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Mental health in correctional and criminal justice systems (CCJS): Exploring how diagnosis, treatment and cultural differences impact pathway through the CCJS

Edited by
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Mental health in correctional and criminal justice systems (CCJS): Exploring how diagnosis, treatment and cultural differences impact pathway through the CCJS

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Editorial: Mental health in correctional and criminal justice systems (CCJS): exploring how diagnosis, treatment and cultural differences impact pathway through the CCJS

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KEYWORDS

correctional and criminal justice systems, mental health, met and unmet treatment needs, suicide among prison inmates, continuity of care on release from prison, prison inmate

Editorial on the Research Topic
Mental health in correctional and criminal justice systems (CCJS): exploring how diagnosis, treatment and cultural differences impact pathway through the CCJS

A number of previous reviews of the literature have shown the prevalence of mental disorders in prisons is considerably higher than in the general population (1–3). This includes data from low and medium income countries as well as higher income countries. One study (4) which assessed data from 13 low and middle-income countries found the prevalence of non-affective psychosis was on average 16 times higher than the general population, major depression and illicit drug use disorder were both six times higher, and the prevalence of alcohol use disorders was two times higher. Findings from high-income countries are similar.

In regard to the treatment of prisoners with mental disorders, a policy document from the WHO "Good governance for prison health in the twenty first century" (5) recommends that the health care of prisoners should be supervised by government in the same way as the general population. This is also in keeping with the United Nations Standard Minimum Rules for the Treatment of Prisoners—the Mandela Rules. Rule 24 states that "the provision of health care for prisoners is a state responsibility" and that "prisoners should enjoy the same standards of health care that are available in the community, and should have access to necessary health-care services free of charge without discrimination on the grounds of their legal status" (6). Few studies have examined the mental health care received by prisoners. Another issue is deaths which occur while in prison custody or shortly afterwards. This is an ongoing issue that needs to be resolved, with more research, and better understanding of interventions required to improve the situation (7–9).

Where studies have been undertaken they have indicated the needs for treatment of prisoners for mental health disorders have often not been identified and treatment needs

have not been met (10, 11). Few studies have examined what factors impact the pathway through the criminal justice system in terms of treatment received and whether needs were met, although some have suggested poorer outcomes for people from ethnic minority groups (12). Another largely unexplored area is the extent to which the treatment needs of prisoners discharged from prison are handed over to appropriate mental health services in the community (13).

Simpson et al. conducted a systematic review of publications investigating mental health services in the correctional framework. In regard to those passing through the correctional system, they found no evidence for standardized assessment approaches, some evidence to support specific psychosocial interventions and relatively weak evidence to support reintegration methods back into the community.

Other contributors to our topic have added to what is known. Linked to the theme of the effectiveness of interventions for those passing through the criminal justice system, Yesuf et al. looked at the prevalence of mental illness among inmates in north-western Ethiopia. They found around 75% of inmates had some form of mental disorder with symptoms including feeling unhappy and finding it difficult to play an important role in life. However, those that took part in rehabilitation activities had an improved outcome. The authors concluded that this was an area for further research and development that could lead to better outcomes for those with symptoms of mental disorder.

Stawinska-Witoszynska et al. found a high level of generalized anxiety disorders (GAD) in the population of inmates detained in one of the largest penitentiary units in north-eastern Poland. They found a three times higher prevalence of GAD among inmates detained in a closed type prison compared with those in an open prison. They made the case for increased availability of psychological therapies for prisoners.

Another theme of this topic is whether care is sufficiently integrated between the criminal justice system and community based services. McIntosh et al. conducted a mental health needs assessment for Scotland's prison population. They concluded that existing provision to support the mental health needs of people in prison in Scotland was inadequate. This was partly due to a lack of integrated care between the justice, health and social work systems resulting in prisoners not receiving the support they needed both during and following imprisonment.

In line with another topic theme some research has been undertaken on treatment options for different mental health conditions seen in prisons in various countries. Sekiguchi et al. looked at treatment options for persistent methamphetamine associated psychosis and how this should be distinguished from schizophrenia spectrum disorder. They found benefits from using a lower dose antipsychotic to treat methamphetamine associated psychosis. Naidoo et al. in a study based on a women's correctional center in South Africa emphasized the need to educate, support and manage those infected with HIV which has a high prevalence in South Africa. In Canadian based studies, Moghimi, Knyahnytska, Zhu et al. explored the mental health needs of correctional workers and found, Moghimi, Knyahnytska, Omrani et al. digital mental health care interventions could help meet these needs. Shafti, Steeg et al. and Shafti, Taylor et al. explored the relationship between aggressive behaviors and self-harm and implications for managing such behavior in correctional settings.

In terms of other themes of this Research Topic such as whether an individual's needs for treatment and care are successfully handed over to community-based services and the impact of the quality of care on the likelihood of recidivism more research is needed. As noted by Skipworth et al. a study in New Zealand indicated that there has been an increasingly poor outcome in terms of imprisonment following discharge from a mental health unit over a ten-year period and concluded that models of community based mental health care may be increasingly reliant on the criminal justice system to manage aggressive and dangerous behavior among those with mental illness. There have been reports of similar trends in other countries including the UK.

Author contributions

NM: Writing—original draft. AF: Writing—review and editing.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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The Prevalence of Generalised Anxiety Disorder Among Prisoners of the Penitentiary Institution in North-Eastern Poland

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Introduction: Generalised anxiety disorder (GAD) is one of the most common mental disorders. The psychosocial factors that may lead to generalised anxiety disorders include stress, traumatic events, conscious and unconscious internal conflicts, and low social and economic status. Imprisonment and forced isolation may favour the development of depression or anxiety disorders in inmates. Thus, this study aimed to analyse the prevalence of generalised anxiety disorder (GAD) in the population of inmates detained in one of the largest penitentiary units in north-eastern Poland.

Materials and Methods: The data comes from 2017 and includes information on 635 male inmates incarcerated at the Czerwony Bór Prison. The information comes from the health records of individual inmates, kept by the prison outpatient clinician, and documented consultations with doctors of units outside the prison. The classification of generalised anxiety disorders (F41.1) was made in accordance with the 10th Revision of the International Statistical Classification of Diseases and Health Problems and the clinical diagnosis made by a psychiatrist. The Mann-Whitney test was used to compare quantitative data without normal distribution, chi-squared test or Fisher exact test for comparing qualitative data. A one-dimensional and multi-dimensional logistic regression model was used to examine the impact of the prison type on the prevalence of generalised anxiety disorder.

Results: Generalised anxiety disorder was observed among 44 prisoners (6.9%), most often in the age range 30–39 years and among men younger than 30 years, respectively 40.9 and 31.8% of all diagnosed. The average age of patients was 34.6 years. The least number of prisoners with GAD was in the age group 50–59 (2.3%). Nearly 66% of patients were prisoners detained in a closed type prison; the chance of generalised anxiety disorder was three times higher than among the prisoners in a half-open and open type facility. Generalised anxiety disorder was diagnosed significantly more often with those currently serving a prison sentence than those before incarceration.

Conclusions: In Polish conditions, the importance of the problem associated with GAD is evidenced by a significant increase in its prevalence in the prison environment and a three times higher chance of developing generalised anxiety disorder among prisoners in a closed type institution, which calls for highly organised psychiatric care and increased availability of psychological assistance for prisoners.

