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Exposure to patient aggression and health outcomes for forensic mental health nurses: A cross-sectional survey

Claire Newman[1] | Michael Roche[1,2] | Doug Elliott[1]

[1]University of Technology Sydney, Ultimo, New South Wales, Australia

[2]University of Canberra, Bruce, Australian Capital Territory, Australia

Correspondence
Claire Newman, University of Technology Sydney, UTS Building 10, 235-253 Jones Street, Ultimo, NSW 2007, Australia.
Email: newmanclaire0082@outlook.com

Abstract

Aims: The aims of the study were to determine the types and prevalence of forensic mental health nurse exposure to patient aggression and explore the impact of these exposures on their physical and mental health and work absences.

Design: Cross-sectional survey conducted January to April 2020.

Methods: All 205 nurses working in an Australian high-security inpatient forensic mental health hospital were invited to participate. An online survey included the Perception of Prevalence of Aggression Scale to measure respondent exposure to types of patient aggression, and the SF-36v2 to measure mental and physical health. Absence from work and other work and individual characteristics were also explored.

Results: Sixty-eight respondents completed the survey. Verbal abuse was the most experienced aggression type, followed by physical violence and observing violence, patient self-harming behaviours and sexual violence. Nurses who worked in acute units experienced significantly more exposure to overall aggression than nurses in non-acute units. Higher level of aggression was associated with number of days sick leave taken and days off due to aggression or violence. Higher level of aggression was associated with poorer mental health, and patient self-harming behaviour was associated with poorer physical health.

Conclusions: Nurses in acute units experience higher levels of inpatient aggression and are therefore at increased risk of being impacted by the exposure. Findings indicate a psychological impact of exposure to frequent aggression and potential for an accumulative effect of exposure to traumatic events on nurse well-being. Nurses who are victim of, or witness, physical violence are most likely to take time off work.

Impact: This study provides further evidence that forensic mental health nurses are frequently exposed to various forms of patient aggression. For some nurses, this exposure to patient aggression negatively impacted their mental and physical health. Employing organizations should therefore prioritize provision of formal support for nurses.

No patient or public contribution.

KEYWORDS
aggression, exposure to violence, forensic nursing, mental health services, restraint, physical, self-injurious behaviour, workplace violence

1 | INTRODUCTION

Nurses who work in forensic mental health inpatient settings can be exposed to various types of patient aggression in the workplace (Ireland et al., 2021), including verbal abuse, physical or sexual violence and patient self-harming behaviours (Newman et al., 2021). Patient aggression has the potential for an adverse effect on nurses' well-being, workplace satisfaction and performance (Foli & Thompson, 2019; Kafle et al., 2022). Consequences of patient aggression on the health system additionally include increased sick leave and turnover of nurse (Happell, 2008; Kafle et al., 2022) and impairs quality of patient care and safety (Pariona-Cabrera et al., 2020). The prevalence of patient aggression in forensic mental health varies and is likely influenced by patient characteristics. The paucity of research related to the nature and extent of exposure to patient aggression for forensic mental health nurses has been identified (Ireland et al., 2021; Newman et al., 2021). While it is known that exposure to patient aggression impacts on forensic mental health nurses' mental health, less is known about its impact on physical health and related absences from work.

2 | BACKGROUND

Violence and aggression in forensic mental health inpatient settings is common; 27%–42% of forensic mental health inpatients commit a violent assault during their hospitalization (Broderick et al., 2015; Brown et al., 2019; Verstegen et al., 2017), while 55% will be verbally aggressive (Verstegen et al., 2017). Staff exposure to verbal aggression in forensic mental health is frequent (Haines et al., 2017), reportedly experienced by 90% of staff (Kelly et al., 2015). Being victim to physical violence was reported by 67%–70% of forensic mental health staff (Kelly et al., 2015; van Leeuwen & Harte, 2017); in one study, the violence was serious in 43% of events (Kelly et al., 2015).

The prevalence of forensic mental health patients who engage in self-directed aggression, also referred to as self-harming behaviour, ranges from 12% in incident report data (de Vogel & Verstegen, 2021) to 68%–70% by file examination (Brown et al., 2019; Laporte et al., 2021). The actual number of incidents is therefore likely to be higher than that reflected in incident report data, due to non-reporting or under-reporting of incidents (de Vogel & Verstegen, 2021). Types of self-harming behaviour in this clinical setting include cutting/scratching with sharp objects, head banging and ingesting foreign objects or dangerous liquids (de Vogel & Verstegen, 2021; Laporte et al., 2021). One study reported 64.9% of incidents to be considered severe or extreme in nature (de Vogel & Verstegen, 2021). Suicide is a rare form of deliberate self-harm, occurring in 0.1%–3.7% of forensic mental health inpatients (de Vogel & Verstegen, 2021), with hanging and suffocation being common methods (de Vogel & Verstegen, 2021).

