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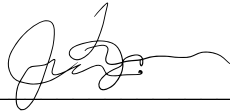
**Barriers to Effective Implementation of Contingency Management in Outpatient
Treatment of Methamphetamine**

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A DNP project submitted in partial fulfillment of the requirements for the Doctor of Nursing
Practice degree

Chair: Jonnae Tillman, DNP, PMHNP



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03.19.2021

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Abstract

The objective of this project is to: 1) identify current understanding, attitudes, and beliefs of clinicians at a midsized urban outpatient substance use treatment clinic regarding contingency management (CM) treatment modality; 2) examine how this data contributes to barriers to implementation of contingency management for methamphetamine treatment; and 3) make recommendations to improve implementation strategies. A ten-question survey was developed based on Social Ecological Theory (U.S. Department of Health and Human Services, 2005), and was administered to 31 clinicians. A key informant interview was conducted using theoretical sampling (LoBiondo-Wood & Haber, 2018) of emergent themes. Three major barriers emerged from the data, including characteristics of methamphetamine use disorder, integration of CM into agency process, and lack of client resources. Limitations of the study included a small sample size, and limited representation of agencies. Recommendations include the administration of client interviews to develop client centered, feasible solutions.

Barriers to Contingency Management Implementation

Methamphetamine use is on the rise in America (DEA, 2020; Glick et al., 2018; Jones et al., 2020a). In the United States, 1.9 million people age 12 and up report using methamphetamines (Chawarski et al., 2020). According to the National Institute on Drug Abuse (NIDA), methamphetamine overdose deaths have increased from 547 in 1999 to 16,167 in 2019 (NIDA, 2021). Furthermore, a cross-sectional study of approximately 1.3 million amphetamine-related US hospitalizations between 2003 and 2015 showed that hospitalizations increased substantially by 2015, and annual hospital costs related to amphetamines increased from \$436 million in 2003 to \$2.17 billion by 2015 (Winkleman et al., 2018). Administration via injection has been increasing, as has concurrent use with opiates (Jones et al., 2020a).

In the western United states, over half of all substance use treatment admissions reported to the Substance Abuse and Mental Health Services Administration (SAMHSA) were related to methamphetamine, and between 2008 and 2016, overdoses related to methamphetamine quadrupled in Washington State (Stoner et al., 2018). Locally, King County has seen a substantial increase in methamphetamine use and overdose (Hood et al., 2018; Stoner et al., 2018). In 2018, 54% of overdose deaths in King County involved a stimulant, and 40% of all overdose deaths involved methamphetamine specifically (Hood et al., 2018; Stoner et al., 2018). Methamphetamine use appears to be heavily concentrated in the unhoused or unstably housed community, as well as among men who have sex with men (Banta-Green et al., 2017; Banta-Green et al., 2015; Stoner et al, 2018).

Chronic methamphetamine use can cause cardiovascular and cerebrovascular sequelae, chronic psychosis, and cognitive impairment (Curran et al., 2004; Herron & Brennan, 2019; Hsieh et al. 2014; Sadock et al., 2015). If injected, methamphetamine can increase a patient's

likelihood of contracting HIV or hepatitis C (Herron & Brennan, 2019; Sadock et al., 2015). Methamphetamine use is also linked to lower retention rates in substance use treatment programs and complicates the treatment outcomes of those concurrently using an opiate (Tsui et al., 2020). These factors impact care, engagement, and outcomes for nurses, nurse practitioners, and their patients.

Contingency management (CM) is an evidenced-based psychosocial intervention that is effective in initiating abstinence. (McPhereson et al, 2018). CM is based in the behavioral science of operant conditioning, i.e., rewarding abstinence with incentives such as money or vouchers (Burduli et al., 2018; McPhereson et al., 2018). Despite its effectiveness, only 10% of substance use treatment clinicians report using CM (Becker et al., 2019; Kirby et al., 2006). Currently, minimal information exists on the barriers to implementing CM in clinical settings, specifically as a treatment for methamphetamine use. This project seeks to understand these barriers in order to improve implementation of CM.

Purpose and Aims

The purpose of this project is to determine the barriers to implementation of contingency management at a mid-sized outpatient substance use treatment center. The specific aims are to:

- 1) identify clinicians' understanding, attitudes, and beliefs regarding contingency management;
- 2) examine the clinical implementation of contingency management in methamphetamine treatment; and
- 3) develop recommendations to improve clinical implementation of contingency management.