Keywords: generalised anxiety disorder, mental health, prisoners, penitentiary system, prevalence

INTRODUCTION

Generalised anxiety disorder (GAD) is one of the most common psychiatric disorders (1). Although GAD runs a less visible course than schizophrenia, depression or bipolar disorder, it may similarly result in the patient's disability (2, 3). Generalised anxiety disorder is characterised by the chronicity of the process (lasting more than 6 months), intense feelings of anxiety and persistent yet ungrounded worrying about various problems (e.g., money, future, family or health) (4–7). Other symptoms that patients experience include headaches and dizziness, restlessness, easy fatigue, sleeping problems, tremors, tachycardia, dyspnoea, palpitations, gastrointestinal complaints, e.g., difficulty swallowing, epigastric pain, and excessive perspiration (1, 3–8).

It should be noted that the GAD (generalised anxiety disorder) problem is generally marginalised. There are difficulties in diagnosing this syndrome from other mental disorders, especially when GAD and depression coincide. The efforts of psychiatric neuroimaging, genetic and neurochemical studies are focused on finding biomarkers that play an essential role in its aetiology and treatment (9).

Among other psychosocial factors, stress, traumatic events, adverse events experienced in childhood and more recently before the onset of symptoms, conscious and unconscious internal conflicts, and low social and economic status may lead to generalised anxiety disorder (10–12).

The more frequent prevalence of mental disorders, including anxiety disorders observed among immigrants, is explained by discrimination, yet according to many researchers, other factors such as economic stress or lack of life partner are of substantial significance (13–15). It is difficult to determine the dominant cause of the disorder. In the group of Hispanics working on daily payment, people with low social status, the prevalence of depression and anxiety turned out to be higher than in the general population of Latinos in the U.S., on the other hand, among Puerto Rican youth living in the Bronx, anxiety disorders were more common than those in Puerto Rico, at a similar level of poverty in both groups (14, 15). Cigarette smoking or quitting, alcohol abuse, and taking drugs include other risk factors for generalised anxiety disorder (16–18). The relationship between smoking and anxiety disorders has not been confirmed by studies (17).

Undoubtedly, deprivation of liberty and the nature of life in prison can be regarded as stress factors. Apart from masculinisation and predominance of young men, prisoners constitute a distinctive group differing in many respects from other groups in the society (14, 17, 18). They are often individuals from pathological backgrounds, with low social and economic status, suffering from illnesses that frequently result from inappropriate lifestyles. There is a risk that prisoners may be particularly vulnerable to the emergence of mental disorders or exacerbating the existing mental ones. It can be influenced by their background and the difficult conditions of confinement, such as overcrowded prisons, isolation from the world outside, the need to adapt to the internal order within the prison, violence, and a lack of support. (4, 5, 9, 13, 14, 19–21).

In Poland, convicts are classified according to such factors as gender, age, previous imprisonment, time remaining until completion of the imprisonment, type of offence and act committed (intentional or unintentional), their state of health, degree of demoralisation and the risk they pose to the society. Prisons are organised as closed prisons, semi-open prisons and open prisons. These three types differ in the degree of security they provide and the type of isolation the prisoners undergo (22).

As incarceration evokes mainly negative emotions, which favours the development of depression or anxiety disorders in inmates, this study aimed to analyse the prevalence of generalised anxiety syndrome in inmates detained in one of the largest penitentiary units in north-eastern Poland.

MATERIALS AND METHODS

In the descriptive epidemiological study, only secondary sources of information were used - medical records of 635 prisoners aged 21 to 72 from the Penal Institution in Czerwony Bór, located in the Podlasie Voivodship, containing adult men, convicted for the first time and recidivists. It is a penitentiary unit, divided into three types of establishments: closed, semi-open and open, differing in the way of securing residential buildings and the duties of officers serving in a given category of the prison. The data for this study was obtained from the prisoners' medical records dating back to the period before incarceration and their health records provided by the prison physician supplemented with the results of specialist consultations from the medical units outside the prison and the results of additional diagnostic tests. Generalised Anxiety Disorder (F41.1) was classified in accordance with the 10th Revision of the International Classification of Diseases and Health Problems (23). The authors chose to discuss GAD in

detail because its prevalence was higher than that of alcohol dependence syndrome and depression. Moreover, the reliability of the diagnosis was higher than that of personality disorders that are difficult to diagnose and for which, depending on the classification of the diseases adopted, minor differences in typology are encountered. The following variables were included in the analysis: age of prisoners (5 age groups - under 30, 30–39, 40–49, 50–59, 60 years and more), the type of prison (closed, semi-open including open due to a small number of convicts in an open prison), classification of prisoners (first-time offender or recidivist), length of previous sentence and occupation.

The time of diagnosis was determined (before or during imprisonment), which allowed estimating the number of newly diagnosed cases of generalised anxiety disorder during detention. A psychiatrist made the diagnosis regardless of whether the clinical diagnosis had been made before admission to the Penitentiary Institution or at the time of incarceration.

Statistical Analysis

The general characteristics of the study group were given in numbers and percentages by individual category. The Mann-Whitney test was used to compare quantitative data without normal distribution, chi-squared test (or Fisher exact test, when the numbers of individual categories were too small) for comparing qualitative data. A one-dimensional and multi-dimensional logistic regression model was used to examine the impact of the prison type on the prevalence of generalised anxiety disorder. Due to the relatively small patient group in the multi-dimensional model, the adjustments were made in stages. First, only the variables significant in the unidimensional analysis were adjusted, then all the collected variables. To estimate the detection of disease among prisoners before and during imprisonment, a one-sample test was used. Testing it was assumed, that no difference in proportions means the same, i.e., 50%, frequency of diagnosing diseases before and during detention in prison.

In statistical analyses, the PQStat v1.6.4 program was used, and the significance threshold was set at 0.05.

RESULTS

The surveyed population consisted predominantly of young males aged 30–39 and those under the age of 30. Most of them had been first-time offenders, serving 1 to 5 years in prison. In general, the length of sentences adjudicated ranged from one to 25 years of imprisonment. A total of 255 prisoners (40.2%) were placed in a closed-type institution. Almost 50% of the prisoners were working. Anxiety disorders were diagnosed in 6.9% of the prisoners and depression in 1.7% (**Table 1**).

Generalised anxiety disorder occurred in 6.9% of respondents, mainly in younger age groups. Most patients were observed in the age range 30–39 years below 30 years, respectively, 40.9 and 31.8% of all convicts with generalised anxiety syndrome. Among 50–59. only one case of this disorder was found (**Table 2**).

There was a significant difference between the occurrence of generalised anxiety disorder and the type of prison ($p = 0.0003$). Among the inmates with generalised anxiety disorder, depression was observed significantly more frequently compared to the inmates who did not suffer from this disorder ($p = 0.0346$). There was no relationship between the age of the inmates, the length of the sentence served to date, the classification of the inmates (first-time offender, recidivist), their work situation and the prevalence of generalised anxiety disorder (**Table 2**).

TABLE 1 | General characteristics of the study population.

Variables	Count = 635 (100%)
Type of penitentiary	
Closed	255 (40.2%)
Open and semi-open	380 (59.8%)
Length of adjudicated sentence served	
Up to 1 year	206 (32.4%)
1–5 years	349 (55.0%)
5 years or more	80 (12.6%)
Classification	
First-time incarceration	377 (59.4%)
recidivist	258 (40.6%)
Work situation	
Working	322 (50.7%)
Not working	313 (49.3%)
Age	
Under 30	205 (32.3%)
30–39	227 (35.7%)
40–49	110 (17.3%)
50–59	63 (9.9%)
Over 60	30 (4.7%)
Selected mental disorders	
Anxiety disorders	44 (6.9%)
Depression	11 (1.7%)

The risk of generalised anxiety disorder, as determined by the unadjusted model, was ∼3 times higher for prisoners serving their sentence in a closed-type institution OR (95% CI) = 3.1 (1.6; 6.0) (**Table 3**). A statistically significant odds ratio was also obtained in the other two regression models, the minimally adjusted model as well as the full model. Depression and other analysed variables (length of sentence served to date, classification, work situation and age) had no significant effect on the relation between prison type and the occurrence of generalised anxiety disorder (**Table 3**).

