulance, hallucinations and psychiatric issues. Behavioural problems were identified in 29.2% (n = 73) of all the triage descriptions for methamphetamine-related documented injury presentations and agitated/aggressive/violent behaviour was identified in 15.6% (n = 39) of methamphetamine-related documented injury presentations. Overall, 18% (n = 45) of methamphetamine-related documented injury presentations were brought in by the ambulance service. Hallucinations was identified in 6.4% (n = 16) of presentations related to methamphetamine and psychiatric issues were identified in 19.2% (n = 48). Psychiatric issues were related to suicidal ideation (n = 17), self-harm (n = 7), paranoia (n = 10), schizophrenia (n = 5) and mental health (n = 8).

5.2.5. Discussion

The results highlight several important issues. An increase in the number of presentations related to methamphetamine occurred in the later years of this study, especially in 2014 and 2015. Methamphetamine-related documented injury presentations required police presence more often than other stimulant-related documented injury presentations, and methamphetamine-related documented injury presentations were allocated higher triage categories when compared to all documented injury related ED presentations. In addition, 20.3% of methamphetamine-related documented injury presentations presented with behaviour that was agitated, violent, or aggressive.

Methamphetamine-related documented injury presentations increased steadily from 0 presentations in 2005, to 6 in 2013, however a dramatic increase in presentations in 2014 (n = 33) and 2015 (n = 86) was noted. Interestingly, NSW saw a similar increase

in methamphetamine-related emergency department presentations, with 510 presentations in 2009-10, 2,521 in 2013-14, 3,733 in 2014-15, and 4,903 in 2015-16 (Center for Epidemiology and Evidence, 2017). Previous research (Bunting et al., 2007; Cloutier et al., 2013; Hendrickson et al., 2010) analysed ED presentations of methamphetamine to Urban facilities. Therefore, this paper suggests that in addition to rising presentation rates in urban settings, methamphetamine related presentations are increasing in rural areas and resource allocation and policy needs to reflect this finding.

Previous reports of the proportion of presenters 'brought in by police' and 'brought in by ambulance' have varied significantly by study location (site and country) and year. Three previous studies reported on 'brought in by police': Richard et al.'s (1999) study reported 12% (America, urban location); Pasic et al.'s (2007) study reported 57% (America, urban location) and Bunting et al.'s (2007) study reported 24% (Australia, urban location). One previous study focusing on methamphetamine-related presentations reported on brought in by ambulance, with Richard et al. (1999) reporting 69% arrived by ambulance. These results are considerably higher than the results for this study. Bunting et al.'s (2007) study focused on toxicological presentation (overdose) and the nature of that particular presentation may explain the reason for the higher result for brought in by ambulance. It is likely that the rate of police and ambulance involvement is determined by the level of aggression/behavioural disturbance exhibited as well as services availability which is likely to vary by location. As the presentations increased in the final years of this study, the percentage of presentations requiring police involvement also increased. Of the 37 (14.8%) methamphetamine-related presentations requiring police/police flag, five presented in 2014, 11 presented in 2015, 11 presented in 2016 and only 8 in 2017.

QLD hospitals use the Australian triage scale which categorises all presentations to ED for the purpose of prioritising and identifying the most at risk patients ranked from 1 (resuscitation/immediate) to 5 (non-urgent/within 120 minutes) (Fitzgerald, Jelinek, Scott, & Gerdtz, 2010). This study found a high proportion (84.4%) of all ED methamphetamine-related documented injury presentations were allocated triage categories 1, 2 or 3, requiring them to be seen immediately or within 30-minutes of arrival to ED. This was higher than all presentations to hospitals across QLD (2016-2017), with 50% triaged to categories 1, 2 and 3 (Australian Institute of Health and

Welfare, 2017a) and higher than the results for all other documented injury related presentations recorded in this study (35.5%). There is limited data in previous research conducted on methamphetamine-related ED presentations to compare with the results of this study. Further research is needed to consider triage score and the impact it potentially has on the workload, staff and resource allocation.

Adverse behaviour recorded for methamphetamine-related documented injury presentations in this study (29.2%) was lower than in previous research. An Australian study (Bunting et al., 2007) recorded 41% of presentations with behaviour that is violent, aggressive or agitated, while 66% was recorded in a study conducted in Hawaii (Toles et al., 2006). It was unclear, however, if behaviour for those studies was recorded at triage or during the time spent in ED. This study's findings relied on clinicians recording behaviour in the free text (triage notes) and did not include data recorded in the progress notes. The QISU data provides a five-minute snap shot of the information collected at the triage desk about each presentation and there is no standardised system for reporting behaviour/ aggression.

5.2.6. Limitations

There are a number of limitations in this study that need to be considered when interpreting and utilizing the results. The results report data collected by QISU, which represents EDs in different areas in one Australian state (Queensland). However not all hospitals in QLD participated and adult urban data was deficient. As a result, the outcomes of this study may not be representative of QLD metropolitan hospitals, other Australian states and territories, or other countries.

There is no standard method to identify drug use or to link drug use with an ED presentation (Cloutier et al., 2013; Jones et al., 2018). QISU data was initially designed to collect Injury surveillance data for the purpose of injury prevention strategies. Drug use identification at triage is difficult, relying on past history, collateral information or patient disclosure. Individual hospitals policy on using toxicology and urine drug screen on unconscious patients to determine drug use was not collected as part of this study, this may result in underreported stimulant-related documented injury presentations. As a result, some methamphetamine-related injury presentations may have been missed. Identification of stimulant use may have varied over time with the increased awareness of clinicians to stimulant use in the community. This methodology use will have missed presentations where the triage

text did not contain terms related to stimulant drug use or the diagnosis was not coded as stimulant-related. In addition, cocaine was not included in the data collection, which may have impacted on the number of stimulant-related presentations identified and data gathered for 'all other documented injury-related presentations' was not collected for each individual case, rather as overall statistics. As a result, the comparison of methamphetamine-related documented injuries aged 12-65 to all other documented injury-related presentations 0-65+, unless indicated otherwise.

It is possible that individual patients presented multiple times during the study. The number of presentations may not reflect the number of individuals affected by stimulant use, though it will reflect the burden of care placed on the emergency department. More detailed analysis to examine the evolution of patient presentations over time in terms of frequency and nature of presentation may assist in development of effective interventions that break the cycle of dependency and destruction.

5.2.7. Conclusion

This study reports patterns and features of stimulant-related documented injury presentations to selected Queensland EDs over a thirteen-year period from 2005 to 2017. The sudden increase of methamphetamine-related documented injury presentations in the final years of this study indicates a rising potential for an increase in the number of presentations in the future. The high acuity of methamphetamine-related documented injury presentations, the need for additional emergency services and adverse behaviour indicates these presentations require more resources (staff, time and interventions) than other ED documented injury presentations. Further research is required to understand the opportunities for ED/ emergency services based interventions.

Reducing the use of illicit drugs and the associated adverse health outcomes is a public health issue, and methamphetamine in particular is a concern due to the rapid increase in use. Prevention in the form of education to limit new users and greater access to treatment facilities and options for existing users is required to reduce the number of current users and prevent further harms and impacts on health. In addition, there is a need for accessible and timely data collection relating to substance-related presentations to EDs to assist in developing services that respond to community need.

5.2.8. Relevance to clinical practice

Methamphetamine-related documented injury presentations to ED are higher acuity and require more emergency resources (ambulance, police, and nursing staff) than other stimulant-type documented injury presentations to ED. This is likely to have an impact on the emergency services and resources available across QLD, in particular in rural areas, where services and staff are often limited. The results of this study suggest presentations in rural areas are increasing.

End of manuscript

5.3. Summary

This chapter presented the results from phase one *stage one*; QISU data on methamphetamine-related injury presentations to ED in QLD. The manuscript raised several key points in the conclusion; methamphetamine-related injury presentations require more emergency services (police, paramedics and emergency department staff) than other stimulant; methamphetamine-related injury presentations have a higher acuity than other stimulant-related presentations; methamphetamine-related injury presentations require more resources than other injury related presentations. Phase two of this study will explore the key findings highlighted in phase one. These include; methamphetamine-related injury presentations often require police and ambulance staff to transport them into ED and presentations are increasing in frequency.

The following chapter (six) will present the results of data gathered by Turning point (Ambo-AODstats) from Victorian ambulance services on crystal methamphetamine-related ambulance attendances. The purpose of this stage of phase one is to determine if the results present in this chapter are isolated to the state of QLD, ambulance attendances related to methamphetamines are increasing, and callouts often require co-attendance between paramedics and police.

**Higher Degree Research Thesis by Publication
University of New England**

STATEMENT OF ORIGINALITY

We, the Research Master/PhD candidate and the candidate's Principal Supervisor, certify that the following text, figures and diagrams are the candidate's original work.

Type of work	Page number/s
Published Manuscript	97 - 118

Name of Candidate: Rikki Jones

Name/title of Principal Supervisor: Professor Kim Usher



Candidate

13/10/2020

Date



Principal Supervisor

28/10/2020

Date

**Higher Degree Research Thesis by Publication
University of New England**

STATEMENT OF AUTHORS' CONTRIBUTION

(To appear at the end of each thesis chapter submitted as an article/paper)

We, the Research Master/PhD candidate and the candidate's Principal Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated in the *Statement of Originality*.

	Author's Name (please print clearly)	% of contribution
Candidate	Rikki Jones	55%
Other Authors	Professor Kim Usher	15%
	Dr Cindy Woods	20%
	Ruth Barker	10%

Name of Candidate: Rikki Jones

Name/title of Principal Supervisor: Professor Kim Usher



Candidate

3/07/2020

Date



Principal Supervisor

28/10/2020

Date

Chapter 6. Patterns of methamphetamine-related callouts by VIC ambulance Service.

Title of Article: Crystal methamphetamine's impact on frontline emergency services in Victoria, Australia

Authors:

Rikki Jones (BN, RN)

Professor Kim Usher AM, (RN, RPN, A/DipNEd, BA, BHSc, MNSt, PhD, FACN, FACMHN)

Cindy Woods (BEd, PhD)

Manuscript submitted to: Australasian Emergency Care

Status of Manuscript: Published 17 August 2019

Submission dates: Accepted 30 July

Citation information: Jones, R., Usher, K. & Woods, C. (2019). Crystal methamphetamine's impact on frontline emergency services in Victoria, Australia. *Australasian Emergency Care*. <https://doi.org/10.1016/j.auec.2019.07.004>.

Signed:



Candidate



Principal Supervisor

6.1. Introduction

This chapter will present a discussion of the results from phase one *stage two*, the quantitative data collected from Turning point Ambo project (Ambo-AODstats) on crystallised methamphetamine-related callout events in Victoria (VIC) from 2011-12 and 2016-17. This is presented as a published manuscript, using the latest word document of the manuscript prior to publication. The data was selected as it was freely available in the public domain. The manuscript will be followed by a summary of the chapter.

Key findings from phase one *stage one* included, methamphetamine-related injury presentations require more emergency services (police, paramedics and emergency department staff) than other stimulant; methamphetamine-related injury presentations have a higher acuity than other stimulant-related presentations; methamphetamine-related injury presentations require more resources than other injury related presentations.

6.2. Manuscript: Crystal methamphetamines impact on frontline emergency services in Victoria, Australia

Abstract

Background: The use of crystal methamphetamine is a growing problem in Australia. Methamphetamine users can suffer adverse physical health effects, psychotic symptoms and methamphetamine-related aggressive behaviour. The increasing use and related harms of crystal methamphetamine is presenting serious problems for frontline emergency responders.

Methods: A population-based retrospective analysis was undertaken of data collected by Ambulance Victoria describing crystal methamphetamine-related events attended by ambulance across Victoria over six financial years from 2011/12 to 2016/17.

Results: Methamphetamine-related events attended by Victoria Ambulance paramedics significantly increased from 2011/12 to 2016/17, particularly in regional Victoria. The most frequent age group requiring ambulance attendance is 25-39 years.

The proportion of events requiring police co-attendance significantly increased, as did transportation to emergency department/hospital.

Conclusion: The substantial increases in methamphetamine-related events attended by ambulance indicate the need for increased resources and support for paramedics, particularly in regional/rural areas. The large increase among young people aged 15-24 years indicates a need for policy action on prevention, harm reduction and expanded treatment services to reduce health problems and methamphetamine-related harms. **Key words:** Ambulance; Australia; 'Ice'; Illicit drugs; Methamphetamine; Paramedic

6.2.1. Introduction

Methamphetamine use and related harms are a global health issue, and widely recognised as a serious and complex problem in Australia (Commonwealth of Australia, 2015). In 2016 there was an estimated 34.2 million people using amphetamines worldwide (United Nations Office on Drugs and Crime [UNODC], 2018), and global production and distribution of methamphetamines also increasing with seizures of ice at the Australian boarder increasing in 2016 almost 60 times compared to the number of seizures recorded in 2014 (Commonwealth of Australia, 2015). Worldwide in 2010, illicit drug use contributed to 0.8% of the total burden of disease and in 2011 it contributed to 1.8% of the Australian burden of disease and injury (Australian Institute of Health and Welfare, 2016b; Institute for Health Metrics and Evaluation, 2016). Deaths attributed to drug use was estimated in 2014 to be at 450,00 people worldwide and 1 in 8 people who inject drugs was reported to be living with HIV(United Nations Office on Drugs and Crime [UNODC], 2018).

Methamphetamine use contributes to mortality, disease, substantial illness, injury, violence, crime, workplace concerns and social and family disruption (Ministerial Council on Drug Strategy, 2011). According to the National Drug Strategy Household Survey (NDSHS) 2016, for Australians who use an illicit drug weekly or more often, meth/amphetamines is the most frequently used drug after cannabis (Australian Institute of Health and Welfare, 2017b).

Crystal methamphetamine, also known as 'ICE', is the main form of methamphetamine now used in Australia, and when looking at all meth/amphetamine use the proportion of ice use increased from 22% in 2010 to 57% in 2016 (Australian Institute of Health and Welfare, 2017b). 'ICE' has a higher purity than other forms of

meth/amphetamines and can be administered via smoking and injecting in addition to consumption orally (Commonwealth of Australia, 2015). Smoking or injecting increases the overall effect of 'ICE' on users potentially increasing the risk of psychological issues, and violent and aggressive behaviour (Commonwealth of Australia, 2015). Despite the increase in methamphetamine seizures at the border and the increase in 'ice' use, the overall methamphetamine use has decreased in recent years (Australian Institute of Health and Welfare, 2018).

Among Australians who had used at least one illicit substance in the last 12 months, methamphetamine was the fourth most commonly used drug (1.4%) after cannabis (10.4%), cocaine (2.5%), and ecstasy (2.2%) (Australian Institute of Health and Welfare, 2017b). In economic terms, in 2009-10, the Australian government spent approximately \$1.7 billion on illicit drug programs, with the majority spent on law enforcement (64%), and only 22% spent on treatment and 11.9% on prevention and harm reduction (Ritter et al., 2013).

A growing body of evidence is exposing the extent of the burden that methamphetamine places on frontline emergency services. Estimates of the proportion of Emergency Department (ED) attendances attributable to methamphetamine use vary but figures up to 2.3% have been reported (Jones et al., 2018). A recent literature review of methamphetamine-related ED presentations found that presentations were predominantly male, more often accompanied by police, presenting with psychosis, aggression and violence and more often seen by psychiatric services compared with other drug-related presentations (Jones et al., 2018). Little research has been undertaken on the incidence of methamphetamine-related events attended by ambulance and paramedics and co-attended by police in Australian jurisdictions. This paper presents data extracted from Ambo-AODstats of crystal methamphetamine-related events attended by Ambulance Victoria paramedics in the Melbourne metropolitan area and regional Victoria, Australia.

6.2.2. Materials & Methods

6.2.2.1. Study design

A population-based retrospective analysis was undertaken of data collected by Ambulance Victoria describing crystal methamphetamine-related events attended by ambulance across Victoria over six financial years from 2011/12 to 2016/17.

6.2.2.2. Data collection

Data were sourced from Ambo-AODstats, owned by Turning Point. Ambo-AODstats provides data on alcohol and drug-related events attended by Ambulance Victoria paramedics in Victoria, Australia. Ambulance Victoria paramedics record the details of all emergency case attendances in an electronic patient care record (ePCR), stored in the Victorian Ambulance Clinical Information System (VACIS). The data set includes information on alcohol, pharmaceutical drugs and illicit drugs. Data from Ambo-AODstats are available online from 2011/12 for both metropolitan and regional Victoria. In 2014/15 data were not collected for several months due to industrial action. Data for this period has been imputed using the average for the same period in the previous year and the following year. Data are presented annually in 20 drug-related categories including crystal methamphetamine and any illicit drug use which includes any one or more of all types of amphetamines (of which methamphetamine is a subset), cannabis, heroin, GBH, stimulants, inhalants, and hallucinogens. Drug involvement is defined as the inappropriate consumption of the drug (not an adverse reaction to prescribed drugs) which significantly contributed to the reason for ambulance attendance. Attribution of the involvement of a drug relies on paramedic clinical assessment, patient self-report, or information provided by others or available at the scene.

Data is available in frequencies, proportions and crude rates per 100,000 population using the Australian Bureau of Statistics estimated resident population data for each year. Rates have not been age standardised. Data are stratified by age group (five categories), sex, year of attendance, regions (all regions, metropolitan/regional, local government areas), type of location (outside space or public space), police co-attendance, and transport to ED/hospital. Categories with fewer than five incidences are not reported. Comparison across drug types is problematic because often multiple drug types are involved that are not mutually exclusive and thus cannot be added together.

6.2.2.3. Data analysis

Data were descriptively analysed (frequency, percent and rates per 100,000 population). Z-tests were used to examine changes over time. Bivariate analyses (z-tests to compare two sample proportions) were performed to compare crystal

methamphetamine-related events attended by ambulance and any illicit drugs-related events attended by ambulance by age, sex, metropolitan/regional, police co-attendance and transport to hospital. Statistical tests were performed using EpiTools epidemiological calculator (Sergeant, 2013).

6.2.2.4. Research ethics statement

The data used in this paper are freely available in the public domain, thus human research ethics approval was not required.

6.2.3. Results

Table 6-1 provides a summary of the methamphetamine and any illicit drugs-related events attended by ambulance in metropolitan Melbourne and regional Victoria in 2011/12 and 2016/17, and the change between these periods. The absolute numbers of methamphetamine-related events attended by ambulance increased from 768 in 2011/12 to 2,514 in 2016/17 which is an increase of over 200%, while any illicit drugs-related attendances (of which methamphetamine is a subset) doubled. The largest increase (419%) was noted in regional Victorian methamphetamine-related events attended by ambulance.

Table 6-1 Trends in absolute numbers of methamphetamine- and any illicit drugs-related events attended by ambulance from 2011/12 to 2016/17 in metropolitan and regional Victoria, Australia.

	2011/12	2016/17	Difference	% change from 2011/12	P value
Ambulance attendances					
Total no. of methamphetamine-related attendances	768	2,514	1,746	227%	< .0001
Total no. of any illicit drugs-related attendances	5,376	11,097	5,721	106%	< .0001
Metro - No. of methamphetamine-related attendances	673	2020	1347	200%	< .0001
Regional - No. of methamphetamine-related attendances	94	488	394	419%	< .0001
Metro - No. of any illicit drugs-related attendances	4604	9145	4541	99%	< .0001
Regional - No. of any illicit drugs-related attendances	766	1918	1152	150%	< .0001
Total Victorian population (million)	5.6	6.3	668,219	12%	

Note: Population data sourced from the Australian Bureau of Statistics; Denominator is number of cases for the financial year in 2011/12 and 2016/17

Figure 6-1 shows trends over time in crystal methamphetamine-related events attended by ambulance. A pronounced upward trend in attendances is evident in metropolitan Melbourne over the six-year period from 2011/12 to 2015/16, with the peak attendances occurring in 2015/16, before decreasing in slightly in 2016/17. In regional Victoria, the upward trend is not as pronounced but follows the same pattern of peaking in 2015/16 before decreasing in 2016/17.

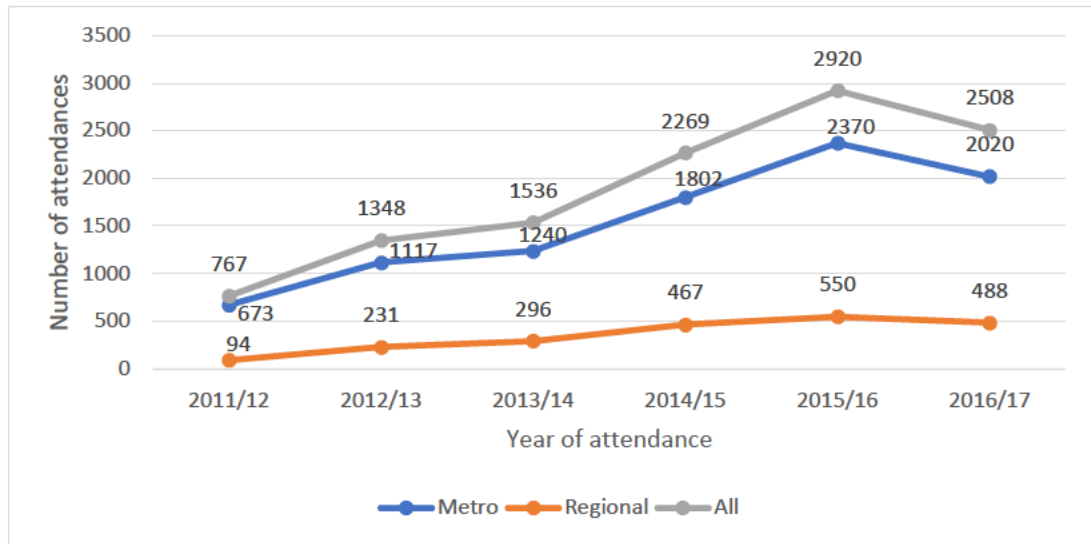


Figure 6-1 Crystal methamphetamine-related attendances by year in metropolitan Melbourne and regional Victoria – 2011/12 to 2016/17

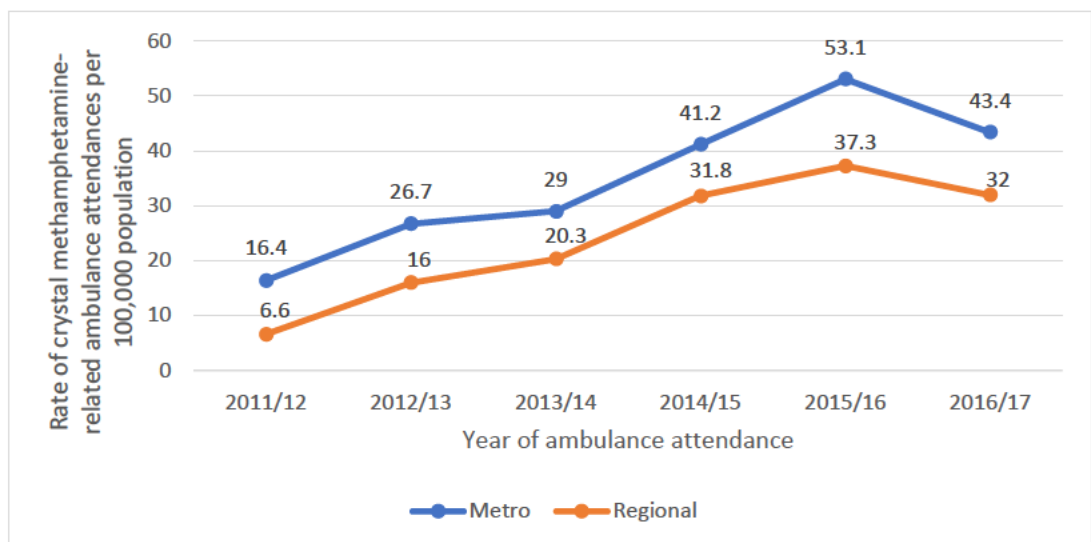


Figure 6-2 Rate of crystal methamphetamine-related attendances per 100,000 population by year in metropolitan Melbourne and regional Victoria – 2011/12 to 2016/17.

The growth in illicit drug-related events attended by ambulance, including methamphetamine, far exceeds population growth in Victoria. In metropolitan Melbourne in 2011/12, the proportion of crystal methamphetamine-related events attended by ambulance was 1.8% of all attendances, increasing to 3.2% in 2016/17. In regional Victoria the proportion was 0.8% in 2011/12, increasing to 2.5% in 2016/17. However, using rates per 100,000 population to control for a smaller regional population, Figure 6-2 shows a pronounced upward trend in both metropolitan and regional attendances from 2011/12 to 2015/16 before declining slightly in 2016/17.

Table 6-2 shows the characteristics of methamphetamine-related events attended by ambulance in 2011/12 and 2016/17. While the absolute numbers in each age group have increased, it is important to examine the proportion of people in each age group.

The proportion of 15-24 year olds has significantly reduced (halved) while the proportion of 40-64 year olds requiring ambulance attendance has significantly increased (doubled). The 25-39 year age group forms the largest proportion of methamphetamine-related events attended by ambulance in both 2011/12 and 2016/17, making up around half of all attendances.

Males form around two-thirds of all methamphetamine-related events attended by ambulance in both 2011/12 and 2016/17. The proportion of events that included police co-attendance has significantly increased from 2011/12 (21.6%) to 2016/17 (47.0%), and around 80% of all methamphetamine-related events attended by ambulance required transport to ED/hospital.

Table 6-2 Characteristics of crystal methamphetamine-related attendances in regional and metropolitan Victoria 2011/12 and 2016/17

	2011/12 N (%)	2016/17 N (%)	% change from 2011/12	P value
Age				
0-14 years	6 (0.5)	8 (0.3)	33%	< 0.05
15-24 years	329 (43.1)	584 (23.3)	77%	< 0.05
25-39 years	346 (45.3)	1337 (53.4)	297%	< 0.05
40-64 years	85 (11.1)	572 (22.8)	573%	< 0.05
65+ years	No data	No data	-	-
Male	495 (64.5)	1650 (65.6)	233%	< 0.05
Public Space	310 (41.1)	1084 (43.1)	250%	< 0.05
Outdoor Space	264 (39.1)	1023 (40.7)	287%	< 0.05
Police co-attendance	166 (21.6)	1182 (47.0)	612%	< 0.05
Transported to ED/hospital	603 (78.7)	2029 (80.7)	236%	< 0.05

6.2.4. Discussion

This is the first Australian study to provide state-wide data on methamphetamine-related events attended by ambulance across Victoria. Results indicate that there has been a rise in the overall number of methamphetamine-related events attended by ambulance, events requiring police co-attendance and an increase in the number of attendances requiring transport to ED. These increases suggest these events are increasing in acuity, complexity and are resource intensive.

Police co-attendance at EDs was reported in three other Australian studies. Bunting et al.'s (2007) study reported 24% of methamphetamine-related ED presentations required police, while Gray et al. (2007) reported 16%. The current study found that almost half (47%) of all methamphetamine-related events attended by ambulance required police co-attendance. The difference in figures arises because in the current study police co-attendance is calculated as a proportion of all methamphetamine-related events attended by ambulance, whereas the abovementioned three studies report on the proportion that present to an ED with police co-attendance.

Although the number of methamphetamine-related events attended by ambulance increased in both regional and metropolitan areas during the observation period, the largest increase occurred in regional Victoria (419%). The National Drug Household Survey reported that people in remote or very remote areas are 2.5 times more likely to use meth/amphetamines compared with those residing in major cities (Australian Institute of Health and Welfare, 2017b). Appropriate resources and prevention and treatment services are required in rural/remote areas, which generally have less services available than metropolitan areas, to ensure this increase in events can be managed.

While males aged 25-39 years remain the most frequent age group requiring ambulance attendance due to methamphetamine use, the marked increase in the number of younger people aged ≤ 24 years requiring ambulance attendance for methamphetamine-related events is a significant social and public health concern. According to Rawson et al. (2007), adolescents' brains are still maturing and methamphetamine abuse could result in psychological and neurological consequences. In addition, methamphetamine abuse among young people results in

higher levels of suicidal ideation and depressive symptoms, especially in young women (Rawson et al., 2007). During this period, a proportion of the sample aged 15-24 years would have transitioned into the next age group (25-39 years), and similarly a proportion of sample in the 25-39 year age group would have transitioned into the 40-64 year age group.

Methamphetamine-related events appear to be a significant and increasing drug-related burden on ambulance services (Kaar et al., 2015; Macgregor & Payne, 2011). In recent years, methamphetamine has become easier to obtain and the purity of the drug has increased (Lim et al., 2015). Although the latest Australian NDSHS 2016 (2017) shows a decline in recent use of methamphetamines between 2013 and 2016, Lim et al. (2015) notes that other data sources (Ecstasy and Related Drugs Reporting System [EDRS] and the Illicit Drug Reporting System [IDRS]) reveal an increase in the prevalence and frequency of recent crystal methamphetamine use. This suggests a shift from other forms of methamphetamine (powder, base) to crystal methamphetamine (Lim et al., 2015), and indicates that greater purity and a change in the administration route (oral ingestion to smoking and injection) is contributing to greater harms observed in Victoria. However, it is likely that the increased frequency of use is restricted to populations that were already using methamphetamine rather than an influx of new users (Lim et al., 2015).

Despite the NDSHS showing a decline in the use of meth/amphetamines between 2013 and 2016, a recent Australian study estimated a sharp increase in the numbers of regular and dependent methamphetamine users aged 15-24 years between 2010 and 2013, which correlates with the findings of this study (Kaar et al., 2015). With self-report surveys such as the NDSHS, the increasing stigmatisation of methamphetamines leads to fewer people willing to disclose use, resulting in an underestimation of use (Lim et al., 2015; Macgregor & Payne, 2011).

Public perceptions of methamphetamines have shifted recently and for the first time in 2016, results of the NDSHS show methamphetamine was nominated as the drug most likely to be associated with a drug problem, overtaking heroin and cannabis, the previously nominated top drugs (respectively) (Australian Institute of Health and Welfare, 2017b). After tobacco and alcohol, methamphetamines were perceived as the drug causing the most deaths (Australian Institute of Health and Welfare, 2014),

and the drug causing the most concern for the community, overtaking alcohol for the first time (Australian Institute of Health and Welfare, 2014).

While ambulance data can identify trends, it is unable to identify the experiences of paramedics who manage, treat and transport people affected by methamphetamines. Future research is needed about the experiences of paramedics to identify any gaps in services, support and resources for paramedics as methamphetamine and other drugs-related events attended by ambulance increase.

6.2.5. Strengths and weaknesses

The strengths of this study include the same statistical data collected annually state-wide over a period of time. While every effort is made to identify methamphetamine-related events attended by ambulance, the data relies on paramedics correctly identifying the drug used as crystal methamphetamine, mentioning crystal methamphetamine or 'ice' in their ePCR, or self-report by the patient or other witness at the scene. Ambulance codes may not include the attribution of drugs if it is deemed irrelevant to the current injury or attendance. Therefore, crystal methamphetamine-related events may be underreported. Similarly, it is possible that methamphetamine-related events may be over-reported due to ambulance staff inaccurately identifying the drug used as crystal methamphetamine. Data collected in only one jurisdiction may not be representative or generalise to other jurisdictions.

6.2.6. Conclusions

For frontline emergency responders, such as police and paramedics, the magnitude of the methamphetamine problem is increasing. There is a critical need for day-to-day support for frontline emergency staff who provide treatment and transport to people who have taken methamphetamine and policy action to reduce methamphetamine-related harms. These findings suggest the need for targeted prevention and treatment programs rather than further spending on legislation and policing which are of minimal benefit.

End of manuscript

6.3. Summary

This chapter presented the results from VIC ambulance attendances related to crystallised methamphetamines. Several key findings were highlighted in this manuscript; Police co-attendance (where paramedics and police are both required to attend a callout event) is increasing, the number of callouts events related to crystal methamphetamines is increasing, and there is a need for targeted prevention and support services for staff caring for these patients. The increasing number of presentations and increasing need for police and paramedic co-attendance confirm the results presented in chapter five were not limited to the state of QLD (methamphetamine-related injury presentations in the final four years of the study and paramedics and police were often required to transport these types of presentations to ED). These results also suggest the problem is increasing for ED's, and police and paramedics who work in the pre-hospital environment, despite the overall decrease in methamphetamine use noted by national surveys.

The increase in methamphetamine-related presentation/callouts is likely to have considerable impact on police and paramedics working in the pre-hospital environment. It is timely to explore the experience of police and paramedics working in the pre-hospital environment and their perceptions of deservingness and attitudes towards people who use methamphetamines. Phase one *stage three* of this research will focus on police and paramedics perceptions of deservingness and attitudes towards people who use methamphetamines. The following chapter (seven) will present the results of phase one *stage three*; data collected via survey on perceptions of deservingness and attitudes of police and paramedics in WA towards people who use methamphetamines and required transport to ED.

**Higher Degree Research Thesis by Publication
University of New England**

STATEMENT OF ORIGINALITY

We, the Research Master/PhD candidate and the candidate's Principal Supervisor, certify that the following text, figures and diagrams are the candidate's original work.

Type of work	Page number/s
Published Manuscript	122 - 133

Name of Candidate: Rikki Jones

Name/title of Principal Supervisor: Professor Kim Usher



Candidate

13/10/2020

Date



Principal Supervisor

28/10/2020

Date

**Higher Degree Research Thesis by Publication
University of New England**

STATEMENT OF AUTHORS' CONTRIBUTION

(To appear at the end of each thesis chapter submitted as an article/paper)

We, the Research Master/PhD candidate and the candidate's Principal Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated in the *Statement of Originality*.

	Author's Name (please print clearly)	% of contribution
Candidate	Rikki Jones	40%
Other Authors	Professor Kim Usher	30%
	Dr Cindy Woods	30%

Name of Candidate: Rikki Jones

Name/title of Principal Supervisor: Professor Kim Usher



Candidate

13/07/2020

Date



Principal Supervisor

28/10/2020

Date

Chapter 7. Perceptions of deservingness and attitudes

Title of Article: Methamphetamines: Cross sectional-survey exploring Police and Paramedics attitudes and perceptions of deservingness of care.

Authors:

Rikki Jones (BN, RN)

Dr Cindy Woods (Bed, PhD)

Professor Kim Usher, (AM, RN, RPN, A/DipNEd, BA, BHS~~c~~, MNS~~t~~, PhD, FACN, FACMHN)

Manuscript submitted to: Nursing & Health Sciences Journal

Status of Manuscript: published 24th October 2020

Submission dates: 26th July 2020, 29th August 2020, 20th October 2020

Citation information: Jones, R., Woods, C. & Usher, K. (2020). Methamphetamines: Cross sectional-survey exploring Police and Paramedics attitudes and perceptions of deservingness of care. *Nursing & Health Sciences*. Doi:10.1111/nhs.12787

Signed:



Candidate



Principal Supervisor

7.1. Introduction

This chapter will present a discussion on the results for the survey conducted in Western Australia (WA) exploring the perception of deservingness and attitudes of police and paramedics towards people who use methamphetamines. A published manuscript will present the results and discussion, using the latest word document of the manuscript prior to publication. A chapter summary will follow the manuscript, summarising the key findings for phase one *stage three*. UNE Human Research Ethics Committee (HREC) granted ethics approval (HE18-209, appendix I).

Key findings from phase one (*stage one and two*) of this study highlighted an increase in prevalence of methamphetamine-related presentations and callout events, and increased co-attendance (police and paramedics) in the pre-hospital environment. Illicit drug use is often stigmatised and stigma can lead to negative attitudes, and a decrease in perceptions of deservingness and entitlement to health care (Chalmers et al., 2016; Salamat et al., 2019). Perceptions of deservingness and negative attitudes affect the quality of care provided and how patients engage with services. A survey was utilised for this stage of the study to allow the research team to determine participants' perceptions of deservingness and attitudes, prior to exploring participants experience caring for person under the influence of methamphetamines.

7.2. Manuscript: Methamphetamines: Cross sectional-survey exploring Police and Paramedics attitudes and perceptions of deservingness of care.

Abstract

Methamphetamine is presenting serious problems for frontline emergency responders due to the increase potential for aggression and violence. A cross-sectional survey was utilised to explore the perception of deservingness and attitudes of police officers and paramedics. Overall, participants deservingness were neutral ($M = 3.0$, $SD 1.26$) and were entitled ($M = 3.1$, $SD 1.3$) to the same level of medical care as others. When responses were stratified by profession, paramedics were significantly

more positive about deservingness ($M = 3.52$, $SD 1.2$) and entitlement ($M = 3.70$, $SD 1.2$) compared with police ($M = 2.78$, $SD 1.2$; $M = 2.97$, $SD 1.3$ respectively), $p < .001$. Participants felt less anger ($M = 2.48$, $SD 1.11$), more disappointment ($M = 3.35$, $SD 1.2$) and less sympathy ($M = 2.24$, $SD 0.9$) towards people who use methamphetamines. Stigma, attitudes and perceptions of deservingness have an impact on patients' engagement in treatment and medical services. It is important police and paramedics are aware of their perceptions of deservingness and the potential of these beliefs to affect how patients' engage in health care services. Key words: Methamphetamine; illicit drugs; perception of deservingness; police and paramedics attitudes; Stigma; cross sectional survey.

7.2.1. Introduction

Research on stigmatization of drug addiction is demonstrating health professionals often hold negative attitudes towards patients with drug addiction, this may impact on the quality of care the patient receives (Birtel et al., 2017; Skinner et al., 2007). Patients often perceive stigmatization and negative attitudes from health professionals and this can lead to patients' expectation of negative or judgemental attitudes when accessing health care, poor communication between patients and health professionals (van Boekel et al., 2013), patients feelings of worthlessness, shame and self-judgment, and patients reluctance to engage in treatment or seek medical attention (Kelly & Westerhoff, 2010; Lloyd, 2013; van Boekel et al., 2013).

7.2.2. Background

Methamphetamine, a psychostimulant (Cleary et al., 2017; Isoardi et al., 2018) stimulates the release of neurotransmitters dopamine, serotonin and norepinephrine (Vearrier et al., 2012; Yu et al., 2015), resulting in an intense high (feeling of euphoria), increased alertness, and decreased fatigue (Commonwealth of Australia, 2015; Jones et al., 2019a). Internationally, an estimated 50 million people use methamphetamines (Rosas-Hernandez et al., 2016; United Nations Office on Drugs and Crime, 2016). However, the rate of methamphetamine use in Australia has reportedly decreased since 2013 (Australian Institute of Health and Welfare, 2017b; Commonwealth of Australia, 2015). In 2018, in WA (the population under study) methamphetamine use remained stable at 25%, while the frequency of crystallised

methamphetamine use increased from 15% in 2011 to 39% in 2018 (Featerston, et al., 2018).

Methamphetamine is a focal point in media and for health professionals across the world (Chalmers et al., 2016; Gordon & Jong, 2018; United Nations Office on Drugs and Crime, 2016), with media increasing attention on the negative impact on methamphetamine use (acute behavioural disturbances, psychosis, criminal behaviour) and crisis framing (Cartwright & Tait, 2019; Jones et al., 2020). This can increase stigmatization and negative attitudes towards methamphetamine users amongst health professionals who provide frequent care to patients who use illicit drugs (Ford et al., 2009; Usher et al., 2015).

Health professionals' stigma and negative attitudes towards people who use drugs is a recurrent theme with research conducted across the globe: Japan (McCann et al., 2018; Takano et al., 2015), United Kingdom (UK)(Adams, 2008; Birtel et al., 2017; Kelleher & Cotter, 2009; McLaughlin et al., 2006; Williams, 1999), Netherlands (van Boekel et al., 2013; van Boekel et al., 2014), United States of America (Beletsky et al., 2005) and Australia (Brener et al., 2010; Feather & Johnstone, 2001; Ford et al., 2008; Skinner et al., 2007; Williams et al., 2015). Research focusing on health professionals attitudes includes; attitudes towards mental health and substance abuse (Feather & Johnstone, 2001; Howard & Holmshaw, 2010); attitude towards substance users (Kelleher & Cotter, 2009); and attitudes towards illicit drug users and intravenous (IV) drug users (Brener et al., 2010; van Boekel et al., 2014). Research into perceptions of deservingness and stigma include: deservingness and attitudes of nurses towards alcohol and other drugs using simulated situations (Skinner et al., 2007); perception of stigma or attitudes and the impact on care provided (McLaughlin et al., 2000; Salamat et al., 2019); the effect of stigma and negative attitudes on health care delivery (van Boekel et al., 2013).

According to Skinner et al. (2007), greater perceptions of an individual's responsibility for a condition or incident is associated with greater anger and lower sympathy towards the individual. These affective reactions of anger or sympathy predict perceptions of deservingness. For example, greater anger and lower sympathy increases the perception negative treatment or punishment is deserved (Skinner et al., 2007). Whereas the perception of life circumstances contributed to a condition or

incident is associated with greater sympathy and lower anger, which increases the perception help and assistance is deserved. Skinner et al. (2007) proposed a model to visually display this association (Figure 7-1).

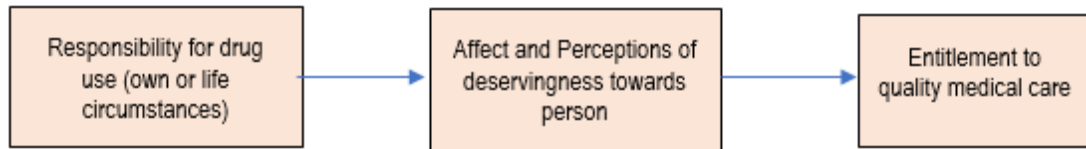


Figure 7-1 responsibility attributions, affect and perceptions of deservingness.

Adapted model from Skinner et al. (2007, p. 166) of responsibility attributions, affect and perceptions of deservingness. [Skinner, N., Feather, N. T., Freeman, T., & Roche, A. (2007). Stigma and discrimination in health-care provision to drug users: The roles of values, affect, and deservingness judgments. *Journal of Applied Social Psychology*, 37(1),163-166].

Police and paramedics are often called to attend methamphetamine-related callouts in the pre-hospital environment (Jones et al., 2019a), and co-manage/care for persons under the influence of methamphetamines. Previous research focusing on methamphetamine-related presentations to ED conducted by Jones et al. (2019a) demonstrated police and paramedics are often involved in escorting/accompanying methamphetamine users to emergency departments (ED). Negative attitudes, stigma and perceptions of deservingness have been linked to a decrease in service utilisation by illicit drug users, which indicates it is timely to assess emergency respondents' attitudes and perceptions of deservingness towards methamphetamine users in the pre-hospital environment.

The main aim of this study was to explore the attitudes and perceptions of deservingness of police officers and paramedics, which has not previously been researched. While police and paramedics are two separate services, they are often required to work together in the pre-hospital environment to respond to methamphetamine-related presentations. The pre-hospital environment has not been researched in this context, so a comparison between police and paramedics responses will be explored as a secondary aim. Paramedics, as has been found with nurses (Skinner et al., 2007), may have an emphasis in their training on all patients being entitled to quality care regardless of the individual's perceived responsibility for their condition. This emphasis may not be incorporated in police training and may account for differences in perceptions of deservingness found between the groups. The study is part of a larger research project exploring methamphetamine-related ED presentations, and the experience of front-line emergency workers (police and paramedics) attending methamphetamine-related events.

Research Question:

1. What are the levels of perceptions of deservingness and the strength of association between perceptions of deservingness, attributions and affect, of police and paramedics who are required to transport patients to EDs for methamphetamine-related presentations?
2. Do police and paramedics' deservingness judgements and attitudes towards methamphetamine users differ?

7.2.3. Methods

7.2.3.1. Design

A cross-sectional survey of police officers and paramedics working across Western Australia (WA). Ethical approval was gained from the University of New England Human Research Ethics Committee (HE18-209) and was approved by the research committees for both the St Johns Ambulance service in WA and the Police force in WA. STROBE checklist was used to report the results of this study.

7.2.3.2. Setting

WA is located on the west coast of Australia, has a population of approximately 2.5 million (Australian Bureau of Statistics, 2016), and is the largest Australian state with an land area of approximately 2.6 million km² (Wikipedia, 2019). There are 30 ambulance stations across all metropolitan areas in WA, and 160 ambulance locations across regional and rural WA (St John Ambulance Australia, 2019). The WA police force has over 150 police stations across 15 separate districts (Western Australia Police Force, 2019).

7.2.3.3. Participants

Permission to conduct research with the Police Force and Ambulance Services in all states across Australia was sought, however approval from both the Police Force and the St John's Ambulance service was only provided for the state of WA. Recruitment occurred across rural, remote and metropolitan areas in WA and included front-line police officers and St John paramedic staff. A convenience sample was used to recruit participants. An email was sent to research committees in both the WA Police

Force and St Johns Ambulance services WA for them to circulate, inviting police and paramedics to complete the survey from February 2019 to July 2019 (6 months). The email contained general information on the study and a link to the survey.

Participants had to meet the eligibility criteria of experience with a person under the influence methamphetamine requiring transport to ED to complete the survey. The eligibility criteria were embedded in the first part of the survey along with participant information and consent, if the participants did not meet the eligibility criteria or give consent the survey was terminated and the survey response was excluded from the final results.

7.2.4. Data Collection

The online survey instrument was hosted by Qualtrics. Validity and reliability for the survey was reported by Skinner et al. (2007) for registered nurses and internal consistency was found to be acceptable for negative ($\alpha = .60$) and positive ($\alpha = .60$) affective items. Internal reliabilities, as measured by Cronbach's alpha in this study are good for items related to positive ($\alpha = .85$) and negative ($\alpha = .90$) affective responses to drug use. The survey instrument included two parts: Part one collected data on participant characteristics; Part two collected data on attitudes and perceptions of deservingness using a 5-point Likert scale.

Part one

This section collected participant characteristic variables (age, gender, ethnicity, field of work: ambulance service/police service, years of experience, location: rural-remote/metropolitan), frequency of managing person under influence of methamphetamine and, perceptions of whether persons under the influence of methamphetamines are more difficult to manage than other patients (Table 7-1).

Part two

The survey questions were used in previous research conducted by Skinner et al., (2007) and Feather and Johnstone (2001). In this study, eight questions were used to measure perceptions of deservingness of front-line emergency personnel (police and paramedics) towards methamphetamine users and to investigate the role of deservingness in police and paramedics' affect towards patients requiring transport to EDs for methamphetamine-related treatment. The eight questions measure: perceived

responsibility for drug use (life circumstances, and personal responsibility, 1 = not at all responsible to 5 = very responsible); negative affect (anger and disappointment towards users, 1 = not at all angry/disappointed to 5 = very angry/disappointed); positive affect (sympathy and concern towards user, 1 = not at all sympathetic/concerned to 5 = very sympathetic/concerned); perception of deservingness and entitlement (deserves same medical care as others and entitled to the same medical care, 1 = not at all deserving/entitled to 5 = very deserving/entitled).

A sample size was calculated using G*power, software used to calculate statistical power, for independent sample t-test for two groups (Faul, Erdfelder, Lang & Buchner. 2007). A medium effect was specified with 5% error probability and 95% power, sample size was calculated at $n = 210$.

7.2.5. Data Analysis

Data were analysed using SPSS version 25 (IBM SPSS Inc., Armonk, NY, USA). Summary univariate statistics (means, percentages, standard deviation and confidence intervals where possible) were used to describe variables in part one of the study (age, gender, ethnicity, years of experience, location, frequency and difficulty to manage) (Table 7-1) and Likert responses (means, standard deviations) in part two of the study (Table 7-2). Bi-variant analyses were used to describe the relationship between participant characteristics, and the attitudes and deservingness scales. The relationship between participant characteristic variables and attitude measures were assessed using t-tests. Associations between negative and positive affective variables, responsibility and deservingness variables were assessed using Pearson's correlation coefficient to determine the direction and strength of associations (Table 7-3). The two positive and negative affective responses were averaged to create an overall positive and negative affective index. Police and paramedics' mean responsibility, affective indices (positive affect and negative affect) and perceptions of deservingness responses were compared using independent t-tests and ANOVA with Tukey's post hoc testing. A p value of <0.05 was considered statistically significant.