The prevalence of exposure to patient aggression does therefore vary widely in forensic mental health and is influenced by patient type and characteristics. Male patients admitted in acute units account for higher rates of violent-related incidents (Bader et al., 2014; Daffern, Mayer, et al., 2003; Daffern, Ogloff, et al., 2003). In studies examining incidents of violence in Australian forensic mental health hospitals, 69%–90% of incidents occurred on acute wards (Daffern, Mayer, et al., 2003; Daffern, Ogloff, et al., 2003). Exposure to patient aggression is more common in acute units as they accommodate patients who are acutely unwell and experiencing higher levels of distress. Additionally, female patients account for higher rates of deliberate self-harm incidents (de Vogel & Verstegen, 2021; Laporte et al., 2021) and younger forensic mental health patients demonstrate a higher prevalence of physical violence during hospitalization (Broderick et al., 2015).

Importantly, exposure to patient aggression negatively impacts the mental and physical health of forensic mental health nurses, including psychological distress in the form of anxiety (Lee et al., 2015; van Leeuwen & Harte, 2017), PTSD symptoms (Ireland et al., 2021; Jankovic et al., 2021; van Leeuwen & Harte, 2017), poor subjective well-being including stress and burnout (Ireland et al., 2021; Kobayashi et al., 2020; van Leeuwen & Harte, 2017) and moral injury (Morris et al., 2022). Of concern, around a third of forensic mental health nurses experience clinical levels of general distress (Lee et al., 2015), with 17%–22% meeting criteria for a PTSD diagnosis (Ireland et al., 2021; Lee et al., 2015). Deterioration of mental health over a period of time may represent a cumulative effect of exposure to patient aggression, where nurses exposed to multiple incidents of patient aggression are more likely to experience disproportionately greater levels of psychological distress (Tonso et al., 2016). Nurses subjected to cumulative impacts of exposure to patient aggression are likely to experience helplessness, fear of re-assault, feel unsafe in the workplace and have heightened vulnerability (Ireland et al., 2021).

The impact of patient aggression on the physical health outcomes of forensic mental health nurses may include short-term injuries resulting from patient assault (Bader et al., 2014) or during physical restraint of a patient (Daffern, Mayer, et al., 2003). Detrimental physical health outcomes may also be long-term and include somatic and musculoskeletal disorder symptoms following exposure to patient assaults (Yang et al., 2012) and insomnia after exposure to frequent patient aggression (Lee et al., 2015).

Limited evidence indicates that exposure to patient aggression results in workplace absences and impacting on forensic mental health organizations. In a review of prospective and longitudinal studies, Nyberg et al. (2021) reported that three out of four included studies demonstrated statistically significant associations between physical violence experienced by healthcare personnel and sickness absence. In forensic mental health specifically, 12% of 348 of clinicians reported taking sick leave following patient assault in the previous 6 months (Kelly et al., 2015). In studies of non-forensic mental health nurses, 30%–50% of study participants reported taking sick leave following exposure to physical violence (McKinnon & Cross, 2008; van Leeuwen & Harte, 2017). The number of sick days taken following an incident of physical violence has been reported to range from 1 to 11 days (Tonso et al., 2016; van Leeuwen & Harte, 2017); however, victims of workplace physical violence may take months, years or never return to the workplace. Research to

date has largely focused on sick leave taken following an incident of physical violence, but less is known about the relationships between other forms of patient aggression, including cumulative exposure, and its impact of absences from work.

3 | THE STUDY

3.1 | Aims

To determine the types and prevalence of forensic mental health nurse exposure to patient aggression and explore the impact of these exposures on their physical and mental health and workplace absence.

4 | METHODS

4.1 | Study design

A cross-sectional survey of forensic mental health nurses was conducted.

4.2 | Study setting

The setting was a 135-bed inpatient forensic hospital caring for male and female patients, providing specialist mental health care a high-security therapeutic environment. Patients include persons found not guilty of an offence by reason of mental illness or are unfit to plead because of mental illness, persons who become mentally ill while in prison custody and require treatment in a mental health facility and persons without current contact with the criminal justice system who require mental health care in a highly secure environment. The hospital operates six accommodation units: acute and high-dependency care for male patients; acute care for female patients; acute care to male and female adolescent patients (generally aged 14–21 years); extended care to male patients; a long-stay unit for male patients; a rehabilitation unit for male patients.

4.3 | Sample and power calculations

Study participants were forensic mental health nurses working in an inpatient setting. The whole population was asked to complete the survey. A post hoc calculation undertaken on the response sample suggested that the number of respondents was sufficient for a reasonable power of 0.95 (Hulley et al., 2013) in statistical analyses.

4.4 | Data collection

All 205 nurses working in the hospital in January 2020 were invited via email to participate in an electronic survey. The invitation email contained a Participant Information Sheet and a link to complete the survey electronically using Qualtrics©, Sydney. The purpose of the study, stated in the Participant Information Sheet, included furthering understanding of the prevalence and type of workplace trauma exposures and exploring the impact of these exposures on nurses' well-being. Nurses were sent a reminder email to complete the survey at weekly intervals. The survey remained open for 12 weeks.