Table 4 presents the percentage of diagnoses of generalised anxiety disorder in the studied population depending on the time of the diagnosis. These disorders were diagnosed more often among prisoners while staying in prison (86.4%). A significant difference was found between the number of diagnoses made before and during the incarceration ($p < 0.0001$).

DISCUSSION

The prevalence of all anxiety disorders is estimated differently, depending on the country and research methodology, in the range from a few to several per cent (1, 2). Generalised anxiety disorder (generalised anxiety syndrome) making up the group of

TABLE 2 | Assessment of the prevalence of generalised anxiety disorders according to the age of prisoners, their classification, type of prison, length of imprisonment to date, work activity, time of diagnosis and depression.

	Generalised anxiety disorder		
Variables	**Yes ($n = 44$)**	**No ($n = 591$)**	***p*-value**
Type of penitentiary			0.0003
Closed	29 (65.9%)	226 (38.2%)	
Open and semi-open	15 (34.1%)	365 (61.8%)	
Length of adjudicated sentence served			0.2097
Up to 1 year	11 (25%)	195 (33%)	
1–5 years	24 (54.5%)	325 (55%)	
5 years or more	11 (25%)	195 (33%)	
Classification			0.7802
First-time incarceration	27 (61.4%)	350 (59.2%)	
recidivist	17 (38.6%)	241 (40.8%)	
Work situation			0.4699
Working	20 (45.5%)	302 (51.1%)	
Not working	24 (54.5%)	289 (48.9%)	
Age median (25–75%)	32.5 (26–42)	34 (28–43)	0.3697
Below 30	14 (31.8%)	191 (32.3%)	
30–39	18 (40.9%)	209 (35.4%)	
40–49	9 (20.5%)	101 (17.1%)	
50–59	1 (2.3%)	62 (10.5%)	
Over 60	2 (4.6%)	28 (4.7%)	
Depression			0.0346
Yes	3 (6.8%)	8 (1.4%)	
No	41(93.2%)	583 (98.6%)	

TABLE 3 | Regression models describing the effect of incarceration on the prevalence of generalised anxiety disorder in prisoners.

	Logistic regression model		
	One-dimensional (without adjustment)	**Minimally adjusted**	**Fully adjusted**
	OR [95%CI]	**AOR* [95%CI]**	**AOR# [95%CI]**
Generalised anxiety disorder	3.1 [1.6; 6.0] $p = 0.0005$	3.1 [1.6; 5.9] $p = 0.0007$	3.0 [1.5; 5.8] $p = 0.0017$

OR [95%CI], anxiety disorders odds ratio.
AOR [95%CI], adjusted odds ratio.
**Adjusted for depression.*
#Adjusted for depression, length of imprisonment served to date, classification, work situation and age.

TABLE 4 | The prevalence of generalised anxiety disorder in the population of prisoners depending on the date of diagnosis.

Diagnosis of generalised anxiety disorder $n = 44$	
Before arriving at the prison	6 (13.6%)
During imprisonment	38 (86.4%)
p-value	<0.0001

N, number of prisoners.

mental disorders is one of the most commonly detected mental diseases (3), and although they are less visible than schizophrenia, depression or bipolar disorder can also lead to patient disability (1, 6).

During the entire lifetime, generalised anxiety disorder occurs in the U.S. population at the level of 5.1 to 11.9%; in Europe, its prevalence is lower 4.3–5.9%, on average 5% (10, 24, 25).

The consistency of most research results concerns the more frequent prevalence of generalised anxiety disorder (GAD) among women and adolescents as well as in younger adults than in older age (11, 24, 26, 27).

In studies conducted in Poland, generalised anxiety disorder occurred in 6.9% of the prisoners' population and was one of the most frequently diagnosed disorders. Identical to the results of most epidemiological studies, they mainly concerned younger age groups. Most diagnosed were observed among 30–39-year-olds and prisoners under 30 years old, while in the two oldest age ranges, the cases of generalised anxiety disorder occurred sporadically. The prevalence of anxiety disorders among prisoners was much higher than that of the general Polish population. Based on the EZOP Polska study, the first cross-sectional epidemiological study in the country using the structured diagnostic questionnaire CIDI, conducted on a sample representative of the population aged 18–64 years, generalised anxiety disorder during life was found in 1.1% (95% CI 0.9–1.3), significantly more often among women (1.5%) than men (0.6%) (28). Unlike other studies, which may be the result of their diverse methodology, they were the least frequent among the youngest respondents, regardless of gender (11, 24, 26–28).

In similar masculinised (90% men) and young prisoners population in the north-east of Amhar in Ethiopia with an average age of 30.6 ± 11.49 SD, the prevalence of anxiety disorder was generally 36.1% and was higher compared to other low- and middle-income countries such as Chile or India. In European prisons, the prevalence of depression or anxiety disorders is estimated at around 25% (16).

Compared to the results of the above studies, the low prevalence of generalised anxiety disorder among the prison population studied may be puzzling. This phenomenon might have been influenced by the type of the study, which was the only one that was granted consent, and with the exclusive use of data from prisoners' medical records. The analysis took into account all diagnoses of generalised anxiety syndrome made by a consultant psychiatrist working at the prison outpatient clinic and the previous diagnoses made by the inmates' psychiatrists before incarceration and verified by the consultant. Generalised anxiety syndrome had been diagnosed prior to detention only in 13.6% of the surveyed, which makes it impossible to associate it with the fact of imprisonment. The cause of

its occurrence could not be established. Unfortunately, the prisoners' medical records were sometimes incomplete, and some of them had not received any medical care before their detainment. All prisoners treated at the outpatient clinic due to mental problems or referred by the psychologists working with prisoners were offered psychiatric consultations. As a result, the number of those diagnosed with generalised anxiety disorder increased.

We also recognise that the group of inmates with generalised anxiety syndrome was relatively small (44 inmates with the syndrome and 591 with no disorder). Logistic regression is sensitive to small groups, especially when models contain many adjustment variables. Although stable results of the full model were obtained, which confirmed the results obtained in smaller models, it would be worthwhile to extend such a study to a larger population of detainees.

On the other hand, the prevalence of generalised anxiety disorders among prisoners appeared to be much higher than in the general population of Poland, where the prevalence of this phenomenon was at a low level, and cross-sectional epidemiological studies had been conducted on a representative group of respondents. The surveyed prisoners from the penitentiary in Czerwony Bór originated from the general Polish population.

Despite its limitations, the opportunity to carry out an epidemiological study in the population of prisoners in the penal facility in Czerwony Bór made it possible to determine the level of prevalence of generalised anxiety disorder depending on various variables and to select those inmates particularly at risk of this disorder. As studies on the health of the prison population carried out by doctors in Poland are scarce, this paper may evoke the interest of researchers who might want to broaden their knowledge on the subject.

Unfortunately, the insufficient number of studies regarding prisoners, especially in our part of Europe, makes it difficult to compare the results of this study with other findings.