7.2.6. Results

A total of 272 participants responded to the survey invitation, emailed out by WA Police Force and St Johns Ambulance service WA. Of the 272 participants, seven did not give consent, eight participants had no experience managing persons under the influence of methamphetamines requiring transport to ED, and 41 only partially completed the survey, these responses were not included in the analyses. A total of $n = 217$ survey responses were analysed.

7.2.6.1. Participant characteristics

Of the 217 respondents, 70.5% ($n = 153$) work for the police and 29.5% ($n = 64$) work for the ambulance service (see Table 7-1). Males accounted for 73.3% ($n = 159$) of all participants. The most common age bracket was 18 to 29 ($n = 82$, 37.8%). Overall, 64.5% ($n = 140$) of participants identified as European, 4.1% ($n = 9$) identified as Indigenous, and 31.3% ($n = 68$) identified as other.

Only 192 participants completed the years of experience question. Mean years of experience ($n = 192$) was 13.36 ($SD = 8.60$), with females reporting fewer years of experience ($M = 9.85$, $SD = 6.47$) than males ($M = 14.50$, $SD = 8.92$). The majority of the participants were located in a metropolitan area ($n = 150$, 69.1%).

Both police and paramedics reported persons under the influence of methamphetamine were more difficult to manage than other clients including those intoxicated with other drugs ($n = 208$, 95.9%). Two-thirds (65.5%, $n = 143$) of participants reported they had contact with persons under the influence of methamphetamines weekly. A comparison between location and frequency of management was statistically significant ($\chi^2(3, n = 218) = 13.07$, $p < 0.05$), with staff from metropolitan areas more likely to manage person under the influence of methamphetamines weekly (rural/remote 49.3%; metropolitan 72.2%).

Table 7-1 Participant characteristics

Variables		All (n = 217)	Police (n = 154)	Paramedic (n = 63)
Gender	Male	160 (73.7)	118 (76.6)	42 (66.7)
	Female	57 (26.3)	36 (23.4)	21 (33.3)
Age	24 below	21 (9.7)	17 (11)	4 (6.3)
	25-29	61 (28.1)	51 (33.1)	10 (15.9)
	30-34	42 (19.4)	25 (16.2)	17 (27)
	35-39	29 (13.4)	19 (12.3)	10 (15.9)
	40-44	22 (10.1)	14 (9.1)	8 (12.7)
	45-49	21 (10.1)	15 (9.7)	6 (9.5)
	50-54	15 (6.9)	7 (4.5)	8 (12.7)
	55-59	4 (1.8)	4 (2.6)	-
	60+	2 (0.9)	2 (1.3)	-
Ethnicity	Indigenous	9 (4.1)	7 (4.5)	2 (3.2)
	European	140 (64.5)	100 (64.9)	40 (63.5)
	other	68 (31.3)	47 (30.5)	21 (33.3)
Years of experience (n = 192)			(n = 134)	(n = 58)
	1-5	42 (21.8)	30 (22.4)	12 (20.7)
	6-10	45 (23.4)	28 (20.9)	17 (29.3)
	11-15	41 (21.3)	28 (20.9)	13 (22.4)
	16-20	21 (10.9)	15 (11.2)	6 (10.3)
	21-25	23 (12.0)	14 (10.4)	9 (15.5)
	26-30	13 (6.8)	12 (9.0)	1 (1.7)
	31+	7 (3.6)	7 (5.2)	-
Location	Remote/rural	67 (30.9)	57 (37)	11 (17.4)
	Metropolitan	150 (69.1)	97 (63)	52 (82.5)
Frequency of contact	Monthly	48 (22.1)	39 (25.3)	9 (14.3)
	Weekly	142 (65.4)	95 (61.7)	47 (74.6)
	Daily	14 (6.5)	10 (6.5)	4 (6.3)
	Other	13 (6)	10 (6.5)	3 (4.7)
Difficult to manage	Yes	208 (95.9)	148 (96.1)	61 (95.3)
	Unsure	9 (4.1)	6 (3.9)	3 (4.8)
	No	-	-	-

7.2.6.2. Perceptions of deservingness

Perceptions of deservingness were measured using an eight question Likert scale (sympathy, concern, anger, disappointment, life circumstances, personal responsibility, deservingness and entitled). Table 7-2, presents mean scores for all participants as well as individual groupings (police & paramedics) and the independent t-test reported as a p value.

Sympathy: Overall, participants felt low sympathy towards methamphetamine users, and police felt significantly less sympathetic compared with paramedics, $t(215) = 2.55, p < 0.05$. There were no differences when comparing sympathy with gender, location, age or years of experience.

Concern: Overall, participants felt moderate concern towards drug users, with similar responses between police and paramedics. There were no statistical differences between concern and gender, field of work, location, age or years of experience.

Anger: Overall, participants did not feel anger towards drug users, and results were similar between police and paramedics. There were no differences between anger and gender, ethnicity, field of work, location, age or years of experience.

Disappointment: Overall, participants were moderately disappointed with drug users, with police slightly more disappointed than paramedics. There were no differences between disappointment and gender, ethnicity, field of work, location, age or years of experience

Positive & negative affect: The overall mean for the positive affect was $M = 2.80$ and the overall mean for the negative affect was $M = 2.91$. This means the perceptions of deservingness of police and paramedics towards methamphetamine users was more neutral than either positive or negative. Paramedics had a significantly higher positive affect ($M = 3.01$, $SD .72$) compared to police ($M = 2.71$, $SD .99$), $t(215) = 2.16$, $p < 0.05$. Police had a slightly higher mean negative affect ($M = 2.94$, $SD 1.01$) compared with paramedics ($M = 2.86$, $SD 1.00$), but the difference was not statistically significant ($t(215) = -0.56$, $p > 0.05$).

Life circumstances: Participants perceived life circumstances were responsible for problematic drug use to a small extent, with paramedics holding stronger beliefs about life circumstances being responsible for drug use than police. Younger participants aged 18-29 ($M = 3.56$, $SD 1.08$, $CI 3.32-3.80$) perceived a person's life circumstances are significantly more responsible for a persons' drug use than the 30-39 year age group ($M = 3.06$, $SD 1.03$, $CI 2.81-3.30$) $F(4) = 2.52$, $p < 0.05$. Participants located in metropolitan ($M=3.41$, $SD 1.01$) areas perceive life circumstances are responsible for drug use to a significantly greater extent compared with rural/remote participants ($M=3.0$, $SD 1.0$), $t(215) = -2.66$, $p < 0.05$. There were no differences between perceptions of life circumstances and gender, ethnicity, field of work or years of experience.

Table 7-2 Perceived deservingness means

	All (N = 217) Mean (SD)	Police (n = 154) Mean (SD)	Paramedic (n = 63) Mean (SD)	P value t-test
Total mean score	3.18 (0.48)	3.10 (0.50)	3.36 (0.35)	
Life circumstances To what extent are adverse life circumstances likely to be responsible for a person's problematic drug use	3.30 (1.04)	3.22 (1.07)	3.49 (0.93)	0.081
Individual's responsibility To what extent is an individual personally responsible for their problematic drug use	4.54 (0.65)	4.58 (0.65)	4.46 (0.67)	0.229
Anger To what extent do you feel angry towards people using drugs	2.48 (1.11)	2.49 (1.12)	2.44 (1.13)	0.784
Disappointment To what extent do you feel disappointed towards people using drugs	3.35 (1.2)	3.38 (1.22)	3.27 (1.15)	0.528
Sympathy To what extent do you feel sympathy towards people using drugs	2.24 (0.98)	2.14 (1.01)	2.51 (0.88)	0.011
Concern To what extent do you feel concern towards people using drugs	3.36 (1.24)	3.3 (1.29)	3.52 (1.09)	0.226
Deservingness To what extent do people who use drugs deserve the same level of medical care as people who don't use drugs	3.00 (1.26)	2.78 (1.22)	3.52 (1.2)	0.000
Entitled To what extent are people who use drugs entitled to the same level of medical care as people who don't use drugs	3.1 (1.3)	2.97 (1.3)	3.70 (1.19)	0.000
Positive Affect Sympathy & Concern	2.80 (0.93)	2.71 (0.99)	3.01 (0.72)	0.032
Negative Affect Anger & Disappointment	2.91 (1.01)	2.94 (1.01)	2.86 (1.00)	0.578

Note: SD = standard deviation

Individual's responsibility: Overall, participants strongly perceived individuals were responsible for their drug use. There were no differences between perceptions of individual responsibility and gender, ethnicity, field of work, location, age grouping or years of experience.

Deservingness: Overall, participants moderately believed methamphetamine users are deserving of the same level of medical treatment as others. Police and paramedics differed significantly in their perception that drug users deserved the same level of medical care as people who do not use drugs. Police overall disagreed that drug users deserved the same level of medical care, whereas paramedics agreed they do deserve the same level of medical care $t(215) = 4.09, p < .001$. There were no statistical differences between deservingness and gender, ethnicity, location, age or years of experience.

Entitled: Overall, participants moderately believed methamphetamine users are entitled to the same level of medical care as others. Police and paramedics differed significantly in their perception that drug users are entitled to the same level of medical care as people who do not use drugs. Police disagreed that drug users were entitled to the same level of medical care as people who do not use drugs, whereas paramedics agreed that they are entitled to the same level of medical care, $t(215) = 3.86, p < .001$. There were no associations between entitlement and gender, ethnicity, location, age or years of experience.

7.2.6.3. Pearson's correlation

The associations between negative and positive affect variables, and responsibility and deservingness variables were assessed using Pearson's correlation coefficient to determine the direction and strength of associations (Table 7-3).

There was a small positive association ($r = .22$) between positive affect and perceptions of responsibility of life circumstances for drug use. Positive affect is moderately positively associated with perceptions of entitlement ($r = .40$) and deservingness ($r = .21$) to same level of medical care. There was a small negative association between positive affect and personal responsibility ($r = -.27$), meaning greater perception of personal responsibility for drug use reduces sympathy and

concern. This is reflected in table 2, which shows high perceptions of personal responsibility ($M = 4.46$) for problematic drug use and low sympathy ($M = 2.51$).

Table 7-3 Pearson's correlations – associations between affect, attributions and perceptions of deservingness and entitlement

Variable	1	2	3	4	5	6
1. Positive affect (sympathy/concern)	—	-.067	.216**	-.272**	.422**	.399**
2. Negative affect (anger/disappointment)		—	-.162*	.167*	-.400**	-.350**
3. Life circumstances			—	-.082	.184**	.182**
4. Personally responsible				—	-.205**	.229**
5. Deserve					—	.836**
6. Entitled						—

Correlations are statistically significant at: ** $p < .01$; * $p < .05$

The opposite is seen with negative affect. A small positive association is seen between negative affect and perception of personal responsibility ($r = .17$), meaning greater perceptions of personal responsibility for drug use is associated with increased anger and disappointment. There is a small negative association between negative affect and perceptions of responsibility of life circumstances for drug use ($r = -.16$), meaning as attributions for life circumstances increase, anger and disappointment reduce. There is a moderate negative association between negative affect and perceptions of deservedness ($r = -.40$) and entitlement ($r = -.35$) to same level of medical care. This means greater anger and disappointment towards drug users is associated with disagreement drug users are deserving or entitled to the same level of medical care as others.

7.2.7. Discussion

To our knowledge, this is the first study to be conducted on both police and paramedics' perceptions of deservingness towards methamphetamine users in the pre-hospital environment. Although participants believed life circumstances somewhat impacted on a person's drug use, users were considered to be personally responsible for their drug use. Participants were less likely to feel sympathy towards drug users ($M = 2.24$), were more likely to believe drug users deserved ($M = 3.0$) and were

entitled ($M = 3.1$) to the same medical care as patients with other medical conditions, and methamphetamine users were considered more difficult to manage (95.9%) than other drug-related presentations and medical conditions. Overall, police and paramedics attitudes were somewhat neutral (positive affect $M = 2.80$; negative affect $M = 2.91$), with positive affect linked to an increased belief in deserving and entitled to medical care and negative affect linked to increase belief users are responsible for their drug use. These were similar to results reported by Skinner et al.'s (2009) study on positive affect and negative affect of health care professionals.

This study reported participants moderately agreed methamphetamine users were deserving of and entitled to the same medical treatment as other medical related problems. These findings are reflected in McCann et al.'s (2018) study was conducted in Japan on paramedics' perceptions about caring for drug and alcohol users. McCann et al. (2018) reported paramedics believed drug and alcohol users were as deserving of medical care as other medical conditions even if the issue was a non-medical emergency. This study reported a link between deservingness judgments and entitlement views with anger and disappointment (less deserving and entitled of medical care, to participants feeling an increase in anger and disappointment towards users). Skinner et al.'s (2009) study, conducted in Australia, reported a link between personal responsibility for drug use and deservingness to quality care, (less deserving of care linked to personal responsibility for drug use). Skinner et al. (2009) also found deservingness was not directly linked to nurses' attitudes, rather their entitlement views seemed to guide their attitudes towards illicit drug users. However, the study used hypothetical situations for the participants to view before completing the survey. It is unclear if the participants in the study had regular contact with illicit drug users in their normal work environment.

This study found police and paramedics did not hold negative attitudes (negative affect- anger and disappointment) towards methamphetamine users. A few studies have reported similar findings; however, a large number of studies reported the opposite. Fonti et al.'s (2016) study conducted in Australia reported health professionals held positive or neutral attitudes towards women who use substances in pregnancy, and Skinner et al.'s (2007) study found registered nurses had low levels of negative attitudes towards heroin users (less anger/disappointment- negative affect M

= 2.57). These results were slightly lower than the results reported in this study (M = 2.94).

McLaughlin et al.'s (2006) study conducted in Ireland reported health care professionals held negative views towards illicit drug users, preferred not to work with illicit drug users, and felt ill prepared to manage patients who use illicit drug. The authors noted their negative views may have been a result of perceptions there was a lack of resources to care for these patients. Williams et al.'s (2015) study in Australia reported students enrolled in an undergraduate paramedicine or nursing degree held negative attitudes towards drug users and Ford et al.'s (2009) study conducted in Australia reported nurses had low levels of motivation to provide care to illicit drug users with only 15% of nurses being satisfied providing care to illicit drug users. Ford et al.'s (2009) study reported nurses' therapeutic attitude towards illicit drug users as low, and attitudes were thought to be related to a lack of role support. Interestingly, Salamat et al.'s (2019) study conducted in the UK reported drug users thought health professionals held them more responsible for their drug use than the health professionals actually reported themselves. This may be related to health professionals not being completely honest with their responses (social desirability bias), participant self-stigma (referred to self-stigma bias) which may impact the drug users view of health professionals attitudes towards them, the health professional unintentionally stigmatizes these patients (Salamat et al., 2019), or it could be a combination of all three.

This study reported methamphetamine users are more difficult to manage, this was measured by Likert scale however the term 'difficult' is ambiguous and can have varied meaning for each participant. Despite this, other research supports this finding. McCann et al.'s (2015) study reported participants felt drug and alcohol users were more difficult and challenging to manage than other medical conditions. Their study focused on interviews and participants were able to describe the reasons for their beliefs. Kelleher & Cotter's (2009), study conducted in the UK also supported these findings, stating no participant said drug users were easy to manage. Their study focused on emergency care staff (doctors & nurses) and their attitudes towards substance users.

Our results for Pearson's correlation are similar to Skinner et al.'s (2007) results and fitted the model proposed: increased responsibility was linked to decreased

sympathy/concern and increase in anger/disappointment; increased belief life circumstances contribute to drug use decreased anger/disappointment; increased anger/disappointment decreased the deservingness/entitled to medical care. A difference between police and paramedic responses was noted, paramedics felt more sympathy towards methamphetamine users than police, and police were slightly less likely to agree methamphetamine users deserved and are entitled to the same medical care as other medical conditions. Results are likely linked to the roles the two services play in society and their training. It is unlikely police undergo training emphasising all patients are entitled to the same health care. Including training on social determinants of health and the impact of life circumstances on drug use may improve perceptions of deservingness and attitude. In addition, it is possible police are more likely to experience situations involving person under the influence of methamphetamine who are aggressive and violent, which may impact their perceptions of deservingness. A report for the Queensland Mental Health Commission recommended a range of measures to reduce stigma and discrimination for people experiencing problematic alcohol and other drug use (Lancaster et al., 2017). One of their overarching recommendations advocates for anti-stigma awareness training to be conducted across relevant workforces to assist in understanding the impacts of stigma on mental health and ability to seek help. Awareness training includes educational, behavioural and social interventions programs that create a deeper understanding and awareness of what stigma is, how it is generated and a comprehensive understanding of its impact and implications (Li et al., 2014; Lohiniva et al., 2015). This study has highlighted that a necessary first step in awareness training is a needs assessment with police and health professionals such as paramedics as priority targets.

Police and paramedics are often the first point of contact prior to patients arriving in ED. The quality of care provided and the experience of patients in this environment can impact patient's' perceptions of health care and how substances users access health care services in future. It is important, in this regard, for police and paramedics to not only be aware of, but to limit the impact their perceptions of deservingness and attitudes have on their patients. Attitudes and perceptions of deservingness may be affected by a variety of factors including; negative experiences working with people who use drugs (Beletsky et al., 2005); support available to staff and the resources required to provide care for people who use drugs (Kelleher & Cotter, 2009; McCann

et al., 2018). The difficult nature of caring for persons under the influence of methamphetamines (Cleary et al., 2017) and managing aggressive and violent behaviour associated with methamphetamine use (National Institute on Drug Abuse, 2013) are likely to result in negative experiences. Debriefing and support services for police and paramedics may help to mitigate the effect negative experience has on perceptions of deservingness, further research in this area is needed. Without a joint effort from all groups involved, stigma and negative attitudes towards minority groups will continue.

7.2.7.1. Limitations

Limitations of this study needs to be considered. Convenience sampling was utilized to recruit participants, which can increase the risk of sampling bias, and the sample may not be representative of the emergency service population. In addition, the survey was conducted in one jurisdiction only (WA), and rural/remote participants were underrepresented, which limits the generalisability of these results. No measure of aggression or violence was included, negative experience managing aggression and violence may have affected the participant's responses. A cross-sectional study design cannot determine a causal relationship between affect and deservingness and entitlement judgements. There were no standards of measure to identify drug use, participants were reliant on previous experience and patients self-report, to identify specific drug use. While the calculated sample size was reached, this is still a relatively small sample size. Despite the small sample size, the results have application in this area, further research is required to expand on the foundational knowledge this research presents. This study's results for deservingness and attitudes are difficult to compare to previous research due to the varied study designs, different participant characteristics and stigmatised groups on which the research focused (methamphetamine users versus other drug and alcohol users, and mental health patients).

Stigmatized conditions may evoke strong responses (both negative and positive) or cause participants to give a more socially desirable response in relation to their perceptions of deservingness and may not be representative of their true opinion (McGilloway & Donnelly, 2004). The relatively wide standard deviations in Table 7-2 suggests a range of different views, as would be expected with value judgements.

7.2.8. Conclusion

The present study expands on previous research, which has examined health professionals' perceptions of deservingness and attitudes towards illicit drug users by focusing on methamphetamine users in the pre-hospital context. The main findings in this study are police and paramedics' perceptions of deservingness and attitudes towards methamphetamine users were more neutral than positive or negative; participants agreed methamphetamine users deserve and are entitled to same medical care as other patients despite perceiving drug users are personally responsible for their drug use; and felt low anger and disappointment towards methamphetamine users. These findings are important because stigma, attitudes and perceptions of deservingness have an impact on patients' engagement in treatment and medical services. It is important police and paramedics are aware of their perceptions of deservingness and the potential of these beliefs to impact how patients' engage in health care services. Awareness training across both workforces could be a powerful tool in reducing stigma and increasing help seeking behaviours for people experiencing problematic drug use. Further research in police and paramedics' experience caring for methamphetamine users in pre-hospital environment can assist in developing better education, resources, services and policy to improve the safety of staff, the community and people who use illicit drugs, and improve the way people who use illicit drugs are cared for across organisations rather than as segmented services.

End of manuscript

7.3. Summary

This chapter presented the results for the survey conducted in WA exploring police and paramedic's perceptions of deservingness and attitudes towards people who use methamphetamines. The manuscript highlighted several key points: The perception of deservingness and attitudes of police and paramedics were neutral, and participants' believed persons' who used methamphetamines deserved and were entitled to the same medical care as other medical conditions. These findings are important due to a potential increase in the negative impact on staff working in the pre-hospital environment due to increased prevalence of presentations/callout events and the

quality of health care provided is affected by stigma and perceptions of deservingness. Phase two of this study was utilise semi-structured interviews to explore police and paramedics experiences caring for persons under the influence of methamphetamines who require transport to an ED.

There were several key findings identified in phase one which were followed-up in phase two of the study. Results from QISU data indicate an increase in the number of methamphetamine-related presentations in the final four years of this study (2014 and 2017). Methamphetamine-related injury presentations often required police presence and or were brought in by ambulance. Methamphetamine-related injury presentations had a high acuity related to allocated higher triage categories and 20.3% of methamphetamine-related injury presentations presented with behaviour that was agitated, violent, or aggressive. Results from VIC ambulance data indicate a significant rise in the overall number of methamphetamine-related events attended by ambulance, events requiring police co-attendance and an increase in the number of methamphetamine-related attendances requiring escort to ED. Perceptions of deservingness data indicate police and paramedics hold neutral perceptions of deservingness towards persons who use methamphetamines and believed persons' who used methamphetamines deserved and were entitled to the same medical care as other medical conditions. This concludes section two of this dissertation.

The following section, section three, contains the three chapters (eight, nine and ten) that will present the results from the semi-structured interviews. Chapter eight will present the results of theme 1; Complexity of care: Caring for the patient within the context of violence. Chapter nine will present the results from theme 2: (Responding to violence, abuse & danger: A focus on safety). Chapter ten will present the results of Theme 3 (Managing care: Continually modifying care practices).

**Higher Degree Research Thesis by Publication
University of New England**

STATEMENT OF ORIGINALITY

We, the Research Master/PhD candidate and the candidate's Principal Supervisor, certify that the following text, figures and diagrams are the candidate's original work.

Type of work	Page number/s
Published Manuscript	138 - 155

Name of Candidate: Rikki Jones

Name/title of Principal Supervisor: Professor Kim Usher



29/10/2020

Candidate

Date



23/11/2020

Principal Supervisor

Date

STATEMENT OF AUTHORS' CONTRIBUTION

(To appear at the end of each thesis chapter submitted as an article/paper)

We, the Research Master/PhD candidate and the candidate's Principal Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated in the *Statement of Originality*.

	Author's Name (please print clearly)	% of contribution
Candidate	Rikki Jones	55%
Other Authors	Professor Kim Usher	20%
	Dr Cindy Woods	25%

Name of Candidate: Rikki Jones

Name/title of Principal Supervisor: Professor Kim Usher



Candidate

21/10/ 2020

Date



Principal Supervisor

23.11.2020

Date

Section Three: Phase Two Results

Chapter 8. Complexity of care: Caring for the patient within the context of violence, abuse and danger

Title of Article: Complexity of caring within the context of violence, abuse and danger: Police and paramedics experiences of caring for people affected by methamphetamines

Authors:

Rikki Jones (BN, RN)

Professor Debra Jackson (AO, RN, PhD, FACN, SFHEA)

Dr Cindy Woods (BEd, PhD)

Professor Kim Usher, (AM, RN, RPN, A/DipNEd, BA, BHSc, MNSt, PhD, FACN, FACMHN)

Manuscript submitted to:

Status of Manuscript: Drafted

Submission dates:

Citation information:

Signed:



Candidate



Principal Supervisor

8.1. Introduction

This chapter will present a discussion on the results from Theme 1 (Complexity of care: Caring for the patient within the context of violence) from phase two (qualitative semi-structured interviews). The aim of phase two was to explore police and paramedics experience caring for persons under the influence of methamphetamines and required transport to an ED. A manuscript (under-review) will present the results and discussion, using the latest word document at the time of submission to the Journal. A chapter summary will follow the manuscript, summarising the key findings from theme 1. UNE Human Research Ethics Committee (HREC) granted ethics approval (HE18-209, appendix I).

The results of phase one guided the development of the interview questions for phase two. Results from QISU data indicate an increase in the number of methamphetamine-related presentations in the final four years of this study (2014 and 2017).

Methamphetamine-related presentations often required police presence and or were brought in by ambulance. Methamphetamine-related presentations had a high acuity related to allocated higher triage categories and 20.3% of methamphetamine-related presentations presented with behaviour that was agitated, violent, or aggressive.

Results from VIC ambulance data indicate a significant rise in the overall number of methamphetamine-related events attended by ambulance, events requiring police co-attendance and an increase in the number of methamphetamine-related attendances requiring escort to ED. Perceptions of deservingness data indicate police and paramedics hold neutral perceptions of deservingness towards persons who use methamphetamines and persons who used methamphetamines deserved and were entitled to the same medical care as other medical conditions.

8.2. Manuscript: Complexity of caring within the context of violence, abuse and danger: Police and paramedics experiences of caring for people affected by methamphetamines

Abstract

Acute behavioural disturbance (violence and aggression) and mental health illness (paranoia, hallucinations, psychosis, and suicidal ideation) are negative side effects of methamphetamine use. Police and paramedics in the pre-hospital environment are co-attending methamphetamine-related callouts in increasing numbers, despite the reported decrease in methamphetamine use across Australia. A qualitative research design was utilised to explore the experience of police and paramedics in the pre-hospital environment caring for persons under the influence of methamphetamines. Callout events related to methamphetamines were identified as complex and challenging due to acute behavioural disturbances, co-occurring mental health illness, inability to effectively communicate with the patient, and patients presenting in a state of crisis. Further services are required to meet both patient and staff needs including debriefing services for staff, and social support services for patients to alleviate the state of crisis.

8.2.1. Introduction

Methamphetamine is a psychostimulant directly effecting the neurotransmitters in the brain (Evren & Bozkurt, 2018). It is more lipid soluble than other amphetamine-type stimulants resulting in a substance that is potent and long lasting (Scott et al., 2007; Vearrier et al., 2012). Methamphetamines have several negative side effects including but not limited to; violent and aggressive behaviour, psychosis, insomnia, neurotoxicity, malnutrition, suicidal ideation and depression (National Institute on Drug Abuse, 2013; Vearrier et al., 2012).

Globally, methamphetamines are the most popular form of amphetamines consumed and consumption is on the increase (United Nations Office on Drugs and Crime,

2017). Worldwide, 71% of all drug seizures were a form of amphetamine with an estimated 24 million people using amphetamines (Chomchai et al., 2015).

Methamphetamine usage in Australia was first noted in the early 1990's, with a sudden peak in use in 2001 (Commonwealth of Australia, 2015). The use of the crystallised form of methamphetamine ('ICE') has doubled in use since 2010, despite the overall use of methamphetamine is reportedly in decline (Australian Institute of Health and Welfare, 2020b). In addition, weekly and daily use of 'ICE' increased from 12.4% in 2010 to 29% in 2019 (Australian Institute of Health and Welfare, 2020b). Amphetamine-related deaths, increased from 298 deaths in the 2002-06 period, to over 442 deaths in 2016 (Pennington Institute, 2018). The number of methamphetamine-related hospital discharges/separations reportedly in 2016-17 was 8,652, representing an increase from 1,741 in 2012-13, and 7,762 in 2015-16 (Australia Institute of Health and Welfare, 2018).

A study conducted by Jones et al. (2019a) reported methamphetamine Emergency Department (ED) injury-related presentations required transport to hospital by police and/or paramedics more often than other stimulant drug-related injury presentations. Considering the increase in methamphetamine-related presentations and overdoses in recent years, it is timely to explore the experiences of police and paramedics to determine the impact on personnel, resources and training required to assist patients in the pre-hospital environment. Two previous published articles explored the experience of health care professionals caring for people who present under the influence of methamphetamines in the ED environment (Cleary et al., 2017; Usher et al., 2017). To our knowledge, this current study is the first study to explore the experiences of both police and paramedics caring for persons under the influence of methamphetamines in the pre-hospital environment.

This current study is part of a larger study exploring the impact of methamphetamines on emergency services. Phase one of the study focused on patterns and features of methamphetamine-related presentations to ED (Jones et al., 2019a), ambulance callouts (Jones et al., 2019b) and perceptions of deservingness (Jones et al., 2020). Phase two explored the experience of paramedics and police officers caring for persons under the influence of methamphetamine and requiring transport to an ED. In this context, research has yet to explore the pre-hospital environment. While police and paramedics are two separate services, they are often required to attend

methamphetamine-related callouts in the pre-hospital environment. The aim of the study was to explore the experience of paramedics and police officers caring for persons under the influence of methamphetamine and requiring transport to an ED, this paper presents the findings identified from Theme 1- Complexity of care: Caring for the patient within the context of violence, abuse and danger.

8.2.2. Methods

8.2.2.1. Design

A qualitative study design utilising semi-structured interviews was undertaken to understand the participant experience of the phenomenon. The COREQ (consolidating criteria for reporting qualitative studies) checklist was utilised to report the findings.

8.2.2.2. Recruitment

A purposive sampling technique (Creswell & Plano Clark, 2018) was utilised to recruit participants nationally through two methods. 1) Questions was included in a survey conducted previously where the participant indicated they were interested in participating in interviews. 2) Social media adverts were circulated asking police and paramedics to contact the research team if they were interested in participating in the interviews. Inclusion criteria included potential participants be: over 18 years of age; able to speak and read English; currently working as a frontline police officer or paramedic in Australia; experience managing persons under the influence of methamphetamine who required transport to an ED.

A total of 18 police and paramedic participants gave consent to participate (Police n = 10, Paramedics n = 8). Participants worked in different locations (Police: metropolitan n = 7, rural n = 2, remote n = 1; Paramedics: metropolitan n = 3, rural n = 1, remote n = 1, across all areas n = 3) across Australia. The duration of the interviews ranged from eight to 37 minutes, (n = total 405 minutes; average of 22.5 minutes). Interviews were conducted over the phone and at a time that was convenient for the participant.

8.2.2.3. Ethical considerations

University of New England's research ethics committee granted ethics approval to conduct the research (HE18-209). Participation was voluntary. The research team provided the participant with an information sheet, telephone transcript, and consent

form prior to arranging an interview. Participants provided the research team with written consent prior to interview and confirmed verbally at interview.

8.2.2.4. Data collection

Data collection occurred in Australia over 14 months (May 2019-July 2020). Recruitment of participants occurred via e-mail invitation through a social media advert or participation in a survey (previous data collection method of the larger research project) where participants indicate they were willing to participate in an interview. Semi-structured interviews were guided by six standard questions to ensure the rigor of the interview process and the ability to analyse interviews under common themes (Nowell et al., 2017). The interviews gathered participant characteristic data on profession and location (rural, remote or metropolitan) at the commencement of the interview. The focus of the interview questions explored participant experience caring for persons under the influence of methamphetamine who required transport to an ED; the challenges of caring for these patients; the reasons for transport to ED; and identifying and discussing additional resources or processes required to manage these patients. Interviews were conducted over the phone at a time and date that was suitable to the participant. The interviews were audio recorded for the purpose of transcription and were transcribed by an approved transcription service.

8.2.2.5. Data analysis

Thematic analysis (Clarke & Braun, 2017) was used to analyse the interview data. The researcher followed a six-step process to ensure a rigorous and high quality analysis of the data text (Clarke & Braun, 2017; Nowell et al., 2017). The steps involved included familiarization with raw data, identification of initial themes, searching for themes, and developing connections between themes, and themes were reviewed by the research team until a consensus was reached on the final themes (Nowell et al., 2017). In this study, the interviewer coded the data using NVivo before discussing the codes with an experienced research team member to confirm codes, group codes into themes and reach a consensus on themes. Data collection continued until data saturation was reached, no new data generated or new themes identified (Fusch & Ness, 2015).

8.2.2.6. Results

Analysis identified three main themes; Theme 1- Complexity of care: Caring for the patient within the context of violence, abuse and danger; Theme 2- Responding to methamphetamines: A focus on safety; Theme 3- Managing care: Continually modifying care practice. This paper presents an overview of Theme 1: Complexity of care: Caring for the patient within the context of violence, abuse and danger. Participant quotes are used to illustrate themes and for each quote, police are identified as PP and paramedics are identified as PA. Table 8-1 presents each theme identified from the analysis, and the sub themes and threads for each theme. The theme presented in this paper is highlighted in blue.

Table 8-1 Overview of themes, subthemes and threads from interviews exploring Police and Paramedics experience

Theme	Sub themes	Threads
Complexity of care: Caring for the patient within the context of violence, abuse and danger.	Mental health and behavioural changes: The unpredictable nature of methamphetamines	Behaviour Unpredictability Violence and aggression Increased strength Verbal and physical abuse Mental health Paranoia, hallucinations, psychosis and depression Co-occurring mental health Inability to communicate effectively Patient assessment Drug use masking medical conditions Chemical sedation Patients present state of crisis
	A focus on caring: The challenges of managing persons under the influence of methamphetamines	Respect Understanding Empathy Concern Desire to help Frustration to make lasting change
	Compassionate care in the context of violence, abuse and danger	
Responding to methamphetamine-related callouts: A focus on safety	Personnel safety: Responding to violence and danger	Protecting patients from themselves Protecting patient during care
	Acute behavioural disturbances: Maintaining patient safety	Protecting patients from themselves Protecting patient during care
	Unsafe environments: Drug use corrupting families	Domestic and family violence Extreme violence resulting in injury Children at risk
Managing care: Continually modifying care practices	Coordinated, standardised approach to care	Standardised approach between police, paramedics and EDs Streamlining services Police and guidelines De-escalation New care approaches Access to specialised care Discharge and follow-up Hospital security
	Managing care: Improving services and care environments	Suitable areas in ED Transport vehicles Increased risk providing care in rural/remote areas Lack of resources and facilities in rural/remote areas In-experience effecting decision making In-experience staff required additional support
	In-experience and staff needs	Specific drug education Negotiation and de-escalation Self-defence

There were three subthemes identified for Theme 1 (Complexity of care: Caring for the patient within the context of violence, abuse and danger); 1- Mental and behavioural changes: The unpredictable nature of methamphetamines, 2- A focus on caring: the challenges of managing persons under the influence of methamphetamines,

3- Compassionate care in the context of violence, abuse and danger. Analysis revealed responding to incidents or caring for persons affected by methamphetamines was complex. The effect methamphetamines had on the user (physical strength, acute behavioural disturbances and elements of mental health issues/illness), the state of crisis patients often presented in, and the challenges of providing care associated with persons under the influence of methamphetamines, affected the complexity of care.

8.2.2.7. Mental health and behavioural changes: The unpredictable nature of methamphetamines

Complexity of care was affected by the reported negative side effects (mental health and behaviour) of methamphetamines use. Both police and paramedics participants reported similar findings for this theme. Acute behavioural disturbances (behavioural changes) most often discussed by participants included: unpredictability, increased strength, violence and aggression, and verbal and physical abuse. Mental health changes identified by participants included paranoia, depression, delusions, hallucinations, and psychosis. The degree in which these changes affected complexity of care was associated with when the person had last used methamphetamines, the mixture of methamphetamines used, and if they were a regular user. The duration of time since the patient had last used methamphetamines and the composition of the drug used (whether adulterants, diluents [bulking agents] or contaminants have been added) (Cole et al., 2010), were identified as being influential on patient presentation. Persons who had not used for over a day were easier to manage with less difficult acute behavioural disturbances and mental health illness than if the person had used methamphetamines recently before paramedics or police arriving. Persons who used recently or just prior to police and paramedics arriving were more dangerous and required additional resources/staff.

In general, it depends how recently they've used meth to be honest, this is in my six years' experience. People that have recently shot up or used meth within the last few hours can be violent, unpredictable and quite dangerous. They may be suffering from a meth-induced psychosis or schizophrenia or mental health issues in relation to their drug use....Regular users that have built up tolerance over a number of years and have it in their system but haven't shot up recently can be quite normal or quite reasonable to deal with. (PP8)

Participants also mentioned they could identify when a particularly bad batch of methamphetamines had arrived in the area. They indicated this resulted in an increase

in callouts as well as an increase in the violence displayed, in particular, domestic violence.

...probably more of a general comment, but, put it this way, we can always tell when we have meth come into town. We can always tell also when we have flakka or bath salts come into town and they often mix that with the meth, which makes it even worse. So it's very telling that we know straightaway when someone's brought stuff into town, simply by the nature of our work and how much it goes up. For example, we might attend anywhere between about three and five domestic incidents on a shift and some nights that will go up to 20 and they're all extraordinarily violent and our lockup's full and they're trying to tear the place apart. Then we won't see them again for a couple of weeks and, as I said, you just know when some gear has come into town and particularly if they're mixing it with other substances. (PP3)

Despite when the person had last used methamphetamines or the precursor chemicals/drugs used to manufacture the drug, participants agreed methamphetamine use created a more dangerous work environment due to acute behavioural disturbance and non-compliance. Participants noted persons under the influence of methamphetamines often presented with abnormal increases in physical strength, which made it difficult to control the situation if the patient became excited or non-compliant. Bursts of energy accompanied the increase in strength, requiring additional staff to manage and control the situation.

I mean personally I've dealt with females who have been under the influence of methamphetamine and I'm a reasonable size guy. I can handle myself. Some of these girls who are probably 55, 60 kilos have got the strength of a man at about 100 kilos in short bursts of energy. It's quite hard to understand how someone of such a slight build can generate so much power, but it does happen and it's surprised me the amount of strength that comes from a person of small stature, let alone someone of a large build. But they do tend to have bursts of energy where you could have four people holding someone and you're still struggling to contain them. (PP7)

Participants identified several noticeable acute behavioural disturbances exhibited by persons under the influence of methamphetamines. These changes made it more difficult to care for patients and added to the complexity of care. Participants identified unpredictability as a common theme, describing patients as reasonable or compliant one minute and unreasonable the next. This rapid change made caring for patients under the influence difficult due to an inability to predict and control the situation.

That's something I believe that's really disconcerting with the methamphetamine patient. One minute, they can be talking to you almost holding eye contact, be generally a reasonable conversation. The very next second, they can be spitting at you, trying to launch themselves out of the back of the ambulance, launch themselves at you, run away, all these different things that can happen and that's the one word is unpredictability that I associate with methamphetamine patients versus anyone else. (PA13)

Participants reported experiencing verbal abuse and patients fought against them when restraints were required to manage the situation. Police participants who had experience managing dangerous situations (history of working for the military), still found these situations difficult to manage. Situations were resource intensive, requiring police and paramedics to attend and assist in transporting the patient to ED. In ED police were required to remain until hospital security had control of the situation and ED staff had assessed the patient.

He was highly agitated when we got there. It took two of us, myself and my partner at the time...a lot of verbal and physical fighting to get him under control..... Both of us were ex-military so we both knew how to handle ourselves and it was probably a good hour's worth of wrestling.....probably be more like 15 minutes in all honesty, but it took a while to get him under serious control before we could detain him with handcuffs. Then we got the ambulance to turn up and then they ended up taking him to hospital with one of us in the back of the ambulance with him. (PP5)

People who used methamphetamines did not think and react the same way as other patients. Participants described the violence as excessive and abnormal compared to assaults perpetrated by people who were not under the influence of methamphetamines. This potential for excessive violence made the situation more complex and difficult. When arriving at a violent assault scene, the injuries to the victim were extreme and potentially traumatising for both the victim and staff.

I mean, with meth though you're stabbing them or hitting them multiple times or even when they escape, they then chase them down the road. It's almost like they're trying to kill people, the assaults are far more vicious..... (PP3)

In addition to the traumatising nature of caring for violent and abusive patients, participants identified part of the complexity of care involved physically managing patients with escalating behaviour. A way of dealing with the escalating behaviour involved limiting physical contact with the patient, to remain alert and vigilant, and prepare for the situation to escalate.

...it's desperately trying to manage the physical contact with these patients, who are quite likely to suddenly explode with a whole lot of aggression, whether that be deliberately targeted at our staff or accidentally targeted, or accidentally affecting our staff as well. It's really hard to know exactly when, and why, or how, these patients are likely to suddenly...become excitable or aggressive. That's always in the back of my mind. It's how to deal with that is really, really difficult and there's not really a set way that you can deal with that sort of thing except to plan ahead accordingly and try and make sure there's a way out. (PA14)

In addition, persons who used methamphetamines were likely to display signs of a mental illness. Mental health problems identified by participants included depression, anxiety, hallucinations, paranoia and excited delirium/psychosis. Hallucinations often

resulted in the patients losing touch with reality and engaging in bizarre behaviour in public, creating public concern in addition to putting themselves at risk. This combination of mental health and drug related presentations made the person more dangerous and erratic adding to the complexity of care and often required additional staff and time. Participants felt management of was ineffective for mental health issues related to drug use, which influenced the management outcomes of these patients.

I think it's very much tied with a lot of mental health issues. Typically, in my experience, heavy methamphetamine users do suffer from anxiety, depression and stuff like that. Yeah. If we're ever going to fix it, they need to, I think, address that issue first instead of just shoving people through the courts and booting them out the other side with a fine. That's just my opinion. (PP8)

8.2.2.8. A focus on caring: The challenges of managing persons under the influence of methamphetamines

Providing care or responding to persons under the influence of methamphetamines was identified by participants as challenging and difficult, adding to the complexity of care. Challenges identified by both police and paramedic participants included; inability to communicate effectively and patients presented in various states of crisis with extensive social circumstances. Paramedic participants reported more complex themes in addition to these including; difficulty communicating with patient effect care decision making and their ability to complete a full assessment, medical conditions masked by drug use, and patients often presented in medical crisis making patients more at risk of rapid deterioration.

Both police and paramedic participants found persons under the influence of methamphetamines were difficult to communicate as the drug affected the person's ability to concentrate, and repetitive talking. This inability to communicate with patients added to the challenges.

A lot of them are very unfocused, very fidgety. They repeat themselves a lot when they're talking. They don't focus, they find it very difficult to maintain any eye contact. Their movements are very sporadic and it's very difficult to predict what they're going to do or how they're going to move. (PP5)

Paramedic participants felt an inability to communicate with patients under the influence of methamphetamines affected their ability to develop a therapeutic relationship and complete a full assessment (including medical history and history of drug use). Assessment and history were considered paramount to being able to

provide proper medical attention, and required prior to administering any form of chemical sedation. Participants reported vigilance was essential to ensure life threatening medical conditions are recognised and treated without delay.

In addition to that of course there is also the fact that just because someone is high on meth doesn't mean they're not having a medical episode or had a former episode that they can't tell you about it. Your ability to assess a patient is paramount during the course to make sure that their respiratory and cardiovascular functions are not adversely affected in the process of the apprehension or the transport; and that the assessment includes to make sure that they haven't been injured in a fall or an assault leading up to us needing to be involved in transporting them and that sort of thing. We still need to be vigilant to make sure that those things have been accurately assessed and managed and that means we have to take all that into account when we consider any use of chemical or physical restraint and how we apply those and monitor for ongoing patient wellbeing. (PA17)

In addition, difficulty communicating with patients affected paramedic participants' decision making about providing care. Participants highlighted it was challenging to determine if the patient was drug affected or required medical attention. If the patient required further assessment and treatment, additional staff and time were required. Both police and paramedics were often required on scene to help transport patients to ED.

The hard point is trying to find the line between, is this person crazy enough that they need to go to the hospital and be in an ambulance and get treatment, or are they just on meth and we're going to bring them back and talk to them about stealing that they did two days ago?...Where do I find the balance between totally sober and so far down the line it's like, no, you definitely need an ambulance because you're nuts. Finding that line can be difficult sometimes. (PP8)

Paramedic participants explained the patients' medical condition and their ability to assess patients impacted on the challenges associated with caring for persons under the influence of methamphetamines. The effect of methamphetamines could mask other medical conditions or medical conditions could be mistaken as drug side effects, resulting in a delay in medical care or incorrect diagnosis.

We had a patient recently with...meningitis B... that was a patient that was bouncing around the room. At first, I thought she is a known IVDU- intravenous drug user. So I...highly suspected she had been on meth, however, the way she presented was not exactly the same and it turned out that yeah, she had meningitis, but I still sedated her simply because she...she wasn't in control of her own self because of the swelling in the lining of the brain. (PA13)

Persons under the influence of methamphetamines often presented in a state of social, medical or mental health crisis (more than just drug-related presentations) which added to the challenges and complexity of care. This issue was identified by both police and paramedic participants. Paramedics further explained that persons under

the influence of methamphetamines could present medically unwell, especially when bingeing on methamphetamines over a period of days. When bingeing on methamphetamines, patients tended to ignore medical conditions and treatments, failed to notice they were unwell, and were less inclined to look after their own health. This could result in serious and rapid deterioration in their medical condition.

...they can also be clinically very unwell. A number of patients that I've seen in the last six months have been quite septic and quite far progressed down that septic shock pathway. Because of their level of drug intoxication over I guess a protracted period of time they've not taken care of their own healthcare needs and it's got to that point where they're actually really clinically quite unwell with a challenging prognosis and a long period of time to recovery from their underlying physical illness as well as the drug intoxication. (PA18)

In addition, paramedic participants described patients who bingeed on methamphetamines, over a period of time, often went days without sleep and presented in a 'hyped up' state. This often resulted in adverse side effects to their mental health (instigating excited delirium or a psychotic episode), and their physical health (exhaustion and negative cardiovascular side effects) adding to the state of crisis they were presenting in.

A good proportion of them would be because they're in a paranoid psychotic state where they're a danger to themselves or others. That would be at least 50 per cent. Then another 50 per cent is where they have called us because they're now sleepless and anxious, or complaining of cardiovascular side-effects like chest pain and things like that after big benders. Frequently those sleepless or chest pain type patients have some element of psychosis as well, because to get to that stage, we're talking probably three or four days of meth without any proper breaks. Even just the sleepless nature of that makes them pretty prone to abnormal behaviour, if you don't add methamphetamine on top of that. (PA14)

Both police and paramedic participants identified extensive social circumstances added to the state of crisis and made callouts related to persons under the influence more challenging. Social circumstances identified by participants included, social upheaval, a state of personal distress, a lack of social support, and lack of trust for health care services. A breakdown in relationships resulted from substance use and engaging in risky lifestyle choices exacerbated the social isolation. To maintain their drug habit, people who use drugs often engage in criminal activity, such as dealing drugs and engaging in prostitution, which further affected their mental and physical health.

One of them will be getting apprehended by police and having a timeframe of going to jail, right. They'll start spiralling, using more and more and committing more. I don't know the health side of it, but they go into this spiral where they're using so much. They need to commit more crime....They're never sleeping. Then more people are after them and they're going...crazy. We will catch them at that

point when they're so wanted for so many crimes. It ends in quite a violent, dangerous apprehension. (PP4)

Police participants expressed concern about spiralling behaviour and the self-destructive trajectory of persons who used methamphetamines. This self-destructive behaviour would increase over time with some users spiralling out of control until they reached a crisis point. Police participants identified this further exacerbating the impact on social circumstances.

Sooner or later, they will all come crashing down. I've spoken to people who have managed to successfully use meth for 10 or 15 years and then finally there'll be a trigger in their life. Something will happen that will cause them to spiral downhill, use more and more and more, and then before they know it, they're living out of a car and their mates have stolen all their money and they've had their phone stolen and all sorts of stuff. (PP8)

8.2.2.9. Compassionate care in the context of violence, abuse and danger

Despite the complexity of care and the challenges providing care, both police and paramedic participants expressed a sense of compassion towards persons who used methamphetamines. Participants expressed compassion as concern, treating patients with respect, understanding, empathy, and a desire to help. The demographic of people who used drugs was likely to be any age, came from any social situation and have different levels of education or work experience. In one experience shared by a participant, the patient was a 40-year-old, respected female. There was a sense of sadness as they shared the story and concern over the state of crisis the patient was presenting in.