State of the Science

Literature searches were conducted on CINAHL, PubMed, PsycINFO, and Google Scholar. Text sources were referenced to better explain addiction. Sources cited are less than five years old, unless current research was not available, or to include an applicable landmark study.

Substance Use Disorder

Substance use disorders (SUDs) are characterized by a combination of behavioral, psychological, and physical dependence (Sadock et al., 2015). Behavioral dependence is defined by substance seeking activities, while psychological dependence refers to the cravings experienced by a person who has become dependent on a substance. Physiological dependence are the physical effects experienced by a person when they no longer have access to their substance of choice. Sadock et al. (2015) note that no one person is guaranteed to develop a substance use disorder. Instead, drug availability, social setting, specific actions of the drug, and the likelihood of negative effects can all play a role in developing addiction. Dr. Nziga A. Harrison (2020), an addictions psychiatrist, states the development and sustenance of this chronic illness can be divided into four categories: biological causes, such as genetics or an acquired illness; psychological causes, or how our world view developed; social and stress related causes, such as how chronic and acute stressors can impact physiological reactions and decision making; and the cultural and political causes, or how our ethnicity, sexuality, gender, religion, and socioeconomic class impact our lives and health.

Terminology in addiction medicine varies. More commonly known terms, such as “addict,” are considered stigmatizing. This author will attempt to use terminology from The American Society of Addiction Medicine (ASAM) to reduce stigmatizing language around addiction. Slang or colloquial terms will be avoided, and language that emphasizes the chronic,

medical nature of substance use disorder will be prioritized. This author seeks to respect the lives and journeys of those living with methamphetamine use disorder.

The biological and psychological elements of addiction can be seen as a process of impulsivity and compulsivity (Stahl, 2013). Drug use of any kind can be considered “behavior maintained through consequences” - be they biological, the reduction of withdrawal symptoms or the euphoria of the high; psychological, the alleviation of cravings; or social, the approval of the peer group (Sadock et al., 2015). Stahl (2013) notes that impulsivity and compulsivity further maintain this process. Impulsivity can be conceptualized as the inability to “stop starting” actions, with minimal critical thinking about consequences, while compulsivity is characterized by the inability to stop ongoing actions and behaviors (Stahl, 2013). The habits one forms can be a type of compulsion, as well as a conditioned behavior - stimulated by the environment and mediated by positive or lack of negative reinforcement (Higgins & George, 2013; Stahl, 2013). Stahl (2013) characterizes both impulsivity and compulsivity as a type of cognitive inflexibility, mediated by a lack of cortical control over “bottom up” drives. These drives are neuronal loops, influenced by the brain’s reward circuitry. With a substance use disorder, what may start as an impulse that is mediated by reward circuits can ultimately become habituation, thereby decreasing sensitivity to the pleasurable response, and requiring increased use to achieve the same gratification (Higgins & George, 2013; Stahl, 2013).

Methamphetamine Use Disorder

According to ASAM, Methamphetamine is classified as a stimulant, differing from amphetamine prescribed for conditions such as ADHD by a methyl group (Herron & Brennan, 2019). Herron and Brennan (2019) state that stimulants cause an increase in extracellular dopamine and norepinephrine in both the central and peripheral nervous systems, and notes that

stimulants have a wide array of uses, such as management of ADHD, or for anti-fatiguing and performance enhancing properties. When prescribed, stimulants such as amphetamines are taken orally, or transdermally, which mitigates some of the intense psychological effects that are seen with smoking or injecting. These routes of administration are more rapidly absorbed, causing a faster onset of pleasurable feeling, followed by a more rapid decline of effect.

Amphetamine and methamphetamine use can cause elation, euphoria, and alertness, but increasing dose and use may cause these feelings to progress to dysphoria, irritability, and psychotic symptoms that can be similar to the positive and cognitive symptoms of schizophrenia (Sadock et al., 2015). A meta-analysis on methamphetamine induced psychosis conducted by Hsieh et al. (2014) found that, depending on the study, methamphetamine induced psychosis can occur from 10% to 60% of methamphetamine users, with the dose and frequency of use making psychosis more likely. Furthermore, 30% of individuals who have experienced methamphetamine induced psychosis found that these symptoms lasted longer than six months. Chronic use of methamphetamine causes cognitive impairment, and even chronic psychosis, with some theories proposing a kindling effect of chronic use leading to increased susceptibility to developing a psychotic disorder (Curran et al., 2004).