Among Ethiopian prisoners, the risk of developing anxiety disorders was 2.49 times higher in those who described their lives before imprisonment as "unhappy" (16). Probably, in this case, the existing anxiety symptoms have been superimposed on embedding stress. Polish prisoners during control visits to the prison dispensary often reported lowered mood, sleep problems, headaches and dizziness, shortness of breath, and increased anxiety. Their stay in prison resulted in the prevalence of generalised anxiety disorder, which was diagnosed in most prisoners during their imprisonment, as already mentioned, similar to American studies (18). The study showed that the chance of developing generalised anxiety disorder among closed-type prisoners was more than three times higher than among prisoners in semi-open and open facilities, regardless of the age of the prisoner. Depending on the severity of the crime and the length of the sentence, three types of prisons operate in France. The results of studies conducted among French convicts, with a median age of 37 years, which were given with an error of fraction estimation, showed the prevalence of clinically significant mental disorders estimated based on the agreement of two clinicians in 27.4 $\pm$ 4.5% of prisoners. The prevalence of generalised anxiety disorder itself, diagnosed according to two clinicians, was estimated at 12.0 $\pm$ 42.1% and diagnosed by at least one - at 19.6 $\pm$ 3% (20). Among the respondents, almost half (49%) men were in prison at least for the second time, 28% reported child abuse, 29% imprisonment of a family member, 16% were psychiatrically treated (20). The authors of this publication drew attention to the difficulties in interpreting psychiatric diagnoses in prisons, especially using traditional standardised interviews (20). They also noted that depression was more likely to occur in recidivists, while anxiety disorders were more common among first-time offenders (20). In our study, there was no association between the length of sentence served to date and the classification of prisoners (first-time offender, recidivist) and the prevalence of generalised anxiety disorders.

Attention is paid to the issue of the importance of determining the level of psychological stress of prisoners placed in prisons, thanks to which it is possible to predict what health problems they may have, depending on the conditions prevailing in individual prisons (29). The scale of the problem was confirmed, among others, by studies in Italy, Spain and Nigeria, according to which prisoners, despite health problems, are not properly treated (30–32). Lack of therapy for convicts with mental disorders may lead to deterioration of the quality of life of prisoners and suicide attempts, also described in general populations of different countries (20, 33, 34). In psychiatric disorders, including anxiety disorders, effective and integrated therapy is required, which includes both pharmacotherapy, psychotherapy and behavioural therapy (35–37). For obvious reasons, in prison conditions, it is extremely difficult to achieve sufficient conditions to achieve satisfactory results, for example, due to restrictions on the freedom of changing persons' place of stay and uninhibited undertaking physical activity that can have a positive effect on treatment (38). Worldwide, there is a greater need for the treatment of persons deprived of their liberty and for the undertaking therapy of mental illnesses, compared to the general populations. In the case of anxiety disorders, this problem concerns 17.2–58.6% of prisoners (39–41).

Summarising, the prevalence of generalised anxiety disorder in the male population in one of the largest prisons in north-eastern Poland was definitely higher compared to the general population of Poland but lower than among prisoners in many other countries. In Polish conditions, the importance of the problem associated with GAD is evidenced by a significant increase in its prevalence among prisoners. There is three times greater chance of developing generalised anxiety disorder among prisoners in a closed type institution, which requires a better organisation of psychiatric care and increased availability of psychological support offered to prisoners.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethics Committee of the Poznan University of Medical Sciences, Collegium Maius, Fredry street 10, 61-701, Poznań. Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

AUTHOR CONTRIBUTIONS

BS-W and KC: conceptualization, investigation, resources, and data curation. B-SW, KC, and BW: methodology. BW: software and formal analysis. B-SW: validation, supervision, and project administration. B-SW, KC, and WM: writing—original draft preparation, writing—review and editing, and visualization. All authors contributed to the article and approved the submitted version.

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Treatment Response Distinguishes Persistent Type of Methamphetamine Psychosis From Schizophrenia Spectrum Disorder Among Inmates at Japanese Medical Prison

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Introduction: Persistent methamphetamine-associated psychosis (pMAP) is a disorder similar to schizophrenia, so much so that the differences in clinical symptoms and treatment response between the two remain unknown. In this study, we compared the features of pMAP with those of schizophrenia spectrum disorders (SSD).

Materials and Methods: This was a retrospective quasi-experimental case-control study of inmates in a medical prison. The behavioral problems, clinical symptoms, and chlorpromazine (CP)-equivalent doses of 24 patients with pMAP and 27 with SSD were compared.

Results: Patients in the pMAP group were hospitalized for fewer days than those in the SSD group (281.5 vs. 509.5; $p = 0.012$), but there were no other significant group differences in behavioral problems or clinical symptoms. The pMAP group received fewer antipsychotics in CP-equivalent doses than the SSD group at 4, 8, and 12 weeks after admission and at the time of discharge ($p = 0.018$, 0.001, 0.007, and 0.023, respectively). The number of CP-equivalent doses in the SSD group tended to increase after admission, but not in the pMAP group.

Discussion: These findings suggest that differentiation between pMAP and SSD based on behavior and symptoms alone may be difficult, and that patients with pMAP may respond better to treatment with a lower dose of antipsychotic medication than those with SSD. Further confirmatory studies are warranted.

Keywords: methamphetamine associated psychosis, schizophrenia spectrum disorder, chlorpromazine equivalent dose, medical prison, antipsychotics

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INTRODUCTION

It is estimated that 4.96 million people use amphetamine-type stimulants (1). Methamphetamine is one such amphetamine-type stimulant and a highly potent drug closely linked to violent crime (2), recidivism (3), and drug crimes. This leads to confusion in clinical settings, especially in forensic or correctional medical settings, when it comes to diagnosis and treatment of patients with psychotic symptoms suspected of using methamphetamine. As such, psychosis

induced by methamphetamine (methamphetamine associated psychosis, MAP) has received recent attention (4, 5). Symptoms of MAP include hallucinations, delusions, negative symptoms, and cognitive impairment, which are similar to those of schizophrenia (6–9). Moreover, psychiatrists use antipsychotics to treat both MAP and schizophrenia (9, 10). With regard to symptomatology and pharmacotherapy, it is difficult to differentiate MAP from schizophrenia spectrum disorder (SSD). In Japan, due to the occurrence of MAP associated with the period of methamphetamine abuse in the mid-20th century, it has been regarded as a different disease from schizophrenia, based on the discovery of differences through clinical observation. As described in the review by Yui et al. (10), there was a history of being viewed as a different disease, with several differentiating features in the symptoms and course of the disease, but because many papers were written in Japanese, the impact on the global academic community was limited.

The diagnosis of MAP is currently based on the Diagnostic and Statistical Manual of Mental Disorders 5th edition (DSM-5) criteria for substance-induced psychosis (11). This requires an individual to present with either delusions or hallucinations that abate within ∼1 month of drug cessation. However, some researchers, especially in Japan, characterize MAP as a psychotic state that occurs as a result of methamphetamine dependence, broken into two types; "transient" and "persistent" (12, 13). The transient type presents with either delusions or hallucinations that abate within ∼1 month of drug cessation, while the persistent type can cause delusions and hallucinations for months or years after drug cessation.