...a lady, about 40, that I'm dealing with now that's a long-term meth addict. But she's at the downward end of her use of it where she's in a position in life where she has no finances, lost the house, lost her jobs. In our contacts with her, she's just dishevelled, skin sores, lost weight, grinding her teeth. She can't speak....I need to interact with her, because she drives. I caught her driving....a positive oral fluid test for meth last week. She's employed by a state government department but is currently suspended.....When I deal with her, she's a very calm person, but she came in last week....a violent tirade for a few minutes, blaming me for everything that's happened in her life. Look, that's just a different situation where it's just somebody that's just a user that's deteriorated themselves to such a position where they'velosing their job, their house, their kids, everything, money. (PP4)

Caring for persons under the influence of methamphetamine is risky but despite the risk, participants expressed that persons under the influence of methamphetamines deserved respect. Participants identified that patients who used methamphetamines were still people with family and culture/community attached, it was especially

important to maintain a relationship with community and respect cultural differences. These were key to ensuring the community trusted the participants and participants sometimes put themselves at risk to ensure their relationship with the community was preserved.

Now, there is a valid argument to say that you should just stand back and wait until they [police] arrive, but if you've got somebody laying on the front lawn and you've got family watching you, bearing in mind like I said, 85 to 90 per cent of our calls are Indigenous which carries other issues with it, if you stand back and allow that person to lay on the grass and don't render some assistance, that will be remembered. So you are thinking about your relationship with Indigenous population, your standing within that same population is not the same as Caucasian where...paramedics are the most trusted profession. Indigenous people don't look at it like that...they have a different view of the world. So all of those factors make it a difficult situation to just sit back and wait for the police because like I said, the police may be 20 minutes away, who knows? So we do go in. I do go in or I do go up to the patient. At that point, I'm putting myself in a position of danger and until I can figure out what's happening quickly.... (PA13)

Participants felt judgment needed to be reserved while treating people who use drugs, and to approach the situation with compassion and empathy. Methamphetamine use, was seen by some participants, as an addiction/illness and the side effects of the drug sometimes made the patient behave in inappropriate ways, which the patient had limited control over. It was also recognised that the acute behavioural disturbances (aggression and violence) often exhibited were a result of methamphetamine intoxication and not a personal attack. Participants understood life circumstances could lead to drug use and anyone could end up in their situation.

...but it's, everyone's got a story, so that's what I've learned. Things that you learn as you go along, and so it's really easy to judge and go, yeah, yeah, but...if someone, at some stage of my life said, try this it's great, do you know what I mean? Maybe you try it and it is great and you don't see the long-term thing, do you? (PA15)

Some participants expressed a wish to understand why patients used drugs, and how they came to be in this particular situation. Offering assistance and services to help the patient get off drugs was seen as important by some participants, however participants recognised only a few people engaged in services to manage their drug dependency. Participants reported a sense of frustration and helplessness due to an inability to make lasting change.

You wonder why they're there and how they've got there. I'm kind of different to everyone. I try and talk to people and figure out what's got them in that circumstance and then what they've tried to do to get themselves out to it...I do wonder what's brought them there and what if anything I could do to help them, but I guess it's the old rule with policing that you don't learn until you get in that a lot of people just don't want help... There are people that want help...but there's the majority out there that keep ending up in the back of a paddy wagon

and then when you offer them help or you offer to do things for them...they just don't want help (PP8)

Despite the hopeless cycle of addiction, participants shared a few experiences where long-term users finally escaped their addiction. There was a sense of hope displayed when discussing these experiences.

oh, look I mean, one positive story that comes to mind is a young 20-year-old bloke who I ended up getting to know quite well who'd been a long term Ice user since he was 13 or 14 from memory and he's recently had 12 month anniversary of not taking any drugs anymore and has really gone about re-building his life. So that's a nice one as well. (PA18)

8.2.3. Discussion

To our knowledge, this current study is the first study to explore the experiences of both police and paramedics caring for persons under the influence of methamphetamine in the pre-hospital environment. Overall, police and paramedics described methamphetamine related callouts as complex and challenging to care for and manage. Complexity of care was linked to the negative effects associated with methamphetamine use (physical strength, acute behavioural disturbances and elements of mental health illness), challenges faced by police and paramedics caring for and managing persons under the influence of methamphetamines, and patients sometimes presented at crisis point. Despite the complexity of care and challenges associated with caring for and managing persons under the influence of methamphetamines, some participants expressed compassion and empathy towards people who used methamphetamines.

Elements of mental health were associated with methamphetamine use. Common mental health illnesses associated with methamphetamine use include schizophrenia, depression, and suicidal ideation (Jones et al., 2018). A study conducted in Australia by Cleary et al.'s (2017) supported our findings, reporting methamphetamine-related presentations had co-occurring mental health issues. Psychosis has also been previously linked to methamphetamine use (McKetin, 2018; Yang et al., 2020), with a relationship noted, by a study conducted in China, between age of first use and psychotic symptoms increase over years of use (Yang et al., 2020). This current study also further developed this concept with participants identifying co-occurring mental health issues and drug uses increased the dangerous and erratic behaviour exhibited by patients and added to the complexity and challenges faced when caring for persons under the influence of methamphetamines. Drug use with elements of mental health

require more than just a drug use approach to care, mental health illnesses also need to be managed and treated to make a difference to methamphetamines dependency.

Methamphetamine use increases strength, unpredictable, and violent and aggressive behaviour. Previous research exploring the experience of health professionals in ED support our findings. The study conducted by Usher et al. (2017), reported participants identified people who used methamphetamines demonstrated ‘unparalleled physical strength’, and additional resources and staff are required to provide care. Acute behavioural disturbances have been linked to methamphetamine-related presentations to ED with previous research identifying behaviour as aggressive and violent in nature (Bunting et al., 2007; Jones et al., 2019a; Toles et al., 2006) and unpredictable (Cleary et al., 2017).

Usher et al.’s (2017) study conducted in Australia, reported aggressive and violent behaviour was confronting and increased the risk of safety to those working in ED environments, and patient behaviour could rapidly escalate. Despite the negative impact of violence there appeared to be a culture of acceptance for this behaviour (Usher et al., 2017). Cleary et al. (2017) reported methamphetamine presentations were unpredictable and uncontrollable. This study confirmed these findings and reported an increased level of violence associated with methamphetamine fuelled assaults, verbal and physical abuse suffered by staff and managing violent and aggressive situations can be traumatising. Hahn et al.’s (2012) study, conducted in Switzerland, reported violence had a physical and psychological impact on 90% of the healthcare workers surveyed, and increased sick leave (due to physical and psychological reasons).

Management of persons under the influence of methamphetamines often required restrictive practices (physical restraint and chemical sedation) due to violence and aggression, unpredictable, and uncooperative behaviour. Recently though, there has been a push to reduce the use of restrictive practices with an emphasis on de-escalation (McKenna et al., 2017). Communication is an influencing factor in de-escalating violent situations (Hahn et al., 2012; Usher et al., 2017). However, participants in this study reported significant challenges when communicating with persons under the influence of methamphetamines, which may impact the effectiveness of de-escalation. In the pre-hospital environment, it can be difficult to develop a trusting therapeutic relationship due to patients preconceived ideas of

judgment and negative attitudes (Leslie et al., 2018; Miles et al., 2014), time constraints and inability to communicate effectively with patients while under the influence. De-escalation strategies need to incorporate strategies when communication fails, and de-briefing and support services are required for staff to help mitigate the traumatic effect of experiencing violent situations.

In addition, challenges with communicating to patients affects police and paramedics decision making in difficult situations and how they complete a full assessment for diagnostic purposes. An inability to perform a complete history made caring for patients more challenging and increased the risk associated with the use of chemical sedation and physical restraints. Previous research has identified persons under the influence of methamphetamines have increased complexity of care related to an inability of health professional to perform a complete assessment (Cleary et al., 2017), and lack of details on the patients drug usage (Usher et al., 2017).

People who use drugs or suffer from substance dependence change their focus from family to drug consumption resulting in breakdown in social networks and family relationships (study conducted in Germany) (Dyba et al., 2019). This study reported persons under the influence of methamphetamines were engaged in a self-destructive trajectory that resulted in patients presenting in a state of crisis. States of crisis involved extensive social circumstances, (lack of social support, social upheaval), emotional or personal distress, and lack of trust towards health professionals, which added to the complexity of care. This was supported by Cleary et al.'s (2017) study, which reported social situations added to the complexity of caring for persons affected by methamphetamines, with participants identifying a breakdown in relationships or complex social situations were not managed or followed up once discharged from hospital. Sommers et al.'s (2006) study, conducted in United States of America (USA), disagreed suggesting methamphetamines and negative social side effects was limited, reporting only 31% of methamphetamine addicts reported minimal social side effects to drug use and 19% reported no social side effects at all. Dyba et al.'s (2019) study reported social crisis and stress were reasons given by users for their increased methamphetamine use and Hahn et al. (2012) reported extreme stress such as crisis situations can increase the potential for patients to be violent, aggressive or abusive (physical and verbal). Reviewing patient support services to ensure services are

available to alleviate the states of crisis in which patients present are required to ensure patients' needs are met.

Participants expressed helplessness and frustration due to an inability to make lasting change. Participants expressed a desire to help and link patients to other services but felt only a few people want help with their substance dependency. Beletsky et al.'s (2005) study, conducted in USA, supported this finding, adding participants doubted their ability to make lasting change at an individual and community level. Frustration in drug treatment gaps and a failure in criminal system to manage people who use drugs was also identified (Beletsky et al., 2005). Cleary et al.'s (2017) study and van Boekel et al.'s (2013) study both reported health care professionals felt frustration and resentment towards people who used drugs. Despite the frustration, and the negative and traumatic experiences expressed by participants in this study, some participants felt compassion towards people who used drugs. Compassion was expressed as concern, respect, empathy, and understanding. Respect, honesty, understanding, trust and cooperation are critical to developing a partnership or therapeutic relationships with patients (Cleary et al., 2017; Miles et al., 2014; Treloar, et al., 2016).

Compassion and understanding can reduce stigmatization and negative attitudes towards people who use drugs (Treloar et al., 2016). In addition, Leslie et al.'s (2018) study reported positive experience while interacting with police were associated with police showing understanding and treating people who use drugs the same as any other person. These positive experiences shaped how people interacted with police in the future and their willingness to cooperate (Leslie et al., 2018).

8.2.3.1. Strengths & limitations

The findings from this current study only represent a small number of police and paramedics from across Australia and participants were self-selected which may increase selection bias. However, all participants had experience caring for persons under the influence of methamphetamines on a regular basis, and participants were from both rural/regional and metropolitan areas. We acknowledge social desirability bias may affect our findings. This study did not include interviews from consumers of methamphetamines who required transport to ED or from ED staff (mental health, nurses, doctors, security officers). Identifying drug use is problematic, often relying on self-report from patient or relatives and clinicians' judgement (determining if the

drug use is clinically significant or identifying drug use) and recoding drug use in the medical records. Both methods are not 100% accurate and can result in misreporting/identifying drug use related to presentation/callout. In addition, participants were reflecting on their experience managing persons under the influence of methamphetamines and negative experience managing aggression and violence may have impacted the participant's responses.

8.2.4. Conclusions

The findings presented provide an understanding of the complexity of care, and the interaction and nature of methamphetamine-related callouts in the pre-hospital environment. Complexity of care is affected by an inability to effectively communicate to the patient, acute behavioural disturbances (violence, aggression and physical and verbal abuse), co-occurring mental health issues (paranoia, hallucinations, delusions), and patients presenting in a state of crisis. It is important to ensure debriefing, support services and resources are available to police and paramedics to assist in managing the traumatic and unpredictable situations associated with caring for persons under the influence of methamphetamines. Further services are required for patients who are presenting in crisis states to help alleviate the potential for violence and representation.

8.2.5. Relevance to clinical practice

- Challenges communicating with persons under the influence of methamphetamines can impact the effectiveness of de-escalation techniques, as well as decrease the quality of assessment obtained from patients resulting in misdiagnosis or delay in medical treatment.
- There is a clear need for staff support services and debriefing due to the nature of methamphetamine-related callouts.
- Emergency staff need to be aware that patients who use methamphetamines may present at crisis point, with heightened emotions, social upheaval, lack of social support, and lack of trust for police, paramedics and other health professionals.

End of manuscript

8.3. Summary

This chapter presented the results from theme 1 (Complexity of care: Caring for the patient within the context of violence) from the qualitative interviews conducted in phase two of this study. Participants described methamphetamine-related callout events as complex and challenging. Acute behavioural disturbance and co-occurring mental health illness, and managing dangerous and violent situations were potentially traumatising to staff affecting complexity of care. Participants highlighted challenges caring for persons under the influence of methamphetamines included; an inability to communicate effectively to the patient, inability to complete a full assessment, ineffectiveness of de-escalation, and patients presented in states of crisis. Despite negative experience, participants felt compassion towards persons who used methamphetamines. These findings are important as they help to define the impact felt by police and paramedics caring for an increasing number of callout events related to methamphetamines. In addition, these findings can help us to begin to understand how experience affects police and paramedics perceptions of deservingness and attitudes towards methamphetamine users.

The following chapter (nine) will present the results from theme 2 (Responding to violence, abuse & danger: A focus on safety) from the semi-structured interviews conducted in phase two of the study.

**Higher Degree Research Thesis by Publication
University of New England**

STATEMENT OF ORIGINALITY

We, the Research Master/PhD candidate and the candidate's Principal Supervisor, certify that the following text, figures and diagrams are the candidate's original work.

Type of work	Page number/s
Published Manuscript	162 - 180

Name of Candidate: Rikki Jones

Name/title of Principal Supervisor: Professor Kim Usher



Candidate

5/11/2020

Date



Principal Supervisor

23/11/2020

Date

**Higher Degree Research Thesis by Publication
University of New England**

STATEMENT OF AUTHORS' CONTRIBUTION

(To appear at the end of each thesis chapter submitted as an article/paper)

We, the Research Master/PhD candidate and the candidate's Principal Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated in the *Statement of Originality*.

	Author's Name (please print clearly)	% of contribution
Candidate	Rikki Jones	40%
Other Authors	Professor Kim Usher	20%
	Dr Cindy Woods	20%
	Professor Debra Jackson	20%

Name of Candidate: Rikki Jones

Name/title of Principal Supervisor: Professor Kim Usher



Candidate

5/11/2020

Date



Principal Supervisor

23/11/2020

Date

Chapter 9. Responding to methamphetamine-related callouts: A Focus on safety

Title of Article: Responding to methamphetamine-related callouts: Police and paramedics experience of caring for people affected by methamphetamines

Authors:

Rikki Jones, (BN, RN)

Debra Jackson (AO, RN, PhD, FACN, SFHEA)

Dr Cindy Woods, (BEd, PhD)

Professor Kim Usher, (AM, RN, RPN, A/DipNEd, BA, BHSc, MNSt, PhD, FACN, FACMHN)

Manuscript submitted to:

Status of Manuscript: Drafted

Submission dates:

Citation information:

Signed:



Candidate



Principal Supervisor

9.1. Introduction

This chapter will present a discussion on the results from Theme 2 (Responding to violence, abuse & danger: A focus on safety) from phase two of the study. The aim of phase two was to explore police and paramedics experience caring for persons under the influence of methamphetamines and required transport to an ED. A manuscript (under-review) will present the results and discussion, using the latest word document at the time of submission to the Journal. A chapter summary will follow the manuscript, summarising the key findings from theme 2. UNE Human Research Ethics Committee (HREC) granted ethics approval (HE18-209, appendix I).

There were several key findings reported from theme 1 (chapter eight). Participants described methamphetamine-related callout events as complex and challenging. Acute behavioural disturbance and co-occurring mental health illness, and managing dangerous and violent situations were potentially traumatising to staff affecting complexity of care. Participants highlighted challenges caring for persons under the influence of methamphetamines included; an inability to communicate effectively to the patient, inability to complete a full assessment, ineffectiveness of de-escalation, and patients presented in states of crisis. Despite negative experience, participants felt compassion towards persons who used methamphetamines.

9.2. Manuscript: Responding to methamphetamine-related callouts: Police and paramedics experience of caring for people affected by methamphetamines.

Abstract

Methamphetamine, a psychostimulant that directly effects the central nervous system (CNS), is often associated with acute behavioural disturbances (aggression and violence, unpredictability) and psychosis. Violence associated with methamphetamine-related acute behavioural disturbance (ABD) contributes to workplace violence (WPV), particularly for frontline workers. Police and paramedics in the pre-hospital environment are increasingly required to respond to callout events

related to methamphetamines and ABD despite reports that methamphetamine use across Australia is decreasing. A qualitative study was utilised to explore the experience of police and paramedics caring for persons under the influence of methamphetamines in the pre-hospital environment. Thematic analysis revealed caring for persons under the influence of methamphetamines increased safety risks for staff, patient and families. Personal safety was a major concern due to fear for personal safety, increased risk of physical and psychological assault, and direct and indirect threats. It is important for organisations to instigate a care approach utilising guidelines that help staff manage and reduce WPV related to ABD. In addition, debriefing and support services need to be available to help staff and families manage violence both in the workplace and at home.

9.2.1. Introduction

Methamphetamine is a psychostimulant directly effecting the central nervous system (CNS), primarily the neurotransmitter transporters in the brain, causing the release of dopamine, serotonin and norepinephrine (Evren & Bozkurt, 2018). The short-term effects of methamphetamine include euphoria, increased alertness and endurance, decrease in fatigue, and loss of appetite (Commonwealth of Australia, 2015; Evren & Bozkurt, 2018; Scott et al., 2007). Long term use of methamphetamines often results in negative side effects such as acute behavioural disturbances (aggression and violence, unpredictability), mental illness (paranoia, hallucinations, delusions, depression, suicidal ideation and psychosis), skin lesions, sleeplessness, and neurotoxicity (Cloutier et al., 2013; National Institute on Drug Abuse, 2013; Vearrier et al., 2012). Despite the Australian Institute of Health and Welfare (AIHW) recently reporting an overall decrease in methamphetamine use (Australian Institute of Health and Welfare, 2020), reports of presentations and callout events related to methamphetamines has increased (Jones et al., 2019a; Stafford & Burns, 2015), and self-reported mental health issues related to methamphetamines have also increased (Australian Institute of Health and Welfare, 2018).

Unpredictable, aggressive and violent behaviour (acute behavioural disturbance) is commonly associated with methamphetamine intoxication (Cleary et al., 2017; Commonwealth of Australia, 2015; McKenna et al., 2017), and methamphetamine-related presentations to emergency departments (ED) (Brecht & Herbeck, 2013;

McKetin et al., 2014). Research has reported that between 41%-66% of people with methamphetamine-related presentations to EDs exhibit violent or aggressive behaviour (Bunting et al., 2007; Jones et al., 2018; Toles et al., 2006). Previous research has established a link between methamphetamine use and violence, reporting patients intoxicated by methamphetamines had an increased risk of violent behaviour by 60% (McKetin et al., 2014). This risk increased with larger doses of methamphetamines, and with co-occurring psychosis and methamphetamine use (McKetin et al., 2014). ABD is reportedly increasing in the emergency response environment (Braitberg et al., 2018; Oliver et al., 2019), and contributes to workplace violence (WPV) with one study reporting at least 66% of WPV is associated with drug and alcohol intoxication. In Australia nurses and paramedics are considered the highest risk for work related injuries and illness due to verbal and physical abuse (Xil & Collie, 2020).

Australian paramedics recently reported 20% experienced WPV in the last 30 days and 75% experienced violence in the past 12 months, with rates in other locations across the world reported between 61% - 90% (Bigham et al., 2014). Types of violence and aggression reported by paramedics and ED staff include verbal abuse, physical assault and intimidation (Allen et al., 2019; Bernaldo-de-Quiros et al., 2014), with verbal abuse the most common form (Gormley et al., 2016; Rahmani et al., 2012). In Australia between 2001 and 2008, 11,235 police made a compensation claim for workplace injury (Ferguson et al., 2011). Workplace violence was attributed to 12.6% of these incidents and 586.9 hours were lost to injury and the cost was estimated at \$6,951 in compensation claims on average per year (Ferguson et al., 2011). In 2009-10, there were 825 cases of serious injuries sustained by paramedics which had steadily increased from 560 in 2000-01 (Maguire et al., 2014). The cost to the health care system ranged from sick leave/time lost due to injury resulting from assault (2.4 weeks), average compensation cost for workers ranged from \$6000 to \$8300, with a total of \$250,000 for all claims related to assault in 20013-14 (Maguire, 2018). In addition, work related injuries are linked to increased burnout, poor health, anxiety and depression (Xia & Collie, 2020).

The number of ED presentations, safety concerns due to WPV and ABD, and the acuity of methamphetamine-related presentations increase the challenges and complexity of care for staff working in the pre-hospital environment. Considering the

increase in ambulance callouts related to methamphetamines, and the safety concerns related to WPV, it is timely to explore the experience of police and paramedics (pre-hospital environment) caring for person under the influence of methamphetamines requiring transport to an ED. Both police and paramedics were included as participants in this current study because, although they are separate services, they are often required to co-attend callout events in the pre-hospital environment, for persons under the influence of methamphetamines. The aim of this study was to explore police and paramedics experiences caring for persons under the influence of methamphetamines who required transport to ED, to understand the impact of increased methamphetamine-related presentations/callout in the pre-hospital environment and determine police and paramedics perceptions of the supports needed to improve their safety and improve quality of care provided.

This study is part of a mixed methods doctoral research project, which included two phases. Phase 1 (quantitative data) focused on methamphetamine-related presentations to ED (Jones et al., 2019a), methamphetamine-related ambulance callout events in Victoria (Jones et al., 2019b) and police and paramedics perceptions of deservingness of medical treatment for people who use methamphetamine (Jones et al., 2020). Key findings reported an increase in the number of methamphetamine-related presentations to ED in Queensland (QLD) and an increase in ambulance callout events and police co-attendance related to methamphetamines in Victoria (VIC). Phase 2 explored police and paramedics experience caring for persons under the influence of methamphetamines requiring transport to an ED. Interviews conducted with police and paramedics identified three main themes. Theme 1 reported on complexity of care, challenges and compassion, theme 2 (current study) focused on safety while responding to violent, abusive and dangerous situations, and theme 3 focused on managing care and environments where care is provided. This paper will present the findings from theme 2.

9.2.2. Methods

9.2.2.1. Design

The qualitative research utilised semi-structured interviews as a method for data collection. Interviews explored the experiences of paramedics and police caring for

person under the influence of methamphetamines requiring transport to an ED. The COREQ checklist was used to report the findings of this study.

9.2.2.2. Recruitment

Recruitment occurred via two methods; participation in a survey and indicating willingness to be interviewed (previous data collection in this research project) or via social media advert using purposeful sampling technique (Creswell & Plano Clark, 2018). Data were collected over 14 months from May 2019 to July 2020 and participants were recruited from five of the eight states and territories in Australia. Participants were required to meet the inclusion criteria to participate in the study: experience managing persons under the influence of methamphetamine who require transport to an ED; currently working as a frontline police officer in Australia or currently working as a frontline paramedic in Australia.

9.2.2.3. Ethical considerations

The University of New England's Human Research Ethics Committee (HE18-209) granted permission to conduct the research. Participants were emailed the information sheet, consent form and interview questions prior to enrolment in the study. As participation was voluntary, all participants were required to give written consent to participate in the interview and confirm consent at interview. Consent included the use of de-identified quotes, dissemination of research, and digital audio recording of the interview.

9.2.2.4. Data Collection

Semi-structured interviews were conducted by telephone at a time that was dependant on participant. The interview collected information on participant characteristics (location worked [rural/remote or metropolitan], and field of work [police or paramedic]) and participant responses to six pre-developed questions. The six questions ensured data could be analysed under common a priori codes. Interviews were conducted until no new codes or themes were generated, and data saturation had occurred (Fusch & Ness, 2015; Nowell, et al., 2017).

9.2.2.5. Data analysis

A six-step process for thematic analysis (Clarke & Braun, 2017) was followed to analyse the interview data, identify codes and group codes under common themes (Clarke & Braun, 2017; Nowell et al., 2017). The process includes; becoming familiar with the data, generating codes, building themes, reviewing codes and themes and getting consensus with the research team, naming and defining themes and reporting results (Nowell et al., 2017). The analysis resulted in three main themes being identified. Theme 1- Complexity of care: Caring for the patient within the context of violence, abuse and danger; Theme 2- Responding to violence, abuse & danger: A focus on safety; Theme 3- Managing care: Continually modifying care practices.

This paper will present the results from Theme 2: Responding to methamphetamines: A focus on safety. For each theme identified, there were also subthemes and threads identified. Themes are presented in separate papers due to richness and depth of information collected, and to reduce the manuscript size to a reasonable length. Table 1 provides a summary of the themes identified from the interviews, and the subthemes and threads for each theme. The theme presented in this paper is highlighted in blue. Each sub-theme will be discussed with quotes used to illustrate the findings, police are identified as PP and paramedics are identified as PA.

Table 9-1 Overview of themes, subthemes and threads from interviews exploring Police and Paramedics experience

Theme	Sub themes	threads
Complexity of care: Caring for the patient within the context of violence, abuse and danger.	Mental health and behavioural changes: The unpredictable nature of methamphetamines	Inability to communication effectively Patient assessment Drug use masking medical conditions Chemical sedation Patients present state of crisis
	A focus on caring: The challenges of managing persons under the influence of methamphetamines	Inability to communication effectively Patient assessment Drug use masking medical conditions Chemical sedation Patients present state of crisis Respect Understanding
	Compassionate care in the context of violence, abuse and danger	Empathy Concern Desire to help Frustration to make lasting change
Responding to methamphetamine-related callouts: A focus on safety	Personnel safety: Responding to violence and danger	Fear for personnel safety Increased risk physical and psychological assault Direct and indirect threats Failure in communication devices
	Acute behavioural disturbances: Maintaining patient safety	Protecting patients from themselves Protecting patient during care
	Unsafe environments: Drug use corrupting families	Domestic and family violence Extreme violence resulting in injury Children at risk
Managing care: Continually modifying care practices	Coordinated, standardised approach to care	Standardised approach between police, paramedics and EDs Streamlining services Police and guidelines De-escalation New care approaches Access to specialised care Discharge and follow-up Hospital security
	Managing care: Improving services and care environments	Suitable areas in ED Transport vehicles Increased risk proving care in rural/remote areas Lack of resources and facilities in rural/remote areas In-experience effecting decision making In-experience staff required additional support
	In-experience and staff needs	Specific drug education Negotiation and de-escalation Self-defence

9.2.3. Results

Analysis of the rich data revealed methamphetamine-related callout events in the pre-hospital environment was dangerous due to increased safety risk associated with caring for persons who displayed violent and aggressive behaviour. Safety issues

identified included increased risk to personnel (staff) safety, increased risk for families living with methamphetamine violence, and increased risk to the patient under the influence of methamphetamines. There were three subthemes identified for Theme 2 (Responding to violence, abuse & danger: A focus on safety): 1- Personnel safety: Responding to violence and danger; 2- Acute behavioural disturbances: Maintaining patient safety; 3- Unsafe environments: Drug use harming families. Analysis identified managing persons under the influence of methamphetamines often involved violent, abusive and dangerous situations. This study included 18 interviews (Police n = 10, Paramedics n = 8) with a total of 405 minutes of data collected (interviews ranging from eight minutes to 37 minutes; average of 22.5 minutes). Ten participants worked in metropolitan areas (Police n = 7, Paramedics n = 3), five worked in rural/remote areas (police n = 3, paramedics n = 2), three paramedics worked in both metropolitan and rural/remote areas.

9.2.3.1. Personnel safety: Responding to violence and danger

Responding to methamphetamine-related callouts often involved responding to violent, abusive and dangerous situations. Threads identified by both police and paramedic participants included increase risk to personal safety, fear for safety of self and co-workers. In addition, paramedic participants highlighted a concern with failing communication device while on scene which increased the risk to their personal safety and caring for patients in dangerous situations had a negative impact on their ability to provide patient care.

Personal safety was a major concern due to increased fear when responding to persons under the influence of methamphetamines. The increased fear was often due to past-experience responding to persons under the influence of methamphetamines who were unpredictable, violent and aggressive behaviour which increased the risk of physical and psychological assault.

Whenever I go to a meth or come to a meth situation, I'm frightened. I won't lie about that. The adrenalin is pumping and you just don't know how it's going to turn out. I will deal with it and wrestle with people. But it scares me. I wouldn't have 10, 15 years ago, worried about my safety as much, dealing with drugs, cannabis, heroin or whatever like that. But with meth you are just concerned about your safety and concerned about other officer's safety because it is so unpredictable. (PP1)

Participants identified an aspect of increased risk to personal safety was associated with emotional and psychological distress in addition to physical violence. Paramedic

participants further identified these experiences can be particularly traumatising for inexperienced staff. The emotional and psychological distress was often related to verbal abuse, direct and indirect threats (from patient and community members), and patients spitting at staff. Extra protection was often required to protect staff from bodily fluids (facemasks and eyewear).

...potential injury for us...it can be psychological, it can be physical...very repulsive in some of the language that they will come out with...I had backed up a crew to this job and there were two females, one young intern was the attendant and I was in the back with her but she was facing...the patient; and this guy was still considerably agitated and very aggressive. He was trying to spit so we had put a mask on him and could not have been more disgusting and violent in his direct outbursts at this paramedic intern, young female. It was very upsetting to hear the sorts of things he was saying to her and about her, clearly trying to get a response. As it turned out, the intern burst into tears and...I ended up swapping out with the intern and having to explain to her afterwards, because she was quite upset...(PA17)

The violence displayed when patients were 'going off' could be excessive and increased the risk of police and paramedics sustaining severe injury. Participants explained these situations often escalated rapidly and participants raised concerns that if patients had access to or were carrying weapons, these could be used to assault staff.

He was sitting down on a chair and he was sitting there kind of shaking, knees were shaking, arms were shaking. It looked like there was a bit of contained aggression there, but otherwise he seemed okay with us. We informed him he was under arrest for aggravated armed robbery....He was compliant with us. He stood up and pretended to put his arms behind his back and then all hell broke loose. Me and my partner have wrestled him out the front door and he started hitting us and we've wrestled with him and managed to throw him into a corner and then he's taken off on foot. I've had to chase him on foot over quite a distance and he's turned around and punched me and I've tasered him. Then we've had a wrestle on the ground, I've had to Taser him again. Then wrestled on the ground and he's punched me in the face and hit me in the guts and all sorts of stuff. Punched me quite a bit. Then on the third Taser he finally decided he didn't want to fight any more and we ended up subduing him and then taking him back to the police station. (PP8)

Paramedic participants highlighted with dangerous situations they had limited time to make a decision about patient care and sometimes these decisions put their own personal safety at risk. Their decision-making was affected by a desire to help the patient, which resulted in stressful and traumatising situations, potentially psychologically affecting participants. Police participants expressed frustration due to their desire to help the patient but frequently the patients saw them as the enemy, which undermined their ability to make a difference.

....as you say you talk to them reasonably. They've committed a crime; you're trying to deal with that crime on a low level where they don't have to be taken into custody. You try and explain that to them. Their mindset appears to go off on a tangent where they think we are, well probably in their eyes we are the enemy, but

we're the enemy. We're the people that are going to take their liberty away and they react accordingly. They fight...I've been involved where I've been injured myself trying to help these people. (PP2)

In addition, paramedic participants identified failing communication devices increased the personal safety risk. Communication devices sometimes failed when responding to callouts which was concerning when responding to situations involving methamphetamine-related due to limited ability to call for help. However, participants outlined how they attempted to prevent risks before arrival at an event by ensuring back up was available and paramedics reported increasingly relying on police to co-attend potentially dangerous and violent situations. Participants also explained there were procedures in place to call for assistance (i.e. code black).

...in both the metropolitan and regional setting, there's been a significant change in the available communications infrastructure for operational paramedics in the last three years. What that means in practice is it's no longer the case that we can go into the inside of a building and reasonably expect that our communications device, normally our portable radio, will actually work. There's some underpinning technical reasons for that but essentially we're now operating out there in the field with much less reliable communications and therefore I think we're just, we're taking far fewer risks with these patients and we are regularly now, whilst we drive to these cases almost automatically, not quite automatically but very close to automatically requiring the attendance of police with us. (PA18)

Both police and paramedic participants discussed several ways to minimise the risk to personal safety in addition to co-attendance. These included, completing pre-checks before arrival, scene safety, and situational awareness. When it came to personal safety participants identified the importance of remaining alert or hypervigilant, even when the patient presented calm and cooperative. In addition, paramedics recognised the importance of completing pre-checks prior to arriving on the scene however this often-delayed assessment and treatment. Police participants identify that pre-checks did not always highlight all risks, describing it was impossible to pre-empt all dangerous situations involving methamphetamines or to know when the patient was carrying weapons.

We always obviously do our checks before arriving. But the risk is just the fact that you just don't know what you are going to get into. You don't know someone with samurai swords. It's just an unknown factor and it is extremely dangerous... You just don't know when or where any situations are going to occur. It could be in a park. It could be when you do a vehicle stop and it just turns, it's how quick it turns that becomes hard to manage. We can manage it up to a point, knowing if someone is there. If they've got firearms. Their previous history. They have warnings on our systems. But if we get someone that we don't know, then you just don't know and it's extremely dangerous. I'm surprised more police officers haven't been injured or killed in relation to meth drug incidents. (PP1)

Participants highlighted scene safety and minimising the physical contact with the patient were important ways of minimising the safety risk. Police participants tried to limit their physical contact, while paramedics used scene safety and situations awareness to protect themselves. Scene safety included ensuring an accessible exit (from either the room or the vehicle), in case of escalation and need for rapid withdrawal, and waiting until the police arrived to help manage violent or dangerous situations.

First of all, I guess it's down to scene safety more than anything. So making sure that there's...always an easiest route out of a scene for a start. That they don't end up boxing themselves into a room or anything like that, with a paranoid psychosis patient in between them and an exit point. That's the first step. Secondary, it's desperately trying to manage the physical contact with these patients, who are quite likely to suddenly explode with a whole lot of aggression, whether that be deliberately targeted at our staff.... (PA14)

Participants undertook situational awareness training to ensure they were able to identify rapidly escalating situations, which was essential in reducing safety risk. Situational awareness included being mindful of the environment and what they carried on themselves, ensuring there wasn't anything within easy reach of the patient that could be used as a weapon.

They've tried to grab scissors out of my shirt, they have tried to grab scissors off the...in the back of the ambulance off one of the trays, so we've had a rethink about how we, or certainly have had a think about what I carry with me and what's easily accessible by people, if they want to grab something. (PA13)

9.2.3.2. Acute behavioural disturbances: Maintaining patient safety

Mental health illness (hallucinations, paranoia, psychosis and suicidal ideation) and ABD (violence, aggression, and verbal and physical abuse) side effects of methamphetamine use increased the risk to patient safety. The two main areas of concern highlighted by both police and paramedic participants were protecting the patients from themselves and protecting the patient during care. Persons under the influence of methamphetamines often required protection from themselves due there impaired decision-making which often resulted in these types of patients engaging in risky activities which placed patients in dangerous situations. Additional staff and resources were often required to manage these situations, as result.

... called to back up a crew that were dealing with a young male who'd taken methamphetamine and for whatever reason he'd ended up running from police and ended up on top of a building....the roof of a two-story building, trying to evade police. He was not at all keen to come down and was quite convinced that not only the police and the ambulance were out to get him, but that there were

some unknown forces to get him as well, which made it extremely difficult for us to actually control. He was on the roof, it was unsafe for us to get up there, it was unsafe for the police to get up there, and it was unsafe for the patient, because he's pounding around on the roof and getting really close to the edge and even started throwing tiles and bits and pieces down.... We actually needed to call the fire brigade in as well, which really only served to complicate things further, because they were just as nervous about getting up there on the roof as anyone else was. In the end, they managed to at least get themselves in a position where they could get onto the roof quickly if they needed to, but as they were doing that, the patient actually realised what was happening and threw himself off the roof. Ended up with a fracture in his forearm and the same in his tib-fib. Despite that, he still tried to get up and run away. (PA14)

Persons under the influence of methamphetamines, police and paramedic participants reported, frequently experienced mental health problems (paranoia, psychosis, hallucinations) which increased the risk to patient safety and resulted in patients trying to avoid staff. Both police and paramedic participants felt they were unable to reason with these patients, which delayed medical care, and patients were at increased risk of self-harm which are a concern when transporting patients.

...when they are in the back of the pod, even if they're handcuffed, they bash their heads on the side of the pod, cause themselves injury.... So, if someone is really, really high and just off their mind and you get them in the back of a pod, it's not uncommon to have to stop halfway to a fashion and have to try and rip them out of the pod again.... because they've started self-harming and then that goes up to the next level. At that point, you get an ambulance there... (PP8)

There was an increased risk to the patient while providing care due to the use of physical restraints, chemical sedation, and the requirement to transporting patients to ED. Police participants identified that decreased pain sensation related to methamphetamine use was problematic as patients fought against physical restraints (handcuffs, and/or safety nets) causing injury to themselves. Police participants also identified how using physical restraints to subdue patients increased the risk of positional asphyxia and overheating (because of the methamphetamine use) which could result in death. While staff training reduced the chance of positional asphyxia during restraint, some police participants still preferred to use an ambulance for transport so medical treatment was readily available if the patient deteriorated.

...meth users, is that level I discussed earlier, that excited delirium and what to expect and basically how to handle it. Also the fact that, if we do have to handle someone in that situation and it goes to a hands on situation, then one of the other big teaching tools that we get taught throughout the academy and are reminded of annually when we do our annual re-qualifications is positional asphyxia in regards to holding them down and all of that sort of stuff. (PP9)

Both police and paramedic participants noted there was a push to reduce the use of restrictive practice in health care. Physical restraints assisted in transporting patients in the ambulance. However, paramedic participants identified that physical restraints

or safety nets were challenging to apply, especially if the person was uncooperative, aggressive or violent. This added to the challenges of providing care, as physical restraints limited the paramedics' ability to assess and monitor patients, and could result in a delay in recognition of a deteriorating patient.

Sometimes it's difficult to cardiac monitor them because of the net and how much they move around, it often dislodges the dots. In lots of ways it's back to old school, physically feeling pulses, doing other forms of just assessment to make sure that they are indeed, at the very least, cardiovascular and respiratory that they're okay in those regards....our safety nets, safety blankets...call them what you will they're a form of restraint, are not easy or quick to put on. They're cumbersome and often the patient is fighting a lot of the time whilst it's being put on, which makes it difficult to apply and to apply properly. (PA17)

Acute behavioural disturbances (ABD) required chemical sedation to ensure the patient was calm for transport to hospital. Both police and paramedic participants felt it was less risky to use chemical sedation prior to transport to reduce the chance of escalation in behaviour (violent and un-cooperative). However, additional police were required to physically restrain patients prior to administering sedation and in some States, chemical sedation required a critical care paramedic and/or a paramedic clinical team leader for ABD. It takes time for the resources to be in place for chemical sedation to occur, delaying medical care and patient assessment.

All of our advanced care level, which is essentially the level that all ambulances carry, can chemically restrain people. Everyone's using droperidol these days. Generally, the policy is that if they believe there's an acute behavioural disturbance, they'll often require a clinical team leader, such as a critical care paramedic, to also respond. If there are significant violence concerns, we also have the capacity to send an operational supervisor as well to help assist and support the crews. Sometimes that's done in the absence of police. We will have staged, waiting for police to attend, sometimes up to two hours. When an operational supervisor arrives, the discussion is about the risk assessment and possibly being able to manage it ourselves without having police attend. So that can be crew intensive, it just depends on the situation. Effectively you can imagine just a two-person crew plus perhaps a single responding clinical care paramedic, plus or minus the operational supervisor who works by themselves. (PA16)

Paramedic participants highlighted large doses of sedatives are sometimes required which can result in respiratory arrest, requiring paramedics to increase the monitoring of patients to ensure they were able to recognise signs of deterioration.

Like I said droperidol is increasingly popular in use as a first line agent but the progression to midazolam is often quite rapid and again even for patients where we do start to see a significant impact on their respiratory drive, these are patients that can be relatively safely managed in pretty regular paramedic practice. This is pretty basic stuff that we're quite good at. We're relatively speedy to identify that deteriorating patient and obviously we transport these people in restraints with full monitoring and very close, constant observation of them. (PA18)

9.2.3.3. Unsafe environments: Drug use harming families

Analysis of data revealed unsafe environments for families added to the safety issues associated with caring for persons under the influence of methamphetamines. Families were at increased safety risk due ABD. Main concerns for family safety highlighted by police and paramedic participants were domestic or family violence, extreme violence resulting in serious injuries, and children witnessing violent, abusive and highly emotional situations. Participants identified increased levels of domestic violence in areas where methamphetamine use was prevalent, and domestic violence (involving methamphetamines) reported as excessive resulting in serious injuries. Domestic violence involved children, parents, partners and siblings of the patient. Living with violence over extended periods affected family relationships, resulting in families being at breaking point.

We picked up a young bloke the other day whose mother is a nurse and he has been using. He has an issue of ADHD, but recently lost his job, he reckons because his younger brother had mentioned something to his boss. He then lost his licence to either drink driving or drug driving under methamphetamine and he'd also recently assaulted his dad with a knife and assaulted his brother physically. His poor nurse mum was basically just broken and beside herself, with nowhere else to go or nothing she could do to prevent his demise. (PA16)

At times, the domestic violence situations involved partners both using methamphetamines. If both parents were using methamphetamines, participants highlighted these situations were more unpredictable and difficult to control, involved ABD and/or mental health problems, and increased the children's safety risk. Police participants reported patients sometimes used children as barriers between themselves and police. In these situations, normal processes involving force increased the child's safety risk.

When we arrived, he come at us with a knife and a baby in his arms....I spent about three-quarters of an hour talking him down. We couldn't use any of our force options obviously, because of the baby. He'd used the baby as a shield. Albeit that at the end of it, once it all calmed down and then backtracking through my processes.....He wasn't threatening the baby, he wasn't, although he did use it as a shield, I don't think he would have hurt the baby....So, everyone's safety is at the top of our minds....when dealing with them. (PP9)

In addition, police participants noted that children with both parents using methamphetamines were at increased risk of neglect. While children may not always be the assault victims, they were still witnessing the extreme violence, and their safety was at risk. Situations can be emotional and intense, and the potentially traumatising for children, family and staff involved in de-escalating the situation.

It seems to be when I was in (name of town removed) especially, it seemed to be that a lot of the domestic violence was related around the families that were dysfunctional and were using meth. It just seemed to be that the main domestic violence families we went to were the meth users. I don't know...I don't know if the domestic violence is getting any bigger. But certainly, extremely volatile when you've got two people that are using meth and then you've got the children to deal with as well. Not an easy situation. (PP1)

9.2.4. Discussion

Analysis of the interview data revealed safety was a major concern for both police and paramedics when caring for persons under the influence of methamphetamines.

Participants in this study identified caring for persons under the influence of methamphetamine put their personal safety at risk due to the unpredictability, violent and aggressive behaviour related to methamphetamine use. Participants reported experiencing emotional and psychological distress in addition to physical injury related to managing these events in the course of their employment. The participants reported domestic violence and family violence as an area of concern with families and children identified as at risk.

Previous research focusing on WPV found 68% of WPV in ED are associated with substance use (Kleissl-Muir et al., 2018). 87.7% of paramedic participants experience a form of workplace violence, with 3% reporting experiencing violence daily (Boyle et al., 2007). Previous research focusing on pre-hospital environments reported similar findings to ED studies. In a study conducted in the Netherlands, 172 (65.2%) of paramedics and 116 (39.2%) of police reported not experiencing physical violence in the role, while 76 (54.4%) of police and 161 (28.3%) of paramedics reported experiencing over 11 incidents of psychological violence (van Reemst & Fischer, 2016). A study conducted in the United States of America (USA) reported verbal violence (69%) as the most common form of violence reported by emergency medical services (EMS), while almost half (44%) had experienced physical violence (Allen et al., 2019). Usher et al.'s (2017) qualitative study (participants included paramedics) supported our findings and reported caring for persons under the influence of methamphetamines increased the safety risk including personal safety of staff, other patients in ED, and also the patient. The behaviour exhibited by patients under the influence of methamphetamines escalated rapidly and included non-compliance, and aggressive, violent and combative behaviour (Usher et al., 2017).

Wongtongkam's (2017) study reported violence against paramedics occurred mostly on evening shifts (50%) on Saturdays (73.3%), and 10% of participants reported experiencing physical violence (pushing, slapping, spitting, and scratching) in the past month. Other forms of violence towards paramedics perpetrated by patients or families, included verbal assault (offensive language and threats), intimidation, sexual harassment (obscene gestures, derogatory jokes or slurs), and sexual assault (fondling, groping) (Bigham et al., 2014). Police and paramedic participants in this current study reported similar findings (physical and verbal abuse, direct and indirect threats, and psychological trauma). Factors contributing to violence included drug and alcohol intoxication, lack of police or security presence, and inability to communicate effectively (Wongtongkam, 2017).

ABD and WPV is known to have negative effects including personality changes, fear for personnel safety, over utilisation of police back up, increased apprehension and inability to function in social situations (Bigham et al., 2014), increased stress levels (Murray et al., 2019) and increased amounts of sick leave required by staff (Hahn et al., 2012). The negative physical and psychological effect on staff can lead to fear of engaging in violent situations, and increased experience in violent situations can lead to post traumatic stress disorders (Murray et al., 2019). Overall, the sequelae results in decreased job satisfaction, increased negative attitudes and decreased empathy towards patients involved in ABD or WPV (i.e. methamphetamine and alcohol users), increased frustration, anger (Wongtongkam, 2017), increased burnout, and high turnover of staff (Bigham et al., 2014; Murray et al., 2019). In addition, WPV seems to be commonplace and almost inevitable behaviour (Usher et al., 2017) with Bingham et al. (2014) reporting 61% of paramedic participants did not report violent incidences or take any action.

Improving safety for staff in workplaces is paramount. Management of ABD usually involves de-escalation and chemical and physical/mechanical restraint (Muir-Cochrane et al., 2018; Power et al., 2020; Safe Care Victoria, 2020). In addition, previous research reported ways to manage or minimise risk. Co-attendance (police and paramedics), additional staff support, maintaining relationships between police and paramedic services, scene safety, engaging in violence prevention training, development and instigation of violence intervention programs, and situational awareness were identified as key areas for reducing risk by several studies (Allen et

al., 2019; Murray et al., 2019). Usher et al.'s (2017) study also reported the importance of knowing and identifying behavioural cues in order to manage potentially unsafe situations. The participants in this study reported using similar strategies to minimise the risk, however, due to previous experience with WPV and ABD, participants reported an over reliance on chemical sedation for managing violence.

WPV is not acceptable; staff working in pre-hospital and ED environments need to remain vigilant and report all incidents of WPV to ensure organisations can continue to develop policies and guidelines around management and prevention of WPV. It was beyond the scope of this study to explore the management and care approach used by police and paramedic services to manage ABD and WPV. However, ensuring organisations develop a clear and defined approach to ABD, ensuring staff practice minimising risk strategies (discussed above), and making de-briefing and support services available to staff, may help to reduce the negative sequelae of WPV and ABD. This may help to mitigate the over utilisation of chemical sedation and the development of negative attitudes that develop towards difficult patients. Reports of violent incidences occurring out of hours has an implication for allocation of staff and availability of de-briefing and support services out of hours. In addition, negative attitudes towards patients (i.e. illicit substance users) can affect the quality of care provided and stigma associated with addiction (Skinner et al., 2007).