According to Hsieh et al. (2014) the pathophysiology of this psychosis is believed to be caused by an influx of dopamine in the limbic pathway— the bedrock of the dopamine hypothesis of schizophrenia— as well as possibly relating to aberrant glutamatergic transmissions, and subsequent damage to GABAergic neurons. The limbic system, along with the ventral tegmental area and the cortex, form the reward circuit pathway that is stimulated by many substances of abuse, and this can lead to habituation (Stahl, 2013).

In addition to the aforementioned behavioral health concerns, there is an increased risk of cardiovascular and cerebrovascular side effects for long term methamphetamine uses, with hypertension and myocardial infarction becoming more likely (Sadock et al., 2015). Individuals who inject methamphetamine are at a higher risk of contracting HIV and hepatitis (Herron & Brennan, 2019; Sadock et al., 2015).

One barrier to methamphetamine use disorder treatment is the lack of effective pharmacological interventions (Bhatt et al., 2016; Chan, et al., 2019). Medication treatments, such as suboxone, naltrexone, or methadone, are shown to be incredibly impactful for those living with opiate use disorder (Connery, 2015; Timko et al., 2016). This is not true of medication treatments for methamphetamine use disorder—a recent meta-analysis found only low strength evidence for methylphenidate and topiramate reducing methamphetamine use (Chan et al., 2019). Further analysis of prescribed stimulants as a medication treatment for methamphetamine found no effect for sustained abstinence (Bhatt et al., 2016). Both Chan et al. (2019) and Bhatt et al. (2016) noted evidence of bias and methodological flaws in studies on medication for methamphetamine use disorder. There will likely be continued research in this area, but currently little evidence exists for effective pharmacological interventions for methamphetamine use disorders (Bhatt et al., 2016; Chan, et al., 2019).

Nationally, methamphetamine use is on the rise (DEA, 2019; Glick et al., 2018; Jones et al., 2020a). According to the Drug Enforcement Administration National Drug Threat Assessment Reports (2020), deaths from methamphetamine use have been steadily rising since 2010. Jones et al. (2020a) report increases in administration via injection since 2008, along with concurrent use of opiates, heroine, and benzodiazepines. The last decade has seen increases in methamphetamine use among people using heroin and being treated for heroin use disorder

(Jones et al., 2020a; Palamar et al., 2020). The 2015–2018 National Surveys on Drug Use and Health (NSDUHs) estimated that those most likely to have used methamphetamine in the last year were Hispanic and non-Hispanic white males, age 26 to 50 and older, with lower educational attainment, Medicaid or no insurance, and those with co-occurring substance use disorders and mental illness (Jones et al., 2020b).

The western United States has a long history with methamphetamine, and the nationwide rise in use and negative sequelae is especially reflected there (DEA, 2020; Glick et al., 2018; Stoner et al., 2018). In 2017, over half of all drug treatment admissions reported to SAMHSA involved methamphetamine in the western US (Stoner et al., 2018). In a survey of Syringe Exchange Programs (SEP) in Washington State, methamphetamine and heroin were the most frequently used substances, with 82% of respondents saying they used methamphetamine alone, and 46% reporting they combined it with an opiate (Banta-Green et al., 2018). Seattle wastewater testing showed methamphetamine present at the highest levels of all cities tested (Glick et al., 2018; Stoner et al., 2018).

Contingency management

Contingency management (CM) is a non-pharmacological intervention for methamphetamine use, rooted in the behavioral science of operant conditioning (Burduli et al., 2018). McPherson et al. (2018) writes that SUD is conceptualized as a behavior, the strength of which is modified by reward or punishment. The premise of Contingency Management is to modify this behavior by providing incentives to not use the substance of choice. Key principles in the efficacy of CM include the amount of reinforcement per behavior, the immediacy at which the reinforcement is delivered, and the size of the reinforcement. These reinforcements can take the form of tangible items—money; vouchers; gift cards; social incentives, such as certificates;

or clinic privileges, such as early dosing at a methadone clinic. Reinforcements can be negative, such as revocation of previously allowed privileges or items. Notably, punishing reinforcements can worsen detrimental behaviors, therefore CM programs largely use positive reinforcement (McPherson et al., 2018).