4.5 | Measures

The survey included two psychometric instruments and an additional six questions related to demographic information. Exposure to patient aggression and absence from work was measured using the 17-item Perception of Prevalence of Aggression Scale (POPAS) (Oud, 2000). The 36-item SF-36v2 (Ware & Sherbourne, 1992) provided a measure of psychological and physical well-being. The additional questions related to respondents individual and work-related characteristics. Individual characteristics included respondents' gender and age range. Work-related characteristics included their position type, employment status, work location type and number of years' experience working in forensic mental health.

4.6 | Validity, reliability and rigour

The POPAS is a questionnaire that provides estimates of frequency on 16 types of aggressive behaviour mental health staff may be exposed to. For this study, an additional aggressive behaviour type was added: observed severe physical violence. This was to capture witnessing severe physical violence by a patient towards another patient or staff member as a form of workplace trauma. Respondents are asked to rate the extent to which they were confronted with each type of aggressive behaviour in the previous 12 months, rated on a 5-point Likert scale from 'never' to 'frequently'. Respondents are separately asked to estimate the *number* of incidents of each aggression type they had been exposed to in the same period. The final item gathered the number of days sick leave, and the number of days off as result of aggression or violence, in the previous 12 months. The POPAS has demonstrated good internal consistency, with a Cronbach's α coefficient of .86 (Nijman et al., 2005). In the current study, calculated on the responses for the 16 POPAS aggression items, Cronbach's α coefficient was .90.

The SF-36v2 is a short-form health survey consisting of 36 items that comprise eight domains of health-related quality of life which combine into two summary measures: Physical Component Score (PCS) and Mental Component Score (MCS). The PCS and MCS are normed scores based on US item weights, as recommended by instrument developers, with a higher score indicating better health. For this study, the approved Australian version was used where 'kilometres' and 'metres' replaced 'miles' and 'yards', respectively. The SF-36v2 has Cronbach's α coefficient of .82 indicating adequate validity (Ware & Sherbourne, 1992). In the current study, Cronbach's α coefficient for the SF-36v2 ranged from .74 to .96 for the health domain scales.

4.7 | Data analysis

Data were analysed using IBM SPSS™ statistical package, version 27. Scale and subscale scores were calculated in accordance with previous research. Missing data varied for demographic items and the estimated number of incidents in the POPAS, and imputation was not undertaken. Instrument data were largely complete with the exception of two respondents to the POPAS where <10% of data was missing, and imputation was undertaken using mean substitution (Tsikriktsis, 2005). Descriptive statistics (means and standard deviations) were calculated for the total sample, and for each unit type. POPAS perceived frequency scale items were grouped into consolidated aggression types: 'verbal abuse', 'physical violence', 'observed violence', 'self-harming behaviour' and 'sexual violence'; consistent with the types of traumatic events for forensic mental health nurses (Newman et al., 2021). Descriptive statistics for the reported number of incidents for both individual items and each of these consolidated types were also calculated, with mean, standard deviation, minimum and maximum estimates reported in accordance with previous use of POPAS (Nijman et al., 2005; Oud, 2000). For the SF36v2, software from the instrument developers generated normed scores (T score), based on US item weights, for MCS and PCS scores.

To explore associations between exposure to patient aggression and nurses' health, Pearson correlation coefficients were calculated between total POPAS frequency scales and SF36v2 component scores, as these data were normally distributed. Correlations were also calculated between consolidated POPAS frequency scales and health (MCS and PCS), using Kendall tau correlation as data for each group were not normally distributed. Kendall tau correlations were calculated between exposure to patient aggression (total POPAS Score and POPAS frequency scale) and absence from work (sick leave taken and days off due to aggression or violence). Bootstrapping was conducted for all correlations to counter the effects of a relatively small sample size, presence of extreme outliers (and POPAS absence from work data only) and non-normally distributed data (POPAS groups and absence from work data).

Group comparisons were conducted using Mann–Whitney *U*-tests, with a two-tailed alpha criterion level of <.05 employed. A non-parametric test was chosen as the number of respondents in groups being compared was small. To control for multiple comparisons and reduce the probability of 'familywise' type I error, the Benjamini–Hochberg procedure was used to provide adjusted *p*-values. Some continuous descriptive variables were categorized for analysis: nurses' work locations as 'acute' or non-acute'.

4.8 | Ethical considerations

Ethical approval to conduct the study was obtained from Justice Health Human Research Ethics Committee (approval number: G1030/18). Participants were informed in writing that their consent to participate was implied by completion of the survey. Respondents were informed that their participation was anonymous and that no identifying data would be collected.