Domestic and family violence were areas of concern highlighted by participants in this study due to extreme violence, nature of the injuries sustained, and children identified as at risk because of violence related to methamphetamine use. Previous research exploring the affect parental substance abuse has on children, found children living with parents who use methamphetamines are regularly exposed to traumatising situations (i.e. domestic violence), dysfunctional parenting, and are more likely to have drug related problems as an adult (Dyba et al., 2019; Solis et al., 2012). Kleissl-Muir et al.'s (2018) study supported these findings, reporting children raised in substance abuse and violent environments were more likely to suffer substance abuse problems later on, and demonstrate aggressive or violent behaviour.

Brown and Hohman's (2008) study reported the impact on children living with parents who use methamphetamines included environmental effects (unsafe and unstable housing, repeated removal from home the environment, homelessness,

breakdown in family relationships, and inconsistent school attendance), psychological effects (mimicking aggressive behaviour and behavioural issues), and emotional effects (emotional abuse, separation anxiety). Dyba et al.'s (2019) study reported high levels of parental stress and dysfunctional parenting in parents who use methamphetamines. In addition, dysfunctional parenting was thought to impact children's behaviour and emotional regulation, with increased behavioural difficulties, psychological distress and social issues (difficulties interacting with other children) (Dyba et al., 2019).

There are multiple risk factors associated with parental substance abuse (psychopathology, criminality, domestic violence and poverty) (Eggins et al., 2020), which adds to the complexity of situations police and paramedics face when responding to domestic violence situations involving methamphetamines. It is clear that living in dysfunctional family environments and with parental methamphetamine abuse has a negative impact on children and long-term support for children living with parental substance abuse is required. Police and paramedics are in a position for 'early recognition' of children living in these environments and instigating support services (such as psychological and emotional support for the child and parental support) could help to improve the situation and prevent the cycle of addiction and abuse from repeating.

9.2.4.1. Strengths and limitations

The study included 18 police and paramedic participants from across five of the eight States and Territories in Australia, and from rural, remote and metropolitan locations. The sample of participants was small and participants self-selected which may have affected the samples representativeness and selection bias. All participants did however report experience caring/managing persons under the influence of methamphetamines. Although the number of participants was not large, data collection continued until no new information was provided (data saturation), establishing the rigor and trustworthiness of the data. Identifying drug use is difficult and relies upon clinician experience to recognising signs of drug use and patients or relatives disclosing their drug use.

9.2.5. Conclusion

The findings presented provide a comprehensive understanding of the safety issues related to caring for persons under the influence of methamphetamines in violent, abusive and dangerous situations. Methamphetamine-related callouts for police and paramedics are potentially dangerous, raising safety concerns for families, staff, and the patient. Caring for persons under the influence involves patients with impaired ability to think and process information. This increases their risk of placing themselves in dangerous situations which can be life threatening or result in injuries. Families of people who use methamphetamine are at risk of experiencing or witnessing violence. ABD increases WPV, which can result in post-traumatic stress, decrease staff empathy towards patients and increase negative attitudes towards substance abuse, increase sick leave, decrease job satisfaction and result in high turnover of staff. It is important for organisations to instigate a care approach that utilises guidelines helping staff manage and reduce WPV related to ABD.

Relevance to practice

- Families and children of persons who use methamphetamines are at risk due to experiencing violence at home. Police, paramedics and ED staff are in a position for ‘early recognition’ and referral to essential support services to help mitigate the negative emotional and traumatising effect.
- Workplace violence (WPV) due to ABD is a major safety concern, ensuring organisations have up to date care approach/guidelines to manage and minimise the risk is important to mitigate the negative sequelae of WPV.
- Staff are responsible for reporting all incidence of WPV and to engage in strategies that minimising the safety risk to themselves and co-workers. This is key in helping to reduce WPV related to ABD and methamphetamine use.

End of manuscript

9.3. Summary

This chapter presented the results from Theme 2 (Responding to violence, abuse & danger: A focus on safety) from the qualitative interviews conducted in phase two of the study. There were several key findings identified from theme 2. Families and

children are at increased risk due to domestic/family violence, workplace violence is a major concern in pre-hospital environments due to acute behavioural disturbance (ABD) and mental health side effects associated with methamphetamine use, and persons under the influence of methamphetamines have impaired decision-making abilities placing themselves in danger.

The following chapter (ten) will present the results from Theme 3 (Managing care: Continually modifying care practice) from the semi-structured interviews conducted in phase two of the study. This will be presented in a chapter format and will finalise the results for phase two of the study.

**Higher Degree Research Thesis by Publication
University of New England**

STATEMENT OF ORIGINALITY

We, the Research Master/PhD candidate and the candidate's Principal Supervisor, certify that the following text, figures and diagrams are the candidate's original work.

Type of work	Page number/s
Published Manuscript	185 - 203

Name of Candidate: Rikki Jones

Name/title of Principal Supervisor: Professor Kim Usher



3/12/2020

Candidate

Date



3/12/2020

Principal Supervisor

Date

**Higher Degree Research Thesis by Publication
University of New England**

STATEMENT OF AUTHORS' CONTRIBUTION

(To appear at the end of each thesis chapter submitted as an article/paper)

We, the Research Master/PhD candidate and the candidate's Principal Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated in the *Statement of Originality*.

	Author's Name (please print clearly)	% of contribution
Candidate	Rikki Jones	40%
Other Authors	Professor Kim Usher	20%
	Dr Cindy Woods	20%
	Professor Debra Jackson	20%

Name of Candidate: Rikki Jones

Name/title of Principal Supervisor: Professor Kim Usher



Candidate

5/11/2020

Date



Principal Supervisor

3/12/2020

Date

Chapter 10. Managing Care: Continually modifying care practices

10.1. Introduction

This chapter will be presented as a traditional chapter discussing the results of the final theme from phase two (Theme 3 Managing care: Continually modifying care practices) of this study. The semi-structured interviews collected data from police and paramedics working across Australia in the pre-hospital environment.

Chapter eight and nine presented the findings from theme 1 (Complexity of care: Caring for the patient within the context of violence, abuse and danger), and theme 2 (Responding to methamphetamines: A focus on safety). A summary of the chapter will follow the discussion of the results for theme 3.

Key findings from theme 1 included; 1) Methamphetamine-related callout events were complex and challenging, 2) an inability to effectively communicate with patients which affected participants' ability to complete a full assessment and use de-escalation techniques, 3) managing violent, aggressive and dangerous situations could be traumatising for staff and families, 4) people who use methamphetamines may present in a state of crisis.

Key findings from theme 2 included; 1) Families and children are at increased risk due to domestic/family violence, 2) workplace violence is a major concern in pre-hospital environments due to acute behavioural disturbance (ABD) and mental health side effects associated with methamphetamine use, 3) persons under the influence of methamphetamines have impaired decision-making abilities resulting in patients in dangerous situations.

10.2. Results

Three subthemes were identified from Theme 3 (Managing care: Continually modifying care practices): 1. Coordinated, standardised approach to care, 2. Managing care: Improving services and care environments; 3. Inexperience and staff training needs.

10.2.1. Coordinated, standardised approach to care

Police and paramedics are two distinctly different services who respond to persons under the influence of methamphetamines in the pre-hospital environment. Callout events for these patients often require both police and paramedics to co-attend, to provide care and manage difficult situations. Police and paramedic participants highlighted a coordinated approach to providing care in the pre-hospital environment between police and paramedics required development. Issues highlighted by participants related to the need for a coordinated approach included: a standardised approach between police, paramedic, and ED; streamlining services between ED and the pre-hospital environment; care coordination policy and guideline development; de-escalation or hands-off approach; a new approach incorporating a joint response from police and mental health nurses. In addition, paramedic participants felt chemical sedation pathways required improvement and additional drugs incorporated.

Police and paramedics identified the lack of a current standardised approach, which provided clear guidance on how the two services should provide care to persons under the influence of methamphetamines together. Participants considered working together using a coordinated approach was important and needed to include ED staff. Some participants suggested an overarching decision from government on how the services coordinated care to guide management would help to streamline the care approach, and maintain relationships between the three services (ED, police and paramedics).

I think there needs to be a decisive decision amongst government bodies [on] how to handle it....it's more common for an ambulance to call for police attendance prior to going to a job that they know that there could be a significant risk. I think it's a whole of government type approach needs to be used while dealing with these people.... (PP1)

We then have to convince them [police] that this is actually a drug issue, however, unless you find drugs on somebody, you can't actually arrest them. The police are standing there well, what can we do and then you have to go through the whole Mental Health Act option that is open to them..... That needs to be across the board so that we don't have to waste 10 minutes trying to debate with the police officer first as to why we want this person to be taken to ED because we suspect they are under the influence of methamphetamine. (PA13)

Due to no clear guideline or pathway on how to respond to persons under the influence, issues around transport often arose. There was no pathway/guideline to assist police and paramedics decide who and how transport would occur. Having a guideline that was clear and flexible, which both services could use, would help to coordinate care.

There's no structured process. It's basically every single patient you're assessing with your experience and a lot depends on who is on scene and who the police are. The police sometimes get it and they sometimes don't. Sometimes we just say we're not transporting, that the patient is too aggressive and we're not interested and sometimes the police kick back and sometimes they are really happy with that. It all depends on who I'm working with as a paramedic and who the other stakeholders involved are, so the police obviously....It would be a guideline, a good guideline would be awesome but you could never always stick to it. (PA11)

Participants also discussed new approaches to how services provide care. New approaches included the push to a more conservative (hands-off) approach to caring for drug intoxication. This approach relied on de-escalation techniques, rather than chemical and physical restraint. However, both police and paramedic participants felt the suggested de-escalation approach to managing persons under the influence of methamphetamines did not always work due to the negative effect methamphetamines have on the mental health and behaviour of the patient.

We usually take the path with least resistance but sometimes that doesn't work and we need to, instead of just literally sit them in a chair and just getting them into hospital without talking to them much, not upsetting them, just you know, you're treading on thin ice the whole time. That's not a pun. So sometimes we have to go down the road of full sedation. Obviously, that's not something we want to do. (PA11)

A combined mental health nurse and police approach was trialled in some States. Paramedics' participants working in these areas felt it improved management of patients care and was more patient centred. This approach also ensured additional clinical skills were available to manage common mental health side effects.

At the moment [state removed] has got a bit of a trial going with the police and a mental health nurse. They are fantastic at treating these patients because they do it regularly, it's their speciality and they're getting used to the community side of it. It works really well. Whereas we're just pitching up as two paramedics with two random coppers off the beat who are trying their best but it's not our pure skillset. Just like any specialist, they can probably do it better so we would like to see more and more of those style of systems...(PA11)

Police and paramedic participants identified instigation of the Mental Health Act required more understanding and regulation, to improve efficiency and decision making. Some paramedics felt inexperienced police staff were unclear of the regulations of the Act, which resulted in delays in transport due to opposition to

instigate the Mental Health Act. While police participants identified there were concerns around their early release from ED prior to medical or mental health assessment. Police found once they had left ED, the patient would escalate in behaviour or abscond and police were required to either apprehend or were called back to help ED manage the situation. As a result, police were remaining in ED until the patient had been seen by a medical officer and decisions made about care. This resulted in police resources being tied up in ED for long periods.

The issue we have there is also if they're under the *Mental Health Act* or they've been brought in by police under the *Mental Health Act* and the police have been advised that they can leave prior to the person being seen by the medical practitioner, we get called back if the situation changes. They're not formed, so therefore they've not been seen or they haven't been treated by a professional medical person and therefore they haven't been assessed as having a mental psychosis or whatever their treatment is going to be...but for whatever reason if we leave because they're satisfied that the person can remain there under medical staff's care without police, then we're getting called back or we're starting to search for people who are at risk and they've left the premises. So a lot of times we don't leave simply because it becomes a duty of care for these people if they leave the hospital and they still haven't been seen by a medical practitioner. That can take hours. (PP7)

Some paramedic participants identified the current sedation pathways required improvement. Chemical sedation, especially if they were exhibiting ABD (violence, abuse or aggression), had become a base line response due to experience with significantly violent confrontations and assault. Issues relating to the sedation pathways included: the need for more flexibility, a greater range of medications including oral sedatives, and a pathway that was clearer and easier to use for less confident/experienced clinicians, and assisted decision-making. Both police and paramedic participants flagged concerns around the decision-making for chemical sedation. Participants shared that despite the clinical protocols in place there remained some uncertainty around when to begin chemical sedation and if it was necessary. Some paramedic participants identified they were seeing a significant increase in the use of chemical sedation due to experiences managing persons under the influence displaying significant violence.

I think under sedation is probably the best way and restraint, like a full restraint. But like I said, sometimes you're just taking them there because it might be a mental health issue rather than them kicking off because of the meth. I mean, where do you draw the line? Where do you make that decision? That is, quite obviously a problem. At what point do we make that decision to sedate, restrain....(PP9)

whereas perhaps in the past we would have gone along to someone's house or to a business and had a conversation to make a bit of an assessment first, there's just been too many instances of significant violence and quite violent difficult

confrontations without the assistance of other agencies. So, I guess the idea of both requesting that assistance but also from a clinical perspective escalating to chemical restraint quite quickly is almost a baseline behaviour I guess for many paramedics. There's a very, very low threshold for the use of sedation, whereas perhaps in the past we were a bit more - a bit less liberal with it. (PA18)

In some States, the pathway included a sedation assessment tool (SAT) which helps clinicians to decide when sedation is needed due to the SAT score allocated to the patient, while other States were still in the process of improving their pathways.

Paramedic participants also identified sedation pathways required additional medications. Some States had additional drugs added to their sedation pathways, these included antipsychotic (to manage mental health side effects associated with methamphetamine use) and additional intravenous (IV) or intramuscular (IM) sedation (for when participants had exhausted sedation options already available). In addition, paramedics identified it was difficult to get the balance right between patients' behaviour and the quantity of the sedation used. If the sedation was too great, the patients' respiratory drive or cardiovascular system may be impaired; but, if the sedation was not sufficient, the patient remained awake and their behaviour could escalate.

We're actually looking into that at the moment, so I'm a clinical support paramedic in [location removed], so I work with our clinical governance team. We are looking at alternate ways of sedating these patients at the moment. At the moment we use midazolam as a first-line agent, and then overdose them on ketamine once you've given them midazolam. We're looking at adding an anti-psychotic drug as well, whether that be droperidol or olanzapine. The problem with doing those sorts of ones is that they have some additional cardiovascular side-effects which methamphetamine tends to potentiate, putting them at risk in terms of particularly their heart rhythms, if we're looking at some of the anti-psychotic drugs. It's a really tricky balance in terms of choosing the right type of sedation. (PA14)

10.2.2. Managing care: Improving services and care environments

Additional services and support were often required to help police and paramedics manage persons under the influence of methamphetamines. Participants identified that services and care environments were in need of improvement. Both police and paramedic participants identified the areas that required improvement; discharge and follow up care, suitable areas in ED to care for patients with psychosis or ABD, and suitable transport vehicles. Paramedic participants also highlighted a need for access to specialised services (i.e. community mental health nurses, intensive care

paramedics), while police participants highlighted a need for trained security in all hospitals.

Paramedic participants identified access to specialised services helped in decision making and helped participants to manage difficult situations. Some paramedics had a direct link to community mental health services or specialists via telecommunications, which provided additional support. In some states, paramedics had access to patients' previous mental health history, which helped in identifying potentially risky situations prior to engaging with the patient.

But we are getting better at that. I'm not sure if this is our own program, I think it is in [state removed], but we have a direct line to a mental health practitioner that works within the hospital. They oversee all of the acute behavioural disturbance jobs that come in. So we can actually call them on the way to the job. Effectively they reckon they have an 80 per cent capture of people who have been in the system. So if we have a name and a date of birth, we can share that or say they've seen us and they will review the case to be able to give us further information about previous contact with mental health and some of those challenges. So it helps us to be able to better risk assess what we're walking into...We have that telecom resource, that [patch] expert support, so we can ring up a mental health practitioner. The other reason that that's all awesome is because not only do we have that extra information about their backgrounds, but at times the patient may actually speak to the practitioner. So they'll attempt to engage with them and use them as a referral line. But secondly, if that risk assessment's questionable, having that mental health expert come back to us and say no, you're dealing with a ticking time bomb here, this person needs to come to hospital, it's very supportive in that way. So it would be more mentoring. (PA16)

Paramedic participants also identified extra support, when available, was useful when responding to violent, abusive and dangerous situations. Additional support for paramedics included; intensive care paramedics, clinical support officers and operational officers. These additional services provided extra staff to help manage the situation but also additional experience in areas like additional chemical sedation, airway support, and managing ABD. For some States, any ABD situation required a critical care paramedic to attend in addition to the paramedic crew and an operational supervisor was available if the situation warranted.

All of our advanced care level, which is essentially the level that all ambulances carry, can chemically restrain people...Generally the policy is that if they believe there's an acute behavioural disturbance they'll often require a clinical team leader, such as a critical care paramedic, to also respond. If there are significant violence concerns, we also have the capacity to send an operational supervisor as well to help assist and support the crews. (PA16)

Participants also identified additional support was particularly important if an inexperienced paramedic crew was responding to difficult and dangerous situations. The additional staff not only offer support but also additional experience. Participants

recognised it was not always possible to have the extra support even for inexperienced crews. In some States, this lack of resources or staff to respond was marginally offset by the ability to call in and speak to more experienced critical care paramedics or a medical doctor via telecommunication.

We do have a teleconferencing console live, so these guys can actually ring a recorded line that gets them to speak to a critical care paramedic or a doctor. So our medical director has a number of doctors involved. That provides coverage throughout [state removed], so it can get support for the situation and advice. It's recorded, which is great for the staff because then if something does go pear shaped, the organisation is supporting them. (PA16)

Some participants felt the added security could alleviate the pressure police faced when spending extended time in ED (leaving community without police response team). In some areas, such as metropolitan hospitals, large security teams were present and responded to situations in ED. However, in other areas, such as rural and remote hospitals, there were no security or limited security staff. The police were often required to stay or called in to assist ED staff.

Unfortunately, our hospital has no real security. It's unfortunately a combination of a security officer combined with - I don't know what the term is for orderlies now. Patient assistant officers or something. But anyway - so it's really a combination of orderly and security and quite often it's only one person. It's very unsafe for them, so they need to call upon us pretty much any time they've got someone who's come in whose drug affected and going off. (PP3)

In addition to support services for staff, participants highlighted there was a need for additional services and support for patients. Participants identified, in some areas, there was no follow-up for patients once discharged from ED to the community, and when processed through the court systems. Additional resources or services participants thought might help included: mental health and drug and alcohol follow-up post discharge from ED, additional rehabilitation or treatment services available in the local area, and drug counselling after drug possession charges.

I've spoken to people who want to go to rehab and can't get in. If there were more services there to be able to do effectively rehabilitate people, that'd be a good thing.....I think if the courts were more focussed on preventing the behaviour from reoccurring instead of just slapping a fine, then maybe we'd be able to see a change. By that I mean, if you charge someone for possession of methamphetamine, they go to court, they get a \$300 fine that they can't pay anyway. They get a criminal record that they don't care about anyway. Then when they don't pay the \$300 fine....it just goes to what's called a Warrant of Commitment, which means they then have a warrant that they have to serve time in custody. So, we'll go, arrest them and they stay in custody for 24 hours until their fines are paid. It's just this big, shit, circular feedback....If the courts would issue a decent outcome i.e. no, you need to do drug counselling for 12 weeks, or you need to do a urine analysis and piss clean twice a week for nine weeks in a row, or you have to attend counselling. It'd be good to divert the offenders and

instead of just giving them monetary penalties, making them attend counselling rehabilitation type sessions. (PP8)

Participants felt ED environments and vehicles used to transport patients were areas requiring improvement. Many participants highlighted EDs were unsuitable environments to bring patients who were under the influence of methamphetamines. EDs were unsuitable due to patients often requiring a less stimulating environment and while some hospitals had access to mental health rooms in ED's, not all EDs were able to provide a safe room for patients who were experiencing psychosis or displaying ABD.

...we're taking them to the wrong place. We're taking them to ED, we should be taking them to a mental health specific ED....you are 100 per cent treating it wrong. You're taking them to a bright place with lots of people and tonnes of stimulation when you actually need the opposite. You need to get these to guys to sleep, these people sorry. So it is the wrong place and there's too much risk in ED, there's too many people that you're exposing to a psychotic patient...(PA11)

Concern over the welfare of the patient while waiting for extended time in ED was another issue identified by participants. The extended wait time sometimes increased the agitation of the patient, increasing the risk of escalating behaviour and further delays in assessment and treatment. Participants felt a separate triage area for patients with ABD was required as fast tracking the triage and assessment of these patients would help improve the length of time patients remained in police pods or in triage areas. In some areas, this was already in place with participants identifying it helped to improve and streamline the approach to care between the services.

They did introduce at [location removed] a nurse navigator, as well as a mental health nurse who was a rapid assessment person. That has helped, but it isn't 24/7. I think the ED staff would like to see something along those sorts of lines. I think the last one would be just having some sort of area that is a direct triage, where we go with people with heightened moods and elevated behaviours... Taking them to the ED triage, where we have everything from sepsis concerns to paediatrics to chest pains to whatever else and having 10 ambulances lined up in the corridor, it's a diabolical combination to take someone who's elevated there and then subsequently requires physical restraint in front of all of these people. So if we had some sort of triage area for ABD [acute behavioural disturbances], I think that would be a helpful thing. (PA16)

Often patients under the influence of methamphetamines were able to walk around ED's. Participants highlighted this as a concern due to the unpredictable nature associated with methamphetamine use, potential for escalating behaviour, and other sick patients were witnessing the psychotic and violent behaviour. In hospitals that did not have a safe room for ABD and psychosis, police were often required to keep the patient in the back of a police pod, where it was safer for the patient and other patients

in ED. While this reduced the risk to staff in ED and other patients, participants felt it was inappropriate to leave patients in police pods for hours.

I would have to say unfortunately, like everything, it comes down to government money. The health care system is extraordinarily under-resourced, if only just with physical assets like ED surely needs a secure room that we can take these people to...I think every ED without fail needs to have a secure and safe room where we can sit down with these people and have them at least not in the public area and not in the treatment area...that goes for mental health patients as well as drug-affected persons. (PP3)

Participants highlighted the vehicles used to transport patients to ED were not always appropriate. Police participants highlighted police pods, while designated safe, created issues around patient deteriorated due to limited medical care and increased risk to the patient due to reported increase in self-harmed while in the pod. Staff were also at increased risk of injury when getting patients in and out of the pods. Paramedic participants also highlighted concerns with transporting persons under the influence of methamphetamines in the back of an ambulance. The design of an ambulance are suited to treatment of medical patients, with lots of equipment around (which the patient can grab and use to cause injury) and they are unsafe to transport patients experiencing psychosis or ABD. Participants recognised a need to have specialised vehicles suited to transport persons under the influence of methamphetamines who were exhibiting ABD or psychosis.

Also I think we need to be looking at our transport options. A normal ambulance where we have restricted space, which is set up for medical conditions mainly not psychotic patients, is not really appropriate. We're trying to do too much with the one vehicle. We should be leaving these people on scene until the right vehicle comes for these patients with the right staff on it as well. (PA11)

In addition, participants recognised providing care in rural environments also had its issues. Providing care in rural and remote locations was riskier than in metropolitan areas due to a decrease in available resources (staff, facilities and service), and a reliance on volunteers. Participants identified there were limited facilities in rural/remote areas. Limited facilities resulted in the patients being in police pods over extended periods, and transported long distances to reach medical care. In addition to the limited facilities, participants identified there was a lack of mental health support services available in rural/remote areas. This often resulted in patients not engaging in services or required them to leave family support to undertake rehabilitation and mental health care, disconnecting them from country.

Generally, if they have been sedated and they've had a psychotic episode, they'll go to a mental health facility and I think right there is the fall point. I think

that's the biggest fail in our system, certainly in [state removed], certainly where we live, they are flown out. Our nearest mental health system is 600 kilometres away and it's only a small one. If we're talking about Indigenous, that means they are taken out of country, they're taken away from family, they are taken out generally sedated. If not sedated, they'll have a calmativie at least, shackled to the stretcher, which is obvious; they are in a small aircraft. Then they wake up and they are a minimum of 600 kilometres away from country. (PA13)

In addition, in some States paramedics in rural/remote locations were required to work with volunteers instead of a second paramedic. Paramedics recognised while some volunteers were experienced, others lacked the situational awareness and the skills when responding to complex situations. The physical and emotional toll could be taxing for paramedics when working on shift with only a volunteer with experienced support not always available.

...I was working with a volunteer, so the volunteers can be a real help or a real hindrance, as opposed to working with a trained paramedic, because you're both on the same wavelength, when it comes to safety and danger and stuff, so I had to tell this volunteer to calm down...to please stop the vehicle, ASAP, without breaking anyone's neck, as well...(PA15)

10.2.3. Inexperience and staff needs

Paramedic participants, in particular, identified inexperienced staff required additional support while both police and paramedic participants identified staff require additional training to care for persons under the influence of methamphetamines. Paramedic participants' recognised paramedics worked in areas with limited supervision, and relied on their experience when attending callouts. Experience guided how paramedics provided care and managed dangerous and difficult situations, however, it was not uncommon to have two inexperienced paramedics rostered in an ambulance together, with limited clinical skills to manage violent and dangerous situations. This impacted on decision making, resulting in inexperienced staff calling police assistance, even when the situation did not call for it. Some police participants reported this resulted in an over-utilisation of their services, negatively affecting the relationship between police and paramedics.

So it's not unusual to have quite an inexperienced team together. So obviously their clinical bandwidth or general bandwidth to be able to prepare and deal with these things is quite new. So they will sometimes be going to, for instance, a nursing home with a 92-year-old that's agitated and they'll be asking for police to support them. Or I stepped in recently when I heard a crew going to a six year old that was throwing things at home and the crew had asked to stage away from the scene, waiting for police...So sometimes the police think that they're being over-utilised for some jobs...(PA16)

Paramedic participants also highlighted an issue with short mentoring programs (five month) which affected decision making ability and confidence in clinical skills. Participants felt increasing the length of the mentoring program could increase confidence, clinical decision-making ability and support for junior staff at the beginning of their career.

I think we have two different things going on, which is at an organisational level there is a group that thinks that a five-month mentoring phase is probably enough for someone who's done a three-year degree. At an operational level everyone effectively says that's not enough, you need at least 12 months' mentoring and support to make sure you increase your bandwidth of experience. (PA16).

All participants recognised training was essential to be able to provide care to persons under the influence of methamphetamines. Training needs highlighted by police included specific drug education and education on responding to mental illness, while both police and paramedics highlighted the need for negotiating and de-escalation training, and self-defence training. Some police participants highlighted the need to have further education on the current drugs circulating in society, how they affect the patient and the best ways to approach and care for these patients.

The only thing I know from meth users is probably what they've told me and what I've observed myself. I don't really think we have any formal training that I've had in regard to how to deal with people under the influence of drugs and every drug is different in the way it affects people I suppose generally...so it's probably something that does need to be looked at and give us also some training in regard to the best way to approach and deal with people. (PP7)

In addition to or as part of drug education, many police participants felt some sort of training involving caring for mental health patients would be beneficial due to mental illness often co-occurring with drug use. Participants who had the opportunity to engage in mental health training courses felt it improved their ability to manage difficult situations.

Yeah, we have a lot of ongoing training. The Police Department in [state removed] has a program where we can apply to do a....It's a mental health course that, I equate that to dealing with people that are affected by [illicit] substances too because obviously it does affect their mental health. There are mental health people out there, people suffering from mental health issues out there, that has nothing to do with drugs. The courses that the Police Department in [state removed] provide are very, very good and it gives you a good insight into how you can manage people. Again lots of support services are available that we can pass on that information to people. (PP2)

Both paramedic and police participants identified de-escalation training as an essential skill which could be used instead of physical and chemical restraint in some situations. However, de-escalation techniques sometimes failed when caring for

patients under the influence of methamphetamines and development of further strategies were required. One police participant felt a modified version of the negotiation training would provide more in-depth training than de-escalation training.

At the moment we have no training whatsoever, any sort of psychological or verbal training with regards to de-escalation and stuff like that, which I think is a very gaping flaw in our training, but we've all brought that up multiple times and no one listens to us. I think we get about four hours total with our empty hand tactics, like our [hand-to-hand] type stuff training. But we learn it in the academy and then that's it. There are never any re-qualifications, there's never any training, nor is there any training in how to deal with someone who is drug-affected or how they may be feeling or any sort of psychological emergency course. Unless you go to, we've got a negotiators' course that our negotiators use. If it was me and I was Commissioner of Police, I'd probably look at that negotiators' course, get a modified version of it that you can deliver to guys in maybe a day. Cut it down from a two-week course, just take the most important points, cut it down to a day, deliver that to every frontline officer. Then you'd have guys on the road who are a lot more clued up in being able to use words and verbally talk to people. That's always the first thing we do anyway and it's a skill you learn pretty quick in the job. (PP8)

Paramedic participants felt they were ill prepared to manage aggression and violence. While de-escalation training could help to calm some situations, there were situations where participants felt they were at risk and self-defence training could help to keep them safe. However, other paramedic participants felt better strategies for managing ABD was more important than self-defence training.

We definitely need self-defence training. We have none of that at all... These people are strong so we need self-defence. Also we need training on the different mental health acts and what we should be doing and where the limits of care are, when we should be leaving people and when we should be taking people. How the Act actually, how we need to work with the Act and also we need basic negotiating training. The police talk to these people much better in my experience than we do. (PA11)

In addition, participants highlighted paramedics newly graduated from a University course with minimal confidence in their de-escalation skills and their ability to manage difficult situations involving patients under the influence of drugs. Participants felt more training in de-escalation techniques, mental health and drug presentations would improve graduates' confidence in their clinical skills and ability to care for patients under the influence of methamphetamines.

...the training and education, the other things I've been thinking of is maybe just further the escalation strategies. All of our undergrads that come to us say that universities aren't really providing as good advice or as good education in these areas, given the mental health and toxicology plays a huge part in our working lives. They would all argue that it's brushed over. It's touched on, but no one does it really well. So they'd like to come to us feeling more clinically strong, to be able to deal with that sort of stuff. (PA16)

10.3. Summary

This chapter presented the results from theme 3 (Managing care: Continually modifying care practices) from phase two (semi-structured interviews) exploring police and paramedics experience caring for persons under the influence of methamphetamines who required transport to ED. The main findings from this theme is the need for a standardised approach to coordinating care between police and paramedics in the pre-hospital environment and the ED, is an area requiring development. In addition, safe rooms/areas and low stimulant environments in ED, fast tracking triage and rapid assessment of ABD and psychotic patients were required to help streamline care provided between pre-hospital and ED environments. In addition, more services and support were required for both staff and patients.

This is the final chapter reporting the results for phase two of this study. Phase one *stage one and two* highlighted an increase in methamphetamine related presentations and callout events, an increase in co-attendance of police and paramedics for methamphetamine-related callouts. The main findings from phase one *stage three* indicate police and paramedics' agreed methamphetamine users deserve and are entitled to the same medical care as other patients and felt low anger and disappointment towards methamphetamine users. Phase two explored police and paramedics' experience caring for persons under the influence of methamphetamines and provided more insight into police and paramedics perceptions of deservingness. Key findings for phase two included: Methamphetamine-related callout events were complex and challenging; a standardised approach to coordinating care between police and paramedics and the ED/ED staff is required; Methamphetamine use can create dysfunctional family environments and patients often present in a state of crisis; despite negative experiences participants still felt compassion towards patients who used methamphetamines. This concludes section three of the dissertation.

The following section, section four, of this dissertation will present the integration of results, discussion and conclusion to the study. Chapter eleven will provide an integration of data and discussion of the integrated results, followed by a discussion outlining the implications of the study, and a conclusion summarising the dissertation.

Section Four: Integration & Conclusion

Chapter 11. Integration of results & Discussion

11.1. Introduction

This chapter will provide an overview of the study, an integration of the quantitative and qualitative research findings, and a discussion of the integrated results. The overview of the study will briefly summarise the study and limited key findings, and how each stage of data collection helped to answer the research questions. The integration of the results will outline and interpret the integrated findings and the discussion will link the interpretation of the findings with previous research. A summary of the chapter will follow this discussion.

Integration of the quantitative and qualitative data is key in a mixed methods study, the integration of the findings therefore needs to present the quantitative and qualitative data together to generate meaning (Creswell & Plano Clark, 2018). In addition, integration of the data improves validity and reliability of the research findings (Fetters et al., 2013). Integration can occur at three different levels; design level, methods level, and interpretation and reporting level (Fetters et al., 2013; McCrudden & McTigue, 2019). In this study integration occurred across the three levels. An explanatory sequential mixed method design was utilised to collect data during two phases. The purpose of an explanatory mixed methods design is to identify key findings in phase one and explore them further in phase two (Creswell & Plano Clark, 2018). In the methods, data were integrated by using the quantitative data to connect, build and guide the collection of qualitative data (Fetters et al., 2013; McCrudden & McTigue, 2019). Finally, integration occurred in the integration and reporting of the results (Fetters et al., 2013; McCrudden & McTigue, 2019); the quantitative data and qualitative data will be presented together in this chapter with a narrative around the integrated findings, and an explanation of how the qualitative findings help to expand our understanding of the quantitative findings.

To achieve integration of the data, the pillar integration process was used to present the quantitative and qualitative data under common themes (Creswell & Plano Clark, 2018; Johnson et al., 2017; Younas et al., 2019). Pillar integration is a form of joint display which is commonly used in explanatory sequential mixed methods research

design to integrate research findings (Johnson et al., 2017). Figure 11-1 demonstrates how themes are constructed using pillar integration, as outlined by Johnson et al. (2019).

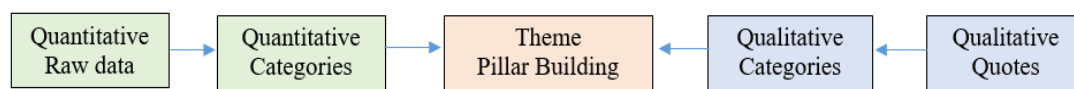


Figure 11-1 Pillar integration process

11.2. Overview of study

A literature review was conducted first, focusing on methamphetamine-related presentations to ED identifying a gap in knowledge; very few studies in Australia focused on methamphetamine-related ED presentations, the studies were of a short duration (months), and limited to one ED which at times was in known high methamphetamine misuse areas (see manuscript contained in Chapter three) (Jones et al., 2018). In order to investigate this identified knowledge gap in phase one *stage one*, a readily available large data set was utilised. The QISU data set was interrogated for injury-related presentations to multiple QLD EDs over a 13-year period from 2005 to 2017, and included methamphetamine-related injury presentations. This stage of the study identified 14.8% of methamphetamine-related injury presentations to EDs were transported by police, 18% were transported by paramedics, with an increase in prevalence of presentations in the final four years of the study (see manuscript contained in Chapter five) (Jones et al., 2019a). To ensure these results were not isolated to QLD, the study included a review of an additional data set allowing the research team to examine crystal methamphetamine-related ambulance callouts, and police and paramedic co-attendance, which was conducted in phase one *stage two*. The Victoria (VIC) ambulance data were readily available online and included data from all ambulance services across VIC. The data identified that paramedics were frequently required to transport patients for crystal methamphetamine-related callout events to EDs (80.7%) and also reported 47% of ambulance attendance events required both police and ambulance co-attendance (see manuscript contained in Chapter six) (Jones et al., 2019b), confirming the findings from the QISU data set were not isolated to the state of QLD. This knowledge allowed the research team to identify police and paramedics as key participants to be included in phase one *stage three* and phase two. In addition, stigma, attitudes and deservingness, a theme the

research introduced in Chapter one, was identified as in need of further exploration. Hence, phase one *stage three* explored WA police and paramedics' perceptions of deservingness and affect (positive and negative) towards persons under the influence of methamphetamines. Previous research has reported ED staff have negative experiences when caring for methamphetamine-related presenters (Cleary et al., 2017), and research on deservingness has linked negative experiences with negative attitudes towards people who use drugs (Beletsky et al., 2005). *Stage three* findings indicated police and paramedics moderately agreed methamphetamine users deserve and are entitled to the same medical care as other patients, and outlined that they felt less anger and disappointment towards methamphetamine users (negative affect)(see manuscript contained in Chapter seven)(Jones et al., 2020).

The key findings from phase one were used to develop phase two, which explored the experience of police and paramedics caring for methamphetamine-related presentations across Australia. The study utilised semi-structured interviews to expand understandings of the findings reported in phase one. The semi-structured interviews identified three main themes; 1) Complexity of care: Caring for patients within the context of violence, abuse and danger, 2) Responding to violence abuse and danger: A focus on safety, and 3) Managing care: Continually modifying care practices.

The research questions for this study were:

1. What are the patterns and features of methamphetamine-related ED presentations?
2. What are the patterns and features of ambulance callouts related to crystal methamphetamines?
3. What are the perceptions of deservingness and attitudes (negative and positive attitudes) of police and paramedics who are required to transport patients to EDs for methamphetamine-related presentations?
4. What are the experiences of paramedics and police' called out to persons under the influence of methamphetamine and required transport to an ED?

Research questions one and two relied on quantitative data gathered from two different data sets using descriptive statistics (i.e. frequency, percentages) and bivariate analysis to compare methamphetamines with other drug presentations.

Research question three relied on quantitative survey data using descriptive statistics

(i.e. frequency, means, and percentages), correlational analysis and bivariate analysis (chi square and *t*-tests) to assess participants' perceptions of deservingness. Research question four relied on qualitative data collected through semi-structured interviews using thematic analysis to analyse police and paramedics' experiences. Chapters five to ten present the quantitative and qualitative findings answering the research questions separately, this chapter (eleven) will provide an interpretation across the two streams of inquiry (present quantitative and qualitative data alongside each other to develop meaning).

11.3. Integrated results

The pillar building process identified six themes, which the integrated findings will be reported under. Table 11-1 shows the six themes identified through the integration process and demonstrates how the themes answer the research questions. Appendix P presents the complete table of the quantitative and qualitative data using the pillar integration process.

Table 11-1 Research questions and the Integrated themes

		Acuity	Complexity of care	Co-ordinated approach	Deservingness & Compassion	Rural care	Prevalence of presentations/callouts
Research Questions	Phase 1	1 What are the patterns and features of methamphetamine-related ED presentations?	✓	✓			✓
		2 What are the patterns and features of ambulance callouts related to crystal methamphetamines?			✓	✓	✓
		3 What are the perceptions of deservingness and attitudes (negative and positive attitudes) of police and paramedics who are required to transport patients to EDs for methamphetamine-related presentations?				✓	
		4 What are the experiences of paramedics and polices called out to persons under the influence of methamphetamine and required transport to an ED?	✓	✓	✓	✓	✓
	Phase 2						

11.3.1. Acuity

The acuity theme contributes answers to question 1 and 4. Quantitative data (phase one, stage one) reported details of the features of ED presentations including acuity, and nature of injury. Qualitative data (phase two) explored the features of ED presentations further, expanding our understanding of acuity and features of presentations associated with methamphetamine-related callout events. This theme highlights persons under the influence of methamphetamines frequently present to ED and in the pre-hospital environment as medically unwell. Table 11-2 presents the detailed quantitative data alongside the qualitative quotes.

Table 11-2 Acuity theme: quantitative and qualitative data

Quantitative data	Qualitative data
<p>QISU (phase one stage one) data</p> <p>Meth-related Triage The majority (84.4%, n = 211) of methamphetamine-related documented injury presentations were triaged into categories, 1 (resuscitation 2.8%, n = 7), 2 (emergency 28.1%, n = 70) and 3 (urgent 53.6%, n = 134).</p> <p>Triage scores n (%) 1-immediate 7 (2.8) 2- emergency (10minutes) 70 (28) 3- urgent (30 minutes) 134 (53.6) 4- semi-urgent (60 minutes) 37 (14.8) 5- non-urgent (120 minutes) 2 (0.8)</p> <p>Nature injury n (%) Asphyxiation 4 (1.6) Fracture 8 (3.2) Open wound 18 (7.2) Other 45 (18) Poisoning/toxic effect 175 (70%) Recorded nature of injury was poisoning/toxic effect (triage category 1 n = 7, 100%; triage category 2 n = 52, 74.3%; triage category 3 n = 92, 68.7%)</p>	<p>Reason for callout So we're getting called by two lots of people. We're getting called by the patient or by someone for the patient. So family members, members of the public quite often call and they'll worry that the patients are acting oddly, that something is wrong with the patient. They're directing traffic, they'll walk around the streets oddly or family members are really concerned about their state. Probably we should put it [in a third] line, the police are calling us because they've been called due to aggression, is a big one as to why they've called I think, so you've sort of got three different call options. When the patient calls themselves they quite often know that they're in trouble. They quite often know that they're on edge and they know what their treatment is and it's to sleep, or they are asking for medication to come down. (PA11)</p> <p>Acuity- Medically unwell ...they can also be clinically very unwell. A number of patients that I've seen in the last six months have been quite septic and quite far progressed down that septic shock pathway. Because of their level of drug intoxication over I guess a protracted period of time they've not taken care of their own healthcare needs and it's got to that point where they're actually really clinically quite unwell with a challenging prognosis and a long period of time to recovery from their underlying physical illness as well as the drug intoxication. (PA18)</p> <p>States of crisis Generally the people that we meet who report some sort of substance dependency or use have a number of things going on. Again we involve getting connection from their social network, so we don't have a lot of people around them to support or help them. Those people have dropped away. They then embark sadly on trying to sustain that drug substance dependency by either dealing themselves, or stealing, or going to criminal activities, or having to sell themselves, so prostitution plays a part as well. I guess as a by-product of those sorts of challenges for them, anxiety, depression or mental health creeps in as well with substance intoxication. (PA16)</p>

QISU data reported methamphetamine-related injury presentations to ED had a high acuity, this was based on allocated triage scores and the nature of injury. Overall, 81% of methamphetamine-related injury presentations were triaged into a category 2 (emergency treat within 10 minutes) or category 3 (urgent treat within 30 minutes). The nature of injury for triage categories 2 and 3 were majority poisoning/toxic. Interview participants did not discuss overdose or poisoning/toxic effect. This may be due to patients more likely to be unconscious when methamphetamine use resulted in an overdose/poisoning/toxic effect and behaviour and mental health illness were identified as the main issues highlighted by participants when responding to these types of presentations. Acute behavioural disturbances [ADB] (aggression or violence), abnormal behaviour in public (erratic or paranoid), mental health problems (self-harm, hallucinations, delusions, psychosis), patients' inability to sleep for days, medically unwell (i.e. septic shock, chest pain), public and family concerns, and states of crisis, were identified as the primary reasons for methamphetamine-related callouts by interview participants.

Interview participants identified the reasons patients presented as medically unwell were related to patients under the influence of methamphetamines often ignoring their health or failed to recognise they were unwell. Methamphetamine side effects also masked other medical conditions or medical conditions were misdiagnosed as drug-related side effects. This resulted in a delay in medical treatment, and patients' experiencing rapid medical deterioration, and thus requiring urgent transport to an ED. In addition, interview participants identified patients who had been bingeing on methamphetamines for several days often went without sleep. This resulted in psychosis/excited delirium, exhaustion and negative effects on the cardiovascular system (i.e. chest pain, hypertension), with patients reaching crisis point.

In addition, interview participants expressed concern at the state of crisis in which these patients presented. States of crisis were identified as spiralling behaviour, increased engagement in criminal activity, lack of social support and breakdown in relationships resulting in social isolation, personal distress and financial problems. These presentations were no longer solely drug related; they included multiple factors with which the patient required support and assistance.

11.3.2. Complexity of care

The complexity of care theme contributes answers to question 1 and 4. Quantitative data (phase one stage one) reported details around the features of presentations including patients' behaviour on presentation and co-occurring mental health problems. Qualitative data (phase two) explored the features of presentations further expanding our understanding and highlighting that methamphetamine-related callouts were complex and challenging. The complexity of care and the challenges faced when responding to methamphetamine-related callouts/presentations were linked to ABD and co-occurring mental health problems.

Acute behavioural disturbance (ABD)

QISU (phase one *stage one*) data reported ABD were identified in 29.2% of all triage descriptions for methamphetamine-related injury presentations. Agitation was identified as the most common behaviour reported, followed by aggression and violence. Interview data (phase two) confirmed these results and developed this concept further, reporting ABD added to complexity of care and increased safety concerns for patient, staff and families. Interview participants identified persons under the influence of methamphetamines were often unpredictable, non-compliant, violent and aggressive. In addition, patients lacked an ability to concentrate and talked repetitively, which are similar results identified in the QISU data. Table 11-3 presents the qualitative and quantitative data for ABD, alongside each other.

Table 11-3 Acute behavioural disturbance: quantitative and qualitative data

Quantitative data	Qualitative data
<p>QISU (phase one stage one)</p> <p>ABD Behavioural problems 29.2% (n = 73) of agitated/aggressive/violent behaviour was identified in 15.6% (n = 39)</p> <p>Agitated n = 22 aggression/aggressive/violent n = 17 threatening/homicidal n = 2 bizarre n = 9 Restless/irritable/erratic n = 7 mood/anxious n = 14 non-compliant n = 2</p>	<p><i>Methamphetamine effects on behaviour</i> it's desperately trying to manage the physical contact with these patients, who are quite likely to suddenly explode with a whole lot of aggression, whether that be deliberately targeted at our staff or accidentally targeted, or accidentally affecting our staff as well. It's really hard to know exactly when, and why, or how, these patients are likely to suddenly, trying to think of the right word, suddenly become excitable or aggressive. That's always in the back of my mind. It's how to deal with that is really, really difficult and there's not really a set way that you can deal with that sort of thing except to plan ahead accordingly and try and make sure there's a way out. (PA14)</p> <p><i>Personnel safety concerns</i> ...potential injury for us...it can be psychological, it can be physical...very repulsive in some of the language that they will come out with...I had backed up a crew to this job and there were two females, one young intern was the attendant and I was in the back with her but she was facing...the patient; and this guy was still considerably agitated and very aggressive. He was trying to spit so we had put a mask on him and could not have been more disgusting and violent in his direct outbursts at this paramedic intern...(PA17)</p> <p><i>Safety concerns for families</i> It seems to be, when I was in (name of town removed) especially, it seemed to be that a lot of the domestic violence was related around the families that were dysfunctional and were using meth. It just seemed to be that the main domestic violence families we went to were the meth users. I don't know...I don't know if the domestic violence is getting any bigger. But certainly extremely volatile when you've got two people that are using meth and then you've got the children to deal with as well. Not an easy situation...We've had some houses where we've had to get family services involved...but obviously it's not good long term growing up with a family...where your mum and dad are both on meth and every now and they can be volatile and aggressive. (PP1)</p> <p><i>Inability to communicate to patient</i> In addition to that of course there is also the fact that just because someone is high on meth doesn't mean they're not having a medical episode or had a former episode that they can't tell you about it. Your ability to assess a patient is paramount during the course to make sure that (a) their respiratory and cardiovascular functions are not adversely affected in the process of the apprehension or the transport; and that the assessment includes to make sure that they haven't been injured in a fall or an assault leading up to us needing to be involved in transporting them and that sort of thing. We still need to be vigilant to make sure that those things have been accurately assessed and managed and that means we have to take all that into account when we consider any use of chemical or physical restraint and how we apply those and monitor for ongoing patient wellbeing. (PA17)</p> <p><i>ED environments & transport vehicles</i> Taking them to the ED triage, where we have everything from sepsis concerns to paediatrics to chest pains to whatever else and having 10 ambulances lined up in the corridor, it's a diabolical combination to take someone who's elevated there and then subsequently requires physical restraint in front of all of these people. So if we had some sort of triage area for ABD, I think that would be a helpful thing. A quieter space that doesn't have the same traffic and simulation that they get in the triage area. (PA16)</p>

Interview participants reported persons under the influence of methamphetamines often presented with an abnormal increase in physical strength, which made it impossible for police and paramedics to control the situation, and required additional staff to use physical/mechanical restraints. The unpredictability, and level of extreme violence and aggression created dangerous situations which were difficult for police and paramedics to control, which added to the complexity of care. Interview participants identified ABD (violence, aggression and psychosis) increased personnel safety risk and included fear for their safety, exposure to blood borne diseases and physical and verbal assault. Experiencing ABD and work place violence (WPV) resulted in physical and psychological harm, and was traumatising to police and paramedic staff. Physical abuse included spitting, punching, pushing, wrestling, kicking, and using weapons to cause injury. Verbal assault involved direct and indirect threats, and derogatory comments. Participants identified that increased WPV associated with ABD increased their use of chemical sedation (restrictive practices).