Contingency management is considered to be one of the most effective psychosocial interventions for substance use disorder (De Crescenzo et al., 2018). Contingency Management shows promise across cultures, and with underserved populations (McPherson et al., 2018; Okafor et al., 2020). Several studies investigated CM efficacy among specific populations of substance users, such as those who utilize syringe exchange programs, and men who have sex with men (MSM) (Glick et al., 2018). These studies confirm that CM is effective in retention in treatment and reduction in use, though long term abstinence is less clear (Minozzi et al., 2016).

Despite CM's history as an empirically supported tool for substance use treatment, it is among the least utilized (Rash et al., 2012). Several studies have investigated why it is underutilized (Becker et al., 2019; Beneshick et al., 2010; Cameron & Ritter, 2007; Kirby et al., 2006; Rash et al., 2012). Many of these studies utilize surveys, sent to clinicians working in the field of substance use. While there are studies that look at specific populations of patients and providers, such as at the Veterans Administration, this project will include surveys that restricted polling to community-based SUD providers. The majority of practitioners surveyed in these studies viewed CM favorably but acknowledged barriers to implementation (Kirby et al., 2006; Rash et al., 2010).

Thematic findings included: 1) beliefs that CM doesn't address underlying addiction, and instead incentivizes behavior change (Kirby et al., 2006); 2) beliefs that conflict between patients could arise due to unequal incentives (Kirby et al., 2006); 3) prohibitive cost of implementation

(Kirby et al., 2006; Rash et al., 2010); 4) time constraints to implement CM (Beneshik et al., 2010); 5) differences between CM and the agency's philosophy of treatment (Beneshik et al., 2010); and 6) beliefs that substance use returns once CM is withdrawn (Rash et al., 2010).

Kirby et al., (2006) note that factors that positively influenced provider's beliefs about CM included: 1) expertise and experience with CM; 2) having a supervisory role; 3) holding an advanced degree; and 4) more years of experience in the field of chemical dependency. Rash et al. (2012) assessed whether allegiance to an alternate treatment modality served as a barrier to CM implementation but did not find it to be a primary.

At the same time prevalence and lethality is increasing, there is minimal research on exploring barriers for treatment of methamphetamine use disorder. This project further expands upon the research on barriers to CM implementation in outpatient substance use disorder clinical settings, specifically around methamphetamine use.

Theoretical Framework

Social Ecological Theory

The social ecological framework conceptualizes how behavior affects, and is affected by, multiple levels of influence—from personal to political (U.S. Department of Health and Human Services, 2005). The social environment in which one lives, works, and coexists impacts behaviors. Examining public health from this perspective is one way to view structural circumstances and the impact on health behavior. This can guide multiple levels of intervention (U.S. Department of Health and Human Services, 2005).

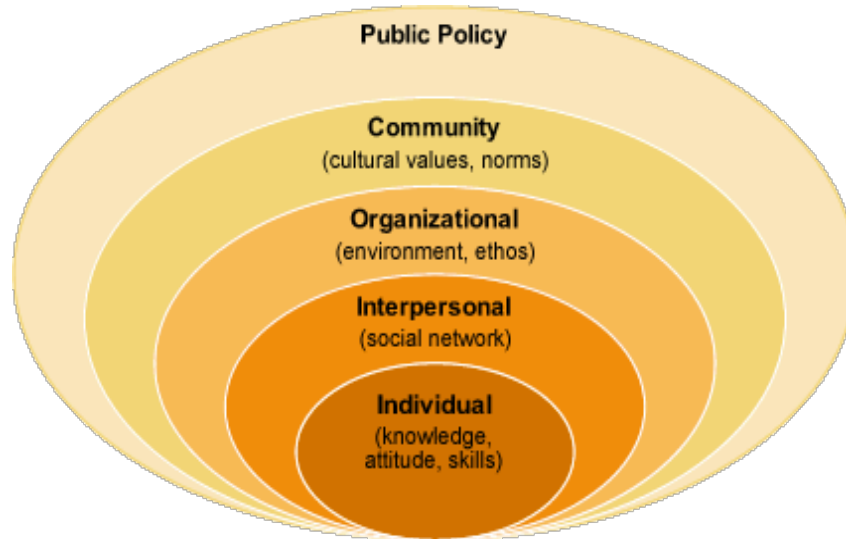
The social ecological model examines public policy, community, organizational, interpersonal, and individual factors (see figure 1). The U.S. Department of Health and Human Services (2005) describes public policy as the federal, state, or local laws that impact health