Similar to previous Japanese studies, a recent review (14) divided MAP into two types: "acute" (corresponding to "transient") and "persistent." However, few studies have distinguished between acute and persistent MAP (4). We assumed the difficulties in distinguishing MAP and SSD are rooted in confusion between acute and persistent types. For instance, McKetin et al. (15) classified methamphetamine-induced transient psychosis and persistent psychosis and compared them to primary psychosis. However, they excluded patients from the MAP group who met the DSM criteria for schizophrenia. For this reason, psychosis due to methamphetamine that caused schizophrenia was not compared, and the qualitative difference not mentioned. Moreover, studies that investigated MAP symptoms had several limitations. Most of them considered abstinence from drugs, but the information was derived from self-report data, indicating the reliability of drug-cessation data was fragile. To overcome these limitations, we chose to include only patients in a medical prison. This makes our drug-cessation data more reliable; Japanese prisons enforce strict rules banning the use of illegal drugs. To some extent, the criminal tendencies of patients in the MAP and SSD groups in our sample could be considered more similar than those of patients with MAP and SSD in the general population. In other words, when the general population is included in such a study, most of the people in the SSD group will be non-criminals, while the MAP group will show some kind of deviant behavior, and thus there will be a large difference in criminal tendency between the two groups. However, since all the individuals in our sample had committed some type of crime, we did not expect to see a significant difference in criminal tendencies between groups compared to the general population.

We hypothesized that contrary to the DSM-5 definition, persistent MAP (pMAP) and SSD are separate disorders. In this study, we focused on pMAP and chronic SSD to clarify the differences between them with respect to life history, behavioral problems, clinical symptoms, and response to pharmacotherapy.

MATERIALS AND METHODS

Study Design and Participants

We conducted a retrospective quasi-experimental case-control study using structured prison and medical records of patients in a medical prison. Included patients were transferred from general prisons to psychiatric wards in the Medical Correction Center in East Japan, formerly known as Hachioji Medical Prison Hospital, for psychiatric treatment from April 2010 to July 2020. Hachioji Medical Prison Hospital was one of four hospitals in Japan with the ability to provide inpatient treatment for inmates, mainly in the medical, surgical and psychiatric wards. In January 2018, Hachioji Medical Prison Hospital was moved to the Medical Correction Center in East Japan. We used the number of days to discharge as one of the indices for treatment response; therefore we only included patients discharged until November 2020. We investigated the data of 129 admitted patients originally diagnosed with schizophrenia, schizoaffective disorder, MAP, or drug-induced psychosis who also experienced subsequent complications due to methamphetamine use. We defined patients with pMAP as those (1) who met the DSM-5 criteria for schizophrenia or schizoaffective disorder, (2) who had a history of multiple instances of methamphetamine use, and (3) whose onset of psychosis was followed by methamphetamine use. To ensure we included only patients with precise diagnoses free of ambiguity, we excluded two patients who could have been classified into the SSD group because they had histories of methamphetamine use prior to onset of psychosis. Sufficient information was available to correctly diagnose and categorize 51 patients.

These 51 patients were classified into two groups: the MAP group ($n = 24$) and the SSD group ($n = 27$). None of the patients had used amphetamine or dextroamphetamine.

We collected data on diagnosis, life history, medical history, behavioral problems, and pharmacotherapy from the medical records.

Diagnosis and Measures Assessing Life History

Psychiatric disorders and comorbidities were diagnosed based on the DSM-5 criteria. Original diagnoses recorded in the medical records were made by attending doctors during the hospital stay, and an experienced psychiatrist (YS) confirmed the accuracy of the diagnoses using data from the medical records and excluded patients who did not meet the diagnostic criteria for pMAP or SSD.

The pMAP and SSD groups were compared with respect to age, gender, race, years of illness, years of

methamphetamine use, years from methamphetamine use to onset, estimated intelligence quotient [assessed using a test called CAPAS (16) from the Ministry of Justice], medical history (whether treatment continued until change to outpatient status/hospitalization/arrest), suicide attempt, comorbidity, educational background, family history during childhood (familial antisociality, poverty, divorced/bereaved parents, psychiatric family history, childhood abuse), school refusal, delinquency, regular work experience, marriage/divorce history, crime type, first crime/repeated crime, abuse of other drugs (thinner or cannabis).

Clinical Observations

First, we examined the number of hospitalization days at the medical prison. Regarding behavioral problems after admission, we examined yelling, self-harm, verbal abuse, physical violence, food refusal, and playing with one's own feces. We also examined auditory hallucination, visual hallucination, tactile hallucination, persecutory delusion, disorganized speech, manic state, and lack of insight. Data were recorded by nurses based on their observations within a strict 24-h surveillance period inside the medical prison. These patterns of behavior were summarized using binominal values: 1, existence; 0, absence.

We considered the following variables for pharmacotherapy: antipsychotic doses before admission, 4, 8, and 12 weeks after admission, and at time of discharge. The pharmaceutical data was compared using chlorpromazine (CP)-equivalent dose conversion (17). As two patients were hospitalized <12 weeks, we assumed their doses at 12 weeks were same as those upon discharge.

Statistical Analysis

Continuous data were analyzed using the Mann-Whitney *U*-test. Categorical data were analyzed using Fisher's exact test. All tests were two-sided, with significance set at $p < 0.05$. The false discovery rate [Benjamini-Hochberg procedure (18)] was used to correct *p*-values for multiple testing of CP-equivalent doses at each time point between groups. To compare the CP-equivalent doses within groups at each time point, we used Friedman's test and Scheffe's *post hoc* test. All analyses were conducted using BellCurve for Excel (Social Survey Research Information Co., Ltd. Tokyo, Japan).

Ethical Approval

We conducted this research following the principles outlined in the Declaration of Helsinki. This study was a retrospective study without utilizing any specimens and the information utilized in the research had been anonymized. The need for informed consent was waived in accordance with Ethical Guidelines for Medical and Health Research Involving Human Subjects in Japan. This study was reviewed and approved by the Clinical Research Ethics Board of the Medical Correction Center in East Japan.

TABLE 1 | Background characteristics of pMAP and SSD patients in the medical prison.

	pMAP ($n = 24$)		SSD ($n = 27$)			*U*-test
	Mean	**SD**	**Mean**	**SD**	***p*-value**	
Age at admission	38.3	13.1	41.1	10.7	0.143	
Age at onset	28.2	7.9	25.4	8.3	0.261	
Years of psychotic disorder	10.0	10.7	15.7	13.1	0.049	*
Age at first MA use	20.7	4.0	–	–		
Years between first MA use and onset	7.5	5.9	–	–		
Estimated intelligence quotient	77.5	18.9	64.2	20.0	0.020	*
	Number	**%**	**Number**	**%**		**Fisher's exact test**
Sex					0.127	
Male	18	75.0	25	92.6		
Female	6	25.0	2	7.4		
Admission to correctional facilities					0.265	
First time	12	50.0	18	66.7		
Multiple times	12	50.0	9	33.3		
Other drug abuse						
Thinner	11	21.6	6	11.8	0.136	
Cannabis	14	27.5	3	5.9	0.001	**
Type of crime						
Stimulants Control Law	15	62.5	0	0.0	0.000	**
Childhood experience						
Maltreatment	5	22.7	7	26.9	1.000	
Poverty	6	30.0	8	34.8	1.000	
Divorce or bereavement of parents	12	50.0	10	38.5	0.569	
Antisocial family members	3	13.6	1	3.7	0.314	
Bullied	2	13.3	5	22.7	0.677	
School refusal	8	50.0	6	27.3	0.187	
Delinquency	19	79.2	7	25.9	0.000	**
Education level						
Less than high school diploma	18	75.0	13	50.0	0.086	
Work experience for >6 months	16	69.6	18	66.7	1.000	
Homelessness	4	16.7	6	22.2	0.731	
Marriage history	4	16.7	2	7.4	0.402	
Suicidal behavior	15	62.5	9	33.3	0.051	
History of psychiatric treatment	21	87.5	25	92.6	0.656	
Under psychiatric treatment before arrest	11	52.4	9	36.0	0.372	
History of hospital admission	15	65.2	21	80.8	0.332	

***p < 0.01; *p < 0.05. pMAP, persistent methamphetamine-associated psychosis; SSD, schizophrenia spectrum disorders; MA, methamphetamine; SD, standard deviation.*

RESULTS

Sample Characteristics

The total sample consisted of 51 participants with a mean age of 39.8 years [standard deviation (SD) 11.9]; 84.3% were male, and 98.0% were Japanese. All patients had a psychotic disorder: schizophrenia, schizoaffective disorder, MAP, drug-induced psychosis, or residual or late-onset psychotic disorder induced by MA use. In this sample, pMAP occurred in 47.1% of the sample and SSD occurred in 52.9%.