Interview data explained ABD due to methamphetamines use created unsafe environments for families living with methamphetamine dependency. Interview participants raised family safety as a concern with extreme levels of violence (worse than when attending domestic violence without methamphetamines involved) resulting in serious injuries, often to multiple victims. Violence towards families and partners included physical violence, direct threats usually with weapons (i.e. machetes, knives), and verbal abuse. This was traumatising for victims and families, putting emotional strain on family relationships, and resulting in families presenting at breaking point. Children were at additional risk, due to living with extreme violence, increased risk of neglect and witnessing or being involved in highly emotional and volatile situations.

In addition, interview participants identified ABD (in particular fidgeting, rapid speech, unreasonable and inability to concentrate) affected their ability to communicate to the patient. An inability to communicate with the patient affected participants' ability to complete a full assessment. Interview participants' highlighted vigilance in these situations was key in ensuring medical conditions were not missed due to an inability to complete a full assessment and obtain background information from the patient. An inability to communicate to the patient also limited the effectiveness of de-escalation strategies. The overall result was an impact on

participants' ability to make decisions around care, which could result in a delay in medical treatment or mental health assessment.

Participants also raised concerns that the care environments were not always suitable due to ABD and sometimes mental health problems associated with methamphetamine use. Environments about which interview participants raised concerns were transport vehicles and safe areas in ED. Ambulance vehicles are not designed to manage ABD or mental health patients due to limited space and equipment. Participants expressed that a vehicle designed specifically for transporting patients with ABD and psychosis would be safer for staff and the patient. Police participants also indicated that police pods increased the risk to patient safety, due to risk of injury, self-harm when behaviour escalated and medical attention was not readily available. In addition, ED were often busy and noisy environments whereas methamphetamine-related presentations required less stimulating triage areas and safe rooms. Over stimulating environments increased patients' anxiety and the ABD displayed, which increased the safety risk to staff and other patients in the ED. Safe rooms or mental health rooms helped to safely contain patients negated the need to leave patients in police pods for hours. Participants also identified fast tracking triage and assessment for ABD and patients experiencing psychosis was beneficial, reducing the risk of escalating behaviour due to long waiting times, reducing the time patients spent in police pods, and allowing for safe early release of police and paramedics from ED. This helped to improve and streamline the care between pre-hospital and ED environments.

In addition, interview participants identified ABD was affected by when the patient last used methamphetamines, and the precursor used to manufacture methamphetamines, all had an impact on the severity of behaviour displayed. Patients, who injected immediately before the callout event, increased the complexity of care due to encountering an increase in violent, abusive and dangerous behaviours.

Unpredictable behaviour increased the complexity of care and participants perceived a need to remain hyper-alert in case of a rapid escalation of behaviours.

Elements of Mental health

QISU data (phase one *stage one*) identified common mental health illness terms from the triage free text. The triage text mentioned psychiatric or mental health issues in 19.2% all triage notes. Psychiatric/mental health issues included hallucinations,

suicidal ideation, self-harm, paranoia, schizophrenia and mental health. The interview participants (phase two) reported similar findings. Interview participants provided further insight into how mental health issues added to complexity of care of patients under the influence of methamphetamines, supporting findings identified in QISU data. Table 11-4 presents the quantitative and qualitative data alongside each other for elements of mental health.

A key consideration when caring for and treating patients under the influence of methamphetamines was whether patients were experiencing drug-related mental health problems or the possibility of underlying mental health conditions, or both. Common mental health illnesses associated with methamphetamine use identified by interview participants included paranoia, hallucinations, anxiety, depression, self-harm and psychosis/excited delirium, which were similar to the quantitative findings (QISU).

Table 11-4 Elements of mental health: quantitative and qualitative data

Quantitative data	Qualitative data
<p>QISU (phase one stage two) data</p> <p><i>Mental Health</i> Mental health n (%) Hallucinations 16 (6.4) Psychiatric issues 48 (19.2)</p> <p>Psychiatric issues were related to: suicidal ideation (n = 17), self-harm (n = 7), paranoia (n = 10), schizophrenia (n = 5) Mental health (n = 8).</p>	<p><i>Patient safety, impaired decision making</i> ...a middle-aged lady...she was found by a passer-by...She was digging underneath...like a statue that had been put up in public area in the sort of centre of town. She had a belief that there was something underneath those statues, so initially, the police were called. They called us, we arrived, the police had sort of for want of a better way of explaining it, they had sort of surrounded her just keeping her in the centre. So I don't know what had gone on prior to me arriving, however, when she saw the ambulance arrived, she became quite agitated. Her [flight of] speech was certainly increased, just talking nonsensical really. She didn't actually threaten physically, but she became very agitated. When we said look, we're going to take you across to the emergency department, we're going to get someone to have a chat to you and just did the normal talk that we would do, she refused to come into the ambulance. At that stage, we enacted, or the police enacted the Mental Health Act. She struggled when they got hold of her arms, so I just gave her some Midazolam and we took her across to ED. So that's the most recent example. (PA13)</p>

Interview participants highlighted that patients who displayed signs of hallucinations and paranoia were out of touch with reality and this impaired patients' decision-making ability and resulted in patients engaging in reckless activities. This placed the patients in situations that put their own safety and health at risk. Persons under the influence of methamphetamines frequently displayed unreasonable or paranoid behaviours, creating difficulties for police and paramedics trying to de-escalate or diffuse risky situations. Paranoid ideation resulted in participants perceiving police and paramedics as adversaries when they were attempting to offer assistance, resulting

in further extremes in behaviour. In addition, increased strength and decreased pain tolerance resulted in patients fighting against police and paramedics, and against physical/mechanical restraints, which often resulted in injuries.

11.3.3. Co-ordinated Approach

The theme co-ordinated approach contributes answers to research questions 2, and 4 and provides an understanding of the frequency police and paramedics are required to co-attend methamphetamine-related callouts and their experiences of co-providing care. VIC ambulance data (phase one *stage two*) showed an increase in the number of paramedic attendances for methamphetamine-related callouts over time. Qualitative data (phase two) explored the increase in co-attendance between police and paramedics, focusing on how they co-provide care and areas participants considered needed improvement or development. Table 11-5 presents the quantitative and qualitative data alongside each other for the theme: co-ordinated approach.

Table 11-5 Co-ordinated approach: quantitative and qualitative data

Quantitative data	Qualitative data
<p>VIC ambulance data (phase one stage two)</p> <p>Co-attendance Police co-attendance 166 (21.6%) 2011/12, 1182 (47%) 2016/17, change 612% p value <.05</p>	<p>Standardised approach There's no structured process. It's basically every single patient you're assessing with your experience and a lot depends on who is on scene and who the police are. The police sometimes get it and they sometimes don't. Sometimes we just say we're not transporting, that the patient is too aggressive and we're not interested and sometimes the police kick back and sometimes they are really happy with that. It all depends on who I'm working with as a paramedic and who the other stakeholders involved are - so the police obviously...It would be a guideline, a good guideline would be awesome but you could never always stick to it. Like in your Mental Health guideline, you've still got to have options open but you should explain why you walked out of the guidelines and it [would] be okay. Yeah, I would love something. It would be awesome. (PA11)</p> <p>New coordinated approach At the moment [state removed] has got a bit of a trial going with the police and a mental health nurse. They are fantastic at treating these patients because they do it regularly, it's their speciality and they're getting used to the community side of it. It works really well Whereas we're just pitching up as two paramedics with two random coppers off the beat who are trying their best but it's not our pure skillset. Just like any specialist, they can probably do it better so we would like to see more and more of those style of systems and more of more of vehicles and tools adequate to that type of particular presentation. In a similar way that you would have a neonate cot for a neonate transport we need a psych ambulance for a psych job. (PA11)</p>

Interview participants highlighted a standardised approach was lacking when co-responding to persons under the influence of methamphetamines. The standardised approach needed to include a co-ordinated approach between police, paramedics and EDs to improve management and care provided, and streamline services. Currently there is no standardised approach, which provides clear guidelines or policy on how the two services should approach co-attendance. This resulted in delays in medical treatment or assessment and occupied pre-hospital staff for long periods in ED and prevented them from attending other callouts. A coordinated approach needs to include guidelines for how the two services co-ordinate and provide care and streamline how care is conducted between the separate services (police, paramedics and ED). In addition, interview participants felt it would help decision-making at the callout scene if there was a guideline or policy to determine who was responsible for transport of patients to ED in different situations.

Some States across Australia were trialling a new co-ordinated approach to caring for persons under the influence of methamphetamines, which involved the combined response between mental health nurses and police. Participants working in areas where this approach was being trialled, shared that it was a patient centred approach, more empathetic, and provided additional mental health skills that paramedics felt they lacked. Interview participants also highlighted current approaches to caring for persons under the influence of methamphetamines who displayed ABD required the use of de-escalation techniques. However, this approach did not always work with persons under the influence (inability to communicate with patients, ABD and elements of mental health) resulting in the need to use physical and chemical restraint to control the situation and ensure the safety of all involved. Guidelines and policy for managing ABD between services and independently need to include alternatives to de-escalation.

11.3.4. Deservingness & compassion

The theme deservingness and compassion contribute answers to research questions 3 and 4. Quantitative survey data (phase one *stage three*) reported perceptions of deservingness providing an understanding of police and paramedics current perceptions towards people who use methamphetamines. The qualitative data (phase two) further develops understanding, exploring if there is a link between negative experience and negative attitudes or low perceptions of deservingness. Table 11-6

presents the quantitative data alongside the qualitative data for the deservingness and compassion theme.

Survey data indicated agreement that life circumstances contributed to drug use ($M = 3.31$) and strong agreement that individuals were responsible for their own drug use ($M = 4.54$). Survey participants reported low anger ($M = 2.48$) and moderate disappointment ($M = 3.35$) [negative affect] and moderate concern ($M = 3.36$), low sympathy ($M = 2.24$) [positive affect] towards people who used methamphetamines. In addition, survey participants were neutral about whether people who use methamphetamines deserve ($M = 3.00$) and are entitled ($M = 3.1$) to the same level of medical care as other medical conditions. Overall, survey participant's attitudes towards persons who used methamphetamines were neither negative nor positive (neutral). Interview data explored this concept further, reporting persons under the influence not only deserved and were entitled to medical care, but methamphetamine dependency is a medical condition that required appropriate treatment. Despite complexity of care and the negative experience expressed by interview participants, interview participants expressed compassion towards persons under the influence of methamphetamines. Participants' expressed compassion as understanding, empathy, concern, respect and a desire to help. Participants felt the use of methamphetamines was the precursor to the violence and irrational behaviour and was not a reflection of the person when they were not using methamphetamines. In addition, participants highlighted the need to reserve judgment, and reported life circumstance can lead to drug use and anyone could find themselves in a situation where they are experiencing substance dependency, which supported the findings reported by the survey.

Table 11-6 Deservingness & compassion: quantitative and qualitative data

Quantitative data	Qualitative data
<p>Survey response (phase one stage three) data</p> <p>Perceptions & affect Life circumstances p value t test 0.081 All 3.31 (1.04) Police 3.22 (1.07) Paramedic 3.49 (0.93)</p> <p>Individual's responsibility p value t test 0.229 All 4.54 (0.65) Police 4.58 (0.65) Paramedic 4.46 (0.67)</p> <p>Anger p value t test 0.784 All 2.48 (1.11) Police 2.49 (1.12) Paramedic 2.44 (1.13)</p> <p>Disappointment p value t test 0.528 All 3.35 (1.2) Police 3.38 (1.22) Paramedic 3.27 (1.15)</p> <p>Sympathy p value t test 0.011 All 2.24 (0.98) Police 2.14 (1.01) Paramedic 2.51 (0.88)</p> <p>Concern p value t test 0.226 All 3.36 (1.24) Police 3.3 (1.29) Paramedic 3.52 (1.09)</p> <p>Deservingness p value t test 0.000 All 3.00 (1.26) Police 2.78 (1.22) Paramedic 3.52 (1.2)</p> <p>Entitled p value t test 0.000 All 3.1 (1.3) Police 2.97 (1.3) Paramedic 3.70 (1.19)</p> <p>Positive Affect p value t test 0.032 (Sympathy & Concern) All 2.80 (0.93) Police 2.71 (0.99) Paramedic 3.01 (0.72)</p> <p>Negative Affect p value t test 0.578 (Anger & Disappointment) All 2.91 (1.01) Police 2.94 (1.01) Paramedic 2.86 (1.00)</p>	<p>Dependency/addiction is a medical illness I think it comes down to experience dealing with them and realising that it's an addiction and an illness. It's not, they're not being aggressive to you on purpose. If you speak to them two or three days later after they're off the meth, they can't remember a thing they've done. It's not an excuse. But it's not a deliberate act either. (PA12)</p> <p>Compassion, empathy & respect You wonder why they're there and how they've got there. I'm kind of different to everyone. I try and talk to people and figure out what's got them in that circumstance and then what they've tried to do to get themselves out to it. I like to talk to people. I find it quite interesting. Yeah, so I do wonder what's brought them there and what if anything I could do to help them, but I guess it's the old rule with policing that you don't learn until you get in that a lot of people just don't want help. It sounds bad and it's one of those things you don't learn until you do this job, but I joined and was like, I can't wait to help people, it's going to be great, and get out there. There are people that want help and there are a number of people that do. But there's the majority out there that keep ending up in the back of a paddy wagon and then when you offer them help or you offer to do things for them, you know, I'll get you into drug counselling, I'll do this, I'll get you a counsellor, they just don't want help (PP8)</p>

11.3.5. Rural care

The rural care theme contributes answers for research questions 2 and 4. VIC ambulance attendance quantitative data (phase one *stage two*) reports on increased prevalence in rural areas, while the qualitative data (phase two) explores this theme further reporting police and paramedics' experiences of providing care with limited resources and services. Table 11-7 presents the quantitative data alongside the qualitative data for the rural care theme.

VIC ambulance attendance data showed the largest increase in prevalence of methamphetamine-related attendance events was noted in regional areas. Interview data indicated providing care in rural areas was challenging due to complexity of care, safety risks associated with methamphetamine-related presentations/callouts requiring additional staff, and there were limited resources available to manage difficult situations.

Table 11-7 Rural care: quantitative and qualitative data

Quantitative data	Qualitative data
<p>VIC ambulance data (phase one stage two)</p> <p>Rural Regional By year crystallised form meth 2011/12 94 2012/13 231 2013/14 296 2014/15 467 2015/16 550 2016/17 488 (Notes: rate in regional areas is increasing faster than metro areas) The largest increase (419%) was noted in regional Victorian methamphetamine-related events attended by ambulance.</p> <p>No of meth-related callouts events Metro 673 2011/12, 2020 2016/17, difference 1347, change 200%, p value <.0001 Regional 94 2011/12, 488 2016/17, difference 394, change 419% p <.0001</p>	<p>Rural/remote environments ...the other thing that's really noticeable is the distinct lack of longer-term treatment options for these patients once they're in the hospital setting. So obviously we deal with them in that quite acute phase. But then in terms of follow up for them and specifically if they want to get off those drugs and they want access to a residential rehab type facility, opportunities for that are very very very limited in regional [state removed]. (PA18)</p>

Interview participants highlighted that rural areas had less available resources (staff, facilities and services) to help provide care and respond to aggressive, violent and dangerous situations. A lack of facilities meant patients were transported long distances to reach medical care, mental health facilities, and drug and alcohol services. This resulted in patients being removed from family and social support to undertake mental health care, and drug and alcohol rehabilitation and treatment. Rural areas also had limited security staff to help manage ABD in ED, requiring police to be in ED for longer periods to support ED staff.

11.3.6. Prevalence of presentations

The prevalence of presentations theme contributes to the answers for research question 1, 2 and 4. Prevalence data provides evidence of the frequency police, paramedics and ED staff respond and treat methamphetamine-related presentations/callouts (phase one stage one and stage two) which is supported by qualitative data of participants' recollection of how often they manage these presentations. The quantitative results presented here are representative of Victoria (VIC), and Queensland (QLD), while the interview data were collected from five of the eight states and territories across Australia. Interview data provided a broader range of experience and provides further understanding about the increase in prevalence and the impact on their experience responding and providing care to this

cohort of patients across Australia. Table 11-8 presents the quantitative and qualitative data for prevalence of presentations theme.

QISU data (phase one *stage one*) reported an increase in prevalence of presentations to ED in the final four years of the study. Interestingly, the number of ambulance callout events related to methamphetamines also increased significantly over a similar time period. Interview participants confirmed the number of methamphetamine-related presentations had increased considerably; however, they reported presentations have been increasing for the last 10-15 years. Participants also identified with the increase in prevalence there has been an increase in the extent of the violence exhibited and an increase in the frequency of encounters with dangerous situations and dangerous police apprehensions. In some areas across Australia, the prevalence had increased to the point where participants felt they managed these callout events more often than any other type of callouts. Interview participants identified part of the reasons for this was due to communities switching from alcohol use to methamphetamines because it was cheaper and easier to obtain. The increase in callouts of => 200% has implications for staffing and resources, particularly in regional/rural areas.

Table 11-8 Prevalence of presentations: quantitative and qualitative data

Quantitative data	Qualitative data																						
<p>QISU (phase one stage one)</p> <p><i>Prevalence</i> 92.8% presented between 2014 to 2017 (sudden increase). Presentations increased significantly over this period, $z = 19.1$, $p < 0.05$, CI .76-.94.</p> <table border="1"> <thead> <tr> <th>Year/no.</th> <th>n (%)</th> </tr> </thead> <tbody> <tr><td>2008</td><td>7 (2.8)</td></tr> <tr><td>2009</td><td>-</td></tr> <tr><td>2010</td><td>2 (0.8)</td></tr> <tr><td>2011</td><td>1 (0.4)</td></tr> <tr><td>2012</td><td>1 (0.4)</td></tr> <tr><td>2013</td><td>7 (2.8)</td></tr> <tr><td>2014</td><td>33 (13.2)</td></tr> <tr><td>2015</td><td>83 (33.2)</td></tr> <tr><td>2016</td><td>64 (25.6)</td></tr> <tr><td>2017</td><td>52 (20.8)</td></tr> </tbody> </table> <p>VIC ambulance data (phase one stage two)</p> <p><i>Prevalence</i> methamphetamine-related events attended by ambulance increased from 768 in 2011/12 to 2,514 in 2016/17 which is an increase of over 200%,</p> <p>Transported to ED 603 (78.7%) 2011/12, 2029 (80.7%) 2016/17, change 236% p value <0.05</p> <p>Total meth callouts VIC 768 2011/12, 2514 2016/17 difference 1746, change 227% p value .0001.</p> <p>Crystal meth attendance by year 2011/12 767 2012/13 1348 2013/14 1536 2014/15 2269 2015/16 2920 2016/17 2508 Total meth 768 2011/12, 2514 2016/17 difference 1746, change 227% p value .0001.</p>	Year/no.	n (%)	2008	7 (2.8)	2009	-	2010	2 (0.8)	2011	1 (0.4)	2012	1 (0.4)	2013	7 (2.8)	2014	33 (13.2)	2015	83 (33.2)	2016	64 (25.6)	2017	52 (20.8)	<p><i>Prevalence</i> ...because the users are more violent and it leads to incidents that obviously require our attention, we're having contact with people who are violent more often, because of the meth. Then, when we're having contact with those people, they are more violent also. So I couldn't put a number on it, but if I think back to my general duties policing side, 10 years ago, we might have, what I term a dangerous, risky arrest a couple of times a year and now it's every week, if not more often. It really has gone through the roof. We've... what I term a dangerous arrest, where they're actively trying to kill you, if they could. (PP3)</p>
Year/no.	n (%)																						
2008	7 (2.8)																						
2009	-																						
2010	2 (0.8)																						
2011	1 (0.4)																						
2012	1 (0.4)																						
2013	7 (2.8)																						
2014	33 (13.2)																						
2015	83 (33.2)																						
2016	64 (25.6)																						
2017	52 (20.8)																						

11.4. Discussion of findings

There are several key findings reported in this chapter. The main findings were methamphetamine-related callout events are complex situations requiring management, care and empathy. Other findings from this study included: 1) significant increases in methamphetamines-related presentations to ED and callout events attended by police and paramedics, 2) police and paramedics expressed compassion, respect and empathy towards patients, and perceived people who use methamphetamines deserve and are entitled to same level of medical care as other medical conditions 3) consideration of a standardised approach and new strategies for substance related callouts may be key in helping to improve management and care

across the pre-hospital and ED environments, and 4) ED environments and transport vehicles were not ideal for providing care for persons under the influence of methamphetamines. It is difficult to compare the results of this study to previous research in pre-hospital environments, as this is the first study to undertake an exploration of police and paramedics experience caring for methamphetamine-related callouts. Previous research has focused on methamphetamine-related ED presentations.

Previous research reported trauma and psychiatric illness were the most common complaint for methamphetamine-related presentations (Hendrickson et al., 2010; Hendrickson et al., 2008; Richards et al., 1999), and ABD and mental health problems (Monahan & Coleman, 2018). This study, however, reported overdose, abnormal behaviour in public (erratic or paranoid), patient's inability to sleep for days, public and family concerns, and states of crisis in addition to ABD and mental health illness. Only one other study reported methamphetamine presentations and complexity of care. The qualitative study conducted by Cleary et al. (2017) reported methamphetamine-related presentations to ED are challenging and complex, with complexity linked to underlying mental health illness, and additional physical problems. The results of the current study confirmed these findings; methamphetamine-related presentations are more than solely drug related, they frequently present with multiple issues (physical-trauma, behavioural- ABD, mental health illness and crisis situations- lack social support due to breakdown in family relationships, social upheaval, personnel distress) which require management and consideration when responding to callouts in pre-hospital environments and when treating patients in ED.

Previous research has linked ABD to methamphetamine use, reporting an increase in violence with; recent methamphetamine use, psychosis and methamphetamines use, and increased doses of methamphetamines (McKetin et al., 2014). These findings are similar to the findings reported in this study. Research on methamphetamines-related ED presentations reported between 41% and 78% presented with aggression and violence (Bunting et al., 2007; Isoardi et al., 2018; Toles et al., 2006). Qualitative research exploring methamphetamine-related presentations in ED reported similar findings to this study, ABD and increase in physical strength increased the resources required to care for patients, and violence was often confronting (Usher et al., 2017).

Families are at increased risk due to violence and living with methamphetamine dependency. Previous research supports our findings, substance dependency often results in family breakdown, and users have extenuating social circumstances, which add to complexity of care (Cleary et al., 2017; Dyba et al., 2019). Additional findings from previous research included, social stress increased methamphetamine use, increased the chance of ABD, complex social situations were not followed up post discharge from ED and parenting was affected negatively by methamphetamine dependency (Cleary et al., 2017; Dyba et al., 2019; Hahn et al., 2012). A study by Sommers et al. (2006) conducted with people who used substances, reported that while around one third of males and one quarter of female participants reported committing methamphetamine-related violence, for the majority of participants, methamphetamine use had limited impact on social circumstances.

A study conducted by Usher et al. (2017) who interviewed health professionals (including two paramedics) reported safety was a major concern for participants related to ABD. Previous research on hospital emergency department workplace violence (WPV) linked 68% of WPV to substance use (Kleissl-Muir et al., 2018), between 87.7% and 65.2% of paramedics experience WPV (Boyle et al., 2007; van Reemst & Fischer, 2016) and 39.2% of police experienced WPV (van Reemst & Fischer, 2016). However, these studies did not specifically examine methamphetamine-related WPV. ABD is usually managed using de-escalation techniques, however participants in this study reported de-escalation is not effective with methamphetamines-related attendances, and often require a form of restrictive practice (chemical sedation or/and physical restraint). De-escalation is centred on non-verbal and verbal communication (Safe Care Victoria, 2020), aimed at calming the patients down (Berring et al., 2016), which may explain why participants in this study reported it as ineffective. This study reported communicating with patients under the influence of methamphetamines was difficult, which affects how successful de-escalation techniques work with this cohort of patients. A qualitative study conducted by Muir-Cochrane et al. (2018) supported this finding, reporting methamphetamine consumers were resistant to de-escalation techniques due to ABD and unpredictability.

Current international and Australian research is advocating the use of de-escalation as an approach to managing ABD in both mental health and substance abuse, to reduce

restrictive practice (i.e. chemical sedation, physical/mechanical restraint) (LeBel et al., 2014). Reducing restrictive practice does however have negative consequences. Previous studies have reported health professionals feared there would be no alternative to restrictive practice in mental health and ABD, they maintained a safe work environment is necessary for staff and patients, and some situations required restrictive practice to achieve a good outcome for everyone present (Muir-Cochrane et al., 2018; Power et al., 2020). Restrictive practice conflicts with person centred care, can be traumatising for staff and use of coercion can damage trust and the therapeutic relationship between staff and patients (McKenna et al., 2017; Muir-Cochrane et al., 2018; Power et al., 2020). This study reported previous experience with violence and aggression in the pre-hospital environment resulted in increased use of restrictive practices (chemical sedation), due to fear for personal safety and safety of co-workers. Fear for personal safety is reportedly a side effect of experiencing trauma in the work place and can lead to post traumatic stress disorders (Murray et al., 2019).

It is clear the practice of de-escalation is difficult with patients under the influence of methamphetamines and the use of restrictive practice can be a negative experience for staff and patients. Other approaches to caring for this cohort of patients is required. This study reported some Australian states are trialling a co-ordinated approach between police and mental health staff. The co-response approach has been trialled in Australia and internationally, with varying combination of health care staff combined with police (Bailey et al., 2018). Generally, the co-response or co-attendance response teams included mental health, paramedics and police and were either a mobile first response team or secondary response team called in after paramedics or police arrived (Bailey et al., 2018). Advantages of a coordinated approach using these response teams included; able to respond to more callouts, reduce the length of time spent at a response, decrease the arrest rate for patients, and reduce the burden on EDs (Bailey et al., 2018), which are similar findings to those reported by this current study. However, there is limited research in this area and further research is required to determine the effectiveness of these approaches at providing care in the pre-hospital environment for substance related callout events. In addition, this study reported co-attendance of methamphetamine-related callout events are increasing as are the number of methamphetamine-related callouts. There was a lack of a current standardised approach to care that guided how police, paramedics and EDs responded and provided care to this cohort of patients.

This study reported methamphetamine use often had elements of mental health problems or co-occurred with mental illness. Psychosis and co-occurring mental illness have been previously associated with methamphetamine presentations (Cleary et al., 2017; McKetin, 2018; Yang et al., 2020). Previous research reported similar findings, common complaints of mental health illness associated with methamphetamine-related ED presentations were schizophrenia, depression, suicidal ideation, and psychosis (Bunting et al., 2007; Cloutier et al., 2013; Hendrickson et al., 2008; Pasic et al., 2007; Richards et al., 1999; Toles et al., 2006).

The environments in which care is provided are essential in helping to reduce ABD and WPV, and to improve the quality of patient care (Muir-Cochrane et al., 2018). Muir-Cochrane et al.'s (2018) study reported dark crowded spaces increased anger and prevented communication and engagement with the patient. Oliver et al. (2018) also reported ED required specific rooms designed to manage ABD that were open and away from other patients in ED. The findings are reflected in this current study in which participants agreed ED environments were generally unsuitable, adding they were overstimulated and noisy, had increased waiting time to be seen by medical officer, which increase patient agitation and ABD. In addition, participants reported fast triage and assessment helped reduce ABD and transport vehicles used in pre-hospital environment were not designed specifically to manage or transport people with mental health or substance issues.

This study reported attitudes towards methamphetamine-users were neutral and interview participants expressed compassion, empathy and respect towards patients under the influence of methamphetamines. McCann et al.'s (2018) study in Japan, reported paramedics felt people experiencing drug addiction are as deserving of medical care as other medical conditions which were similar findings to the findings reported in this study. However, several studies reported different results. Skinner et al.'s (2009) study conducted in Australia with nurses reported increased perceived personal responsibility for substance use, and decreased deservingness and entitlement views, McLaughlin et al.'s (2006) and Ford et al.'s (2009) study reported health care professionals held negative views towards substance users. This was linked to dissatisfaction with job due to a lack of services and resources to support the nurses in their roles (Ford et al., 2009). Williams et al.'s (2015) study on student paramedics also reported negative views held towards substance users.

The results from this study suggest methamphetamine-related presentations to ED and callout events by ambulance services are increasing in areas across Australia. Previous international research reported methamphetamine-related presentations accounted for between 0.4% and 2.3% of all ED presentations (Cloutier et al., 2013; Hendrickson et al., 2010; Hendrickson et al., 2008; Richards et al., 1999) and 1% in an Australian study (Bunting et al., 2007). However, these studies were conducted prior to 2014 when this study registered an increase in prevalence of presentations. A qualitative study conducted by Muir-Cochrane et al. (2018) also reported a significant increase in methamphetamine-related mental health presentations, which supports our findings. The number of ED presentations related to methamphetamines reportedly increased from 1,278 in 2011/12 in NSW to 5,144 in 2015/16 and the number of presentations discharged from hospitals related to methamphetamines across Australia also rose from 1,741 in 2012/23 to 8,652 in 2016/17 (Center for Epidemiology and Evidence, 2020). These results support the increase in prevalence noted in our study for QLD and VIC. Interestingly, the National Drug Strategy Household Survey reported an overall decrease in methamphetamine use, only 1.4% of survey participants admitted to using methamphetamines in their lifetime in 2016 compared to 3.4% reported in 2001 (Australian Institute of Health and Welfare, 2014, 2017). The use of the crystallised form of methamphetamines ('ICE') reportedly increased from 2013 with 50% of all methamphetamines used reportedly the ICE form in 2016 compared to 29% in 2013 (Australian Institute of Health and Welfare, 2017). Weekly reported use of ICE has also increased (12.4% 2010; 29% 2019)(Australian Institute of Health and Welfare, 2020). This suggests the increase in presentations may be due to the increase in ICE use. If this is the case, this would make 'ICE' use more damaging for patients than other forms of amphetamines and methamphetamines.

11.5. Summary

This chapter presented an overview of the study and linked research questions with integrated results, presented a discussion and interpretation of the integrated results and discussed how the findings from this study compare with previous research. The following chapter (twelve) provides a conclusion to the study and the dissertation, linking the findings to the theoretical framework, and providing a discussion of the implications of the research and limitations to the research.

Chapter 12. Implications, limitations & Conclusion

12.1. Introduction

This final chapter will provide a conclusion to the dissertation and the study. A discussion of the implications of research (knowledge, practice and future research) using the theoretical lens (SEM) as a guide, and the limitations of the study will be included. The conclusion will provide a summary linking the theoretical framework to the research findings. A summary of the dissertation will follow the conclusion.

12.2. Implications for knowledge, practice and future research

This dissertation uniquely explored methamphetamine-related presentations and callout events using a mixed methods approach. To our knowledge, this is the first study to explore police and paramedics experience co-responding to methamphetamine-related callout events and their perceptions of deservingness towards people who use methamphetamines. In addition, this is the first study to provide state-wide data on ambulance attendances related to methamphetamines and data on methamphetamine-related presentations to ED over 13-year period and from more than one ED. In this respect this dissertation provides new knowledge in many areas.

National surveys are reporting a decrease in the overall methamphetamine use; however this study has helped to develop knowledge in this area, using quantitative data to report increasing prevalence of presentations, callout events and co-attendance of police and paramedics, and qualitative data to explore police and paramedics experience managing these patients in the pre-hospital environment. This key findings of this study help to increase our knowledge in this area; there is a significant increase in methamphetamines-related presentations to ED and callout events attended by police and paramedics; police and paramedics expressed compassion, respect and empathy towards patients, and perceived people who use methamphetamines deserve and are entitled to the same level of medical care as other medical conditions;

consideration of a standardised approach and new strategies for substance related callouts may be key in helping to improve management and care across the pre-hospital and ED environments; transport vehicles were not ideal for providing care for persons under the influence of methamphetamines; methamphetamine-related presentations and callout events can be quite medically unwell, are more than just drug-related presentations which require complex management; communication with methamphetamine-related callouts can be difficult effecting paramedics ability to conduct an assessment and the effectiveness of de-escalation techniques; and increased prevalence in rural areas needs to be reflected in resource allocation.

Substance use or dependency is a health behaviour, resulting from a combination of factors. The Socioecological Model (SEM) of health promotion theorizes to achieve better health for all, we must look at not just the individual but also the world in which the individual exists. The study used the SEM of health promotion as the theoretical lens to view the findings. Using the SEM helps to develop our understanding not only of the behaviour of substance use/dependency but aims to improve health and well-being, reduce the effect of stigma, and addressing the root causes of harms associated with this health behaviour. The SEM design (12-1) demonstrates how each level influence is affected by the other levels. The following implications for practice will be presented using the SEM framework as a guide. Figure 12-1 demonstrates the implications across the SEM four levels of health promotion.

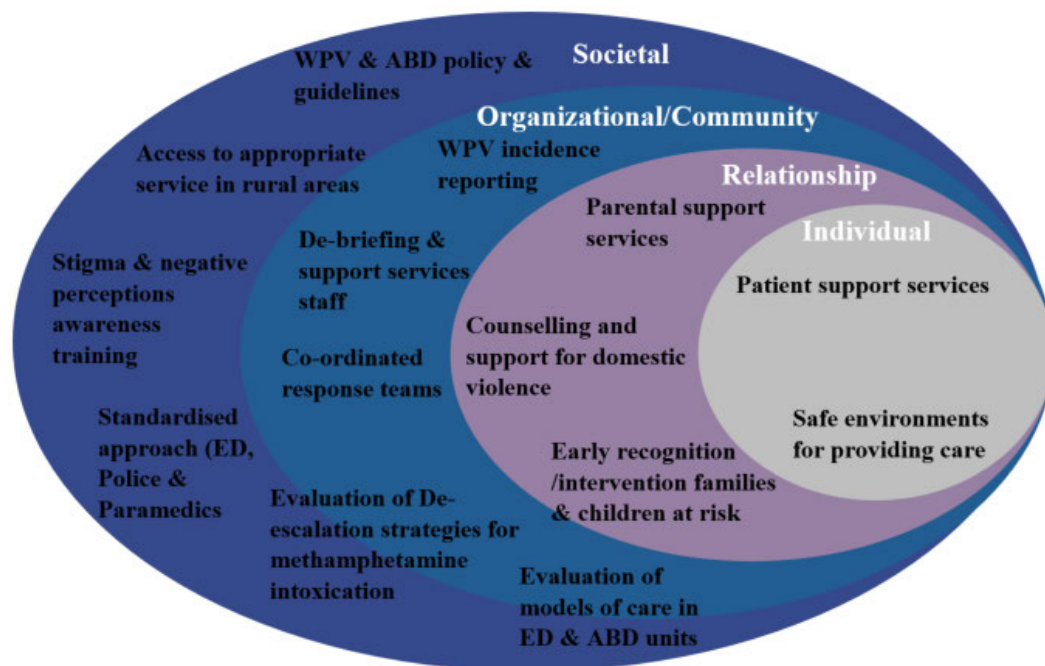


Figure 12-1 Implications for practice and research using SEM framework as a guide.

Adapted from Socioecological Framework for health promotion (Center of disease control and prevention, 2013).

Individual & Relationship

This study reported methamphetamine use is frequently associated with mental health problems and patients presenting with medical and social crisis. Substance related presentations and callout events are more than solely drug-related presentations, and the approach used to respond to and care for these patients needs to consider the multifaceted factors often present in patients under the influence of methamphetamines and other drugs. Support services should aim to alleviate the multifaceted issues for patients presenting due to methamphetamine use. In addition, the impact of methamphetamines dependency is not limited to patients and staff working alongside methamphetamine dependency. Living with and experiencing domestic/family violence and dysfunctional parenting due to methamphetamine dependency negatively affects families, can be traumatic, and may result in breakdown in family relationships, child neglect and negative social consequences. Police and paramedics are in a position for early recognition and identification of families at risk, and can link families to support services to reduce the trauma and negative impact of methamphetamine dependency. EDs and the pre-hospital environment are frequently a first point of contact for patients with substance dependency. Early interventions, at this point of contact, could help to mitigate

(reduce the harm) the social, mental and medical states of crisis in which patients present and link them to essential mental health or substance abuse services.

This study reported an increase in rural/regional attendances related to methamphetamines, which is likely to affect resource allocation and availability of treatment and rehabilitation services. Access to appropriate services in rural areas needs to improve to meet patients' needs and reduce the need to remove patients from social support and country to attend essential harm reduction and treatment services. In addition, the environments where care is provided need further evaluation to ensure they meet patients' needs and are safe for patients and staff.

Community & Societal

For harm reduction to be effective, people who use substances need to engage in services and seek medical treatment, however stigma, perceptions of deservingness and staff attitudes affect how patients engage with health care. Police, paramedics and other health professionals working alongside substance abuse and dependency need to remain aware of the affect stigma has on engagement in services, and stigma, values and perceptions of deservingness are affected by experience and media sensationalism. Anti-stigma advocates argue for the inclusion of awareness training of stigma and the effect of stigma and perceptions of deservingness (conscious and unconscious) on mental health and patients' engagement in health care services. Police, paramedics and ED staff are a first point of contact and should be a priority target for this type of training. In addition, Institutes educating undergraduate paramedics and police officers need to ensure they have adequate training to ensure police and paramedics have the necessary skills available to manage methamphetamine-related callout events. These need to include, de-escalation training, additional management for when de-escalation fails, how to communicate effectively in difficult situations or with difficult patients, how to minimise the risk to personnel safety and managing patients in violent and dangerous situations. Additional paramedic mentoring programs may be needed in this respect to ensure clinicians' have the necessary skills, support and confidence required to manage these types of presentations/callouts. In addition, police and ambulance organisations need to ensure there are adequate de-briefing and support services for (especially out of hours) staff to help mitigate the effect negative experiences of providing care has on

staff perceptions of deservingness and stigma, job satisfaction, retention of staff, and negative sequelae of WPV.

Improving the safety of staff, patients, families and other patients in ED is paramount in relation to ABD and WPV. Accepting WPV as part of the job results in a lack of incidence recording and reliability of statistics on WPV and ABD, which are used to guide policy and procedure development. Health care professionals and police need to remain vigilant and work to reduce WPV, by accurately reporting incidents and engaging in organisational policy and guidelines around managing and preventing WPV and ABD. Organisations should ensure the development of policy and guidelines reflect the approach to reduce restrictive practices but are flexible and include contingencies for when de-escalation techniques fail. In addition, a standardised approach requires development to guide how care is provided between three separate services; ED, police and paramedics. New approaches to care such as response teams (mental health/drug and alcohol nurses, police, paramedics) should be considered to alleviate the burden on pre-hospital and ED environments, and provide person-centred care. Utilising co-response teams including paramedics, mental health, social workers and police may be an alternative option. Evaluation of outcomes are essential for states that are currently trialling this approach to determine if it can assist with the multifaceted aspects of methamphetamine-related presentations/callouts and reduce the burden on health professionals and first responders.

Drug education programs need to move from a propaganda approach which focuses on abstinence and extreme consequences of drug use and move to include education on how to manage and reduce the harmful effects of methamphetamines on society. This needs to include, at a minimum, a dialogue around how to manage overdoses, staying safe during violent or aggressive situations, and managing mental health side effects related to methamphetamine use.

12.2.1. Future research

There are several areas identified from this study that require further research. There is a need to review and evaluate the effectiveness of de-escalation techniques on ABD due to methamphetamine use and the effectiveness of ABD units to manage methamphetamine-related presentations. A comparison between ED and ABD unit management and models of care, and exploration of rapid triage and assessment in ED may help develop quality care that is person-centred and limits the use of restrictive

practices. Future research should examine the environments in which care is provided in both ED and the pre-hospital setting for patients with ADB or mental illness including psychosis, to determine the effectiveness of these environments and identify how these environments can be improved. In addition, future research should focus on the effectiveness of coordinated response teams, the disadvantages and advantages, as well as the mixture of roles included in these teams and their effectiveness to improve the burden of methamphetamine presentations and attendances on the pre-hospital and ED environments. Future research focusing on substance related presentations or callout events needs to consider study design (more than 1 ED/local area, data collection timeframe) and how drug use is measured and validated. A review of current services available for substance-related presentations is suggested to ensure they meet the multifaceted issues often involved in these presentations/callouts.

12.3. Limitations to the study

There are several limitations to this study that need to be considered; difficulties establishing a causal link between drug use and prevalence and perceptions, social desirability bias, sampling/selection bias, measurement of drug use, use of injury related data to determine patterns and features of ED presentations, small survey size utilised and the location of the different stages of the study. A study design utilising a cross-sectional survey is unable to determine a causal relationship between affect and perceptions of deservingness and entitlement. In addition, identification of substance use may vary over time with the increased clinician's awareness of substances used in the community. Media crisis framing and sensational headlines reporting methamphetamine epidemic over the past 5 years is likely to have impacted clinicians' and the community's awareness of methamphetamines. This, is likely to have had an impact on prevalence of presentations and ambulance attendances, and stigma and perceptions of deservingness.

Stigmatized conditions such as substance use/dependency may evoke strong responses (negative) resulting in patients denying drug use and participants responding to survey and interview questions with a more socially desirable response (McGilloway & Donnelly, 2004). This may effect the measurement of perceptions of deservingness and entitlement, and prevalence of attendances and presentations. In addition, convenience sampling and purposive sampling rely on patients presenting to ED and

participants self-selecting to participate, which can lead to sampling/selection bias. We cannot guarantee all presentations and attendances included in phase one were methamphetamine-related or that large numbers of presentations were not excluded. The calculated sample size for the survey was reached, however the sample size for both survey and interviews were relatively small which may affect the samples representativeness.

There is a lack of a validated standardised tool to accurately measure drug use and drug use history was not established, therefore a causative relationship between drug use and the presentation is unlikely to be evidenced. Triangulation of measuring drug use (self-report, urine drug screen and gas chromatography, clinicians' subjective decision), would strengthen study design however it is difficult to achieve across all phases of the study. The study relied on databases measuring drug use to confirm presentations and ambulance attendances were related to methamphetamines. QISU data identified drug use by searching for relevant terms in the triage text and relevant diagnostic codes. VIC ambulance attendance data relied on self-report, families identifying drug use or clinicians' subjective experience identifying drug use at the scene. Identifying drug use at triage and at the scene is difficult as it relies on past history and patient disclosure. In addition, policy on urine drug screening tests in ED may vary across locations. Triage text or Patient Care Record data relied on patient self-report, reports by family, and clinicians' experience and knowledge recognising signs and symptoms of particular drugs. However, drugs are manufactured with a range of household chemicals, precursors and sometimes mixed with other drugs, so without actually testing the drug patients took prior to their presentation or ambulance attendance, it is impossible to state with conviction that methamphetamines was the reason for presentation.

The study conducted research in different states and territories across Australia, which was predetermined by the availability of databases and willingness of services in different locations to participate. As a result, the findings in this study are hard to generalise across Australia. In addition, the use of injury related methamphetamine data to ED means a large number of other methamphetamine-related presentations to ED (such as mental health) were not included and may have impacted the findings of this study. The results for phase 1 are therefore only generalizable to injury related methamphetamine presentations not all methamphetamine-related presentations.

12.4. Conclusion

The study used pragmatism as the philosophical foundation to explore the phenomenon of methamphetamine-related presentations. The pragmatist paradigm allowed the research team to collect quantitative data to summarise the patterns and features of methamphetamine-related presentations and ambulance attendances, providing an understanding of the prevalence of presentations, and foundational knowledge around features of these presentations. The quantitative data collected on perceptions of deservingness and attitudes helped the research team begin to apply the theoretical idea of stigma and perceptions of deservingness to police and paramedics' perceptions of methamphetamine-related callout events. Pragmatism paradigm theorises truth and reality must first be experienced, therefore to fully understand the impact of methamphetamine-related presentations/callout events an individual must first experience caring for these patients. Therefore, to fully understand the phenomenon, phase two of this study collected qualitative data on police and paramedics experience caring for methamphetamine-related presentations/callout events requiring transport to an ED. An explanatory sequential mixed methods design allowed the research team to explore the quantitative data, to gain a better understanding of the phenomenon, and use these findings to help construct the semi-structured interviews to delve into greater meaning and understanding.

The study used the SEM of health promotion as the theoretical lens to view the findings and discuss the implications for practice. Using the SEM helped develop understanding not only of the behaviour of substance use/dependency but also the harms associated with this health behaviour. In this regard there were several findings reported in this study that can be used to help improve health for patients who use methamphetamines. Methamphetamine-related presentations/callout events are complex and multifaceted, requiring management, care and empathy, and increase the safety risk to staff, families and children due to ABD. This impact is potentially going to continue to rise as the prevalence of methamphetamine-related presentations to ED and callout events attended by police and paramedics increases. Support services for patients, staff and families will require continual development and review to ensure they continue to meet the health and psychological needs of patients, families and staff.

There are several key findings reported in from this study. 1) Methamphetamine-related police and ambulance callout events are complex situations requiring management, care and empathy. 2) There has been an increase in methamphetamine-related presentations to ED and callout events attended by police and paramedics. 3) Despite the negative experiences, police and paramedics saw substance use as another medical condition and perceived methamphetamines users moderately deserve and are entitled to same level of medical care as other medical conditions. 4) Police and paramedics expressed compassion, respect and empathy towards patients under the influence of methamphetamines. 5) Consideration of a standardised approach and new co-attendance guidelines or policy for substance related callouts may be key in helping to improve management and care across the pre-hospital and ED environments. 6) ED Environments and transport vehicles are not ideal for providing care for persons under the influence of methamphetamines and would benefit from a review of best practices.

12.5. Summary

This chapter linked the study findings to the theoretical framework and outlined the implications for knowledge, practice and future research. In addition, this chapter also provided a discussion on the limitation of the study. The following section will briefly summarise what was covered in this dissertation.

An introduction to the dissertation was presented in chapter one and chapter two. Chapter one provided a discussion on the themes for research, the aims and research questions, an overview of the study and the rationale for conducting the study. Chapter two provided the background of methamphetamines, outlining the history, how methamphetamines work, the side effects and impact on users and outlined common cycles of methamphetamine use. Chapter three presented the findings of an integrated literature review outlining what is already known and identified a gap in knowledge and methodological issues with previous research, which helped to develop and shape the research question and study design.

Chapter four outlined the theoretical framework which was used to structure and guide the study, the research design, the methodology used and methods used for data collection in phase one and phase two. It presented a discussion on pragmatism, ethics, and the SEM framework of health promotion. Chapters five, six and seven

presented the quantitative findings from phase one, while chapters eight, nine and ten presented the qualitative findings from phase two. Chapter eleven presented an integration of quantitative and qualitative results, while chapter twelve provided a conclusion to the dissertation, linking the theoretical framework to research findings and implications for practice and ideas for future research.