behaviors. Furthermore, community factors refer to norms existing among individual's social circles to inform actions or behaviors about healthcare. Each community is unique, and may be defined by geographic location, religion, race, or ethnicity. The organizational level examines rules, regulations, policies, and work culture within an organization impacting behaviors of clients or employees (Rural Health Integration Hub, n.d). The interpersonal level examines how interactions with other individuals may support or create barriers to healthcare, whereas at an individual level, the effects of one's own knowledge, attitudes, beliefs, and personality are considered (Rural Health Integration Hub, n.d). These levels can be conceptualized as cognitive-behavioral influence, as they examine the relationship between how one's thoughts mediate actions, and how one's environment, perceptions, skills, and knowledge impact those actions (U.S. Department of Health and Human Services, 2005).

The social ecological framework has been used as a tool in substance use disorder research, specifically factors that influence the opiate epidemic in America (Jalalai et al., 2020). It is useful to examine factors in substance use that exist outside individual decision-making. In the same way, it is helpful to examine potential barriers to CM implementation at the clinical level by examining different levels of influence impacting a clinician's willingness or ability to use this intervention.

Figure 1

Social ecological levels of influence



(Ganz, 2010)

Harm Reduction

Harm reduction incorporates a spectrum of beliefs about substance use and does not endorse abstinence as the only path to recovery. The National Harm Reduction Coalition (2020) states that harm reduction seeks to accept that substance use is a part of this world, is influenced by many complex factors, and the quality of the lives of individuals with substance use disorder is more important than total abstinence. Harm reduction is based on respect and positive regard for clients who use substances (National Harm Reduction Coalition, 2020). Studies commonly use complete cessation of methamphetamine use as the metric for successful intervention. Similarly, urine screening is not an ideal tool for gauging use reduction or less risky routes of administration. Harm reduction used as a value framework reinforces the difference between research and practice, which ultimately impacts client recovery.

Methods

Design

This project assesses barriers to contingency management implementation for methamphetamine use in an outpatient setting. This quality improvement project consists of a

ten-question online survey collecting qualitative and quantitative data. Both Likert scale and multiple choice questions were utilized, with open-ended text options available to capture information not evoked by multiple choice options. (See Appendix B).

An additional arm of research focused on key informant interviews to examine the themes that emerged from the survey results. These questions were developed through the process of theoretical sampling (LoBiondo-Wood & Haber, 2018). Survey questions and interview responses were analyzed for understanding, attitudes, and beliefs regarding CM for methamphetamine use.

Setting

This project was set at a mid-sized non-profit agency that offers substance use disorder treatment and social services. Clinicians at three clinical locations of this agency were invited to take the survey.

Participants and Recruitment

There are two groups of project participants. The first group consists of approximately 40 frontline clinicians who complete the intake process with clients, and who may refer clients into CM programs at their organization. These counselors have the minimum qualifications of academic training and work experience in the social service field, as well as a current Substance Use Disorder Professional (SUDP) license. The second group includes clinicians experienced in contingency management, selected based on guidance from site contacts and interviewed as key informants to expand upon data gathered in the survey.

Email invitations were sent to the frontline clinicians by the site coordinator. Informed consent was obtained prior to participation. All responses were de-identified to protect the

privacy of the respondents. No minors, patients or vulnerable populations were involved in this study.

Minimal possible risk to anonymity inherent in small organizations was mitigated by the Primary Investigator (PI) by using a secondary coder not affiliated with the organization, and not collecting indirect identifiers, such as demographics or clinic location. Seattle University Institutional Review Board (IRB) identified this as a quality improvement project, which meets exempt status.