5 | RESULTS

Sixty-eight respondents completed the survey (33.2% response rate). Of the 70.6% of respondents who indicated their gender, 39.7% ($n=27$) were female and 30.9% (n = 21) were male (Table 1). 72 per cent indicated their age group; most were aged 21–50 years ($n=41$, 60.3%), while just over 10 per cent ($n=8$, 11.7%) were more than 51 years old. Most respondents ($n=43$, 63.2%) were employed as Registered Nurses. More than half ($n=41$, 60.3%) worked full-time while 7.4% ($n=5$) worked part-time. Most ($n=26$, 38.2%) had worked in forensic mental health for <5 years, compared to almost one-quarter ($n=16$, 23.5%) between 6 and 15 years, and 10 per cent ($n=7$, 10.3%) for 16 years or more. Almost half of respondents (48.6%, $n=33$) worked in acute units and 28 per cent ($n=19$) in non-acute units.

TABLE 1 Individual and work-related characteristics of respondents.

Descriptor	*n*	%
Gender		
Male	21	30.9
Female	27	39.7
Age (years)		
21–30	14	20.6
31–40	11	16.2
41–50	16	23.5
51–60	6	8.8
>=61	2	2.9
Position		
Nursing assistant/Enrolled nurse	2	2.9
Registered nurse	43	63.2
Clinical nurse consultant	2	2.9
Nursing unit manager	3	4.4
Employment status		
Full-time	41	60.3
Part-time	5	7.4
Casual	4	5.9
Years working in forensic mental health		
<2	16	23.5
3–5	10	14.7
6–10	9	13.2
11–15	7	10.3
16–20	4	5.9
>=21	3	4.4
Work location		
Acute	33	48.5
Non-acute	19	27.9

5.1 | Frequency and nature of exposure to patient aggression

Mean scores and average frequencies of exposure to incidents of the 17 types of aggression are presented in Table 2. The mean total POPAS score, representing perceived exposure to overall aggression, was 31.7 (*SD* 9.14).

Verbal abuse (*M* = 2.7, *SD* 0.85) was the most experienced aggression type, with respondents most likely confronted with 'non-threatening verbal aggression' (*M* = 3.4, *SD* 1.18). With an average exposure of 62 times over the past year, this was the only aggression type experienced at least once by all survey respondents. Exposure to physical violence (*M* = 2, *SD* 0.83) and observing violence (*M* = 2, *SD* 0.85) were equally the second most experienced forms of aggression. Respondents indicated that, on average, they were exposed to 'mild physical violence' (*M* = 2.3, *SD* 1.24) and 'threatening physical aggression' (*M* = 2.4, *SD* 1.18) sometimes or often, on average 20 times over the past year for each. 'Mild physical violence' was more common than 'severe physical violence' (*M* = 1.4, *SD* 0.60) which had an average exposure of just 0.9 times over the past year. Respondents were most likely to observe 'destructive aggressive behaviour' (*M* = 2.1, *SD* 0.92), followed by 'severe physical violence' (*M* = 1.8, *SD* 0.99). Observing 'severe physical violence', however, had a higher average exposure of 19.5 times per year, compared with 12.6 times for 'destructive aggressive behaviour'.

The least experienced forms of aggression were exposure to patient self-harming behaviours (*M* = 1.8, *SD* 0.53), and sexual violence (*M* = 1.5, *SD* 0.53). The types of self-harming behaviour respondents reported included exposure to 'mild violence against self' more than 'severe violence against self' (*M* = 2.6, *SD* 1.01 vs. *M* = 1.9, *SD* 0.89), with an average exposure of 18 and 4.4 times over the past year, respectively. Nearly half the respondents indicated exposure to at least one patient suicide attempt in the previous year. Patient suicide was a rare occurrence, with only one respondent reporting two patient suicides in the previous year.

In relation to sexual violence, respondents on average reported they were confronted with 'sexual intimidation/harassment' occasionally (*M* = 2.0, *SD* 1.04), with an average exposure of 9.3 times over the past year. Experience of 'sexual assault/rape' was rare (*M* = 1.0, *SD* 0.17).

Nurses who worked in acute units (*M* = 33.9, *n* = 33) reported experiencing significantly more exposure to overall aggression (POPAS) than nurses in non-acute units (*M* = 24.9, *n* = 19; U = 120, $p < .000$; Table 3). Nurses in acute units (*M* = 421.5, *SD* 706.93, *n* = 21) also reported experiencing a significantly higher number of total incidents compared with nurses in non-acute units (*M* = 84.2, *SD* 103.01, *n* = 13; U = 66.50, $p < .013$). Nurses working in acute units were also more likely to experience all aggression types more frequently except for suicides and sexual assault/rape, when compared to nurses in non-acute units (Table 3). These statistically significant differences between unit types were for: non-threatening and threatening verbal aggression (*U* = 139.5, $p < .006$ and *U* = 172, $p = .020$, respectively); humiliating and provocative aggressive behaviours (*U* = 376, $p < .033$ and *U* = 170, $p = .020$, respectively); mild physical violence (*U* = 161, $p < .006$); both mild and severe patient-directed violence (*U* = 100.5, $p < .000$ and *U* = 168.5, $p < .009$, respectively); and sexual intimidation/harassment (*U* = 193, $p < .032$).