References

- Adams, M. W. (2008). Comorbidity of mental health and substance misuse problems: A review of workers' reported attitudes and perceptions. *Journal of Psychiatric and Mental Health Nursing, 15*(2), 101-108. doi:10.1111/j.1365-2850.2007.01210.x
- Aglipay, M., Wylie, J. L., & Jolly, A. M. (2015). Health research among hard-to-reach people: Six degrees of sampling.(Analysis). *CMAJ: Canadian Medical Association Journal, 187*(15), 1145.
- Anglin, M. D., Burke, C., Perrochet, B., Stamper, E., & Dawud-Noursi, S. (2000). History of the methamphetamine problem. *Journal of Psychoactive Drugs, 32*(2), 137-141. doi:10.1080/02791072.2000.10400221
- Australia Institute of Health and Welfare. (2018). *Drug related hospitalisation*. Retrieved from Canberra: <https://www.aihw.gov.au/getmedia/da892af5-e381-4037-9cd7-195c93e9578b/Drug-related-hospitalisations.pdf.aspx?inline=true>
- Australian Bureau of Statistics. (2004). *1362.3 - Regional Statistics, Queensland, 2004*. Retrieved from ABS: <http://www.abs.gov.au/ausstats/abs%40nsf/mf/1362.3/>
- Australian Bureau of Statistics. (2016a). *Australian Health Survey: Consumption of added sugars, 2011-12*. Retrieved from Canberra: <https://www.abs.gov.au/ausstats/abs@nsf/Lookup/4364.0.55.011main+features12011-12>
- Australian Bureau of Statistics. (2016b). *Australian Health Survey: Consumption of food groups from the Australian dietary guidelines, 2011-12*. Retrieved from Canberra: <https://www.abs.gov.au/ausstats/abs@nsf/Lookup/by%20Subject/4364.0.55.012~2011-12~Main%20Features~Unsaturated%20spreads%20and%20oils~10002>
- Australian Criminal Intelligence Commission. (2019). *National Wastewater Drug Monitoring Program, Report 7*. Retrieved from Queensland: https://www.acic.gov.au/sites/default/files/2019/06/nwdmp7_140619.pdf?v=1560498324
- Australian Institute of Health and Welfare. (2008). *The effectiveness of the Illicit Drug Diversion Initiative in rural and remote Australia. Drug statistics series no. 19. Cat. no. PHE 96.* . Retrieved from Canberra, Australia: <http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=6442459827>
- Australian Institute of Health and Welfare. (2014). *National Drug Strategy Household Survey detailed report 2013. Drug statistics series no. 28*. Retrieved from Canberra, Australia: <http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=60129549848>
- Australian Institute of Health and Welfare. (2016a). *2.2 How much does Australia spend on health care?* Retrieved from Canberra, Australia: www.aihw.gov.au/workarea/DownloadAsset.aspx?id=60129555788
- Australian Institute of Health and Welfare. (2016b). *Australian burden of disease study: Impact and causes of illness and death in Australia 2011*. Retrieved from Canberra:
- Australian Institute of Health and Welfare. (2017a). *Emergency department care 2016-17: Australian hospital statistics*. (Health services no. 72. cat. no. HSE 182). Retrieved from Canberra: <https://www.aihw.gov.au/getmedia/981140ee-3957-4d47-9032-18ca89b519b0/aihw-hse-194.pdf.aspx?inline=true>
- Australian Institute of Health and Welfare. (2017b). *National Drug Strategy Household Survey 2016: detailed findings*. Retrieved from Canberra: <https://www.aihw.gov.au/reports/illicit-use-of-drugs/ndshs-2016-detailed/contents/table-of-contents>
- Australian Institute of Health and Welfare. (2018). *Alcohol, tobacco and other drugs in Australia; meth/amphetamines and other stimulants*. Retrieved from <https://www.aihw.gov.au/reports/alcohol/alcohol-tobacco-other-drugs-australia/contents/drug-types/meth/amphetamine-and-other-stimulants>
- Australian Institute of Health and Welfare. (2020a, 23/04/2020). *Alcohol, tobacco and other drugs in Australia*. Retrieved from <https://www.aihw.gov.au/reports/alcohol/alcohol-tobacco-other-drugs-australia>
- Australian Institute of Health and Welfare. (2020b). *National Drug Strategy Household Survey 2019*. Retrieved from Canberra: <https://www.aihw.gov.au/reports/illicit-use-of-drugs/national-drug-strategy-household-survey-2019>
- Baberg, H., Nelesen, R., & Dimsdale, J. (1996). Amphetamine use: Return of an old scourge in a consultation psychiatry setting. *The American Journal of Psychiatry, 153*(6), 789-793.
- Bailey, K., Paquet, S. R., Ray, B. R., Grommon, E., Lowder, E. M., & Sights, E. (2018). Barriers and facilitators to implementing an urban co-responding police-mental health team. *Health Justice, 6*(1), 1-12. doi:10.1186/s40352-018-0079-0

- Bandura, A. (1998). Health promotion from the perspective of social cognitive theory. *Psychology and health*, 13(4), 623-649. doi:10.1080/08870449807422
- Beletsky, L., Macalino, G. E., & Burris, S. (2005). Attitudes of police officers towards syringe access, occupational needle-sticks, and drug use: A qualitative study of one city police department in the United States.(Report). *International Journal of Drug Policy*, 16(4), 267. doi:10.1016/j.drugpo.2005.01.009
- Bernaldo-de-Quiros, M., Cerdeira, J. C., Gomez, M., Piccini, A. T., Crespo, M., & Labrador, F. J. (2014). Physical and verbal aggression encountered by out-of-hospital emergency responders in the autonomous community of Madrid: differences between urgent and emergent care settings. *Emergencias*, 26(3), 171-178.
- Berring, L. L., Pedersen, L., & Buus, N. (2016). Coping with violence in mental health care settings: Patient and staff member perspectives on de-escalation practices. *Archives of Psychiatric Nursing*, 30(5), 499-507. doi:10.1016/j.apnu.2016.05.005
- Biddle, C., & Schafft, K. A. (2015). Axiology and anomaly in the practice of mixed methods work: Pragmatism, valuation, and the transformative paradigm. *Journal of Mixed Methods Research*, 9(4), 320-334.
- Biesta, G. (2010). Pragmatism and the philosophical foundations of mixed methods research. *Sage handbook of mixed methods in social and behavioral research*, 2, 95-118.
- Bigham, B. L., Jensen, J. L., Tavares, W., Drennan, I. R., Saleem, H., Dainty, K. N., & Munro, G. (2014). paramedic self-reported exposure to violence in the emergency medical services (EMS) workplace: A mixed-methods cross-sectional survey. *Prehospital Emergency Care*, 18(4), 489-494. doi:10.3109/10903127.2014.912703
- Birtel, M. D., Wood, L., & Kempa, N. (2017). Stigma and social support in substance abuse: Implications for mental health and well-being. *Psychiatry Res.*, 252, 1-8. doi:10.1016/j.psychres.2017.01.097
- Boeri, M. W., Tyndall, B. D., & Woodall, D. R. (2011). Suburban poverty: Barriers to services and injury prevention among marginalized women who use methamphetamine. *Western Journal of Emergency Medicine*, 12(3), 284-292.
- Boyle, M., Koritsas, S., Coles, J., & Stanley, J. (2007). A pilot study of workplace violence towards paramedics. *Emerg Med J*, 24(11), 760-763. doi:10.1136/emj.2007.046789
- Brackins, Todd, Brahm, Nancy, C., Kissack, & Julie, C. (2011). Treatments for methamphetamine abuse. *Journal of Pharmacy Practice*, 24(6), 541-550. doi:10.1177/0897190011426557
- Bradshaw, C., Atkinson, S., & Doody, O. (2017). Employing a qualitative description approach in health care research. *Global Qualitative Nursing Research*, 4. doi:10.1177/2333393617742282
- Braitberg, G., Gerdtz, M., Harding, S., Pincus, S., Thompson, M., & Knott, J. (2018). Behavioural assessment unit improves outcomes for patients with complex psychosocial needs. *Emergency Medicine Australas*, 30(3), 353-358. doi:10.1111/1742-6723.12905
- Brandenburg, M., Brown, S., Arneson, W., & Arneson, D. (2007). The association of pseudoephedrine sales restrictions on emergency department urine drug screen results in Oklahoma. *The Journal of the Oklahoma State Medical Association*, 100(11), 436-439.
- Brecht, M.-L., & Herbeck, D. M. (2013). Methamphetamine use and violent behavior. *Journal of Drug Issues*, 43(4), 468-482. doi:10.1177/0022042613491098
- Brener, L., Hippel, W. V., Kippax, S., & Preacher, K. J. (2010). The role of physician and nurse attitudes in the health care of injecting drug users. *Substance Use & Misuse*, 45(7-8), 1007-1018. doi:10.3109/10826081003659543
- Bunting, P., Fulde, G., & Forster, S. (2007). Comparison of crystalline methamphetamine ("ice") users and other patients with toxicology-related problems presenting to a hospital emergency department. *Medical Journal of Australia*, 187(10), 564-566.
- Cantrell, M. A., & Lupinacci, P. (2007). Methodological issues in online data collection. *Journal of Advanced Nursing*, 60(5), 544-549. doi:10.1111/j.1365-2648.2007.04448.x
- Carter, A., Miller, P., & Hall, W. (2012). The ethics of harm reduction. In R. Pates & D. Riley (Eds.), *Harm reduction in substance use and high-risk behaviour* (pp. 111-123). Oxford: Blackwell publishers Ltd.
- Cartwright, K., & Tait, R. (2019). Service providers' experience of methamphetamine and the portrayal of the 'ice epidemic' in remote Australia. *Australian Journal of Rural Health*, 27(1), 83-87. doi:10.1111/ajr.12483
- Catford, J. (2001). Illicit drugs: Effective prevention requires a health promotion approach. *Health Promotion International*, 16(2), 107-110. doi:10.1093/heapro/16.2.107
- Center for Epidemiology and Evidence. (2017). *Health Stats NSW*. Retrieved from Sydney: NSW: www.healthstats.nsw.gov.au

- Center for Epidemiology and Evidence. (2020). *Health Stats NSW*. Retrieved from Sydney: http://www.healthstats.nsw.gov.au/indicator/beh_illimethed/beh_illimethed
- Chalmers, J., Lancaster, K., & Hughes, C. (2016). The stigmatisation of 'ice' and under-reporting of meth/amphetamine use in general population surveys: A case study from Australia.(Case study). *International Journal of Drug Policy*, 36, 15. doi:10.1016/j.drugpo.2016.06.001
- Chang, J., Dubbin, L., & Shim, J. (2016). Negotiating substance use stigma: the role of cultural health capital in provider–patient interactions. *Sociol Health Illn*, 38(1), 90-108. doi:10.1111/1467-9566.12351
- Clarke, V., & Braun, V. (2017). Thematic analysis. *The Journal of Positive Psychology: Qualitative Positive Psychology.*, 12(3), 297-298. doi:10.1080/17439760.2016.1262613
- Cleary, M., Horsfall, J., & Hayter, M. (2014). Data collection and sampling in qualitative research: does size matter? *Journal of advanced nursing*, 70(3), 473-475. doi:10.1111/jan.12163
- Cleary, M., Jackson, D., Woods, C., Kornhaber, R., Sayers, J., & Usher, K. (2017). Experiences of health professionals caring for people presenting to the emergency department after taking crystal methamphetamine (“ICE”). *Issues in Mental Health Nursing*, 38(1), 33-41. doi:10.1080/01612840.2016.1251516
- Cherpitel, C. J. (2003). Changes in substance use associated with emergency room and primary care services utilization in the United States general population: 1995–2000. *The American Journal of Drug and Alcohol Abuse*, 29(4), 789-802.
- Chomchai, Chulathida, & Chomchai, Summon. (2015). Global patterns of methamphetamine use. *Current Opinion in Psychiatry*, 28(4), 269–274. <https://doi.org/10.1097/YCO.000000000000168>
- Cloutier, R. L., Hendrickson, R. G., Fu, R., & Blake, B. (2013). Methamphetamine-related psychiatric visits to an urban academic emergency department: An observational study. *Journal of Emergency Medicine (0736-4679)*, 45(1), 136-142. doi:10.1016/j.jemermed.2012.11.094
- Cohen, J. (2012). Drug education or drug propaganda. In R. Pates & D. Riley (Eds.), *Harm reduction in substance use and high-risk behaviour* (pp. 17-30). Oxford: Blackwell publishers Ltd.
- Cole, C., Jones, L., McVeigh, J., Kicman, A., Syed, Q., & Bellis, M. A. (2010). CUT: A guide to adulterants, bulking agents and other contaminants found in illicit drugs. Liverpool: John Moores University.
- Commonwealth of Australia. (2015). *Department of the Prime Minister and cabinet, Final report of the national ice taskforce*. Retrieved from Canberra, Australia:https://www.dpmc.gov.au/sites/default/files/publications/national_ice_taskforce_final_report.pdf
- Connell, C. M., Gilreath, T. D., Aklin, W. M., & Brex, R. A. (2010). Social-ecological influences on patterns of substance use among non-metropolitan high school students1. *American journal of community psychology*, 45, 36-48. doi:10.1007/s10464-009-9289-x
- Coughlan, M., Cronin, P., & Ryan, F. (2013). *Doing a literature review in nursing, health and social care*. London: Sage publications.
- Council of Australian Governments. (2015). *National Ice Action Strategy 2015*. Retrieved from Canberra:<https://www.coag.gov.au/sites/default/files/communique/2015%20National%20Ice%20Action%20Strategy.pdf>
- Courtney, K., & Ray, L. (2014). Methamphetamine: An update on epidemiology, pharmacology, clinical phenomenology, and treatment literature. In *Drug Alcohol Depend.* (Vol. 143, pp. 11-21).
- Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research*. Glasgow: SAGE publications.
- Crocq, M. A. (2007). Historical and cultural aspects of man's relationship with addictive drugs. *Dialogues in Clinical Neuroscience*, 9(4), 355-361.
- Curtis, K., Fry, M., Shaban, R. Z., & Considine, J. (2017). Translating research findings to clinical nursing practice. *Journal of Clinical Nursing*, 26(5-6), 862-872. doi:10.1111/jocn.13586
- Degenhardt, L., Baxter, A. J., Lee, Y. Y., Whiteford, H. A., Sara, G. E., Hall, W., . . . Vos, T. (2014). The global epidemiology and burden of psychostimulant dependence: Findings from the Global Burden of Disease Study 2010. *Drug and Alcohol Dependence*, 37, 36-47. doi:10.1016/j.drugalcdep.2013.12.025
- Degenhardt, L., & Hall, W. (2012). Addiction 1: Extent of illicit drug use and dependence, and their contribution to the global burden of disease. *The Lancet*, 379(9810), 55-70.
- Degenhardt, L., Roxburgh, A., Black, E., Bruno, R., Campbell, G., Kinner, S., & Fetherston, J. (2008). The epidemiology of methamphetamine use and harm in Australia. *Drug and Alcohol Review*, 27(3), 243-252. doi:10.1080/09595230801950572

- Degenhardt, L., Sara, G., McKetin, R., Roxburgh, A., Dobbins, T., Farrell, M., . . . Hall, W. D. (2017). Crystalline methamphetamine use and methamphetamine-related harms in Australia. *Drug and Alcohol Review, 36*(2), 160-170. doi:10.1111/dar.12426
- Denham, B. E. (2010). Amplifications of deviance surrounding illicit drug use: Conceptualizing a role for film. *Communication, Culture & Critique, 3*(4), 485-502. doi:10.1111/j.1753-9137.2010.01082.x
- Denzin, N. K. (2012). Triangulation 2.0. *Journal of Mixed Methods Research, 6*(2), 80-88. doi:10.1177/1558689812437186
- Department of Health. (2017). *National Drug Strategy 2017-2026*. Retrieved from Canberra: https://www.health.gov.au/sites/default/files/national-drug-strategy-2017-2026_1.pdf
- Department of Premier and Cabinet. (2019). *Methamphetamine Action Plan Taskforce: Final Report*. Retrieved from Western Australia: <https://www.wa.gov.au/government/publications/methamphetamine-action-plan-taskforce-final-report>
- DiPietro, N. A. (2010). Methods in epidemiology: Observational study designs. *Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy, 30*(10), 973-984. doi:10.1592/phco.30.10.973
- Dyba, J., Moesgen, D., Klein, M., & Leyendecker, B. (2019). Mothers and fathers in treatment for methamphetamine addiction-Parenting, parental stress, and children at risk. *Child & Family Social Work, 24*(1), 106. doi:10.1111/cfs.12587
- Egger, G., Spark, R., & Donovan, R. (2013). *Health promotion, strategies and methods* (3rd ed.). Sydney: McGraw-Hill Education
- Eggins, E., Dawe, S., Wilson, D. B., Chandler-Mather, N., & Betts, J. (2020). PROTOCOL: Psychosocial, pharmacological and legal interventions for improving the psychosocial outcomes of children with substance misusing parents. *Campbell systematic review, 16*(3), n/a. doi:10.1002/cl2.1113
- Erickson, P., & Hathaway, A. (2010). Normalization and harm reduction: research avenues and policy agendas. *International Journal of Drug Policy, 21*(2), 137-139. doi:10.1016/j.drugpo.2009.11.005
- Etchegaray, J. M., & Fischer, W. G. (2009). Understanding evidence-based research methods: Descriptive statistics. *Health Environments Research & Design Journal, 3*(1), 111-117. doi:10.1177/193758670900300110
- Evren, C., & Bozkurt, M. (2018). Update on methamphetamine: An old problem that we have recently encountered. *Dusunen Adam, 31*(1), 1-10. doi:10.5350/DAJPN20183101001
- Faul, F., Erdfelder, E., Lang, A.G. et al. G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods 39*, 175–191 (2007). <https://doi.org/10.3758/BF03193146>
- Feasterston, J., Grigg, J., & Lenton, S. (2018). *Western Australia drug trends 2018: Key findings from the Illicit Drug Reporting System (IDRS) interviews*. Retrieved from Sydney, Australia: <https://ndarc.med.unsw.edu.au/sites/default/files/ndarc/resources/WA%20IDRS%20Report%202018.pdf>
- Feather, N. T., & Johnstone, C. (2001). Social norms, entitlement, and D=deservingness: Differential reactions to aggressive behavior of schizophrenic and personality disorder patients. *Personality and Social Psychology Bulletin, 27*(6), 755-767. doi:10.1177/0146167201276010
- Feilzer, M. Y. (2010). Doing mixed methods research pragmatically: Implications for the rediscovery of pragmatism as a research paradigm. *Journal of Mixed Methods Research, 4*(1), 6-16. doi:10.1177/1558689809349691
- Ferguson, P., Prenzler, T., Sarre, R., & de Caires, B. (2011). Police and security officer experiences of occupational violence and injury in Australia. *International Journal of Police Science & Management, 13*(3), 223-233. doi:10.1350/ijps.2011.13.3.239
- Fetters, M.D., Curry, L.A., & Creswell, J.W. (2013). Achieving integration in mixed methods designs: Principles and practices. *Health Services Research, 48*(6pt2), 2134–2156. doi:<https://doi.org/10.1111/1475-6773.12117>
- Fisher, M., & Marshall, A. (2009). Understanding descriptive statistics. *Australian Critical Care, 22*, 93-97. doi:10.1016/j.aucc.2008.11.003
- Fitzgerald, G., Jelinek, G. A., Scott, D., & Gerdz, M. F. (2010). Republished paper: Emergency department triage revisited. *Postgraduate Medical Journal, 86*(1018), 502. doi:10.1136/pgmj.2009.077081rep
- Florczak, K. L. (2014). Purists need not apply: The case for pragmatism in mixed methods research. *Nursing Science Quarterly, 27*(4), 278-282. doi:10.1177/0894318414546419

- Fonti S, Davis D, Ferguson S. The attitudes of healthcare professionals towards women using illicit substances in pregnancy: A cross-sectional study. *Women and Birth*. 2016;29(4):330.
- Ford, R., Bammer, G., & Becker, N. (2008). The determinants of nurses' therapeutic attitude to patients who use illicit drugs and implications for workforce development. *Journal of Clinical Nursing*, 17(18), 2452-2462. doi:10.1111/j.1365-2702.2007.02266.x
- Ford, R., Bammer, G., & Becker, N. (2009). Improving nurses' therapeutic attitude to patients who use illicit drugs: Workplace drug and alcohol education is not enough. *International Journal of Nursing Practice*, 15(2), 112-118. doi:10.1111/j.1440-172X.2009.01732.x
- Frei, M. Y., & Wodak, A. D. (2017). Beyond ice: rethinking Australia's approach to illicit drugs.(Report). *The Medical Journal of Australia*, 206(4), 151-152. doi:10.5694/mja16.00108
- Fusch, P., & Ness, L. (2015). Are we there yet? Data saturation in Qualitative research. *The Qualitative Report*, 20(9), 1408-1416.
- Galbraith, N. (2015). The methamphetamine problem: Commentary on ... Psychiatric morbidity and socio-occupational dysfunction in residents of a drug rehabilitation centre. *BJPsych bulletin*, 39(5), 218-220. doi:10.1192/pb.bp.115.050930
- Galea, S., Ahern, J., & Vlahov, D. (2003). Contextual determinants of drug use risk behavior: A theoretic framework. *Journal of Urban Health*, 80(3), iii50-iii58. doi:10.1093/jurban/jtg082
- Galea, S., Nandi, A., & Vlahov, D. (2004). The social epidemiology of substance use. *Epidemiologic Reviews*, 26(1), 36-52. doi:10.1093/epirev/mxh007
- Galea, S., & Vlahov, D. (2002). Social determinants and the health of drug users: socioeconomic status, homelessness, and incarceration. *Public Health Reports*, 117(Suppl 1), S135-S145.
- Gearing R E, Mian I A, Barber J, et al (2006). A methodology for conducting retrospective chart review research in child and adolescent psychiatry. *Journal of the Canadian Academy of Child and Adolescent Psychiatry*, 15(3), 126-134.
- Gideonse, T. K. (2016). Framing Samuel See: the discursive detritus of the moral panic over the "double epidemic" of methamphetamines and HIV among gay men. *The International Journal on Drug Policy*, 28, 98-105. doi:10.1016/j.drugpo.2015.10.010
- Goffman, E. (1963). *Stigma: Notes on the management of spoiled identity*. Englewood Cliffs, N.J.: Englewood Cliffs, N.J. : Prentice-Hall.
- Golden, S., & Earp, J. (2012). Social ecological approaches to individuals and their contexts: Twenty years of "Health Education & Behavior" health promotion interventions. *Health Education & Behavior*, 39(3), 364-372. doi:10.1177/1090198111418634
- Golden, S., McLeroy, K., Green, L., Earp, J., & Lieberman, L. (2015). Upending the social ecological model to guide health promotion efforts toward policy and environmental change. *Health Education and Behavior*, 42, 8S.
- Gordon, D. G., & Jong, G. (2018). Gaps in the ice: Methamphetamine in Australia; Its history, treatment, and ramifications for users and their families. *International Journal of Mental Health Nursing*, 0(0). doi:10.1111/inm.12480
- Gormley, M. A., Crowe, R. P., Bentley, M. A., & Levine, R. (2016). A National description of violence toward emergency medical services personnel. *Prehospital Emergency Care*, 20(4), 439-447. doi:10.3109/10903127.2015.1128029
- Gray, S., Fatovich, D., McCoubrie, D., & Daly, F. (2007). Amphetamine-related presentations to an inner-city tertiary emergency department: a prospective evaluation. *Medical Journal of Australia*, 186(7), 336-339.
- Greene, S. L., Kerr, F., & Braitberg, G. (2008). Review article: Amphetamines and related drugs of abuse. *Emergency Medicine Australasia*, 20, 391-402. Melbourne, Australia.
- Gregory, K. E., & Radovinsky, L. (2012). Research strategies that result in optimal data collection from the patient medical record. *Applied Nursing Research*, 25(2), 108-116. doi:10.1016/j.apnr.2010.02.004
- Hahn, S., Hantikainen, V., Needham, I., Kok, G., Dassen, T., & Halfens, R. J. G. (2012). Patient and visitor violence in the general hospital, occurrence, staff interventions and consequences: a cross-sectional survey. *Journal of Advanced Nursing*, 68(12), 2685-2699. doi:10.1111/j.1365-2648.2012.05967.x
- Haight, W. L., Carter-Black, J. D., & Sheridan, K. (2009). Mothers' experience of methamphetamine addiction: A case-based analysis of rural, midwestern women. *Children and Youth Services Review*, 31(1), 71. doi:10.1016/j.childyouth.2008.05.011
- Halcomb, L. (2018). How an understanding of paradigms can improve the quality of nursing research. *Nurse Researcher (2014+)*, 25(4), 6. doi:10.7748/nr.25.4.6.s2
- Hall, J. N. (2013). Pragmatism, evidence, and mixed methods evaluation. In D. M. Mertens & S. Hesse-Biber (Eds.), *Mixed methods and credibility of evidence in evaluation. New directions for evaluations*, 2013(138), 5-13. <https://doi.org/10.1002/ev.20053>

- Hall, H., McPherson, S. B., Towe, L., & Yudko, E. (2009). Effects and diagnosis of methamphetamine use. In S. B. McPherson, H. Hall, & E. Yudko (Eds.), *Methamphetamine use clinical and forensic aspects* (2nd ed., pp. 79-96). Boca Raton: CRC Press.
- Hamilton, M. (2001). Australia's drug policy- Our own? In J. Gerber & E. L. Jensen (Eds.), *Drug war, American style: The internationalisation of failed policy and its alternatives* (97-119). New York and London: Taylor & Francis.
- Hayley, A. C., Downey, L. A., Shiferaw, B., & Stough, C. (2016). Amphetamine-type stimulant use and the risk of injury or death as a result of a road-traffic accident: A systematic review of observational studies.(Report). *European Neuropsychopharmacology*, *26*(6), 901. doi:10.1016/j.euroneuro.2016.02.012
- Hedt, B. L., & Pagano, M. (2011). Health indicators: Eliminating bias from convenience sampling estimators. *Statistics in Medicine*, *30*(5), 560-568. doi:10.1002/sim.3920
- Hendrickson, R., Cloutier, R., & Fu, R. (2010). The association of controlling pseudoephedrine availability on methamphetamine-related emergency department visits. *Academic Emergency Medicine*, *17*, 1216-1222. doi:10.1111/j.1553-2712.2010.00911.x
- Hendrickson, R., Cloutier, R., & McConnell, J. (2008). Methamphetamine-related emergency department utilization and cost. *Academic Emergency Medicine*, *15*, 23-31. doi:10.1111/j.1553-2712.2007.0006.x
- Hides, L., Limbong, J., Vallmuur, K., Barker, R., Daghli, M., & Young, R. M. (2015). Alcohol-related emergency department injury presentations in Queensland adolescents and young adults over a 13-year period.(Report). *34*(2), 177. doi:10.1111/dar.12218
- Howard, V., & Holmshaw, J. (2010). Inpatient staff perceptions in providing care to individuals with co-occurring mental health problems and illicit substance use. *Journal of Psychiatric and Mental Health Nursing*, *17*(10), 862-872. doi:10.1111/j.1365-2850.2010.01620.x
- Hughes, C. E., Lancaster, K., & Spicer, B. (2011). How do Australian news media depict illicit drug issues? An analysis of print media reporting across and between illicit drugs, 2003-2008. *International Journal of Drug Policy*, *22*(4), 285. doi:10.1016/j.drugpo.2011.05.008
- Indig, D., Copeland, J., Conigrave, K. M., & Arcuri, A. (2010). Characteristics and comorbidity of drug and alcohol-related emergency department presentations detected by nursing triage text. *Addiction*, *105*(5), 897-906. doi:10.1111/j.1360-0443.2009.02857.x
- Institute for Health Metrics and Evaluation. (2016). Data visualizations. Retrieved from <http://www.healthmetricsandevaluation.org/tools/data-visualizations>
- Irvine, F. (2010). Contextualizing Health promotion. In D. Whitehead & F. Irvine (Eds.), *Health promotion and Health education in Nursing* (pp. 1-19). United Kingdoms: Palgrave Macmillan.
- Isoardi, K. Z., Ayles, S. F., Harris, K., Finch, C. J., & Page, C. B. (2018). Methamphetamine presentations to an emergency department: Management and complications. *Emergency Medicine Australasia*, *31*(4), 593-599. doi:10.1111/1742-6723.13219
- Johnson, Grove, & Clarke. (2017). Pillar integration process: A joint display technique to integrate data in mixed methods research. *Journal of Mixed Methods Research*, *13*(3), 301-320. doi:10.1177/1558689817743108
- Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed Methods Research: A research paradigm whose time has come. *Educational Researcher*, *33*(7), 14-26. doi:10.3102/0013189x033007014
- Jones, R., Usher, K., & Woods, C. (2019b). Crystal methamphetamine's impact on frontline emergency services in Victoria, Australia. *Australasian Emergency Care*. doi:https://doi.org/10.1016/j.auec.2019.07.004
- Jones, R., Woods, C., Barker, R., & Usher, K. (2019a). Patterns and features of methamphetamine-related presentations to emergency departments in QLD from 2005 to 2017. *International Journal of Mental Health Nursing*, *28*(4), 833-844. doi:10.1111/inm.12618
- Jones, R., Woods, C., & Usher, K. (2018). Rates and features of methamphetamine-related presentations to emergency departments: An integrative literature review. *Journal of Clinical Nursing*, *27*, 13-14. doi:10.1111/jocn.14493
- Jones, R., Woods, C., & Usher, K. (2019c). The challenges of researching drug-related emergency department presentations using reviews of medical charts. *Nurse Researcher*, *27*(3). doi:10.7748/nr.2018.e1614
- Jones, R., Woods, C., & Usher, K. (2020). The impact of media sensationalism and crisis framing on stigma and negative attitudes towards methamphetamine users. *International Journal of Mental Health Nursing*, *29*(3), 319-321. doi:10.1111/inm.12708
- Kaar, S. J., Gao, C. X., Lloyd, B., Smith, K., & Lubman, D. I. (2015). Trends in cannabis-related ambulance presentations from 2000 to 2013 in Melbourne, Australia. *Drug and Alcohol Dependence*, *155*, 24-30. doi:10.1016/j.drugalcdep.2015.08.021

- Kaji, A. H., Schriger, D., & Green, S. (2014). Looking through the retrospectoscope: Reducing bias in emergency medicine chart review studies. *Annals of Emergency Medicine*, *64*(3), 292-298. doi:10.1016/j.annemergmed.2014.03.025
- Kallio, H., Pietila, A.-M., Johnson, M., & Kangasniemi, M. (2016). Systematic methodological review: developing a framework for a qualitative semi-structured interview guide.(Report).(72, 2954).
- Keleher, H., & MacDougall, C. (2009). *Understanding health: A determinants approach* (2nd ed.). South Melbourne, Vic: Oxford University Press.
- Kelleher, S., & Cotter, P. (2009). A descriptive study on emergency department doctors' and nurses' knowledge and attitudes concerning substance use and substance users. *International Emergency Nursing*, *17*(1), 3-14. doi:10.1016/j.ienj.2008.08.003
- Kelly, J. F., & Westerhoff, C. M. (2010). Does it matter how we refer to individuals with substance-related conditions? A randomized study of two commonly used terms.(Clinical report). *International Journal of Drug Policy*, *21*(3), 202. doi:10.1016/j.drugpo.2009.10.010
- Kelly, M., Dowling, M., & Millar, M. (2018). The search for understanding: The role of paradigms. *Nurse Researcher*, *25*(4), 9-13.
- Kinner, S. A., & Degenhardt, L. (2008). Crystal methamphetamine smoking among regular ecstasy users in Australia: increases in use and associations with harm. *Drug and Alcohol Review*, *27*(3), 292-300. doi:10.1080/09595230801919452
- Kleissl-Muir, S., Raymond, A., & Rahman, M. A. (2018). Incidence and factors associated with substance abuse and patient-related violence in the emergency department: A literature review. *Australasian Emergency Care*, *21*(4), 159-170. doi:10.1016/j.auec.2018.10.004
- Lancaster, K., Hughes, C. E., Spicer, B., Matthew-Simmons, F., & Dillon, P. (2011). Illicit drugs and the media: Models of media effects for use in drug policy research. *Drug and Alcohol Review*, *30*(4), 397-402. doi:10.1111/j.1465-3362.2010.00239.x
- Lancaster, K., Seear, K., & Ritter, A. (2017). *Reducing stigma and discrimination for people experiencing problematic alcohol and other drug use*. Retrieved from <https://ndarc.med.unsw.edu.au/sites/default/files/ndarc/resources/Reducing%20stigma%20and%20discrimination%20for%20people%20experiencing%20problematic%20alcohol%20and%20other%20drug%20use.pdf>
- Landorf, K. B. (2013). Clinical trials: The good, the bad and the ugly. In P. Liamputtong (Ed.), *Research Methods in Health, Foundations for Evidence-based Practice* (2nd ed., pp. 234-248). Melbourne, Australia: Oxford University Press.
- Lappin, J. M., Roxburgh, A., Kaye, S., Chalmers, J., Sara, G., Dobbins, M., . . . Farrell, M. (2016). Increased prevalence of self-reported psychotic illness predicted by crystal methamphetamine use: Evidence from a high-risk population.(Report). *International Journal of Drug Policy*, *38*, 16-20. doi:10.1016/j.drugpo.2016.10.018
- Leary, D. E. (2009). Between Peirce (1878) and James (1898): G. Stanley Hall, the origins of pragmatism, and the history of psychology. *Journal of the History of the Behavioral Sciences*, *45*(1), 5-20. doi:10.1002/jhbs.20346
- LeBel, J. L., Duxbury, J. A., Putkonen, A., Sprague, T., Rae, C., & Sharpe, J. (2014). Multinational Experiences in Reducing and Preventing the Use of Restraint and Seclusion. *Journal of Psychosocial Nursing Mental Health Service*, *52*(11), 22-29. doi:10.3928/02793695-20140915-01
- Leslie, E. M., Cherney, A., Smirnov, A., Kemp, R., & Najman, J. M. (2018). Experiences of police contact among young adult recreational drug users: A qualitative study.(Clinical report). *International Journal of Drug Policy*, *56*, 64. doi:10.1016/j.drugpo.2018.03.010
- Li, L., Liang, L.-J., Wu, Z., Lin, C., & Guan, J. (2014). Assessing outcomes of a stigma-reduction intervention with venue-based analysis. *Social Psychiatry Psychiatr Epidemiol*, *49*(6), 991-999. doi:10.1007/s00127-013-0808-6
- Liakoni, E., Dolder, P. C., Rentsch, K., & Liechti, M. E. (2015). Acute health problems due to recreational drug use in patients presenting to an urban emergency department in Switzerland. *Swiss medical weekly*, *145*, 1. doi:http://dx.doi.org/10.4414/smww.2015.14166
- Liamputtong, P. (2013). The science of words and the science of numbers: Research methods as foundations for evidenced-based practice in health. In P. Liamputtong (Ed.), *Research Methods in Health, Foundations for Evidence-based Practice* (2nd ed., pp. 3-23). Melbourne, Australia: : Oxford University Press.
- Lim, M. S. C., Cogger, S., Quinn, B., Hellard, M. E., & Dietze, P. M. (2015). 'Ice epidemic'? Trends in methamphetamine use from three Victorian surveillance systems. *Australian and New Zealand Journal of Public Health*, *39*(2), 194-195. doi:10.1111/1753-6405.12322
- Livingston, J. D., Milne, T., Fang, M. L., & Amari, E. (2012). The effectiveness of interventions for reducing stigma related to substance use disorders: A systematic review: Reducing substance

- use-related stigma. *Addiction (Abingdon, England)*, 107(1), 39-50. doi:10.1111/j.1360-0443.2011.03601.x
- Lloyd, C. (2010). Sinning and sinned against: The stigmatisation of problem drug users. *York: University of York*.
- Lloyd, C. (2013). The stigmatization of problem drug users: A narrative literature review. (20, 85-95). Retrieved from [https://www.release.org.uk/sites/default/files/pdf/publications/Sinning%20and%20sinned%20against%20%20the%20stigmatisation%20of%20problem%20rug%20users%20\(August%202010\)1.pdf](https://www.release.org.uk/sites/default/files/pdf/publications/Sinning%20and%20sinned%20against%20%20the%20stigmatisation%20of%20problem%20rug%20users%20(August%202010)1.pdf)
- LoBiondo-Wood, G., & Haber, J. (2014). *Nursing Research Methods and Critical Appraisal for Evidence-based Practice* (8th ed.). London: Elsevier Health Sciences.
- Lohiniva, A.-L., Benkirane, M., Numair, T., Mahdy, A., Saleh, H., Zahran, A., . . . Kamal, W. (2015). HIV stigma intervention in a low-HIV prevalence setting: a pilot study in an Egyptian healthcare facility. *AIDS Care*, 28(5), 644-652. doi:10.1080/09540121.2015.1124974
- Macgregor, s., & Payne, J. (2011). *Increase in use of methamphetamine*. Retrieved from Canberra: <https://www.aic.gov.au/publications/rip/rip22>
- Mackenzie, N., & Knipe, S. (2006). Research dilemmas: Paradigms, methods and methodology. *Issues in Educational Research*, 16(2), 193-205.
- Maguire, Brian J, O'Meara, Peter F, Brightwell, Richard F, O'Neill, Barbara J, & Fitzgerald, Gerard J. (2014). Occupational injury risk among Australian paramedics: an analysis of national data. *Medical Journal of Australia*, 200(9), 520–520. <https://doi.org/10.5694/mja14.10941>
- Maguire, Brian J. (2018). Violence against ambulance personnel: a retrospective cohort study of national data from Safe Work Australia. *Public Health Research & Practice*, 28(1). <https://doi.org/10.17061/phrp28011805>
- Marshall, B. D. L., Grafstein, E., Buxton, J. A., Qi, J., Wood, E., Shoveller, J. A., & Kerr, T. (2012). Frequent methamphetamine injection predicts emergency department utilization among street-involved youth. *Public Health*, 126(1), 47-53. doi:<http://dx.doi.org/10.1016/j.puhe.2011.09.011>
- Marshall, G., & Jonker, L. (2010). An introduction to descriptive statistics: A review and practical guide. *Radiography*, 16, e1-e7. doi:10.1016/j.radi.2010.01.001
- Mattson, M. (2014). *Emergency department visits involving methamphetamine: 2007 to 2011*. Retrieved from <https://www.ncbi.nlm.nih.gov/books/NBK384656/>
- McAllister, I., & Makkai, T. (1991). Patterns of Cocaine Use in Australia, 1985–88. *Australian Journal of Social Issues*, 26(2), 107-121. doi:10.1002/j.1839-4655.1991.tb01228.x
- McCann, T., Savic, M., Ferguson, N., Bosley, E., Smith, K., Roberts, I., . . . Lubman, D. (2018). Paramedics' perceptions of their scope of practice in caring for patients with non-medical emergency-related mental health and/or alcohol and other drug problems: A qualitative study. *PLoS ONE*, 13(12), e0208391. doi:10.1371/journal.pone.0208391
- McCrudden, M.T. & McTigue, M. (2019). Implementing integration in an explanatory sequential mixed methods study of belief and bias about climate change with high school students. *Journal of Mixed Methods Research*, 13(3), 381-400. doi: 10.1177/1558689818762576
- McGilloway, S., & Donnelly, M. (2004). Mental illness in the UK criminal justice system: A police liaison scheme for Mentally Disordered Offenders in Belfast. *Journal of Mental Health*, 13(3), 263-275. doi:10.1080/09638230410001700899
- McHale, P., Wood, S., Hughes, K., Bellis, M. A., Demnitz, U., & Wyke, S. (2013). Who uses emergency departments inappropriately and when - a national cross-sectional study using a monitoring data system.(Report). *BMC Medicine*, 11(1). doi:10.1186/1741-7015-11-258
- McIntosh, M.J., & Morse, J.M. (2015). Situating and Constructing Diversity in Semi-Structured Interviews. *Global Qualitative Nursing Research*, 2, 2333393615597674–2333393615597674. <https://doi.org/10.1177/2333393615597674>
- McKenna, B., McEvedy, S., Kelly, K., Long, B., Anderson, J., Dalzell, E., . . . Furness, T. (2017). Association of methamphetamine use and restrictive interventions in an acute adult inpatient mental health unit: A retrospective cohort study. *International Journal of Mental Health Nursing*, 26(1), 49-55. doi:10.1111/inm.12283
- McKetin, R. (2018). Methamphetamine psychosis: insights from the past. *Addiction*, 113(8), 1522-1527. doi:10.1111/add.14170
- McKetin, R., Baker, A. L., Dawe, S., Voce, A., & Lubman, D. I. (2017b). Differences in the symptom profile of methamphetamine-related psychosis and primary psychotic disorders.(Report). *Psychiatry Research*, 251, 349. doi:10.1016/j.psychres.2017.02.028
- McKetin, R., Lubman, D. I., Najman, J. M., Dawe, S., Butterworth, P., & Baker, A. L. (2014). Does methamphetamine use increase violent behaviour? Evidence from a prospective longitudinal study. *Addiction*, 109(5), 798-806. doi:10.1111/add.12474

- McKetin, R., McLaren, J., & Kelly, E. (2005). *The Sydney methamphetamine market: Patterns of supply, use, personal harms and social consequences*. In Vol. Series no. 13. Retrieved from <http://113.20.25.135/sites/default/files/publication-documents/monographs/monograph13.pdf>
- McKetin, R., Voce, A., & Burns, R. (2017a). *Research into Methamphetamines use in the Australian Capital Territory*. Retrieved from Perth, Western Australia: <https://ndri.curtin.edu.au/NDRI/media/documents/publications/R313.pdf>
- McLaughlin, D., McKenna, H., Leslie, J., Moore, K., & Robinson, J. (2006). Illicit drug users in Northern Ireland: perceptions and experiences of health and social care professionals. *Journal of Psychiatric and Mental Health Nursing*, 13(6), 682-686. doi:10.1111/j.1365-2850.2006.01015.x
- McLaughlin, D. F., McKenna, H., & Leslie, J. C. (2000). The perceptions and aspirations illicit drug users hold toward health care staff and the care they receive. *Journal of Psychiatric and Mental Health Nursing*, 7(5), 435-441. doi:10.1046/j.1365-2850.2000.00329.x
- Measham, F., & Shiner, M. (2009). The legacy of 'normalisation': The role of classical and contemporary criminological theory in understanding young people's drug use.(Report). *International Journal of Drug Policy*, 20(6), 502.
- Miles, M., Chapman, Y., Francis, K., & Taylor, B. (2014). Midwives experiences of establishing partnerships: Working with pregnant women who use illicit drugs. *Midwifery*, 30(10), 1082-1087. doi:10.1016/j.midw.2013.06.020
- Ministerial Council on Drug Strategy. (2011). *The National Drug Strategy 2010–2015*. Retrieved from Canberra: <http://fileservr.idpc.net/library/National%20Drug%20Strategy%202010-2015.pdf>
- Misak, C. (2013). Rorty, Pragmatism, and Analytic Philosophy. *Humanities*, 2(3), 369-383. doi:10.3390/h2030369
- Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & The Prisma Group. (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLOS Medicine*, 6(7), e1000097. doi:10.1371/journal.pmed.1000097
- Morgan, D. L. (2007). Paradigms lost and pragmatism regained: Methodological implications of combining qualitative and quantitative methods. *Journal of Mixed Methods Research*, 1(1), 48-76.
- Morgan, D. L. (2014). Pragmatism as a paradigm for social research. *Qualitative inquiry*, 20(8), 1045-1053.
- Muir-Cochrane, E., O'Kane, D., & Oster, C. (2018). Fear and blame in mental health nurses' accounts of restrictive practices: Implications for the elimination of seclusion and restraint. *Int J Ment Health Nurs*, 27(5), 1511-1521. doi:10.1111/inm.12451
- Murray, R. M., Davis, A. L., Shepler, L. J., Moore-Merrell, L., Troup, W. J., Allen, J. A., & Taylor, J. A. (2019). A systematic review of workplace violence against emergency medical services responders. *New Solut*, 29(4), 487-503. doi:10.1177/1048291119893388
- Naidoo, J. (2009). *Foundations for health promotion* (3rd ed. ed.). New York: Baillière Tindall/Elsevier.
- National Institute on Drug Abuse. (2013). *Research report series; Methamphetamine*. Retrieved from USA: www.drugabuse.gov/publications/research-reports/methamphetamine
- National Health and Medical Research Council. (2018). *National Statement on Ethical Conduct in Human Research 2007 (updated 2018)*. Retrieved from Canberra: <https://www.nhmrc.gov.au/about-us/publications/national-statement-ethical-conduct-human-research-2007-updated-2018#block-views-block-file-attachments-content-block-1>
- Nickell, J. R., Denehy, E. D., Culver, J. P., Crooks, P. A., Bardo, M. T., & Dwoskin, L. P. (2015). Preclinical evaluation of JPC-141 as a novel treatment for methamphetamine abuse. *Drug and Alcohol Dependence*, 146, e51. doi:10.1016/j.drugalcdep.2014.09.509
- Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*, 16(1). doi:10.1177/1609406917733847
- Oliver, M., Adonopulos, A. A., Haber, P. S., Dinh, M. M., Green, T., Wand, T., . . . Chalkley, D. (2019). Impact of acutely behavioural disturbed patients in the emergency department: A prospective observational study. *Emergency Medicine Australasia*, 31(3), 387-392. doi:10.1111/1742-6723.13173
- Ormerod, R. (2006). The history and ideas of pragmatism. *The Journal of the Operational Research Society*, 57(8), 892-909. doi:10.1057/palgrave.jors.2602065
- Pasic, J., Russo, J., Ries, R., & Roy-Byrne, P. (2007). Methamphetamine users in the psychiatric emergency services: A case-control study. *The American Journal of Drug and Alcohol Abuse*, 33(5), 675-686. doi:10.1080/00952990701522732
- Peacock, A., Uporova, J., Karlsson, A., Gibbs, D., Swanton, R., Kelly, G., . . . Farrell, M. (2019). *Australian Drug Trends 2019: Key findings from the National Illicit Drug Reporting System*

- (IDRS) Interviews. Retrieved from UNSW Sydney:
<https://ndarc.med.unsw.edu.au/resource/key-findings-2019-national-illicit-drug-reporting-system-idrs-interviews>
- Pennington Institute. (2020). *Australia's Annual Overdose Report 2020*. Retrieved from Melbourne:
<https://www.pennington.org.au/wp-content/uploads/Australias-Annual-Overdose-Report-2020.pdf>
- Pennington Institute. (2018). *Australia's Annual Overdose Report 2018*, . Retrieved from Melbourne:
<https://www.sarmy.org.au/Global/SArmy/Social/econnect/issue-127/Australia's-Annual-Overdose-Report-2018.pdf>
- Pleasants, N. (2003). A Philosophy for the Social Sciences: Realism, Pragmatism, or neither? *Foundations of Science*, 8(1), 69-87. doi:10.1023/A:1022441619760
- Polnaszek, B., Gilmore-Bykovskiy, A., Hovanes, M., Roiland, R., Ferguson, P., Brown, R., & Kind, A. (2016). Overcoming the challenges of unstructured data in multisite, electronic medical record-based abstraction. *Medical Care*, 54(10), E65. doi:10.1097/MLR.000000000000108
- Power, T., Baker, A., & Jackson, D. (2020). 'Only ever as a last resort': Mental health nurses' experiences of restrictive practices. *International Journal of Mental Health Nursing*, 29(4), 674-684. doi:10.1111/inm.12701
- Prakash, M. D., Tangalakis, K., Antonipillai, J., Stojanovska, L., Nurgali, K., & Apostolopoulos, V. (2017). Methamphetamine: Effects on the brain, gut and immune system.(Report). *Pharmacological Research*, 120(C), 60. doi:10.1016/j.phrs.2017.03.009
- Ramcharan, P. (2013). What is ethical reserach? In P. Liamputtong (Ed.), *Research methods in health, foundations for evidence-based practice* (2nd ed., pp. 24-36). Melbourne, Australia: Oxford University Press.
- Rana, S., Garg, R. K., & Singla, A. (2014). Rapid analysis of urinary opiates using fast gas chromatography-mass spectrometry and hydrogen as a carrier gas. *Egyptian Journal of Forensic Sciences*, 4(3), 100-107. doi:10.1016/j.ejfs.2014.03.001
- Rawson, R. A., Gonzales, R., McCann, M., & Ling, W. (2007). Use of methamphetamine by young people: is there reason for concern? *Addiction*, 102(7), 1021-1022. doi:10.1111/j.1360-0443.2007.01899.x
- Rescher, N. (2005). Pragmatism at the crossroads. *Transactions of the Charles S. Peirce Society*, 41(2), 355-365.
- Richards, J. R., Bretz, S. W., Johnson, E. B., Turnipseed, S. D., Brofeldt, B. T., & Derlet, R. W. (1999). Methamphetamine abuse and emergency department utilization. *The Western Journal of Medicine*, 170(4), 198-202.
- Richmond, I., & Foster, J. (2003). Negative attitudes towards people with co-morbid mental health and substance misuse problems: An investigation of mental health professionals. *Journal of Mental Health*, 12(4), 393-403. doi:10.1080/0963823031000153439
- Rimando, M., Brace, A., Namageyo-Funa, A., Parr, T. L., Sealy, D.-A., Davis, T. L., . . . Christiana, R. W. (2015). Data collection challenges and recommendations for early career researchers. *The Qualitative Report*, 20(12), 2025.
- Ritter, A., Mcleod, R., & Shanahan, M. (2013). *Monograph no. 24: government drug policy expenditure in Australia—2009/10*. Retrieved from Sydney, :
<https://ndarc.med.unsw.edu.au/resource/24-government-drug-policy-expenditure-australia-200910>
- Roach, T. (2012). The social construction of methamphetamine in the print media. In D. L. Bissler & J. L. Connors (Eds.), *The harms of crime media: Essays on the perpetuation of racism, sexism and class stereotypes* (pp. 64-77). Jefferson, NC: MacFarland & Company.
- Roche, A., & McEntee, A. (2017). Ice and the outback: Patterns and prevalence of methamphetamine use in rural Australia.(Report). *Australian Journal of Rural Health*, 25(4), 200. doi:10.1111/ajr.12331
- Rommel, N., Rohleder, N. H., Wagenpfeil, S., Haertel-Petri, R., & Kesting, M. R. (2015). Evaluation of methamphetamine-associated socioeconomic status and addictive behaviors, and their impact on oral health. *Addictive Behaviors*, 50, 182.
- Rosas-Hernandez, H., Cuevas, E., Lantza, S. M., Riceb, K. C., Gannon, B. M., Fantegrossi, W. E., . . . Ali, S. F. (2016). Methamphetamine, 3,4-methylenedioxyamphetamine (MDMA) and 3,4-methylenedioxypropylvalerone (MDPV) induce differential cytotoxic effects in bovine brain microvessel endothelial cells. *Neuroscience Letters*, 629, 125-130. doi:10.1016/j.neulet.2016.06.029
- Rush, C., & Walton, S. (2005). Methamphetamine intoxication and related emergency situations. *NENA Outlook*, 28(1), 10-14.