Instrument

This project utilized a ten-question survey composed of multiple choice and Likert Scale questions. Likert Scale questions were chosen in order to assess levels of understanding and comfort with CM. Multiple choice questions were chosen to explore individual, interpersonal, organizational, and community areas that may hold barriers CM implementation. Open-ended options within the multiple choice questions were included to capture a wider scope of potential barriers. The Pew Research Center Questionnaire Design (n.d.) and Harvard University Program on Survey Research (Harrison, 2007) were utilized for survey development. Question development was further guided by existing data on barriers to contingency management implementation (Kirby, 2006), as well as articles on the social ecological framework (Jalalai et al., 2020; Rural Health Integration Hub, n.d.).

Informed consent was obtained and the survey was disseminated through Google Forms (See Appendix B). Introduction and instructions were in the body of the email that included a link to the survey (See Appendix A).

Data Analysis

Quantitative data was analyzed using pivot tables on Excel. Open ended questions and interviews were coded by hand, grouping answers to each question by emergent themes. Independent secondary coding was performed on qualitative data, to ensure accuracy of themes and anonymity of respondents. Key informant interviews were coded based on thematic content.

Results

Thirty-one individuals completed the survey, and one key informant interview was conducted. The following survey results are displayed by item.

Table 1

Barriers at the public policy level.

Methamphetamine use has been identified as a serious issue at public policy level.	%	n
Strongly agree	35.48%	11
Agree	32.26%	10
Disagree	22.58%	7
Neutral	6.45%	2
Strongly disagree	3.23%	1
Grand Total	100.00%	31

Table 2

Barriers at the community level

CM for methamphetamine is applicable to our patient population.	%	n
Strongly agree	64.52%	20
Agree	25.81%	8
Neutral	6.45%	2
Disagree	3.23%	1
Grand Total	100.00%	31

Table 3

Barriers at the community level

What do you perceive to be the most important barrier to CM implementation at the community level?	%	n
Our clients' housing status makes participating in CM challenging	38.71%	12
There is a lack of knowledge from outside service providers about CM	16.13%	5
It is too hard for our clients to get to the clinic twice a week	16.13%	5
Our clients' community of family, friends, and children makes participating in CM challenging	12.90%	4
Other- write in	9.68%	3
There is no barrier at the community level	6.45%	2
Grand Total	100.00%	31

Table 4*Barriers at the organizational level*

My organization views CM as an evidenced based approach to methamphetamine use.	%	n
Agree	48.39%	15
Strongly agree	29.03%	9
Neutral	19.35%	6
Disagree	3.23%	1
Grand Total	100.00%	31

Table 5*Barriers at the organizational level*

What do you perceive to be the most important barrier to CM implementation at the organization level?	%	n
Integration into workflow	35.48%	11
Referral process	12.90%	4
Staff training	12.90%	4
Other- write in	16.13%	5
Staff knowledge	9.68%	3
There is no barrier at the organizational level	6.45%	2
Culture of the organization	6.45%	2

Grand Total	100.00%	31
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Table 6*Barriers at the intrapersonal level*

What do you perceive to be the most important barrier to CM implementation at the interpersonal level?	%	n
CM may work for some clients but not others	64.52%	20
Other- write in	9.68%	3
Confidence in colleague ability to implement CM	9.68%	3
Not all clients trust their counselors enough to participate	6.45%	2
There is no barrier at the community level	3.23%	1
Not all counselors trust their clients to complete CM	3.23%	1
Not all clients trust their providers enough to participate	3.23%	1
Grand Total	100.00%	31

Table 7*Barriers at the individual level*

I generally view CM as an evidenced based approach to methamphetamine use.	%	n
Agree	41.94%	13
Strongly agree	25.81%	8
Neutral	25.81%	8
Strongly disagree	3.23%	1
Disagree	3.23%	1
Grand Total	100.00%	31

Table 8*Barriers at the individual level*

What do you perceive to be the most important barrier to CM implementation at the individual level?	%	n
There is no barrier at the individual level	51.61%	16
Other- write in	19.35%	6

I already feel like I have too much work to add CM	16.13%	5
I don't have adequate training	12.90%	4
Grand Total	100.00%	31

Table 9

Likelihood to refer clients to contingency management

Based on your answers above, how likely are you to refer a patient to CM.	%	n
Very likely	70.00%	21
I'm not sure	16.67%	5
Somewhat likely	13.33%	4
Grand Total	100.00%	30

Discussion

The findings of this project demonstrate both aims one and two were met, and provided sufficient data to make the following recommendations.