TABLE 2 Perceived frequency and estimated number of incidents of aggression.

Item	Perceived frequency *N* = 68	Estimated number of incidents		
	M[c] *(SD)*	*N*[d]	*M (SD)*	Min-Max
Verbal abuse	2.7 (0.85)	51	221.8 (397.13)	4–1870
Non-threatening verbal aggression	3.4 (1.18)	61	62.0 (103.13)	1–500
Threatening verbal aggression	2.6 (1.13)	62	27.8 (58.54)	0–300
Humiliating aggressive behaviour	2.3 (1.04)	59	14.2 (34.36)	0–222
Provocative aggressive behaviour	2.4 (0.98)	55	19.5 (46.55)	0–300
Passive aggressive behaviour	3.0 (1.11)	58	49.2 (110.14)	0–569
Aggressive splitting behaviour	2.6 (1.12)	57	35.4 (85.46)	0–500
Physical Violence	2.0 (0.83)	50	42.8 (94.88)	0–508
Threatening physical aggression	2.4 (1.18)	56	20.0 (36.61)	0–209
Mild physical violence	2.3 (1.24)	55	20.5 (62.94)	0–365
Severe physical violence	1.4 (0.60)	50	0.9 (2.00)	0–10
Observed violence	2.0 (0.85)	52	33.0 (118.33)	0–798
Destructive aggressive behaviour	2.1 (0.92)	56	12.6 (35.90)	0–229
Witnessed severe physical violence[a]	1.8 (0.99)	53	19.5 (81.79)	0–569
Self-harming behaviour	1.8 (0.53)	47	25.1 (37.87)	0–210
Mild violence against self	2.6 (1.01)	57	18.0 (30.25)	0–200
Severe violence against self	1.9 (0.89)	54	4.4 (8.59)	0–50
Suicide attempts	1.6 (0.73)	52	1.5 (2.25)	0–10
Suicides	1.0 (0.12)	48	0.0 (0.29)	0–2
Sexual violence	1.5 (0.53)	44	25.1 (37.87)	0–50
Sexual intimidation/harassment	2.0 (1.04)	54	9.3 (14.79)	0–50
Sexual assault/rape	1.0 (0.17)	44	0.3 (1.53)	0–10
Total[b]	31.7 (9.14)	41	280 (506.47)	6–2611

[a]Additional item.

[b]Excluding additional item.

[c]1 = never, 2 = occasionally, 3 = sometimes, 4 = often, 5 = frequently.

[d]Different n responses per item, per item n included.

TABLE 3 Perceived frequency of aggression for nurses working in acute and non-acute units.

Item	Acute *n* = 33 *M (SD)*	Non-acute *n* = 19 *M (SD)*	U	*p*	Adjusted *p*[a]
Verbal abuse	2.9 (0.84)	2.1 (0.59)	146.00	.001	.003
Non-threatening verbal aggression	3.7 (1.05)	2.6 (1.07)	139.50	.001	.006
Threatening verbal aggression	2.9 (1.29)	1.9 (0.66)	172.00	.005	.020
Humiliating aggressive behaviour	2.5 (1.03)	1.8 (0.85)	376.00	.011	.033
Provocative aggressive behaviour	2.6 (1.03)	1.8 (0.71)	170.00	.004	.020
Passive aggressive behaviour	3.2 (1.24)	2.5 (0.77)	212.00	.046	.092
Aggressive splitting behaviour	2.5 (1.12)	2.3 (0.89)	281.50	.524	.524
Physical violence	2.2 (0.79)	1.5 (0.49)	152.00	.002	.003
Threatening physical aggression	2.5 (1.15)	1.8 (0.90)	202.00	.028	.056
Mild physical violence	2.6 (1.32)	1.5 (0.61)	161.00	.002	.006
Severe physical violence	1.4 (0.60)	1.2 (0.37)	265.00	.222	.222
Observed violence	2.1 (0.82)	1.6 (0.58)	189.50	.015	.019
Destructive aggressive behaviour	2.2 (0.89)	1.8 (0.79)	226.00	.062	.066
Witnessed severe physical violence[b]	1.9 (0.98)	1.4 (0.68)	211.50	.033	.066
Self-harming behaviour	1.9 (0.51)	1.4 (0.39)	133.50	.001	.003
Mild violence against self	3.0 (0.92)	1.8 (0.71)	100.50	.000	.000
Severe violence against self	2.0 (0.90)	1.3 (0.58)	168.50	.003	.009
Suicide attempts	1.6 (0.83)	1.4 (0.61)	285.00	.535	.535
Suicides	1.0 (0.0)	1.1 (0.23)	297.00	.188	.376
Sexual violence	1.7 (0.54)	1.3 (0.53)	200.50	.024	.024
Sexual intimidation/harassment	2.3 (1.07)	1.6 (1.01)	193.00	.016	.032
Sexual assault/rape	1.0 (0.17)	1.1 (0.23)	306.50	.690	.690
Total POPAS Score[c]	33.9 (8.51)	24.9 (6.37)	120.00	.000	.000

[a]Adjusted *p*-values within groups using Benjamini–Hochberg correction.
[b]Additional item.
[c]Total POPAS Score excludes additional item; unadjusted *p*-value.