- Safe Care Victoria. (2020). *Caring for people displaying acute behavioural disturbance: Clinical guidelines to improve care in emergency settings*. Retrieved from Victoria:https://www.bettersaferecare.vic.gov.au/sites/default/files/2020-01/Supplement_Caring%20for%20people%20displaying%20acute%20behavioural%20disturbance.pdf
- Saitman, A., Park, H.-D., & Fitzgerald, R. L. (2014). False-Positive interferences of common urine drug screen immunoassays: A review. *Journal of Analytical Toxicology*, 38(7), 387-396. doi:10.1093/jat/bku075
- Salamat, S., Hegarty, P., & Patton, R. (2019). Same clinic, different conceptions: Drug users' and healthcare professionals' perceptions of how stigma may affect clinical care. *Journal of Applied Social Psychology*, 49(8), 534-545. doi:10.1111/jasp.12602
- Scott, J. C., Woods, S. P., Matt, G. E., Meyer, R. A., Heaton, R. K., Atkinson, J. H., & Grant, I. (2007). Neurocognitive effects of methamphetamine: A critical review and meta-analysis. *Neuropsychology Review*, 17(3), 275-297. doi:10.1007/s11065-007-9031-0
- Sergeant, E. (2013). Epitools epidemiological calculators Retrieved from <http://epitools.ausvet.com.au>
- Shannon-Baker, P. (2016). Making paradigms meaningful in mixed methods research. *Journal of Mixed Methods Research*, 10(4), 319-334. doi:10.1177/1558689815575861
- Sheridan, J., Bennett, S., Coggan, C., Wheeler, A., & McMillan, K. (2006). Injury associated with methamphetamine use: A review of the literature. *Harm Reduction Journal*, 3, 14-14. doi:10.1186/1477-7517-3-14
- Shortis, T. (2011). Oxford English Dictionary online. *English Drama Media*(20), 57.
- Skinner, N., Feather, N. T., Freeman, T., & Roche, A. (2007). Stigma and discrimination in health-care provision to drug users: The role of values, affect, and deservingness judgments. *Journal of Applied Social Psychology*, 37(1), 163-186. doi:10.1111/j.0021-9029.2007.00154.x
- Sloan, J. J., Bodapati, M. R., & Tucker, T. A. (2004). Respondent misreporting of drug use in self-reports: Social desirability and other correlates. *Journal of Drug Issues*, 34(2), 269-292. doi:10.1177/002204260403400202
- Solis, J. M., Shadur, J. M., Burns, A. R., & Hussong, A. M. (2012). Understanding the diverse needs of children whose parents abuse substances. *Current drug abuse reviews*, 5(2), 135-147. doi:10.2174/1874473711205020135
- Sommers, I., Baskin, D., & Baskin-Sommers, A. (2006). Methamphetamine use among young adults: health and social consequences. *Addictive behaviors*, 31(8), 1469-1476.
- St John Ambulance Australia. (2019). St John Western Australia. Retrieved from <https://stjohnwa.com.au/>
- Stafford, J., & Burns, L. (2015). Australian drug trends 2014. Findings from the illicit drug reporting system (IDRS). *Australian drug trends*, 127. Retrieved from <https://ndarc.med.unsw.edu.au/group/drug-trends>
- Stokols, D. (1996). Translating social ecological theory into guidelines for community health promotion. *American Journal of Health Promotion*, 10(4), 282-298. doi:10.4278/0890-1171-10.4.282
- Takano, A., Kawakami, N., Miyamoto, Y., & Matsumoto, T. (2015). A study of therapeutic attitudes towards working with drug abusers: Reliability and validity of the Japanese version of the drug and drug problems perception questionnaire. *Archives of Psychiatric Nursing*, 29(5), 302-308. doi:10.1016/j.apnu.2015.05.002
- Tashakkori, A., & Teddie, C. (2010). *SAGE Handbook of mixed methods in social and behavioural research*. London: SAGE publications limited.
- Taylor, S. (2008). Outside the outsiders: Media representations of drug use. *Probation Journal*, 55(4), 369-387. doi:10.1177/0264550508096493
- Tebes, J. K. (2012). *Philosophical foundations of mixed methods research: Implications for research practice*: American Psychological Association.
- Thomas, B. H., Ciliska, D., Dobbins, M., & Micucci, S. (2004). A process for systematically reviewing the literature: Providing the research evidence for public health nursing interventions. *Worldviews on Evidence-Based Nursing*, 1(3), 176-184. doi:10.1111/j.1524-475X.2004.04006.x
- Toles, M., & Barroso, J. (2014). Introduction to qualitative research. In G. LoBiondo-Wood & J. Haber (Eds.), *Nursing research: Methods and critical appraisal for evidence-based practice* (8 ed., pp. 95-108). Missouri, USA: Elsevier Inc.
- Toles, M., Jiang, C. S., Goebert, D., & Lettich, L. (2006). Methamphetamine in emergency psychiatry. *Addictive Disorders & Their Treatment*, 5(4), 191-199.

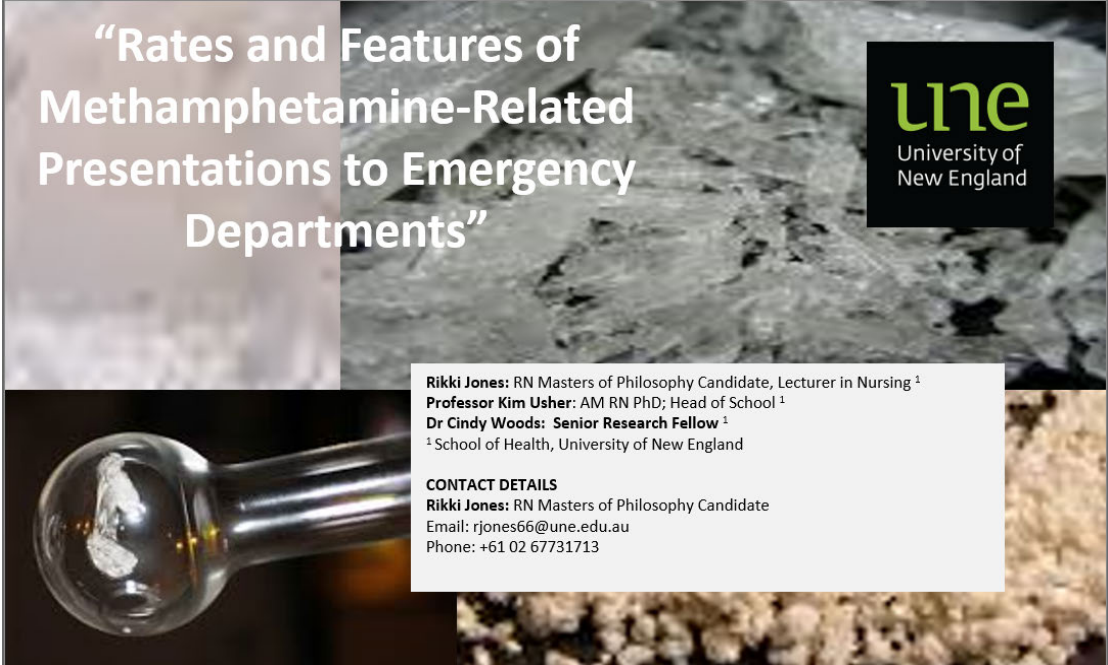
- Tompkins-Dobbs, K., & Schiefelbein, J. (2011). Emergency Department Policies and Procedures for Treatment of Patients Abusing Methamphetamine. *JEN: Journal of Emergency Nursing*, 37(5), 437-443. doi:10.1016/j.jen.2010.07.001
- Tountas, Y. (2009). The historical origins of the basic concepts of health promotion and education: the role of ancient Greek philosophy and medicine. *Health Promotion International*, 24(2), 185-192. doi:10.1093/heapro/dap006
- Treloar, C., Rance, J., Yates, K., & Mao, L. (2016). Trust and people who inject drugs: The perspectives of clients and staff of Needle Syringe Programs. *The International journal on drug policy*, 27, 138-145. doi:10.1016/j.drugpo.2015.08.018
- United Nations Office on Drugs and Crime. (2015). *The challenge of synthetic drugs in East and South-East Asia and Oceania; Trends and patterns of amphetamine-type stimulants and new psychoactive substances*. Retrieved from https://www.unodc.org/documents/scientific/The_Challenge_of_Synthetic_Drugs_in_East_and_South-East_Asia_and_Oceania-2015.pdf
- United Nations Office on Drugs and Crime. (2016). *World drug report*. Retrieved from https://www.unodc.org/wdr2017/field/WDR_2017_presentation_lauch_version.pdf
- United Nations Office on Drugs and Crime. (2020). *World Drug report*. Retrieved from <https://wdr.unodc.org/wdr2020/>
- United Nations Office on Drugs and Crime [UNODC]. (2018). *Global overview of drug demand and supply; latest trends, cross-cutting issues*. Retrieved from
- United States Census Bureau. (2016). American Community Survey 1-year estimates. Retrieved from <<https://censusreporter.org/profiles/16000US4159000-portland-or/>>
- United States Census Bureau. (2017a). *Quick facts Seattle city, Washington; United States*. Retrieved from <https://www.census.gov/quickfacts/fact/table/seattlecitywashington,US/PST045216>
- United States Census Bureau. (2017b). *Quick facts, Hawaii*. Retrieved from <https://www.census.gov/quickfacts/HI>
- Usher, K., Clough, A., Woods, C., & Robertson, J. (2015). Is there an ice epidemic in Australia? *International Journal of Mental Health Nursing*, 24(4), 283-285. doi:10.1111/inm.12155
- Usher, K., Jackson, D., Woods, C., Sayers, J., Kornhaber, R., & Cleary, M. (2017). Safety, risk, and aggression: Health professionals' experiences of caring for people affected by methamphetamine when presenting for emergency care. *International Journal of Mental Health Nursing*, 26(5), 437-444. doi:10.1111/inm.12345
- van Boekel, L., Brouwers, E., van Weeghel, J., & Garretsen, H. (2013). Stigma among health professionals towards patients with substance use disorders and its consequences for healthcare delivery: Systematic review. *Drug Alcohol Depend.*, 131(1-2), 23-35. doi:10.1016/j.drugalcdep.2013.02.018
- van Boekel, L., Brouwers, E., van Weeghel, J., & Garretsen, H. (2014). Healthcare professionals' regard towards working with patients with substance use disorders: Comparison of primary care, general psychiatry and specialist addiction services.(Report). *Drug and Alcohol Dependence*, 134(1), 92. doi:10.1016/j.drugalcdep.2013.09.012
- van Reemst, L., & Fischer, T. F. C. (2016). Experiencing external workplace violence: Differences in indicators between three types of emergency responders. *Journal of Interpersonal Violence*, 34(9), 1864-1889. doi:10.1177/0886260516657913
- Vearrier, D., Greenberg, M. I., Miller, S. N., Okaneku, J. T., & Haggerty, D. A. (2012). Methamphetamine: History, pathophysiology, adverse health effects, current trends, and hazards associated with the clandestine manufacture of methamphetamine. *Disease-a-Month*, 58(2), 38. doi:10.1016/j.disamonth.2011.09.004
- VicHealth (2012). Drinking cultures and social occasions - public holidays. Accessed from <https://www.vichealth.vic.gov.au/media-and-resources/publications/drinking-cultures-and-social-occasions>
- Weaver, K., & Olson, J. K. (2006). Understanding paradigms used for nursing research. *Journal of advanced nursing*, 53(4), 459-469. doi:10.1111/j.1365-2648.2006.03740.x
- Western Australia police Force. (2019). Western Australia Police Force. Retrived from <https://www.police.wa.gov.au/>
- Whittemore, R., & Knafl, K. (2005). The integrative review: updated methodology. *Journal of advanced nursing*, 52(5), 546-553. doi:10.1111/j.1365-2648.2005.03621.x
- Wikipedia. (2019). Western Australia. Retrieved from https://en.wikipedia.org/wiki/Western_Australia
- Williams, B., Boyle, M., & Fielder, C. (2015). Empathetic attitudes of undergraduate paramedic and nursing students towards four medical conditions: A three-year longitudinal study.(Clinical report). 35(2), e14-e18. doi:10.1016/j.nedt.2014.12.007

- Williams, K. (1999). Attitudes of mental health professionals to co-morbidity between mental health problems and substance misuse. *Journal of Mental Health*, 8(6), 605-613. doi:10.1080/09638239917076
- Wodak, A., Ryan, J., Griffiths, P., van Beek, I., Barratt, M. J., Lenton, S., . . . Farrell, M. (2012). Policy and practice in harm reduction in Australia. In R. Pates & D. Riley (Eds.), *Harm Reduction in Substance Use and High-Risk Behaviour*. Hoboken, UNITED KINGDOM: John Wiley & Sons, Incorporated.
- Wongtongkam, N. (2017). An exploration of violence against paramedics, burnout and post-traumatic symptoms in two Australian ambulance services. *International Journal of Emergency Services*, 6(2), 134-146. doi:10.1108/IJES-03-2017-0014
- Wood, D. M., Button, J., Ashraf, T., Walker, S., Greene, S. L., Drake, N., . . . Dargan, P. I. (2008). What evidence is there that the UK should tackle the potential emerging threat of methamphetamine toxicity rather than established recreational drugs such as MDMA ('ecstasy')? *QJM : monthly journal of the Association of Physicians*, 101(3), 207-213. doi:http://dx.doi.org/10.1093/qjmed/hcm133
- Woods, C., & Usher, K. (2017). Populations and areas most at risk of methamphetamine-related harms: A commentary on Degenhardt et al. *Drug and Alcohol Review*, 36, E5-E6. doi:10.1111/dar.12533
- World Health Organization. (1986). The Ottawa Charter for health promotion. Retrieved from www.who.int/healthpromotion/conferences/previous/ottawa/en
- World Health Organization. (1997). Jakarta declaration on leading health promotion into the 21st century. Retrieved from www.who.int/healthpromotion/conferences/previous/jakarta/declaration
- World Health Organization. (2005). The Bangkok charter for health promotion in a globalized world. Retrieved from www.who.int/healthpromotion/conferences/6gchp/bangkok_charter
- World Health Organization. (2018). Constitution of WHO: principles. Retrieved from <http://www.who.int/about/mission/en/>
- Xia, Ting, & Collie, Alex. (2020). Work-related injury and illness in the Victorian healthcare sector: a retrospective analysis of workers' compensation claim records. *Australian Health Review*, 44(1), 24-30. <https://doi.org/10.1071/AH18017>
- Yang, M., Yang, C., Liu, T., & London, E. D. (2020). Methamphetamine-associated psychosis: links to drug use characteristics and similarity to primary psychosis. *International Journal of Psychiatry in Clinical Practice*, 24(1), 31-37. doi:10.1080/13651501.2019.1676451
- Younas, A., Pedersen, M., & Durante, A. (2019). Characteristics of joint displays illustrating data integration in mixed-methods nursing studies. *J Adv Nurs*, 76(2), 676-686. doi:10.1111/jan.14264
- Yu, S., Zhu, L., Shen, Q., Bai, X., & Di, X. (2015). Recent Advances in Methamphetamine Neurotoxicity Mechanisms and Its Molecular Pathophysiology. *Behavioural Neurology*, 2015, 103969. doi:10.1155/2015/103969
- Zozus, M. N., Pieper, C., Johnson, C. M., Johnson, T. R., Franklin, A., Smith, J., & Zhang, J. (2015). Factors affecting accuracy of data abstracted from medical records. *PLoS ONE*, 10(10), [doi:10.1371/journal.pone.0138649](https://doi.org/10.1371/journal.pone.0138649)

Appendices

Appendix A: International Conference of Emergency Nursing 2017

Presentation cards

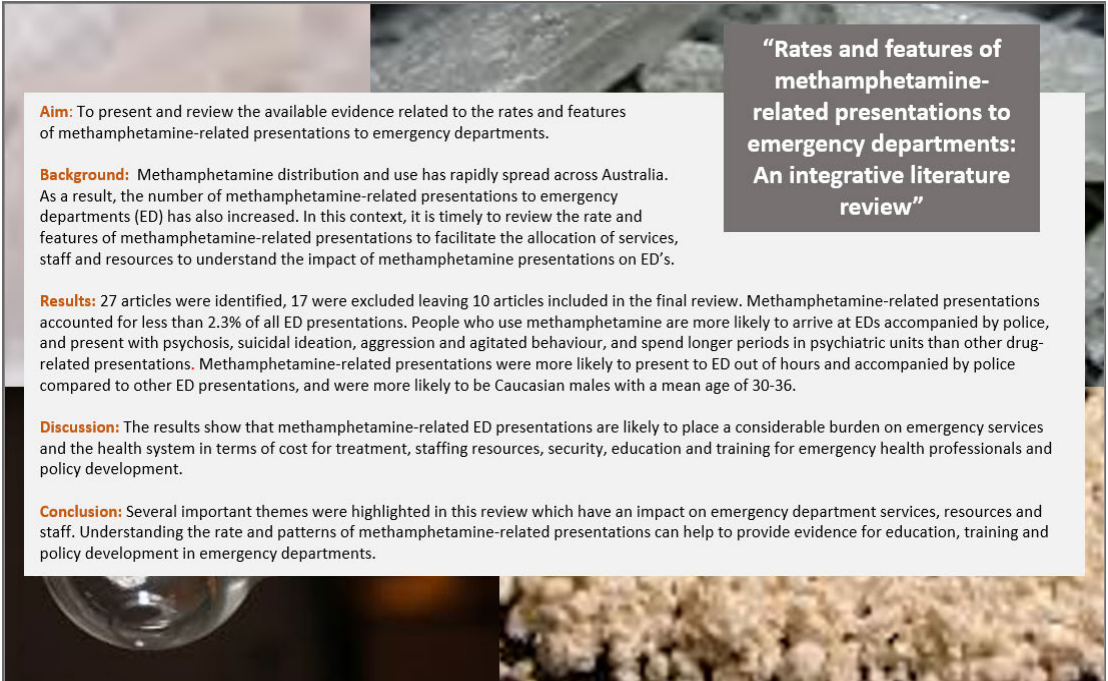


“Rates and Features of Methamphetamine-Related Presentations to Emergency Departments”

UNE
University of New England

Rikki Jones: RN Masters of Philosophy Candidate, Lecturer in Nursing ¹
Professor Kim Usher: AM RN PhD; Head of School ¹
Dr Cindy Woods: Senior Research Fellow ¹
¹ School of Health, University of New England

CONTACT DETAILS
Rikki Jones: RN Masters of Philosophy Candidate
Email: rjones66@une.edu.au
Phone: +61 02 67731713



“Rates and features of methamphetamine-related presentations to emergency departments: An integrative literature review”

Aim: To present and review the available evidence related to the rates and features of methamphetamine-related presentations to emergency departments.

Background: Methamphetamine distribution and use has rapidly spread across Australia. As a result, the number of methamphetamine-related presentations to emergency departments (ED) has also increased. In this context, it is timely to review the rate and features of methamphetamine-related presentations to facilitate the allocation of services, staff and resources to understand the impact of methamphetamine presentations on ED's.

Results: 27 articles were identified, 17 were excluded leaving 10 articles included in the final review. Methamphetamine-related presentations accounted for less than 2.3% of all ED presentations. People who use methamphetamine are more likely to arrive at EDs accompanied by police, and present with psychosis, suicidal ideation, aggression and agitated behaviour, and spend longer periods in psychiatric units than other drug-related presentations. Methamphetamine-related presentations were more likely to present to ED out of hours and accompanied by police compared to other ED presentations, and were more likely to be Caucasian males with a mean age of 30-36.

Discussion: The results show that methamphetamine-related ED presentations are likely to place a considerable burden on emergency services and the health system in terms of cost for treatment, staffing resources, security, education and training for emergency health professionals and policy development.

Conclusion: Several important themes were highlighted in this review which have an impact on emergency department services, resources and staff. Understanding the rate and patterns of methamphetamine-related presentations can help to provide evidence for education, training and policy development in emergency departments.

Poster Presentation

Rates and features of methamphetamine-related presentations to emergency departments: An integrative literature review

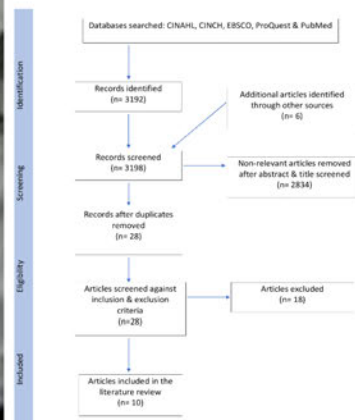
Aim: To present and review the available evidence related to the rates and features of methamphetamine-related presentations to emergency departments.

Background: Methamphetamine distribution and use has rapidly spread across Australia. As a result, the number of methamphetamine-related presentations to emergency departments (ED) has also increased. In this context, it is timely to review the rate and features of methamphetamine-related presentations to facilitate the allocation of services, staff and resources to understand the impact of methamphetamine presentations on ED's.

Method:

A search was conducted of CINAHL, CINCH, EBSCO, ProQuest- health and medicine, and PubMed; databases using a combination of the search terms: "emergency department"; "methamphetamine-related"; "crystal meth or crystal methamphetamine"; "presentations"; "accident and emergency"; and, "drug-related". Articles were measure against inclusion and exclusion criteria and subjected to quality appraisal.

PRISMA flow chart



Authors: Jones R*, Usher, & Woods C,
University of New England
School of Health



Results:

27 articles were identified, 18 were excluded leaving 10 articles included in the final review. Methamphetamine accounted for 2.3% or less (less than 2.3%) of all ED presentations (Figure 1).

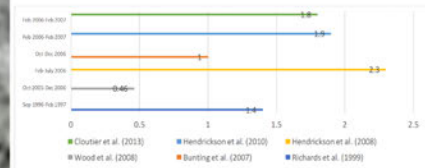


Figure 1: Methamphetamine-related presentations; percentage of all ED presentations

Methamphetamine-related presentations are more likely to present with trauma, psychosis, and be placed on 24-hour psychiatric hold. Psychiatric complaints reported by methamphetamine-related presentations included; psychosis, suicidal ideation, depression and schizophrenia (Figure 2).

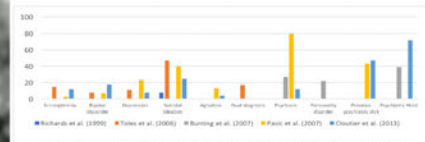


Figure 2: Percentage of methamphetamine-related presentations with Psychiatric history & diagnosis

Methamphetamine-related presentations were more likely to present with agitated, aggressive and homicidal behavior than all other presentations to ED. Methamphetamine-related presentations were more likely to present to ED out of hours and accompanied by police compared to other ED presentations. Methamphetamine users were more likely to be male, with a mean age of 30-36, and Caucasian (Figure 3).

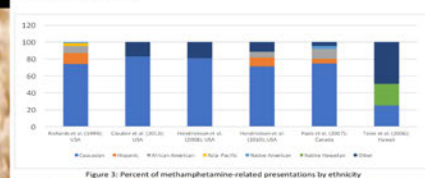


Figure 3: Percent of methamphetamine-related presentations by ethnicity

Discussion:

The purpose of this review was to review the available evidence and quality of evidence on the rates and features of methamphetamine-related emergency department (ED) presentations.

The number of cases (participants) in the selected studies varied from sixty methamphetamine-related ED presentations to four hundred and sixty-one (N=2,200) with an average of two hundred and forty-four. The included studies focused on similar populations: street-involved youth, overdoses presenting to ED, psychiatric methamphetamine-related presentations, and methamphetamine-related presentations.

The results show that methamphetamine-related ED presentations are likely to place a considerable burden on emergency services and the health system. People who use methamphetamine are more likely to arrive at EDs accompanied by police, and present with psychosis, suicidal ideation, aggression and agitated behaviour, and spend longer periods in psychiatric units than other drug-related presentations. These findings have important implications in terms of cost for treatment, staffing resources, security, education and training for emergency health professionals and policy development. Further research on understanding the rate and patterns of methamphetamine-related presentations to EDs can help to provide the evidence needed for future health promotion and policy development.

Conclusion:

Several important themes were highlighted in this review which have an impact on emergency department services, resources and staff. Understanding the rate and patterns of methamphetamine-related presentations can help to provide evidence for health promotion and policy development in emergency departments.

*Corresponding author: R. Jones, School of Health, University of New England, 100 The Square, Armidale, NSW 2351, Australia. Email: rjones66@une.edu.au
 1. Cloutier, C., et al. (2013). Substance use and mental health in the emergency department: A review of the literature. *Journal of Emergency Medicine*, 45(2), 148-155.
 2. Hendrickson, S. G., et al. (2010). Methamphetamine-related emergency department presentations: A review of the literature. *Journal of Emergency Medicine*, 39(2), 148-155.
 3. Hendrickson, S. G., et al. (2008). Methamphetamine-related emergency department presentations: A review of the literature. *Journal of Emergency Medicine*, 35(2), 148-155.
 4. Wood, J. M., et al. (2008). Methamphetamine-related emergency department presentations: A review of the literature. *Journal of Emergency Medicine*, 35(2), 148-155.
 5. Bunting, J. L., et al. (2007). Methamphetamine-related emergency department presentations: A review of the literature. *Journal of Emergency Medicine*, 34(2), 148-155.
 6. Richards, S. H., et al. (1999). Methamphetamine-related emergency department presentations: A review of the literature. *Journal of Emergency Medicine*, 17(2), 148-155.

ICEN 2017 Abstract

Background: Methamphetamine distribution and use has rapidly spread across Australia. As a result, the number of methamphetamine-related presentations to emergency departments (EDs) has also increased. In this context, it is timely to review the rate and features of methamphetamine-related presentations to facilitate the allocation of services, staff and resources to understand the impact of methamphetamine presentations on ED's.

Aim: To present and review the available evidence related to the features and rates of methamphetamine-related presentations to ED's.

Method: A search was conducted of CINAHL, CINCH, EBSCO, ProQuest- health and medicine, and PubMed databases using a combination of the search terms: "emergency department"; "methamphetamine-related"; "crystal meth or crystal methamphetamine"; "presentations"; "accident and emergency"; and, "drug-related". Articles were measured against inclusion and exclusion criteria and subjected to quality appraisal.

Results: 27 articles were identified, 18 were excluded leaving 9 articles included in the final review. Methamphetamine accounted for less than 2.3% of all ED presentations. Methamphetamine-related presentations are more likely to present with trauma, psychosis, and be placed on 24-hour psychiatric hold. In addition, methamphetamine-related presentations were more likely to present with agitated, aggressive and homicidal behaviour and were more likely to present to ED out of hours and accompanied by police compared to other ED presentations. Methamphetamine users were more likely to be male, with a mean age of 30-36, and Caucasian.

Conclusion: Several important themes were highlighted in this review that have an impact on ED services, resources and staff. Understanding the rate and patterns of methamphetamine-related presentations can help to provide evidence for health promotion and policy development in EDs.

ICEN 2017 Program

e20	LEADERSHIP	<i>Unravel my mind & cast me to the right direction – Queen Elizabeth II Jubilee Hospital Emergency Department Nursing Mentoring Project</i>	Julie Finucane, Angela Devlin, Mingshuang Ding
21	LEADERSHIP	<i>“Opening Night” – the experience of creating and leading a new team, and the experience of commissioning a new Emergency Department</i>	Vanessa Gorman
22	LEADERSHIP	<i>Education at the elbow: The use of a Clinical Coach Framework in the Emergency Department</i>	Amanda Naumann, Sean Lannan, Val Mitchell
23	LEADERSHIP	<i>Nursing forum for improve staff engagement.</i>	Emily Lynch
24	LEADERSHIP	<i>The Northern Hospital Ambulance offload performance improvement – nursing led, nursing driven, nursing success</i>	Jodee Bootle
e25	RESEARCH	<i>ED nurse recognition of sepsis is critical to early administration of antibiotics in patients with sepsis to reduce mortality: A systematic review and meta-analysis</i>	Dr Amy Johnston, Dr Joon Park, Prof. Suhail Doi, Vicki Sharman, Justin Clark, Jemma Robinson, Prof. Julia Crilly
e26	RESEARCH	<i>Emergency triage documentation: An examination of the content and patterns of content</i>	Michelle Jory, James Hughes, Rob Eley, Anthony Tuckett
27	RESEARCH	<i>From there to here and here to there. Nurses are active everywhere!</i>	Stephanie Chappel, Prof. Julie Considine, A/Prof. Brad Aisbett, Dr Nicola Ridgers
28	RESEARCH	<i>Nursing handover of vital signs at the transition of care from the emergency department to the inpatient ward: An integrative review</i>	Rachel Cross, Prof. Judy Currey, Prof. Julie Considine
29	RESEARCH	<i>Substance misuse and the involuntarily presentation to the Emergency Department</i>	James Hughes, Maureen Sheehan, Jill Evans
30	RESEARCH	<i>Rates and features of methamphetamine-related presentations to emergency departments: An integrative literature review</i>	Rikki Jones, Prof. Kim Usher, Dr Cindy Woods

Appendix B: Program Education evening ARRH 2018



Health
Hunter New England
Local Health District



Armidale Rural Referral Hospital and School of Health (UNE) invite all staff to an Education Evening for Health Professionals

Thursday 2nd August, 2018

Venue: Tablelands Clinical School, 110 Butler St

Program

6.00 – 6.30pm: Join your colleagues' for a drink and finger food on arrival.

6.30 – 6.45pm: Welcome Address

Clinical Up Dates

6.45 – 7.15pm: **ECG Interpretation** Presenter Becky Ingham-Broomfield, RN

Hot Topics

7.15 - 8.00 pm: **Allocation, Delegation and Decision Making in Nursing.**
Presenter Emma Ratajczyk, CNE

8.00 – 8.20 pm: Coffee & Cake Break

8.20- 8.30 pm: **Wound Assessment** Presenter Toni Clifton, CNS

Evidence into Practice

8.30 – 21:00 pm: **Methamphetamine (ICE) in EDs**
Presenter Rikki Jones UNE Lecturer (MPhil Candidate)

RSVP for catering purposes please email
di.targett@hnehealth.nsw.gov.au

This invitation is extended to nursing students currently on placement at ARRH or its peripheral sites.

Appendix C: Australian Nursing Midwifery Conference 2019

ANMAC abstract

Difficulty translating research on illicit drug-related emergency department presentations using medical chart review for data collection

R Jones¹, C Woods¹, K Usher¹

¹University of New England, Armidale, NSW

Research in nursing is about translating research into practice to make lasting changes in the clinical environment. However, methodology and data collection tools utilised by studies can have a direct impact on how research results are translated into practice. Researching accident and emergency department data via information recorded in patients' medical records is a commonly used and useful strategy to understand reasons for presentations related to the impact of illicit drugs, yet there are several inherent using medical charts for data collection that researchers need to be aware of. Some issues highlighted in a study conducted on illicit drug-related presentations include recruitment/measurement of drug use, abstraction of data from medical records, length of time study was conducted over, location of the study, and sampling method were a few of the issues highlighted by this literature review. The researcher not only needs to be aware of these inherent problems in methods but must plan to address wherever possible to ensure the research has a valid outcome.

ANMAC program

Friday 3rd May		12.30pm - 1.00pm
ID	Author	Poster Title
23	Leanne Bashford	Improving the Patient Journey and Outcomes in Palliative Care
24	Leah East	Supporting Sexual Health in Young Adults at University: A Collaborative Approach
25	Peter Jones	Engaging Learners – Developing the Teaching Potential of Clinical Staff
26	Rikki Jones	Difficulty Translating Research on Illicit Drug-related Emergency Department Presentations Using Medical Chart Review for Data Collection
27	Leigh Kinsman *	Closing the Evidence-Practice Gap Through Food, Wine and Collaboration
28	Debra Lawson	Substance Use in Pregnancy & Parenting Service-Sustaining Significant Change for Parents and Children
29	Catherine Lothian	Retaining Registered Nurses: Thriving or Surviving Beyond Their First Graduate Year
30	Lucinda Matheson	Best Fit Learning and Development for Leaders and Managers in HNELHD
31	Lyndall Mollart	Introducing Electronic Patient Medical Records for Contemporary Practice with Undergraduate Nursing and Midwifery Students: a Feasibility Study
32	Antony Mullen	Supporting and Developing New Graduate Nurses: Piloting a Mental Health Capability Framework
33	Jennifer Ormsby	'The Quicker the Better'- Improving Neonatal Retrieval Team Preparedness
34	Lorinda Palmer *	Academic Literacies and Student Success: A Longitudinal Study
35	Margaret Ridgway	Breastfeeding Promotion, Protection and Support in Action.
36	Margaret Ridgway	Leading the Way: Prioritising Health Care, Every Family Every Time
37	Julie Rutherford	A Piece of Your Heart, Who Fits Where In Your Heart Failure Care
38	Sonya Ryan	Building Safe Resilient Clinicians
39	Sharon-Ann Shunker	SSOFTHEND the impact of pressure injuries in ICU patients
40	Premrudee Sriwichai	Communication Behavior of Professional Nurses at General Hospital in Phayao Province
41	Carla Sunner	Boundary Spanning the Residential Aged Care Quandary
42	Di Targett	The Challenges of the Orthopaedic Patient Journey in the Rural Setting
43	Wayne Varndell	Pain Assessment and Intervention by Nurses in the Emergency Department (PAINED) Study
44	Jessica Williams	Virtual Reality Simulation for Neonatal Resuscitation: Bridging the Gap Between the Classroom and the Clinical Environment

Poster ANMAC 2019

Difficulty translating research on illicit drug-related emergency department presentations using medical chart review for data collection

Authors: Rikki Jones *, Cindy Woods & Kim Usher

University of New England, Armidale NSW



4th Australian
Nursing and Midwifery
Conference



Leading the Way:
Nursing and Midwifery quality, research and education
2 & 3 May 2019
Newcastle Exhibition and Convention Centre, Newcastle, NSW
www.nursingmidwiferyconference.com.au

INTRODUCTION

Researching accident and emergency department (ED) presentations through medical chart review is a useful strategy to understand reasons for presentations related to the impact and burden of illness, disease and substance abuse.²

The methods and research designs used can, however, impact the validity and reliability of research in this field. Ensuring a strong study design and appropriate methodologies are used is vital when conducting research to ensure there is potential for impact.

AIM

The aim of this poster is to highlight some of the challenges nurse researchers face when analysing and abstracting data from ED patient medical charts

IMPLICATIONS FOR PRACTICE

- Nursing staff may face challenges in conducting research using patient medical records.
- Research using medical chart review needs to use a rigorous data abstraction process.
- Clinical documentation impacts the quality of data able to be collected from patients' medical records.

AREA	CHALLENGES OF RESEARCH	POSSIBLE SOLUTIONS
Data Collection	<ul style="list-style-type: none"> - Medical charts designed to collect clinical relevant information not research.² - Accuracy of medical records may be impacted due to missing forms, inconsistent/conflicting information, and records are illegible.³ - Documentation practices are subjective to each clinician.³ - Lack validated and reliable framework to guide data abstraction process.⁴ - Short timeframe for data collection.³ - Number and location of ED's used for data collection can bias findings.² 	<ul style="list-style-type: none"> - Validation of medical records to record the phenomenon under study.² - Clearly describing the methods followed during data abstraction.³ - Performing testing and inter-rater reliability testing on the abstraction.³ - Blinding of the abstractor to the research question/hypothesis.³ - Use an appropriate data abstraction form/tool.^{3,5} - Clinicians can reduce the amount of inaccuracies, inconsistent and illegible data recorded in medical records.²
Sampling	<ul style="list-style-type: none"> - Convenience sampling is the most common method used which may result in sampling bias and limit generalizability of the study's findings.¹ 	<ul style="list-style-type: none"> - Use two or more EDs for data collection.² - Avoiding EDs located in known high drug use areas.²
Recruitment	<ul style="list-style-type: none"> - Recruitment often relies on some form of drug use measurement to determine what the patient has taken, and this may result in lack of inclusion of hidden populations of individuals who use drugs.² 	<ul style="list-style-type: none"> - Use more than one method to measure drug use for recruitment.²

CONCLUSION

This poster presents an overview of the difficulties faced when using medical records as a data collection tool in health research, using drug research in ED as an example. The possible Solutions presented are our recommendations for improving the data abstraction process from medical records. More robust study designs and methods will increase the quality and impact of nursing research in this setting.



REFERENCES

1. Hedt B L, & Pagano M (2011). Health indicators: Eliminating bias from convenience sampling estimators. *Statistics in Medicine*, 30(5), 560-568. doi:10.1002/sim.3920
2. Jones, R, Woods, C., & Usher, K. (2014). Challenges of researching drug-related emergency departments presentations using medical chart review. *Nursing Researcher*.
3. Kaji A H, Schriger D, & Green S (2014). Looking through the retroscope: Reducing bias in emergency medicine chart review studies. *Annals of Emergency Medicine*, 64(3), 292-298. doi:10.1016/j.annemergmed.2014.03.025
4. Polaszak B, Gilmore-Bykovskiy A, Hovanes M, et al. (2016). Overcoming the challenges of unstructured data in multisite, electronic medical record-based abstraction. *Medical Care*, 54(10), E63. doi:10.1097/MLR.000000000000108
5. Zozus M N, Pieper C, Johnson C M, et al (2015). Factors affecting accuracy of data abstracted from medical records. *PLoS ONE*, 10(10). doi:10.1371/journal.pone.0138649

E: rjones66@une.edu.au

T: @Rikkijones66

Appendix D: International Conference of Emergency Nursing 2019

ICEN Oral presentation Abstract

The results of an observational study looking at Methamphetamine-related ED presentations using medical chart review for data collection

Methamphetamines or “ICE” has been receiving a lot of media attention in recent years despite an overall decrease in use of methamphetamine in Australia. This presentation will present the results of a descriptive observational study analysing Emergency Department (ED) injury surveillance data sourced from Queensland injury surveillance unit (QISU) from 2005-2017. Descriptive statistics were used to identify patterns and features of presentations related to methamphetamines.

Results: 250 presentations were documented as methamphetamine-related. 92.8% (n = 232) of all methamphetamine-related presentations presented between 2014-2017; 84.4% (n = 211) of methamphetamine-related presentations were allocated a triage score of 1, 2 or 3; 14.8% (n = 37) of all methamphetamine-related presentations required police involvement; and 15.6% (n = 39) exhibited behaviour that was either, agitated, aggressive or violent in nature.

Conclusion: Methamphetamine-related presentations to ED have a high acuity and often require other emergency resources, police and ambulance. There is a need to develop policy for managing aggressive and agitated people presenting to EDs as a result of methamphetamine use and to further explore the experience of emergency personnel (police and ambulance) managing persons under the influence of methamphetamines.

ICEN Poster Presentation Abstract

The impact of methamphetamines on frontline emergency services in Victoria,
Australia

The use of methamphetamine is a growing problem in Australia, despite the statistics reporting a decrease in use. Methamphetamine users can suffer adverse physical health effects, psychotic symptoms and methamphetamine-related aggressive behaviour. This presentation reports the results of a study analysing data collected by Ambulance Victoria describing crystal methamphetamine-related events attended by ambulance across Victoria over six financial years from 2011/12 to 2016/17.

Results: Methamphetamine-related events attended by Victoria Ambulance paramedics significantly increased from 2011/12 to 2016/17, particularly in regional Victoria. The proportion of events requiring police co-attendance significantly increased, as did transportation to emergency department/hospital.

Conclusion: These results indicate the need for increased resources and support for paramedics, particularly in regional/rural areas. The large increase among young people aged 15-24 years indicates a need for policy action on prevention, harm reduction and expanded treatment services to reduce health problems and methamphetamine-related harms.



THE IMPACT OF METHAMPHETAMINE ON FRONTLINE EMERGENCY SERVICES IN VICTORIA, AUSTRALIA

Authors: Rikki Jones *, Kim Usher & Cindy Woods

University of New England, Armidale NSW



INTRODUCTION

The use of crystal methamphetamine is a growing problem in Australia. Methamphetamine users can suffer adverse physical health effects, psychotic symptoms and methamphetamine-related aggressive behaviour.

The increasing use and related harms of crystal methamphetamine is presenting serious problems for frontline emergency responders.

RESULTS

Methamphetamine-related events attended by Victoria Ambulance paramedics significantly increased from 2011/12 to 2016/17, particularly in regional Victoria. The most frequent age group requiring ambulance attendance is 25-39 years. The proportion of events requiring police co-attendance significantly increased, as did transportation to emergency department/hospital.

METHODS

A population-based retrospective analysis was undertaken of data collected by Ambulance Victoria describing crystal methamphetamine-related events attended by ambulance across Victoria over six financial years from 2011/12 to 2016/17.

Drug involvement is defined as the inappropriate consumption of the drug (not an adverse reaction to prescribed drugs) which significantly contributed to the reason for ambulance attendance.

CONCLUSION

The results indicate the need for increased resources and support for paramedics, particularly in regional/rural areas.

The large increase among young people aged 15-24 years indicates a need for policy action on prevention, harm reduction and expanded treatment services to reduce health problems and methamphetamine-related harms.

Table 1 Trends in absolute numbers of methamphetamine- and any illicit drugs-related events attended by ambulance from 2011/12 to 2016/17 in metropolitan and regional Victoria, Australia.

Ambulance attendances	2011/12	2016/17	Difference	% change from 2011/12	P value
Total no. of methamphetamine-related attendances	768	2,514	1,746	227%	< .0001
Total no. of any illicit drugs-related attendances	5,376	11,097	5,721	106%	< .0001
Metro - No. of methamphetamine-related attendances	673	2020	1347	200%	< .0001
Regional - No. of methamphetamine-related attendances	94	488	394	419%	< .0001
Metro - No. of any illicit drugs-related attendances	4604	9145	4541	99%	< .0001
Regional - No. of any illicit drugs-related attendances	766	1918	1152	150%	< .0001
Total Victorian population (million)	5.6	6.3	668,219	12%	

Note: Population data sourced from the Australian Bureau of Statistics; Denominator is number of cases for the financial year in 2011/12 and 2016/17

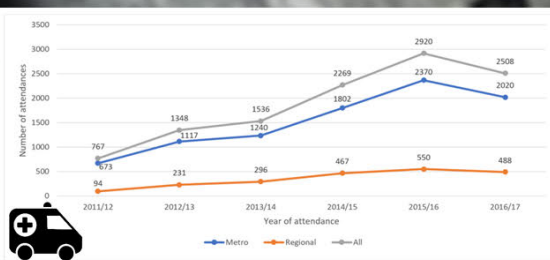


Figure 1 Crystal methamphetamine-related attendances by year in metropolitan Melbourne and regional Victoria – 2011/12 to 2016/17

REFERENCES

1. Commonwealth of Australia. Department of the Prime Minister and cabinet, Final report of the national ice taskforce. Canberra, Australia: Commonwealth of Australia; 2015. Available at: https://www.dpmc.gov.au/sites/default/files/publications/national_ice_taskforce_final_report.pdf. Accessed December 11, 2017.
2. Australian Institute of Health and Welfare. Alcohol, tobacco and other drugs in Australia; meth/amphetamines and other stimulants. 2018. Available at: <https://www.aihw.gov.au/reports/alcohol/alcohol-tobacco-other-drugs-australia/contents/drug-types/meth/amphetamine-and-other-stimulants>. Accessed July 19, 2019.
3. Jones, R, Usher, K. & Woods, C. Crystal methamphetamine's impact on frontline emergency services in Victoria Australia: Australasian Emergency Care Journal; 2019. Available at <https://doi.org/10.1016/j.aecj.2019.07.004>

E: rijones66@une.edu.au.

T:@RikkiJones66



17th International Conference for Emergency Nurses

EXPAND. EXPLORE. EXCEED
HILTON ADELAIDE HOTEL
16 - 18 October 2019

Best Poster - Finalist

presented to

Rikki Jones

for the poster

The impact of methamphetamine's on frontline emergency services in Victoria, Australia

A handwritten signature in black ink, appearing to read "KOB", is positioned above the name and title of Dr Kevin O'Shaughnessy.