Background Characteristics

The pMAP group experienced a shorter duration of psychotic disorder (10.0 vs. 15.7 years, $p = 0.049$) and had a higher estimated intelligence quotient (77.5 vs. 64.2, $p = 0.020$) compared to the SSD group. The pMAP group had a history of cannabis use (27.5 vs. 5.9%, $p = 0.001$), more incarceration due to stimulant control law violations (62.5 vs. 0.0%, $p < 0.001$), and increased delinquency in childhood (79.2 vs. 25.9%, $p < 0.001$). No significant differences were found for other variables, including age and sex (**Table 1**).

Both groups were more likely to include individuals who had not completed high school (75.0 vs. 50.0%), had work experience >6 months (69.6 vs. 66.7%), and were less likely to have been married (16.7 vs. 7.4%). All participants with a marriage history ($n = 6$) were divorced and single at the time of the study. Suicidal behavior was, to an extent, common in both groups (62.5 vs. 33.3%). Both groups were more likely to report history of psychiatric treatment (87.5 vs. 92.6%) and history of hospital admission (65.2 vs. 80.8%), but under psychiatric treatment before arrest was much lower than expected from treatment history (52.4 vs. 36.0%).

Behavioral Problems and Clinical Symptoms

We found that the pMAP group had shorter hospitalizations (281.5 vs. 509.5 days, $p = 0.012$). There were no other significant group differences in behavioral problems or clinical symptoms (**Table 2**). More than half of patients in both groups exhibited yelling (62.5 vs. 85.2%), auditory hallucination (83.3 vs. 96.3%), persecutory delusion (75.0 vs. 85.2%), or lack of insight (75.0 vs. 85.2%).

CP Equivalent Doses

We found that the pMAP group received fewer antipsychotics in CP-equivalent doses than the SSD group at 4, 8, and 12 weeks after admission and at the time of discharge ($p = 0.018$, 0.001, 0.007, and 0.023, respectively; **Table 3**). Friedman's test revealed a significant difference in the SSD group ($p < 0.001$), but not in the pMAP group ($p = 0.337$). In the SSD group, Scheffe's *post hoc* test revealed that CP-equivalent doses at 8 and 12 weeks after admission and at the time of discharge were higher than those before admission ($p = 0.002$, 0.012, and 0.017, respectively; **Table 4**). The number of CP-equivalent doses in the SSD group tended to increase after admission, which was not the case in the pMAP group (**Figure 1**).

TABLE 2 | Behavioral problems and clinical symptoms of pMAP and SSD patients in the medical prison.

	pMAP ($n = 24$)		SSD ($n = 27$)		
	Mean	**SD**	**Mean**	**SD**	***p*-value**
Days of hospitalization in the medical prison	281.5	187.0	509.5	363.0	0.012*
	Number	**%**	**Number**	**%**	***p*-value**
Yelling	15	62.5	23	85.2	0.107
Self-harm	5	20.8	4	14.8	0.718
Verbal abuse	12	50.0	15	55.6	0.782
Physical violence	2	8.3	6	22.2	0.255
Refusal of food	4	16.7	6	22.2	0.731
Playing with one's own feces	3	12.5	4	14.8	1.000
Auditory hallucination	20	83.3	26	96.3	0.175
Visual hallucination	6	25.0	8	29.6	0.762
Tactile hallucination	5	20.8	7	25.9	0.749
Persecutory delusion	18	75.0	23	85.2	0.485
Disorganized speech	9	37.5	17	63.0	0.095
Manic state	1	4.2	5	18.5	0.195
Lack of insight	17	70.8	23	85.2	0.310

*$p < 0.05$. *pMAP, persistent methamphetamine-associated psychosis; SSD, schizophrenia spectrum disorders; SD, standard deviation.*

DISCUSSION

To our knowledge, this is the first study to compare the symptoms and response to drug treatment of patients with pMAP and SSD in a medical prison. We found that the time of psychotic disorder was longer in the SSD group than in the pMAP group. As pMAP is not a spontaneous outbreak but rather an artificially generated psychosis caused by drug use, the onset of pMAP occurred when the patient was old enough to use drugs. For this reason, the duration of psychosis may have been shorter than that of non-artificially generated SSDs. However, as we did not find a significant difference in time of onset, no definite conclusions can be drawn from the present findings. This is a point that warrants further study. The difference in the estimated intelligence quotient is reasonable, as recent studies have shown that ∼70% of schizophrenic patients show a lower intelligence quotient after disease onset (19). On the other hand, there is little research at this stage on the decline of intelligence quotient in pMAP. Perhaps pMAP does not have a significant intelligence quotient decline due to the disease. In other words, patients with schizophrenia are genetically predisposed to have pre-existing cognitive impairment, which may be associated with a post-onset decline in intelligence quotient (19), whereas pMAP is an artificial onset due to drug use, making an innate pre-existing cognitive impairment unlikely, and therefore it may be associated with a decline in intelligence quotient. It is possible that this is not the case in the general population. However, unlike the general population, the estimated intelligence quotient for the entire prison population is ∼80 (16), and this study was conducted on hospitalized patients with high levels of

TABLE 3 | CP-equivalence value of pMAP and SSD patients in the medical prison.

	pMAP ($n = 24$)			SSD ($n = 27$)				
CP equivalence	**Median**	**Q**	**Range**	**Median**	**Q**	**Range**	**z score**	***p*-value**
Before admission	290.0	(0, 600)	0–1,183	300.0	(0, 1,025)	0–2,553	0.851	0.395
4 weeks after admission	400.0	(300, 802.5)	0–2,702	803.0	(515, 1,400)	167–2,842	2.371	0.018*
8 weeks after admission	488.5	(287.5, 663)	0–3,156	1,000.0	(603, 1,583.5)	100–3,312	3.239	0.001*
12 weeks after admission	600.0	(287.5, 970)	0–3,042	1,000.0	(600, 1,579)	12.5–2,850	2.682	0.007*
At discharge	466.5	(275, 940.5)	0–1,936	1,000.0	(500, 1,629)	0–3,394	2.265	0.023*

*$p < 0.05$. Q, 25% percentile, 75% percentile. After Mann-Whitney U-test, false discovery rate method (Benjamini-Hochberg procedure) was used. pMAP, persistent methamphetamine-associated psychosis; SSD, schizophrenia spectrum disorders; CP, chlorpromazine.

TABLE 4 | Changes of CP-equivalence value of pMAP and SSD over time.