5.2 | Impact of aggression exposure on absence from work

Seventy-five per cent of respondents ($n = 51$) reported taking sick leave during the past 12 months. Of these, 98% ($n = 50$) estimated they had taken an average of 9 days of sick leave ($M = 8.7$, *SD* 9.06; range 1–57 days). Importantly, 25 per cent ($n = 17$) estimated they had taken an average of 5 days off work specifically due to experiencing patient aggression/violence in the past 12 months ($M = 5.1$, *SD* 6.68; range 1–28 days).

Absence from work (sick leave taken and days off work due to aggression or violence) was associated with exposure to higher levels of aggression (Table 4). A moderate, positive correlation between overall aggression exposure and number of days sick leave taken ($r = .33$, 95% BCa CI [.12, .51], $n = 59$, $p < .001$) and a strong, positive correlation between aggression exposure and days off due to aggression or violence ($r = .52$, 95% BCa CI [.36, .62], $n = 59$, $p < .000$) were noted. Absence from work was associated with exposure to all types of aggression, except for sexual violence (Table 3). Days off due to violence and aggression was strongly positively correlated to physical and observed violence ($r = .54$, 95% BCa CI [.41, .65], $n = 60$, $p < .000$ and $r = .56$, 95% BCa CI [.42, .68], $n = 60$, $p < .000$, respectively). A mild, positive

TABLE 4 Correlation between absence from work and aggression types experienced.

Variable	Number of days sick leave taken *r*	*p*	Days off due to violence and aggression *r*	*p*
Verbal abuse	.26	.007	.46	.000
Physical violence	.23	.017	.54	.000
Observed violence	.31	.002	.56	.000
Self-harming behaviour	.37	.000	.37	.001
Sexual violence	.13	.214	.32	.004
POPAS	.33	.001	.52	.000

Note: Kendall's tau Correlation. Sig. (two-tailed). Bootstrap results based on 1000 bootstrap samples.

correlation between days off due to aggression or violence ($r = .27$, 95% BCa CI [.09, .44], $n = 59$, $p < .010$) was also noted.

Nurses in acute units ($n = 32$) reported taking more days off work due to aggression or violence than non-acute units ($n = 16$; $M = 2.0$, SD 5.32 vs. $M = 0.3$, SD 1.25; $U = 179$, $p = .031$). Nurses working on acute units had an average of 8 days sick leave, compared with 4 days sick leave reported by nurses working on non-acute units; this difference, however, was not statistically significant ($U = 186$, $p = .122$).

5.3 | Impact of aggression exposure on physical and mental health

A moderate, negative correlation between aggression exposure and mental health ($r = -.31$, 95% BCa CI [−.49, −.11], $n = 60$, $p < .015$) was noted. Mental health also demonstrated a mild negative correlation with verbal abuse ($r = -.24$, 95% BCa CI [−.39, −.06], $n = 61$, $p < .007$); physical violence ($r = -.18$, 95% BCa CI [−.35, −.03], $n = 61$, $p < .047$); observed violence ($r = -.26$, 95% BCa CI [−.40, −.11], $n = 61$, $p < .007$). A mild negative correlation between physical health and self-harming behaviour was also found ($r = -.19$, 95% BCa CI [−.36, .02], $n = 60$, $p < .049$). Nurses working on acute and non-acute units had similar mental and physical health scores.

6 | DISCUSSION

The current study determined the type, prevalence and impact of patient aggression for nurses working in one forensic mental health inpatient setting. Of note, most survey respondents reported frequent exposure to patient aggression. Aggression exposures were associated with poorer mental health and absence from work. These key findings are discussed below.

6.1 | Frequency of exposure to patient aggression

While the overall sample reported frequent exposure to overall aggression, variation in exposure between staff who worked on acute and non-acute units was significant. Acuity of illness may be a greater risk factor for inpatient violence than forensic history, with studies reporting forensic mental health units to have lower, or comparable, rates of patient aggression relative to mainstream mental health service acute units (Haines et al., 2017; Lee et al., 2015). It is arguable that forensic mental health services have fewer incidents of violence as they are better equipped to limit or manage inpatient violence due to more stringent violence risk mitigation strategies than mainstream mental health services. There is, however, sufficient evidence to indicate that nurses working in acute units, despite the level of security associated with forensic hospital settings, experience higher levels of inpatient aggression and are therefore at increased risk of being impacted by the exposure. Further to this, some patients known to be a higher risk of violence are disproportionately responsible for both violent incidents and other forms of aggression such as verbal abuse and property destruction (Verstegen et al., 2020). Nurses that are repeatedly exposed to the same patients by working solely on one unit may therefore be at disproportionately greater risk of experiencing detrimental impacts of exposure to violence than nurses who rotate between multiple units.