Dr Kevin O'Shaughnessy
SCIENTIFIC PROGRAM CONVENER

A handwritten signature in black ink, appearing to read "JRF", is positioned above the name and title of Mr Jack Fabian.

Mr Jack Fabian
2019 ICEN CONVENER

Appendix E: UNE media Article Published 20th August 2019

Growing emergency the tip of the ICE-burg

Publisher; UNE <https://www.une.edu.au/connect/news/2019/08/growing-emergency-the-tip-of-the-ice-berg>



Current crystal methamphetamine or ICE use is exacting a toll not just on individuals and families. First responders and frontline medical and nursing staff in hospital emergency departments are also struggling with the growing number of unpredictable and dangerous patients.

The University of New England (UNE) is investigating methamphetamine-related presentations and the impact this highly addictive stimulant is having on emergency departments (EDs), their staff and ambulance and police officers. Researchers have found that ICE users are labour intensive in emergency departments, spend protracted periods in hospital and their behaviour can mask serious injuries. They also require a higher rate of first responder escorts to emergency departments compared to people with non-methamphetamine-related injuries.

Researcher and nurse Rikki Jones, who has herself worked in rural ED units, said her analysis of data collected by 32 Queensland public hospitals from 2005-2017

has shown that methamphetamine users often require complex care. "Many are experiencing psychosis, hallucinations, depression and anxiety when admitted to hospital, and violent outbursts are common," she said. "These are predominantly younger males, who present with serious injuries, who are triaged as needing emergency (triage 2) or urgent (triage 3) treatment.

"Methamphetamine users frequently require one-on-one and sometimes two-on-one care, which can tie up first responders and hospital staff, and resources for extended periods, delaying treatment for other patients. This is especially pronounced in rural and regional hospitals, where the number of admissions of ICE users has grown and resources in EDs are limited, particularly on weekends.

"Importantly, admission to an ED may be an ICE user's first opportunity for health treatment and many departments lack the specialist drug and alcohol services those patients need."

In 2010 the crystallised form of methamphetamine constituted 22% of all reported methamphetamine use, according to the Australian Institute of Health and Welfare. By 2015 this had increased to 50%, and to 57% by 2016. The Australian Drug Trends Report of 2018 reported that methamphetamine use overall has been steadily declining, however, users have reported an increase in the frequency of use since 2017. The estimated number of methamphetamine-related ED presentations in NSW has rapidly increased from 531 in 2009 to 4,478 in 2016/17, according to the Centre for Epidemiology and Evidence.

Rikki said ICE users are presenting to EDs with increasingly complex injuries. "Our results suggest that 17.6% presented to Queensland EDs with intentional self-harm, 6% had been involved in an assault and 42.4% had an accident related to their methamphetamine use – which included overdose, falls, and puncture wounds," she said. "Hospital staff could be dealing with injuries that have resulted in multi-organ injuries as well as psychological issues."

Victorian hospital ED figures suggest that this may be a national trend. Rikki's current analysis of state-wide methamphetamine presentations to 38 Victorian public hospitals with 24-hour emergency departments showed that presentations have increased by 113% from 2005 to 2015. Other drug-related presentations have increased by 124%, while the remaining presentations have only increased by 29%.

The two ICE studies build on the strong body of UNE research into drug and alcohol admissions to emergency departments in NSW, Queensland and Victoria over the past three years.

Professor Kim Usher, Dr Cindy Woods and Rikki Jones have just completed an analysis of the impact of alcohol-related falls on Victorian EDs, showing that their incidence increased by 93% over the 13 years to 2013, mostly among young males aged 20-24. With most suffering head injuries, emergency staff needed to be vigilant about the need for neurological assessments for the early diagnosis of traumatic brain injuries, however a drunken state often made such assessments challenging.

"It can be very hard for medical staff to know whether the symptoms a patient is exhibiting are due to the effect of alcohol or the injury," Professor Usher said. "ED units are under increasing pressure due to the rise in alcohol and drug-related admissions. ICE-related presenters, especially, often need to be put into isolation cubicles and resuscitation bays. The ED environment is usually totally unsuitable for people exhibiting violent, aggressive and disorienting behaviour."

Professor Kim Usher said she hopes the team's findings help guide hospital staff in how best to manage and treat drug and alcohol patients, and highlight ways to alleviate pressure on first responders, ED staff and hospital resources.

"EDs are struggling to cope with their current workload, let alone the rising incidence of drug and alcohol-related injuries," Professor Usher said. "Triaging such patients is very complex because the person is either incommunicative or difficult, posing major challenges for early diagnosis.

"Our work highlights the need for public education policies, to highlight this drain on public resources, but also education for health professionals and improved hospital guidelines for the management of these patients."

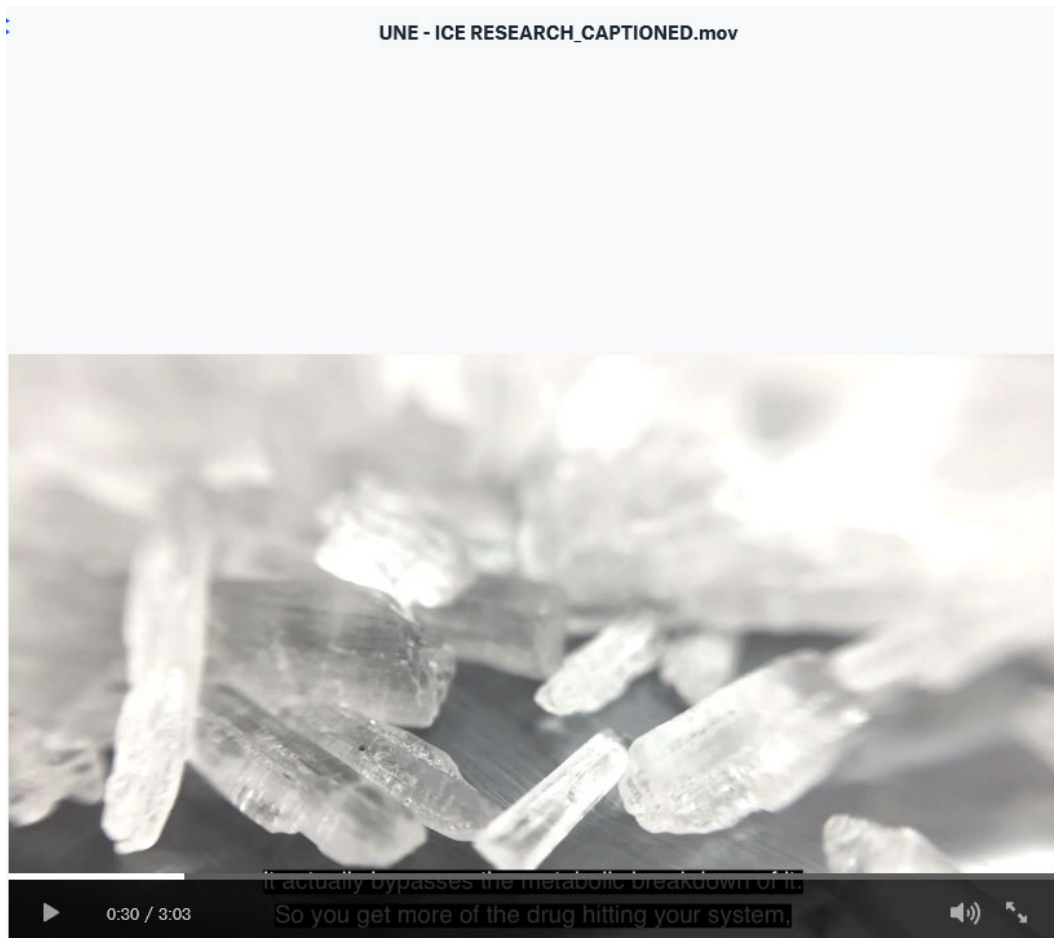
The UNE researchers are now interviewing police officers and paramedics who have been required to escort patients under the influence of methamphetamines to emergency departments.

Appendix F: Methamphetamines research UNE media Video

UNE media video on research project link

Professor Kim Usher & Rikki Jones

Video link https://www.dropbox.com/s/ce8lxngf3rsstjq/UNE%20-%20ICE%20RESEARCH_CAPTIONED.mov?dl=0



Appendix G: QISU Custodian Agreement



AGREEMENT FOR THE PROVISION OF QUEENSLAND INJURY SURVEILLANCE UNIT (QISU) UNIT RECORD LEVEL DATA

QISU provides injury data to a wide range of data users. The provision of this data at unit record level is subject to the following:

1. Individual QISU records are assigned a unique QISU identification number. In addition to this, when data is provided in unit record level format, a separate, project specific identification number is generated. These numbers allow re-identification of the original QISU file and potential verification of data after any external data manipulation. Therefore, any QISU identification numbers must not be removed from the file.
2. Data that is identifiable or potentially identifiable (e.g. contains a hospital UR number, date of birth, or any combination of variables that could potentially identify an individual) will only be released after appropriate ethics and Public Health Act („PHA“) clearance has been obtained, unless that data is being released solely back to the hospital that supplied the data or to the Health Statistics Centre within QH.
3. Anonymous unit record level data (data where individuals cannot be identified) may be released to selected users. Ethics clearance is not required for requests for anonymous data, but a copy of any ethics clearance of relevance to the project/ paper for which the data is intended must be provided to QISU.
4. All QISU data provided to organisations or individuals must be kept securely and used in accordance with the relevant Privacy and Patient Confidentiality requirements and legislation.
5. QISU data must only be used for the research purposes outlined in the research proposal and approved by the Director of QISU. Separate approval from the Director of QISU must be sought to use the data for research purposes not described in the original data request. Further ethics/ PHA clearance may be required prior to approval being granted by QISU.
6. Where arrangements are in place for acknowledgement and/or co-authorship, QISU must be included in a consultative process and provided with draft documents prior to publication, with sufficient time to assess the material and consent to its publication.
7. In the absence of co-authorship, draft versions of research products that utilize QISU unit record level data must be provided to QISU for review and comment prior to submission or publication, with sufficient time to assess the material and provide feedback.

8. For the purposes of this agreement, “research products” include: reports, manuscripts, abstracts, presentations and posters, or any other output where QISU data are described or have been used.
9. QISU (through the Mater Hospital Marketing Department) must be provided with advanced notice of any media releases and/or media attention in relation to research that includes reference to QISU data.
10. Once data has been provided, project reporting must be completed on a six monthly basis using the QISU mail query web link (www.qisu.org.au) to notify QISU of progress, changes and milestones of the project.

Appendix H: Ethics Approval QISU data collection 2016-17



Ethics Office
Research Development & Integrity
Research Division
Armidale NSW 2351
Australia
Phone 02 6773 3449
Fax 02 6773 3543
jo-ann.sozou@une.edu.au
www.une.edu.au/research-services

HUMAN RESEARCH ETHICS COMMITTEE

MEMORANDUM TO: Prof Kim Usher, Dr Cindy Woods, Dr Ruth Barker, Prof
Michelle Cleary & Mrs Rikki Jones

School of Health

This is to advise you that the Human Research Ethics Committee has approved the following:

PROJECT TITLE: Methamphetamine-related emergency department presentations

APPROVAL No.: HE16-232

COMMENCEMENT DATE: 01 October, 2016

APPROVAL VALID TO: 01 October, 2017

COMMENTS: Nil. Conditions met in full

The Human Research Ethics Committee may grant approval for up to a maximum of three years. For approval periods greater than 12 months, researchers are required to submit an application for renewal at each twelve-month period. All researchers are required to submit a Final Report at the completion of their project. The Progress/Final Report Form is available at the following web address:
<http://www.une.edu.au/research/research-services/rdi/ethics/hre/hrec-forms>

The NHMRC National Statement on Ethical Conduct in Research Involving Humans requires that researchers must report immediately to the Human Research Ethics Committee anything that might affect ethical acceptance of the protocol. This includes adverse reactions of participants, proposed changes in the protocol, and any other unforeseen events that might affect the continued ethical acceptability of the project.

In issuing this approval number, it is required that all data and consent forms are stored in a secure location for a minimum period of five years. These documents may be required for compliance audit processes during that time. If the location at which data and documentation are retained is changed within that five year period, the Research Ethics Officer should be advised of the new location.



Jo-Ann Sozou
Secretary/Research Ethics Officer

Appendix I: Ethics Approval Survey & Interview data collection 2018-20



Ethics Office
Research Development & Integrity
Research Division
Armidale NSW 2351
Australia
Phone 02 6773 3449
Fax 02 6773 3543
jo-ann.sozou@une.edu.au
www.une.edu.au/research-services

HUMAN RESEARCH ETHICS COMMITTEE

MEMORANDUM TO: Prof Kim Usher, Dr Cindy Woods & Mrs Rikki Jones

School of Health

This is to advise you that the Human Research Ethics Committee has approved the following:

PROJECT TITLE: Experiences of emergency services professionals managing or caring for people who have taken methamphetamines

APPROVAL No.: HE18-209

COMMENCEMENT DATE: 20 September, 2018

APPROVAL VALID TO: 31 December, 2020

COMMENTS: Nil. Conditions met in full

The Human Research Ethics Committee may grant approval for up to a maximum of three years. For approval periods greater than 12 months, researchers are required to submit an application for renewal at each twelve-month period. All researchers are required to submit a Final Report at the completion of their project. The Progress/Final Report Form is available at the following web address:
<http://www.une.edu.au/research/research-services/rdi/ethics/hre/hrec-forms>

The NHMRC National Statement on Ethical Conduct in Research Involving Humans requires that researchers must report immediately to the Human Research Ethics Committee anything that might affect ethical acceptance of the protocol. This includes adverse reactions of participants, proposed changes in the protocol, and any other unforeseen events that might affect the continued ethical acceptability of the project.

In issuing this approval number, it is required that all data and consent forms are stored in a secure location for a minimum period of five years. These documents may be required for compliance audit processes during that time. If the location at which data and documentation are retained is changed within that five year period, the Research Ethics Officer should be advised of the new location.



Jo-Ann Sozou
Secretary/Research Ethics Officer

Appendix J: Survey: Perceptions of deservingness and experience managing person under the influence of methamphetamine (ICE)

Survey Flow

Block: Default Question Block (29 Questions)

Start of Block: Default Question Block

Q2 I have read the information contained in the information Sheet for Participants and any questions I have asked have been answered to my satisfaction.

- I agree (4)
- I do not agree (5)

Q3 I agree to participate in this activity, realising that I may withdraw at any time.

- I agree (1)
- I do not agree (2)

Q4 I agree that research data gathered for the study may be and published, and my identity will be unidentifiable as explained in the information sheet.

- Yes (4)
- No (6)

Q5 I agree that I may be quoted using a pseudonym.

- I agree (1)
- I do not agree (2)

Q6 I am over the age of 18 years of age.

- Yes (1)
- No (3)

Q7 In preservation of anonymity, I understand that no name or signature is required of me to give consent. By selecting **proceed** I am agreeing to participate in this study.

- Proceed (1)
- Do not proceed (4)

Skip To: End of Survey If Q7 = 4

Q8 Have you experienced managing persons who have taken or were under the influence of methamphetamine?

- Yes (1)
- No (2)

Skip To: End of Survey If Q8 = 2

Q9 Did they required transport/escort to an emergency department (ED)?

- Yes (1)
- No (2)

Q10 Please select an age group

- 24 or below (1)
- 25-29 (2)
- 30-34 (3)
- 35-39 (4)
- 40-44 (5)
- 45-49 (6)
- 50-54 (7)
- 55-59 (9)
- 60+ (10)

Q11 What gender do you identify as?

- Male (1)
 - Female (2)
 - Other (3)
-

Q12 What is your Ethnicity?

- Aboriginal (1)
- Torres Strait Islander (2)
- Aboriginal and Torres Strait Islander (3)
- European (5)
- Asian (6)
- African (7)
- Other (8)

Q13 In what field do you work?

- Ambulance Service (1)
- Police services (2)

Q14 How many years have you worked as a police officer or an ambulance officer?

Q15 What location below best describes your primary place of work?

- Remote (4)
- Rural (5)
- Metropolitan (6)

Q16 How long have you worked at this location?

Q17 Please rate the following statements.

	1. Not at all responsible (1)	2 (2)	3. Moderately responsibly (3)	4 (4)	5. Very responsible (5)
To what extent are adverse life circumstances likely to be responsible for a person's problematic drug use? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To what extent is an individual personally responsible for their problematic drug use? (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q18 Please rate the following statement.

	1. Not at all angry (1)	2 (2)	3. Moderately angry (3)	4 (4)	5. Very angry (5)
To what extent do you feel angry towards people using drugs? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q19 Please rate the following statement.

	1. Not at all disappointed (1)	2 (2)	3. Moderately disappointed (3)	4 (4)	5. Very disappointed (5)
To what extent do you feel disappointed towards people using drugs? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q20 Please rate the following statement.

	1. Not at all sympathetic (1)	2 (2)	3. Moderately sympathetic (3)	4 (4)	5. Very sympathetic (5)
To what extent do you feel sympathetic towards people using drugs? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q21 Please rate the following statement.

	1. Not at all concerned (1)	2 (2)	3. Moderately concerned (3)	4 (4)	5. Very concerned (5)
To what extent do you feel concerned towards people using drugs? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q22 Please rate the following statement.

	1. Not at all deserving (1)	2 (2)	3. Moderately deserving (3)	4 (4)	5. Very deserving (5)
To what extent do people who use drugs deserve the same level of medical care as people who don't use drugs? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q23 Please rate the following statement.

	1. Not at all entitled (1)	2 (2)	3. Moderately entitled (3)	4 (4)	5. Very entitled (5)
To what extent are people who use drugs are entitled to the same level of medical care as people who don't use drugs? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q24 If so, on average how often are you required to manage these patients?

- Weekly (1)
 - Monthly (2)
 - Yearly (3)
 - Other (4) _____
-

Q25 Are methamphetamine users/clients more difficult to manage than other clients and other drug users?

- Definitely yes (1)
 - Probably yes (2)
 - Might or might not (3)
 - Probably not (4)
 - Definitely not (5)
-

Q26 Please provide a brief explanation for your answer to Q25.

Q27 Briefly describe your experience with managing persons who have taken/under the influence of methamphetamine and required transport/escort to an ED.

Q28 Explain further, in what way does it affect management/care?

Q29 We would like to interview you to gain further information on your experience managing persons who are under the influence of methamphetamine. If you are interested in participating in an interview please add your e-mail address in the box below and the research team will contact you outlining the details about participating in interviews.

Q30 If you are interested in receiving the results of this survey, please add you e-mail address below.

End of Block: Default Question Block

Appendix K: Email sent to participants Survey data collection



“Experiences of emergency services professionals managing or caring for people who have taken methamphetamines.”

Hi

I wish to invite you to participate in my research project, described below.

My name is Rikki Jones and I am conducting this research as part of my PhD in the School of Health at the University of New England. My supervisors are Professor Kim Usher and Dr Cindy Woods.

The research aims to explore the police officers and ambulance staffs experience managing person who have taken methamphetamine and required escort/transport to an emergency department (ED).

Attached is a link to a survey. The survey is anonymous and will take 10 to 15 minutes to complete. With your permission, I would like to use the information gathered in the survey for research outputs (articles for journals, conference material and thesis). Please understand that your involvement in this study is voluntary and I respect your right to stop participating in the study at any time without consequence and without needing to provide an explanation. If you do not wish to participate in the survey but would like to share your experience through a semi-structured interview, please contact the research team below via e-mail.

It is unlikely that this research will raise any personal or upsetting issues but if it does you may wish to contact your departments services.

Ambulance contacts:

ACT support services, Peer Support (02) 6207 3533 and Support Link (02) 6207 8242. In addition, you can also contact life line on 13 11 14.

Police Contacts:

WA, Converge International 1300 687 327 or life line on 13 11 14.

I will keep all hardcopy notes and recordings of the interviews in a locked cabinet in my office at the University of New England's School of Health or wherever described in the application. Any electronic data will be kept on cloud.une.edu.au, UNE's centrally managed cloud server managed by the research team. It will also be kept on a password protected computer in the same location. Only the research team will have access to the data.

All the data collected in this research will be kept for a minimum of five years after successful submission of my thesis, after which it will be disposed of by deleting relevant computer files, and destroying or shredding hardcopy materials.

This project has been approved by the Human Research Ethics Committee of the University of New England (Approval No. HE 18-209 Valid to October 2019).

Feel free to contact me with any questions about this research by email at rjones66@une.edu.au or by phone on 02 6773 1713.

You may also contact my supervisors'. My Principal supervisor's name is Professor Kim Usher and she can be contacted by email at Kim.usher@une.edu.au or by phone on 02 6773 2975 and my Co-supervisor's name is Dr Cindy Woods and her email address is cwood30@une.edu.au and phone number is 02 6773 5762.

Below is the link to complete the survey.

https://unesurveys.au1.qualtrics.com/jfe/form/SV_9XohhXHylkXMZs9

Thank you for your time and patients

Rikki Jones

Appendix L: Participants information sheet Survey data collection



School of Health
University of New England
Armidale NSW 2351
Australia
Phone 02 6773 1713
rjones66@une.edu.au
www.une.edu.au

INFORMATION SHEET for PARTICIPANTS

I wish to invite you to participate in my research project, described below.

My name is Rikki Jones and I am conducting this research as part of my PhD in the School of Health at the University of New England. My supervisors are Professor Kim Usher and Dr Cindy Woods.

Research Project	Experiences of emergency services professionals managing or caring for people who have taken methamphetamines.
Aim of the Research	The research aims to explore the police officers and ambulance staffs experience managing person who have taken methamphetamine and required escort/transport to an emergency department (ED).
Survey	I would like to conduct an online survey. The survey will take approximately 15 minutes.
Confidentiality	The survey is anonymous. Any details (demographics) gathered in the course of the study will remain confidential.
Participation is Voluntary	Please understand that your involvement in this study is voluntary and I respect your right to stop participating in the study at any time without consequence and without needing to provide an explanation, however, once you begin the survey your anonymous data which you have already provided cannot be withdrawn.
Questions	The survey questions will not be of a sensitive nature: rather they are general, and will enable me to enhance my knowledge of your experience managing person who have taken methamphetamines and required transport/escort to an emergency department (ED).
Use of Information	I will use information from the survey as part of my doctoral thesis, which I expect to complete in December 2020. Information from the interview may also be used in academic journal articles and conference presentations before and after this date. At all times, I will safeguard your identity by presenting the information in a way that will not allow you to be identified.

Upsetting Issues	It is unlikely that this research will raise any personal or upsetting issues but if it does you may wish to contact your local Community Health Centre or Lifeline on 13 11 14.
Storage of Information	I will keep all hardcopy survey results in a locked cabinet in my office at the University of New England's School of Health. Any electronic data will be kept on cloud.une.edu.au, UNE's centrally managed cloud server managed by the research team. It will also be kept on a password protected computer in the same location. Only the research team will have access to the data.
Disposal of Information	All the data collected in this research will be kept for a minimum of five years after successful submission of my thesis, after which it will be disposed of by deleting relevant computer files, and destroying or shredding hardcopy materials.
Approval	This project has been approved by the Human Research Ethics Committee of the University of New England (Approval NoHE-209, Valid to .31./12/2020).
Researchers Contact Details	Feel free to contact me with any questions about this research by email at rjones66@une.edu.au or by phone on 02 6773 1713. You may also contact my supervisors'. My Principal supervisor's name is Professor Kim Usher and she can be contacted by email at Kim.usher@une.edu.au or by phone on 02 6773 2975 and my Co-supervisor's name is Dr Cindy Woods and her email address is cwood30@une.edu.au and phone number is 02 6773 5762.
Complaints	Should you have any complaints concerning the manner in which this research is conducted, please contact: Mrs Jo-Ann Sozou Research Ethics Officer Research Services University of New England Armidale, NSW 2351 Tel: (02) 6773 3449 Email: ethics@une.edu.au Thank you for considering this request and I look forward to further contact with you. regards, Rikki Jones

Appendix M: Participants Information sheet Interviews data collection



School of Health
University of New England
Armidale NSW 2351
Australia
Phone 02 6773 1713

**INFORMATION SHEET
for
PARTICIPANTS**

I wish to invite you to participate in my research project, described below. My name is Rikki Jones and I am conducting this research as part of my PhD in the School of Health at the University of New England. My supervisors are Professor Kim Usher and Dr Cindy Woods.

Research Project	Experiences of emergency services professionals managing or caring for people who have taken methamphetamines.
Aim of the Research	The research aims to explore the police officers and ambulance staffs experience managing person who have taken methamphetamine and required escort/transport to an emergency department (ED).
Interview	I would like to conduct a face-to-face interview with you at University of New England (UNE) (Location of interview). The interview will take approximately 30-60 minutes. With your permission, I will make an audio recording of the interview to ensure that I accurately recall the information you provide. Following the interview, a transcript will be provided to you if you wish to see one.
Confidentiality	Any personal details gathered in the course of the study will remain confidential. No individual will be identified by name in any publication of the results. All names will be replaced by pseudonyms; this will ensure your anonymity. If you agree I would like to quote some of your responses. This will also be done in a way to ensure that you are not identifiable. All aspects of the study, including the results, will be strictly confidential and only the researchers will have access to information on participants, except as required by law for three reasons. These reasons are: (1) if you say you might harm yourself or someone else, (2) if you share information about children you know who are being abused or neglected, or (3) if you share information about crimes you haven't told the police, such as using unreasonable force to subdue a patient. The researcher will stop the interview and caution you, if you begin to disclose details of any criminal offence for which you, or others known to you, have not been previously apprehended, charged or convicted. If you decide to discuss offences for which you have not been

	<p>apprehended, charged or convicted you should understand that you should only discuss such offences in general terms</p>
Participation is Voluntary	<p>Please understand that your involvement in this study is voluntary and I respect your right to stop participating in the study at any time without consequence and without needing to provide an explanation.</p>
Questions	<p>The interview questions will not be of a sensitive nature: rather they are general, and will enable me to enhance my knowledge of methamphetamine related presentations to emergency departments.</p>
Use of Information	<p>I will use information from the interview as part of my doctoral thesis, which I expect to complete in December 2020. Information from the interview may also be used in academic journal articles and conference presentations before and after this date. At all times, I will safeguard your identity by presenting the information in a way that will not allow you to be identified.</p>
Upsetting Issues	<p>It is unlikely that this research will raise any personal or upsetting issues but if it does you may wish to contact your departments counselling services. In addition, you can contact Lifeline on 13 11 14.</p>
Storage of Information	<p>I will keep all hardcopy notes and recordings of the interviews in a locked cabinet in my office at the University of New England's School of Health or wherever described in the application. Any electronic data will be kept on cloud.une.edu.au, UNE's centrally managed cloud server managed by the research team. It will also be kept on a password protected computer in the same location. Only the research team will have access to the data.</p>
Disposal of Information	<p>All the data collected in this research will be kept for a minimum of five years after successful submission of my thesis, after which it will be disposed of by deleting relevant computer files, and destroying or shredding hardcopy materials.</p>
Approval	<p>This project has been approved by the Human Research Ethics Committee of the University of New England (Approval No HE18-209 Valid to 20/092019).</p>
Researchers Contact Details	<p>Feel free to contact me with any questions about this research by email at rjones66@une.edu.au or by phone on 02 6773 1713.</p>
	<p>You may also contact my supervisors'. My Principal supervisor's name is Professor Kim Usher and she can be contacted by email at Kim.usher@une.edu.au or by phone on 02 6773 2975 and my Co-supervisor's name is Dr Cindy Woods and her email address is cwood30@une.edu.au and phone number is 02 6773 5762.</p>
Complaints	<p>Should you have any complaints concerning the manner in which this research is conducted, please contact: Mrs Jo-Ann Sozou</p>

Research Ethics Officer
Research Services
University of New England
Armidale, NSW 2351
Tel: (02) 6773 3449
Email: ethics@une.edu.au

Thank you for considering this request and I look forward to further contact with you.

regards,

Rikki Jones

Appendix N: Consent form Interviews data collection

CONSENT FORM for PARTICIPANTS

Research Project: Experiences of emergency services professionals managing or caring for people who have taken methamphetamines.

I,, have read the information contained in the Information Sheet for Participants and any questions I have asked have been answered to my satisfaction. Yes/No

I agree to participate in this activity, realising that I may withdraw at any time. Yes/No

I agree that research data gathered for the study may be quoted and published using a pseudonym. Yes/No

I agree to be identified in this research. Yes/No

I agree to having my interview audio recorded and transcribed. Yes/No

I would like to receive a copy of the transcription of the interview. Yes/No
I am older than 18 years of age. Yes/No

.....
Participant Date

.....
Researcher Date

Appendix O: Telephone Interview Script

- Good morning/afternoon, my name is Rikki Jones, I am a researcher at the University of New England and I am conducting research on methamphetamine-related presentations to emergency departments. Am I speaking to (participants name).
 - Thank you for agreeing to participate in this research project, Before we can go any further I will need to confirm your consent to proceed. Please answer 'yes' or 'no' to the following questions: **(OR confirm you have the signed consent here) Notify we are recording this voice and non identifiable quotes will be used.)**
- Have you read the *Information Sheet for Participants* sent to you via e-mail? Do you have any questions about this information?
 - Do you agree to participate in this phone interview, realising that you can withdraw at any time?
 - Do you agree to have the telephone interview audio recorded and transcribed?
 - Are you older than 18 years of age?
 - Do you agree that you may be quoted using a pseudonym?

[If the participant does not agree with any of the statements, thank them for their time and hang up.]

[If the participant does agree to continue with the telephone interview, proceed with the following steps:

- Confirm police or ambulance
- Rural remote or metropolitan
- Before I get started do you have any questions in relation to the study I am conducting or our research on methamphetamines?

Interview Questions; (if you do not wish to answer a question you can just say pass.

Q1: Can you tell me about your experiences managing/caring for offenders/patients under the influence of methamphetamine in EDs?

Q2: Can you explain or discuss the nature of difficulties you have experienced when dealing with offenders under the influence of methamphetamines and how this differs from other drugs or intellectual/mental health issues?

Q3: What are some of the reasons or issues you are called to assist or help transport patients to an ED?

Why or what reasons or issues are you called to help staff in ED manage methamphetamine presentations in ED?

Q4: Can you talk about the things that may help you to manage/care for offenders/patients under the influence of methamphetamine-related presentations?

Q5: Is there any further training or education you feel you need to help you manage clients/patients under the influence of methamphetamines?

Q6: Is there anything else in relation to methamphetamine-related presentations you would like to share before we finish this interview?

Thank you for your time, we appreciate your contribution to this study. You have my contact details in case you think of anything else you wish to add.

Finish telephone call

Quantitative data	Quantitative categories	Pillar Building	Qualitative Categories/codes	Qualitative data
<p>VIC ambulance data (phase one stage two)</p> <p>Co-attendance Police co-attendance 166 (21.6%) 2011/12, 1182 (47%) 2016/17, change 612% p value <.05</p>	<p>Police flag/ambulance callouts/presentation Co-ordinated approach</p> <p>Co-ordinated approach Co-attendance police/ambulance/presentation</p>	<p>Co-ordinated approach</p>	<p>Standardised approach Flexible guidelines Transport decisions Deciding care between services</p> <p>Modifying care Relationships Combined MH & paramedic/police approach Co-ordinated structured approach between police, paramedics & ED</p>	<p>Standardised approach There's no structured process. It's basically every single patient you're assessing with your experience and a lot depends on who is on scene and who the police are. The police sometimes get it and they sometimes don't. Sometimes we just say we're not transporting, that the patient is too aggressive and we're not interested and sometimes the police kick back and sometimes they are really happy with that. It all depends on who I'm working with as a paramedic and who the other stakeholders involved are - so the police obviously...It would be a guideline, a good guideline would be awesome but you could never always stick to it. Like in your Mental Health guideline, you've still got to have options open but you should explain why you walked out of the guidelines and it [would] be okay. Yeah, I would love something. It would be awesome. (PA11)</p> <p>New coordinated approach At the moment [state removed] has got a bit of a trial going with the police and a mental health nurse. They are fantastic at treating these patients because they do it regularly, it's their speciality and they're getting used to the community side of it. It works really well Whereas we're just pitching up as two paramedics with two random coppers off the beat who are trying their best but it's not our pure skillset. Just like any specialist, they can probably do it better so we would like to see more and more of those style of systems and more of more of vehicles and tools adequate to that type of particular presentation. In a similar way that you would have a neonate cot for a neonate transport we need a psych ambulance for a psych job. (PA11)</p>

Quantitative data	Quantitative categories	Pillar Building	Qualitative Categories/codes	Qualitative data																						
<p>QISU (phase one stage one)</p> <p>Prevalence 92.8% presented between 2014 to 2017 (sudden increase). Presentations increased significantly over this period, $z = 19.1$, $p < 0.05$, CI .76-.94.</p> <table border="1"> <thead> <tr> <th>Year/no.</th> <th>n (%)</th> </tr> </thead> <tbody> <tr><td>2008</td><td>7 (2.8)</td></tr> <tr><td>2009</td><td>-</td></tr> <tr><td>2010</td><td>2 (0.8)</td></tr> <tr><td>2011</td><td>1 (0.4)</td></tr> <tr><td>2012</td><td>1 (0.4)</td></tr> <tr><td>2013</td><td>7 (2.8)</td></tr> <tr><td>2014</td><td>33 (13.2)</td></tr> <tr><td>2015</td><td>83 (33.2)</td></tr> <tr><td>2016</td><td>64 (25.6)</td></tr> <tr><td>2017</td><td>52 (20.8)</td></tr> </tbody> </table> <p>VIC ambulance data (phase one stage two)</p> <p>Prevalence methamphetamine-related events attended by ambulance increased from 768 in 2011/12 to 2,514 in 2016/17 which is an increase of over 200%, Transported to ED 603 (78.7%) 2011/12, 2029 (80.7%) 2016/17, change 236% p value <0.05 Total meth callouts VIC 768 2011/12, 2514 2016/17 difference 1746, change 227% p value .0001. Crystal meth attendance by year 2011/12 767 2012/13 1348 2013/14 1536 2014/15 2269 2015/16 2920 2016/17 2508 Total meth 768 2011/12, 2514 2016/17 difference 1746, change 227% p value .0001.</p>	Year/no.	n (%)	2008	7 (2.8)	2009	-	2010	2 (0.8)	2011	1 (0.4)	2012	1 (0.4)	2013	7 (2.8)	2014	33 (13.2)	2015	83 (33.2)	2016	64 (25.6)	2017	52 (20.8)	<p>Prevalence ED presentations Prevalence/increase in presentation Prevalence callouts</p>	<p>Prevalence</p>	<p>Prevalence/increase in presentation</p>	<p>Prevalence ...because the users are more violent and it leads to incidents that obviously require our attention, we're having contact with people who are violent more often, because of the meth. Then, when we're having contact with those people, they are more violent also. So I couldn't put a number on it, but if I think back to my general duties policing side, 10 years ago, we might have, what I term a dangerous, risky arrest a couple of times a year and now it's every week, if not more often. It really has gone through the roof. We've... what I term a dangerous arrest, where they're actively trying to kill you, if they could. (PP3)</p>
Year/no.	n (%)																									
2008	7 (2.8)																									
2009	-																									
2010	2 (0.8)																									
2011	1 (0.4)																									
2012	1 (0.4)																									
2013	7 (2.8)																									
2014	33 (13.2)																									
2015	83 (33.2)																									
2016	64 (25.6)																									
2017	52 (20.8)																									

Quantitative data	Quantitative categories	Pillar Building	Qualitative Categories/codes	Qualitative data
<p>QISU (phase one stage one)</p> <p>ABD Behavioural problems 29.2% (n = 73) of agitated/aggressive/violent behaviour was identified in 15.6% (n = 39)</p> <p>Agitated n = 22 aggression/aggressive/violent n = 17 threatening/homicidal n = 2 bizarre n = 9 Restless/irritable/erratic n = 7 mood/anxious n = 14 non-compliant n = 2</p>	<p>Challenges/difficulties-behaviour</p>	<p>Complexity</p>	<p>ABD Behaviour Violent aggressive Verbal and physical abuse Unpredictable Uncooperative bizarre irrational Increase strength Decrease in pain sensation Fidgety, repetitive talking/flight of speech Sleeplessness Not normal behaviour</p> <p>personal safety Fear Physical and verbal violence Psychological assault Indirect/direct threats Communication device failure Hypervigilance Exposure to body fluids Minimising risk Protecting co-workers</p> <p>Unsafe families Domestic/family violence Families at breaking point Children witnessing violence Unable to use normal processes</p>	<p>Methamphetamine effects on behaviour it's desperately trying to manage the physical contact with these patients, who are quite likely to suddenly explode with a whole lot of aggression, whether that be deliberately targeted at our staff or accidentally targeted, or accidentally affecting our staff as well. It's really hard to know exactly when, and why, or how, these patients are likely to suddenly, trying to think of the right word, suddenly become excitable or aggressive. That's always in the back of my mind. It's how to deal with that is really, really difficult and there's not really a set way that you can deal with that sort of thing except to plan ahead accordingly and try and make sure there's a way out. (PA14)</p> <p>Personnel safety concerns ...potential injury for us...it can be psychological, it can be physical...very repulsive in some of the language that they will come out with...I had backed up a crew to this job and there were two females, one young intern was the attendant and I was in the back with her but she was facing...the patient; and this guy was still considerably agitated and very aggressive. He was trying to spit so we had put a mask on him and could not have been more disgusting and violent in his direct outbursts at this paramedic intern...(PA17)</p> <p>Safety concerns for families It seems to be, when I was in (name of town removed) especially, it seemed to be that a lot of the domestic violence was related around the families that were dysfunctional and were using meth. It just seemed to be that the main domestic violence families we went to were the meth users. I don't know...I don't know if the domestic violence is getting any bigger. But certainly extremely volatile when you've got two people that are using meth and then you've got the children to deal with as well. Not an easy situation...We've had some houses where we've had to get family services involved...but obviously it's not good long term growing up with a family...where your mum and dad are both on meth and every now and they can be volatile and aggressive. (PP1)</p> <p>Inability to communicate to patient In addition to that of course there is also the fact that just because someone is high on meth</p>

		<p>Calling for help Behaviour/safety</p> <p>Challenges Communication Assessment</p>	<p>doesn't mean they're not having a medical episode or had a former episode that they can't tell you about it. Your ability to assess a patient is paramount during the course to make sure that (a) their respiratory and cardiovascular functions are not adversely affected in the process of the apprehension or the transport; and that the assessment includes to make sure that they haven't been injured in a fall or an assault leading up to us needing to be involved in transporting them and that sort of thing. We still need to be vigilant to make sure that those things have been accurately assessed and managed and that means we have to take all that into account when we consider any use of chemical or physical restraint and how we apply those and monitor for ongoing patient wellbeing. (PA17)</p> <p>ED environments & transport vehicles Taking them to the ED triage, where we have everything from sepsis concerns to paediatrics to chest pains to whatever else and having 10 ambulances lined up in the corridor, it's a diabolical combination to take someone who's elevated there and then subsequently requires physical restraint in front of all of these people. So if we had some sort of triage area for ABD, I think that would be a helpful thing. A quieter space that doesn't have the same traffic and simulation that they get in the triage area. (PA16)</p>
--	--	--	---

Quantitative data	Quantitative categories	Pillar Building	Qualitative Categories/codes	Qualitative data
<p>QISU (phase one stage two) data</p> <p>Mental Health Mental health n (%) Hallucinations 16 (6.4) Psychiatric issues 48 (19.2)</p> <p>Psychiatric issues were related to: suicidal ideation (n = 17), self-harm (n = 7), paranoia (n = 10), schizophrenia (n = 5) Mental health (n = 8).</p>	<p>Challenges/difficulties- Mental health</p> <p>Challenges/difficulties- Mental health</p>	<p>Complexity</p>	<p>Challenges/difficulties- Mental health Elements of Mental health paranoia Depression/anxiety Self-harm delusions hallucinations Psychosis/excited delirium Mood swings</p> <p>Challenges Decision making</p> <p>Patient safety Protecting from themselves Self-harm Irrational thinking causing injury</p>	<p>Patient safety, impaired decision making ... a middle-aged lady...she was found by a passer-by...She was digging underneath...like a statue that had been put up in public area in the sort of centre of town. She had a belief that there was something underneath those statues, so initially, the police were called. They called us, we arrived, the police had sort of for want of a better way of explaining it, they had sort of surrounded her just keeping her in the centre. So I don't know what had gone on prior to me arriving, however, when she saw the ambulance arrived, she became quite agitated. Her [flight of] speech was certainly increased, just talking nonsensical really. She didn't actually threaten physically, but she became very agitated. When we said look, we're going to take you across to the emergency department, we're going to get someone to have a chat to you and just did the normal talk that we would do, she refused to come into the ambulance. At that stage, we enacted, or the police enacted the Mental Health Act. She struggled when they got hold of her arms, so I just gave her some Midazolam and we took her across to ED. So that's the most recent example. (PA13)</p>

Quantitative data	Quantitative categories	Pillar Building	Qualitative Categories/codes	Qualitative data
<p>QISU ED data</p> <p>QISU (phase one stage one) data</p> <p>Meth-related Triage The majority (84.4%, n = 211) of methamphetamine-related documented injury presentations were triaged into categories, 1 (resuscitation 2.8%, n = 7), 2 (emergency 28.1%, n = 70) and 3 (urgent 53.6%, n = 134).</p> <p>Triage scores n (%) 1-immediate 7 (2.8) 2- emergency (10minutes) 70 (28) 3- urgent (30 minutes) 134 (53.6) 4- semi-urgent (60 minutes) 37 (14.8) 5- non-urgent (120 minutes) 2 (0.8)</p> <p>Nature injury n (%) Asphyxiation 4 (1.6) Fracture 8 (3.2) Open wound 18 (7.2) Other 45 (18) Poisoning/toxic effect 175 (70%) Recorded nature of injury was poisoning/toxic effect (triage category 1 n = 7, 100%; triage category 2 n = 52, 74.3%; triage category 3 n = 92, 68.7%)</p>	<p>Acuity</p>	<p>Acuity</p>	<p>Challenges Drug use masking med conditions</p> <p>Unsuitable environments ED Transport vehicles Physical restraint/equipment Padded cells</p> <p>Patients in crisis Social circumstances Breakdown in family relationships Spiralling behaviour/self-destructive trajectory</p>	<p>Reason for callout So we're getting called by two lots of people. We're getting called by the patient or by someone for the patient. So family members, members of the public quite often call and they'll worry that the patients are acting oddly, that something is wrong with the patient. They're directing traffic, they'll walk around the streets oddly or family members are really concerned about their state. Probably we should put it [in a third] line, the police are calling us because they've been called due to aggression, is a big one as to why they've called I think, so you've sort of got three different call options. When the patient calls themselves they quite often know that they're in trouble. They quite often know that they're on edge and they know what their treatment is and it's to sleep, or they are asking for medication to come down. (PA11)</p> <p>Acuity- Medically unwell...they can also be clinically very unwell. A number of patients that I've seen in the last six months have been quite septic and quite far progressed down that septic shock pathway. Because of their level of drug intoxication over I guess a protracted period of time they've not taken care of their own healthcare needs and it's got to that point where they're actually really clinically quite unwell with a challenging prognosis and a long period of time to recovery from their underlying physical illness as well as the drug intoxication. (PA18)</p> <p>States of crisis Generally the people that we meet who report some sort of substance dependency or use have a number of things going on. Again we involve getting connection from their social network, so we don't have a lot of people around them to support or help them. Those people have dropped away. They then embark sadly on trying to sustain that drug substance dependency by either dealing themselves, or stealing, or going to criminal activities, or having to sell themselves, so prostitution plays a part as well. I guess as a by-product of those sorts of challenges for them, anxiety, depression or mental health creeps in as well with substance intoxication. (PA16)</p>

Quantitative data	Quantitative categories	Pillar Building	Qualitative Categories/codes	Qualitative data
<p>Rural VIC amb paper Regional By year crystallised form meth 2011/12 94 2012/13 231 2013/14 296 2014/15 467 2015/16 550 2016/17 488 (Notes: rate in regional areas is increasing faster than metro areas) The largest increase (419%) was noted in regional Victorian methamphetamine-related events attended by ambulance.</p> <p>No of meth-related callouts events Metro 673 2011/12, 2020 2016/17, difference 1347, change 200%, p value <.0001 Regional 94 2011/12, 488 2016/17, difference 394, change 419% p <.0001</p>	<p>Increased prevalence in rural areas</p>	<p><i>Rural care</i></p>	<p>Decrease available resources Relying on volunteers Limited staff in ED Limited facilities Distances to services</p>	<p>Rural/remote environments the other thing that's really noticeable is the distinct lack of longer-term treatment options for these patients once they're in the hospital setting. So obviously we deal with them in that quite acute phase. But then in terms of follow up for them and specifically if they want to get off those drugs and they want access to a residential rehab type facility, opportunities for that are very very very limited in regional [state removed]. (PA18)</p>

Quantitative data	Quantitative categories	Pillar Building	Qualitative Categories/codes	Qualitative data
<p>Survey response (phase one stage three) data</p> <p>Perceptions & affect Life circumstances p value t test 0.081 All 3.31 (1.04) Police 3.22 (1.07) Paramedic 3.49 (0.93)</p> <p>Individual's responsibility p value t test 0.229 All 4.54 (0.65) Police 4.58 (0.65) Paramedic 4.46 (0.67)</p> <p>Anger p value t test 0.784 All 2.48 (1.11) Police 2.49 (1.12) Paramedic 2.44 (1.13)</p> <p>Disappointment p value t test 0.528 All 3.35 (1.2) Police 3.38 (1.22) Paramedic 3.27 (1.15)</p> <p>Sympathy p value t test 0.011 All 2.24 (0.98) Police 2.14 (1.01) Paramedic 2.51 (0.88)</p> <p>Concern p value t test 0.226 All 3.36 (1.24) Police 3.3 (1.29) Paramedic 3.52 (1.09)</p> <p>Deservingness p value t test 0.000 All 3.00 (1.26) Police 2.78 (1.22) Paramedic 3.52 (1.2)</p> <p>Entitled p value t test 0.000 All 3.1 (1.3) Police 2.97 (1.3) Paramedic 3.70 (1.19)</p> <p>Positive Affect p value t test 0.032 (Sympathy & Concern) All 2.80 (0.93) Police 2.71 (0.99) Paramedic 3.01 (0.72)</p> <p>Negative Affect p value t test 0.578 (Anger & Disappointment) All 2.91 (1.01) Police 2.94 (1.01) Paramedic 2.86 (1.00)</p>	Attitudes/deservingness	Deservingness and compassion	<p>Attitudes/compassion</p> <p>Compassion Empathy Non judgment Relating to people Respect Understanding support Duty of care Advocate</p>	<p>Dependency/addiction is a medical illness I think it comes down to experience dealing with them and realising that it's an addiction and an illness. It's not, they're not being aggressive to you on purpose. If you speak to them two or three days later after they're off the meth, they can't remember a thing they've done. It's not an excuse. But it's not a deliberate act either. (PA12)</p> <p>Compassion, empathy & respect You wonder why they're there and how they've got there. I'm kind of different to everyone. I try and talk to people and figure out what's got them in that circumstance and then what they've tried to do to get themselves out to it. I like to talk to people. I find it quite interesting. Yeah, so I do wonder what's brought them there and what if anything I could do to help them, but I guess it's the old rule with policing that you don't learn until you get in that a lot of people just don't want help. It sounds bad and it's one of those things you don't learn until you do this job, but I joined and was like, I can't wait to help people, it's going to be great, and get out there. There are people that want help and there are a number of people that do. But there's the majority out there that keep ending up in the back of a paddy wagon and then when you offer them help or you offer to do things for them, you know, I'll get you into drug counselling, I'll do this, I'll get you a counsellor, they just don't want help (PP8)</p>