				SSD ($n = 27$)	
CP-equivalence	***n***	***chi square***	***df***	***p*-value**	**Friedman test**
pMAP	24	20.971	4	0.337	
SSD	27	4.545	4	0.0003	**
SSD					Scheffe's *post hoc* test
Before admission	4 w after admission	7.720	4	0.102	
	8 w after admission	16.434	4	0.002	**
	12 w after admission	12.948	4	0.012	*
	At discharge	11.983	4	0.017	*
4 w after admission	8 w after admission	1.627	4	0.804	
	12 w after admission	0.672	4	0.955	
	At discharge	0.467	4	0.977	
8 w after admission	12 w after admission	0.207	4	0.995	
	At discharge	0.351	4	0.986	
12 w after admission	At discharge	0.019	4	1.000	

*$p < 0.05$, **$p < 0.01$. CP, chlorpromazine; pMAP, persistent methamphetamine-associated psychosis; SSD, schizophrenia spectrum disorders; df, degree of freedom.

illness; therefore, the results cannot be generalized to the community. In addition, the CAPAS itself, which is measured as the "estimated intelligence quotient," is only a surrogate measure and should be confirmed through more detailed investigation in the future.

Significant differences in other background characteristics such as history of cannabis use, incarceration for stimulant control law violation, and childhood delinquency, can be explained by the fact that the concept of pMAP itself is closely related to the crime of stimulant control law violation, which is related to delinquency and other drug use. The concept of SSD, on the other hand, is not related to drug crime by nature. The poor educational background and poor marital status which were common to both groups may be associated with poor social adjustment before arrest and difficulties in social adjustment after release. Low treatment continuation rates at the time of arrest may also indicate a need for special treatment attention for offenders with psychotic symptoms, which warrants further study.

No significant differences were found in behavioral problems or clinical symptoms, and the common prevalence of yelling, auditory hallucinations, persecutory delusions, and lack of awareness suggests that differentiation between pMAP and SSD based on behavior and symptoms alone may be difficult. Previous studies have not reached a consensus on the differences in symptom profiles (20–24). However, as Srisurapanont et al. suggested (22), we do not believe there are behavioral or symptom profiles specific enough to predict whether a patient should be diagnosed with pMAP or SSD. From this point of view, it seems reasonable to not distinguish pMAP from schizophrenia in the DSM, which classifies disorders based on observable symptoms. In fact, a diagnostic transition from substance-induced psychosis to schizophrenia is not an uncommon phenomenon (25, 26). A recent meta-analysis showed that amphetamine-induced psychosis (and not only methamphetamine) leads to a later diagnosis of schizophrenia in ∼22% of patients (24). However, this result does not indicate that substance-induced psychosis naturally morphed into schizophrenia.

The idea of regarding the two diseases as the same is not valid because the etiologies clearly differ, as should the inferred pathogenic mechanisms in the brain. Since SSD itself can be regarded as a heterogeneous entity (27–29), it will be subdivided based on its pathogenic mechanisms in the future.

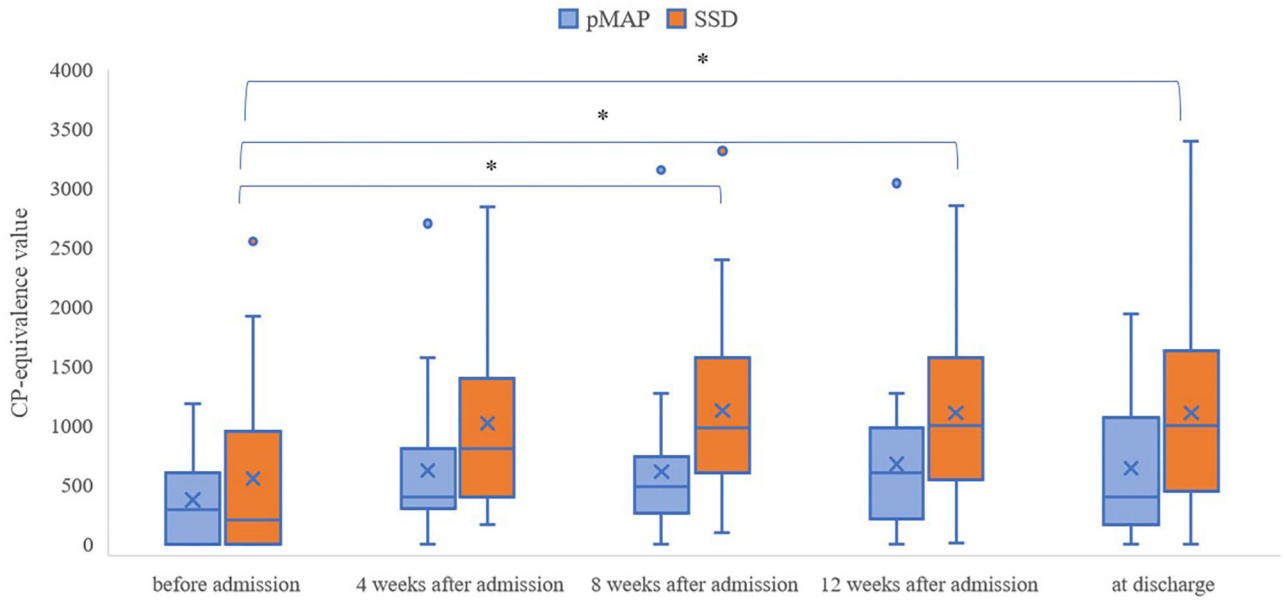

FIGURE 1 | Changes in CP-equivalence value over time within the pMAP and SSD groups. Friedman test: $p = 0.0003$ in the SSD group, $p = 0.337$ in the pMAPgroup. Comparisons between time points were performed using Scheffe's *post hoc* test. pMAP, persistent methamphetamine-associated psychosis; SSD, schizophrenia spectrum disorders; CP, chlorpromazine. *$p < 0.05$.

SSD and pMAP, which may have different etiologies, should be distinguished from each other. For example, schizophrenia with enhanced carbonyl stress (27, 28) should be differentiated from N-methylD-aspartate glutamate receptor encephalitis (29). Our view is supported by the differences in response to antipsychotic medication. In the present study, the SSD group received an increase in antipsychotic medication after admission, whereas the doses given to the pMAP group did not significantly increase; the pMAP group received significantly less antipsychotic medication after admission than the SSD group. In addition, the pMAP group had a shorter hospital stay than the SSD group. These findings suggest that the pMAP group improved and responded better to treatment than the SSD group, even with lower doses of antipsychotic medication. This is consistent with the opinion that "minimal psychotropic doses are desirable and should be combined with psychosocial interventions (21)." However, it is unclear in this study whether minimal adjustments of the antipsychotic dosage resolved symptoms or whether the improvements were due to adjustments to the type of medication. Additionally, a previous study has also shown that patients with treatment-resistant schizophrenia or other psychosis show lower verbal intelligence and fluency than treatment responders (30), and we cannot rule out the possibility that the difference in estimated intelligence quotient between pMAP and SSD in this study may have affected the outcome of treatment responses.

This study has several limitations. First, it was a retrospective study, and causality was unknown. Further research is needed before definite conclusions can be drawn. Second, the association between sex and MAP symptoms needs to be examined, as previous studies have suggested there may be sex differences (21). Third, although the present study revealed a temporal change in antipsychotic medication dose, it provided only collateral evidence of treatment responsiveness. Future studies are therefore needed to elucidate the relationship between treatment-related symptom changes and antipsychotic dosage. Fourth, the study was conducted in a medical prison, a facility that attracts the most severely mentally ill of those being sentenced; our sample did not include the less severely ill or patients in the community. Therefore, we believe there is a limit to the extent to which our findings can be applied to the general population. Fifth, this study did not use a measure of personality disorders, that could have a crucial role in symptoms managing, as well as in violence risk identification. In addition, the number of patients surveyed was relatively small, and the statistical power of the study may have been low. We used false discovery rate method for statistical correction in CP equivalent doses, but no statistical correction was used in background characteristics, behavioral problems, and clinical symptoms. Many comparisons for a sample of this size raises the possibility of Type 1 error in these sections. For these reasons, large-scale surveys are warranted.