Regardless of whether respondents worked on an acute or non-acute unit, these findings indicate that all participating forensic mental health nurses had experienced patient aggression within the last 12 months. Verbal abuse was experienced more frequently than other types of aggression; consistent with similar samples (Haines et al., 2017; Jalil et al., 2017; Kelly et al., 2015) and mainstream mental health inpatient facilities (Schlup et al., 2021; Tonso et al., 2016). Exposure to physical violence was the second most common exposure. These present findings regarding mild and severe physical violence were very similar to those in a UK study of 68 forensic mental health nurses (Jalil et al., 2017). To reduce the prevalence of patient aggression, multicomponent interventions addressing changes to the environment, staffing levels, reporting of incidents and nurse behaviour through the provision of training and education has been recommended (Somani et al., 2021). Changes to organizational culture, including the application of trauma-informed models of care and reducing restrictive practices, additionally has potential to reduce patient violence (Beattie et al., 2019; Weltens et al., 2021). The introduction of Safewards Model has demonstrated effectiveness in reducing incidents of occupational violence and use of restrictive practices (Mullen et al., 2022).

In the current study, mild and threatened physical violence was common, while severe physical violence was rare; consistent with other studies of forensic mental health nurses (Haines et al., 2017; Jalil et al., 2017; Newman et al., 2021). Of note, a recent scoping review reported higher prevalence of physical violence compared with verbal abuse (Newman et al., 2021). It is plausible that different methods of determining prevalence of verbal abuse is the likely cause of this difference. For example, studies using incident report data are more likely to indicate lower prevalence of verbal abuse given the under-reporting of incidents perceived as not being serious enough (McKinnon & Cross, 2008). The difficulty in comparing findings of studies that determining prevalence of aggressive behaviours based on different content, scope and administration has been acknowledged (Kadlčková & Tomagová, 2018).

It is also of interest that exposure to self-harming behaviours in the current study was lower than reported in other forensic mental health nurse samples. For example, in their study of 68 forensic mental health nurses, Jalil et al. (2017) reported mean exposure to self-harming behaviours as 2.3, higher than the 1.8 in the current study. A prevalence range of 1.4–7.9 per bed/per year for forensic mental health nurse exposure to self-harming behaviours was identified in a scoping review (Newman et al., 2021). A similar calculation for the current study resulted in a prevalence of 1.5 per bed/per

year. This may reflect an under-estimation by respondents or may be related to effective management of patient self-harming behaviours; an area of significant policy focus.

6.2 | Impact of exposure to patient aggression

Findings related to the impact of exposure to patient aggression on nurses are important to consider. Respondents who reported greater exposure to overall aggression, verbal abuse, physical violence and witnessing violence, had concomitant poorer mental health. The psychological impact of frequent exposure to patient aggression and violence, including verbal abuse, has been documented previously in both forensic mental health nurses (Jankovic et al., 2021; Lee et al., 2015; Newman et al., 2021) and nurses working in mainstream mental health inpatient settings (Fuller, 2016; Tonso et al., 2016; van Leeuwen & Harte, 2017). Published interventions addressing psychological distress among nurses are scarce. Limited evidence supporting the effectiveness of resilience-building and mindfulness–based programs in reducing PTSD symptoms in nurses has, however, been reported (Liyanage et al., 2022).

Findings are also consistent with another study that reported that not all forensic mental health nurses experience negative reactions or psychological ill health in response to exposure to patient aggression (Ireland et al., 2021). Interestingly, nurses working on acute units had comparable mental health to nurses working on non-acute units, despite having significantly greater exposure to patient aggression. Individual differences regarding impact of exposure to patient aggression among forensic mental health staff working on one unit has also been reported (Mistry et al., 2022), indicating factors other than unit type also influence impact. Influencing factors may be protective and include individuals' resilience and well-being and access to support, supervision and incident debriefing (Mistry et al., 2022). The mental health of nurses exposed to occupational violence was also strongly influenced by ethnicity; in one study, white British participants had significantly worse mental health than those of other ethnicities (Renwick et al., 2019). Other influencing factors that may increase the risk of an adverse response to incidents of patient aggression may include a lack of training, insufficient staffing and/or the experience of stressors outside the workplace (Ireland et al., 2021).

Exposure to physical violence in the current study had no significant implications for physical health, in contrast to previous studies (Yang et al., 2012). Exposure to patient self-harming behaviours was however associated with poorer physical health of respondents. Self-harming behaviour in forensic mental health patients is a known predictor of violence towards others (de Vogel & Verstegen, 2021), reportedly nine times more likely to be physically violent towards others, compared with patients who do not self-harm (Verstegen et al., 2020). Both self-harming behaviours and aggression are, at times, managed with the use of restrictive practices such as seclusion and physical or mechanical restraint (McKeown et al., 2020). Restrictive practices are more frequently used in forensic mental health compared to mainstream mental health services (Flammer et al., 2020) and have been associated with nurses' experiences of emotional and psychological distress (Power et al., 2020) and physical injuries (Renwick et al., 2016). Nurses caring for patients who self-harm are therefore at increased risk of generalized stress response, negatively impacting their well-being from an accumulative effect of exposure to traumatic events and increased use of risk-adverse, controlling practices (Morris et al., 2022). Maladaptive coping strategies, such as increased alcohol consumption and changes to diet/eating patterns, in response to accumulative exposure to traumatic events and use of restrictive practices may also affect nurses' physical health (Mistry et al., 2022).