The first aim identified clinicians' understanding, attitudes, and beliefs regarding CM at a mid-sized outpatient substance use treatment clinic. CM was favorably regarded by clinicians (see Tables 2, 7, and 9). This replicates the findings of Kirby et al. (2006), who surveyed 383 substance use treatment clinicians, and suggests that barriers to CM implementation are not primarily at the individual level. The majority of the respondents endorsed that their agency viewed CM as evidenced based (see Table 4).

The second aim examined barriers to clinical implementation of contingency management in methamphetamine treatment. Three barriers identified included: 1) characteristics of methamphetamine use disorder; 2) integration of CM into agency process; and 3) lack of client resources.

Perceptions that methamphetamine use itself creates challenges to implementation appeared multiple times. Challenges noted in the open-ended responses included how

methamphetamine use made it difficult for patients to engage in treatment. Similarly, Tsui et al. (2020) observed that methamphetamine use reduced retention rates in concurrent treatment for opiate use disorder. Furthermore, McPherson et al. (2018) noted that participants who had a positive urinalysis for a stimulant achieved a shorter period of abstinence with CM.

Respondents indicated an assumption that active methamphetamine use made reward-based abstinence less valuable. In a 2016 meta-analysis of barriers to accessing treatment for methamphetamine use disorder, a common barrier to accessing treatment included client's feeling that treatment was unnecessary (Cumming et al., 2016). Clinicians and the key informant observed how many individuals using methamphetamine do not recognize their use as problematic. This can be contrasted with a finding in the Kirby et al. (2006) study illustrating respondents' belief that CM does not address underlying issues of substance use.

Lack of resources such as housing and access to transportation represent the second barrier (see table 3). Limited access to transportation and housing instability may negatively impact their treatment goals. McPherson et al. (2018) noted CM improved quality of life and rates of abstinence for individuals in underserved communities, however the absence of basic needs is still a barrier to initiating treatment. Interestingly, Becker et al. (2019) noted that higher perceived client barriers correlated with lower CM adoption rates.

Agency process was another notable barrier (see table 5). Specific barriers in agency process include: 1) adequate staffing and training; 2) difficulty integrating CM into clinicians' pre-existing workflow; 3) deceptive simplicity of CM programs. As the key informant observed, CM programs seem simple, but require preparation and detail to implement correctly. This can be contrasted with Kirby et al (2006) finding CM viewed more favorably by those having greater

experience with it as a treatment modality, and thus increased familiarity utilizing CM as a treatment method. Cost was not reflected as a major barrier, unlike in Kirby et al. (2006).

Recommendations

Three recommendations emerged from the data: 1) interview clients who use methamphetamine regarding their experience of barriers to treatment. Interviewing clients would provide enhanced perspective on the unique challenges of treating methamphetamine use disorder, and promote client centered solutions; 2) create a multidisciplinary workgroup to address barriers within the agency itself, improving CM implementation at this clinic; 3) expand utilization of this tool to other agencies interested in CM, thus providing information that is tailored to their demographic.

Conclusions

Methamphetamine use is a deadly problem increasing in severity in the western United States, particularly in the Seattle area (DEA, 2019; Glick et al., 2018; Jones et al., 2020a; Stoner et al., 2018). The negative effects of methamphetamine use are wide ranging and will affect the treatment outcomes for many clients of nurses and nurse practitioners (Curran et al., 2004; Herron & Brennan, 2019; Hsieh et al. 2014; Sadock et al., 2015). This project aims to examine why the effective intervention contingency management is rarely used to combat methamphetamine use disorder at outpatient substance use treatment clinics. Results show the clinicians surveyed regard CM favorably, suggesting barriers to implementation are influenced by circumstances outside the individual. The identified barriers of agency process, lack of resources, and characteristics of methamphetamine use itself demonstrate these internal and external factors. Root causes of barriers to contingency management can be explored in future projects, which will ideally gather data at diverse substance use treatment agencies. Likewise,

clients who potentially benefit from this treatment modality should be interviewed. Increasing understanding of the complex issue of methamphetamine use will help identify the structures that contribute to individual actions and create solutions that will benefit not only members of our local community, but also the millions of Americans who struggle with methamphetamine disorder.