Of note, exposure to patient aggression was associated with workplace absences, with an average of 5 days sick leave taken following exposure to violence or aggression. This is consistent with other studies examining exposure to physical violence in forensic and non-forensic mental health settings (Kelly et al., 2015; McKinnon & Cross, 2008; Tonso et al., 2016; van Leeuwen & Harte, 2017). In addition to being a victim of physical violence, witnessing violence was more likely to be associated with absence from work than other aggression types. Witnessing an episode of physical violence caused stress and anxiety in a qualitative study of nurses working in British mainstream mental health services (Fuller, 2016). It is therefore likely that nurses may use sick leave as a strategy for coping with the psychological impact of exposure to patient aggression, rather than only physical illness or injury (Mistry et al., 2022).

6.3 | Methodological strengths and limitations

The study had several methodological strengths. The use of an anonymous survey design enabled respondents to answer honestly. The survey used psychometrically robust questionnaires to enable comparison of exposure to violence and well-being. Additionally, all nurses in the study site had opportunity to participate; the response rate of one in three was acceptable. Limitations are however noted. The study was conducted in one Australian forensic mental health service. The study findings, therefore, may not be generalizable to other workforce populations. As respondents self-selected to complete the survey, a potential response bias is also acknowledged. Relative to internal closed reports and unpublished data, however, the age, gender, employment status and role distribution is similar to the survey sample, indicating a satisfactory level of representatives of the population. Estimated exposure to aggression and sick leave taken was by self-report and not verified by other means. The lower reported instances of sexual violence make the differential effects of sexual assault on individuals well-being and workplace absence difficult to interpretate. Given the small sample size, missing data related to respondent characteristics resulted in analysis of the influence of age, gender and experience on aggression exposure not

being meaningful. Group comparison for unit type were conducted, but results should be viewed with caution given the limited numbers in each group.

7 | CONCLUSIONS AND IMPLICATIONS FOR POLICY AND PRACTICE

This study provided further evidence that forensic mental health nurses are exposed to patient aggression including verbal abuse, physical violence and self-harming behaviours. It is recommended that forensic mental health organizations focus policy development and service change on reducing occupational violence. For some nurses, exposure to patient aggression will have adverse effects on their mental health. Employing organizations should therefore prioritize a multimodal provision of formal support for nurses, including post-incident debriefing, clinical supervision and access to psychological support and counselling. Introduced measures should be evaluated to determine effectiveness. It would also be of interest to explore why some nurses are more detrimentally impacted by exposure to patient aggression than others. For example, an understanding of the influence of individual characteristics and resilience may assist organizations in the development of tailored staff wellbeing programs.

These findings reinforced that the level of exposure to all types of aggression is greater for nurses working with acutely unwell forensic mental health patients. While the health of nurses working in acute forensic areas was comparable to other nurses, these nurses had more absence from work as the result of their exposure to patient aggression. Nurses in this work environment would therefore benefit from additional organizational support measures including self-care education. Further research is also recommended to examine exposure to patient aggression and its relationship with workplace absence using reliable workforce data and incident reports.

Nurses who had greatest exposure to patient self-harming behaviour had the poorest physical health. These patients who self-harm are also responsible for other forms of inpatient violence and aggression. The impact of exposure to patient aggression, and the increasing work demands associated with accumulative exposure to self-harming behaviours, should therefore be considered and addressed by organizations. For example, consideration of both the duration, and frequency, of allocating the same nurses to provide one-to-one observations of a single patient with frequent and extreme self-harming behaviours. Furthermore, given the impact of maladaptive strategies used to cope with accumulative exposure to incidents of patient aggression on the physical health of forensic mental health nurses, it is recommended that future research focus on exploration and development of interventions to improve healthy behaviours and habits related to exercise, diet and alcohol consumption.

Further research is also recommended to explore the psychological impact for nurses who witness physical assaults in forensic mental health. Support provision for nurses who have exposure to witnessing violence, not just for the victims of violence, may additionally aid in addressing the psychological impact associated with this type of patient aggression exposure.

AUTHOR CONTRIBUTIONS

Claire Newman, Michael Roche and Doug Elliott made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data, involved in drafting the manuscript or revising it critically for important intellectual content, given final approval of the version to be published. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

ORCID

Claire Newman https://orcid.org/0000-0001-7614-931X
Michael Roche https://orcid.org/0000-0002-3831-537X
Doug Elliott https://orcid.org/0000-0002-6081-5442

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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