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Appendix A

Email Introduction and Link to Survey

Hello, my name is Emma Nauman, I'm a student at Seattle University in the Doctor of Nursing Practice Program (DNP).

Thank you for completing this survey as part of my DNP research project. This brief survey seeks to understand barriers to contingency management programs in an outpatient setting.

Contingency Management (CM) is a treatment for substance use disorder that utilizes rewards for goal-oriented behavior - completing the intake process, providing a negative urine screen, and so on. The rewards can be monetary, vouchers, special privileges at the clinic, or certificates congratulating the clients on their hard work.

The survey is structured to analyze potential barriers in the following areas:

Policy: Public policy factors refers to laws that support disease prevention and management.

Community: Community factors refer to social norms that exist among the client or employee's social circle that inform actions or behaviors about healthcare.

Organization: Rules, regulations, policies, and work culture within an organization impacting behaviors of client or employee.

Interpersonal: Interactions with other individuals that may support or create barriers to healthcare.

Individual: One's own individual knowledge, attitudes, beliefs, and personality.

This survey should take 5-10 minutes, and can be accessed at the link here:

https://docs.google.com/forms/d/e/1FAIpQLScfk--7FMEJGP1wUisqb-FmBclbIW9SmJwi6146YhUA6JVqYA/viewform?usp=sf_link

Thank you again, your participation is very much appreciated! Please feel free to reach out to me with any questions or concerns.

Appendix B

Informed Consent and Survey

You are being asked to complete a brief online survey in a research project. The project seeks to investigate barriers to implementation of Contingency Management at a clinical level. Please answer each question to the best of your ability. There is little risk associated with this study. This is an anonymous survey. Your name, position, and clinic location will not be asked. All research materials and consent forms will be stored electronically and will be accessible only by the student researcher. Your participation in this study is voluntary. You may withdraw your consent to participate at any time without penalty. A summary of the results of this research will be supplied to you, at no cost in June 2021. Should you have any concerns about your participation in this study, you may call Emma Nauman, the student researcher, at 503-890-2734. If you have any concerns that your rights are being violated, you may contact the Seattle University Institutional Review Board at (206) 296-2585. If you agree to complete this survey, please select YES below.

Yes

Methamphetamine use has been identified as a serious issue at policy level

Strongly agree

Agree

Neutral

Disagree

Strongly Disagree

CM for methamphetamine is applicable to our patient population

Strongly agree

Agree

Neutral

Disagree

Strongly Disagree

What do you perceive to be barriers to CM at the community level?

Our clients' community of family, friends, and children makes participating in CM challenging

Our clients' housing status makes participating in CM challenging

Our clients' interactions with law enforcement make participating in CM challenging

There is a lack of knowledge from outside service providers about CM

It is too hard for our clients to get to the clinic twice a week

There is no barrier at the community level

Other – write in

My organization views CM as an evidenced based approach to methamphetamine use

Strongly agree

Agree

Neutral

Disagree
Strongly Disagree

What do you perceive to be barriers to CM at the organizational level

Referral process
Staff training
Staff knowledge
Philosophy of the organization
Culture of the organization
Integration into workflow
There is no barrier at the organizational level
Other – write in

What do you perceive to be barriers to CM at the interpersonal level

Not all clients trust their counselors enough to participate
Not all clients trust their providers enough to participate
Not all counselors trust their clients to complete CM
Confidence in colleague ability to implement CM
CM may work for some clients but not others
CM rewards may cause jealousy between clients
There is no barrier at the interpersonal level
Other – write in

I generally view CM as an evidenced based approach to methamphetamine use

Strongly agree
Agree
Neutral
Disagree
Strongly Disagree

What do you perceive to be barriers to CM at the individual level

I don't have adequate training
I already feel like I have too much work to add CM
I disagree with CM for methamphetamine treatment for moral reasons
I disagree because I think another approach works better
There is no barrier at the individual level
Other – write in

Based on your answers above, how likely are you to refer a patient to CM.

Very likely
Somewhat likely
I'm not sure
Somewhat unlikely
Very unlikely

What did we miss?

Please share additional comments regarding clinician barriers to Contingency Management for methamphetamine treatment