Despite these methodological problems, the present study is important for suggesting a difference in treatment response between pMAP and SSD. In the clinical settings, pMAP would be more likely to be treated with maintenance antipsychotic medication than transient MAP; however, it would require a lower dose of antipsychotic medication than SSD, and it would be less likely to cause side effects. Minimal antipsychotic treatment should be used to reduce the number of adverse effects of antipsychotic medications. A previous study has shown that patients with MA use disorder are more likely to have extrapyramidal side-effects from antipsychotic medications (31).

This study suggests that clinicians may have a better rationale for choosing to treat pMAP patients with lower doses of antipsychotics than SSD even before starting medication. For both pMAP patients and clinicians, having this rationale for optimizing treatment would be a great benefit. Future studies comparing pMAP and SSD, controlling for potential treatment-resistant psychosis factors, are needed. Additionally, suggesting the differences between pMAP and SSD, which are equally regarded in the DSM-5, may lead to a more subdivided and refined psychiatric diagnosis and treatment of heterogeneous "schizophrenia." Further research on the differences found in this study is warranted.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Clinical Research Ethics Board of the Medical Correction Center in East Japan. Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

AUTHOR CONTRIBUTIONS

YS designed the research protocol, collected the data, undertook data analysis, and wrote the initial draft of the paper. TO critically edited the paper. TO and YO reviewed the final draft of the paper. All authors contributed to the article and approved the submitted version.

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An HIV Narrative of Female Inmates With a Lifetime History of Mental Illness in Durban, South Africa

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Introduction: South Africa (SA) has one of the highest prevalence rates of Human Immuno-deficiency Virus (HIV) globally, with women carrying a larger burden of the disease. Furthermore, female inmates have higher rates of HIV compared to their male counterparts, with an over-representation of mental illnesses among female inmates as well. Additionally, mental illnesses are highly prevalent in people living with HIV, with HIV and mental illness sharing a complex bidirectional relationship. This study, which forms part of a larger two-phased, mixed-methods study, describes the experiences of contracting and living with/being affected by HIV, among female inmates with a lifetime history of mental illness, in a South African setting.

Method: This study was conducted at a correctional centre in Durban, KwaZulu-Natal, SA. Fourteen adult (18 years and older) female inmates, were purposively selected to participate in individual, in-depth semi-structured interviews. Participants had a lifetime history of mental illness, trauma and were either living with HIV, or affected by HIV. Women from diverse cultural backgrounds, who were fluent in English, were selected. This manuscript focuses on the description of the HIV component of the qualitative interviews only. Thematic analysis was used to analyse the data.

Results: Themes related to contracting HIV included intimate partner betrayal, gender differences regarding sexual behaviour, fear associated with HIV and the importance of pre- and post-test HIV counselling. Themes related to living with/being affected by HIV included the challenges women experienced in their home community, which contrasted with their experience of living with HIV in the prison community, and the importance of accepting an HIV positive life.

Conclusion: HIV is prevalent in the female inmate population at this correctional centre in SA. This study emphasises that whilst incarcerated, attempts should be made to educate, train, support and manage HIV in this population, thereby helping to curb the epidemic. Further research should aim at exploring such strategies. The study also underscores the importance of the continued need for HIV education in order to eradicate associated stigma and discrimination which are still prevalent in SA.

Keywords: HIV, lived experience, South Africa, lifetime mental illness, female inmates/prisoners/offenders

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INTRODUCTION

Although Human Immuno-deficiency Virus (HIV) is a global public health challenge, the majority of people living with HIV/AIDS (PLWHA) reside in sub-Saharan Africa (1). South Africa (SA) has one of the highest prevalence rates of HIV in the world with only Eswatini, Botswana and Lesotho exceeding HIV prevalence rates in SA (2). Approximately 7.7 million South Africans were PLWHA and the country had an HIV prevalence of 20.4% among adults aged 15 to 49 years in 2018 (3). SA recorded 240,000 new infections in 2018 and 71000 people died of AIDS related illnesses in the same year (3). Although the incidence of HIV is declining, the prevalence is increasing, since more PLWHA are on anti-retroviral therapy (ART) and are living longer (4).

In sub-Saharan Africa women have a higher prevalence of HIV than men (5), and in SA, women are disproportionately affected by HIV with 62.7% of PLWHA being women (3). Cultural practices, gender-based violence and the low socio-economic status of women are all cited as reasons to explain this disparity (5). The HIV prevalence among young women aged 15 to 24 years is almost double that of young men of the same age (3.83% in males vs. 7.25% in females) (6). The epicentre of South Africa's HIV epidemic is KwaZulu-Natal (KZN) province (7). Although KZN is the second most populous province in the country (Gauteng being the most populous) it carries the largest burden of HIV (27%) (7). However, the burden of HIV and mental illness among female inmates in KZN correctional centres remains under-researched.

While women constitute a minority of the total prison population, the number of incarcerated women has increased by 50% globally since the year 2000 (8). Furthermore, in most countries the prevalence of HIV in prisons exceeds the prevalence of HIV in the general population (9). A recent review of HIV prevalence in prisoners found that, in some countries, female prisoners had a higher prevalence of HIV than their male counterparts and this is particularly concerning in West and Central Africa, where the prevalence of HIV in female prisoners is almost double that of male prisoners (9). Women are at higher risk of entering prison with sexually transmitted diseases and HIV/AIDS (10). Previous estimates of HIV prevalence in South African correctional centres were as high as 40 to 45% which is more than double the prevalence amongst adults aged 15–49 years in the general population (11). In addition, women in prison have elevated rates of mental illness compared to their male counterparts (12). Mental illnesses are highly prevalent in PLWHA (13), with HIV and mental illness sharing a complex bidirectional relationship (14, 15). Mental illnesses may increase an individual's risk for contracting HIV due to increased social vulnerability; increased inclination for high risk behaviour; associated alcohol and substance misuse; and disinhibition within intimate relationships. Conversely, mental illnesses may be secondary to direct result of HIV neuro-invasion or psychosocial ramifications of living with a chronic illness, or due to adverse effects of antiretroviral therapy (ART) (14, 15). Despite this high prevalence of women living with HIV (WLWH) in SA and the elevated prevalence of WLWH in prison, there remains a paucity of qualitative studies that provide an in-depth understanding of their lived experiences, particularly among inmates with mental illness.

A further area of interest of this study was incarcerated women's HIV experience within the South African cultural context. SA is a country made up of people of diverse cultures and ethnicities. The United Nations Educational, Scientific and Cultural Organization (UNESCO) defines culture as a set of distinctive spiritual, material, intellectual and emotional features of society or a social group, that encompasses, not only art and literature, but lifestyles, ways of living together, value systems, traditions and beliefs (16). Ethnicity refers to shared cultural practices, perspectives and distinctions that set apart one group of people from another. The most common characteristics distinguishing various ethnic groups are ancestry, territorial possession, language, forms of dress, a sense of history and religion (17).

The largest ethnic group in SA is the Zulu nation, the majority of whom live in KZN and Gauteng provinces (17). A study in four South African correctional centres found that cultural conceptualizations influence health-seeking behaviour among inmates, and that both consultation of traditional healers and biomedical remedies is widely practiced (18). Traditional beliefs, medicine and health practitioners play an important role in healing in the lives of African people (19). It is therefore important to examine female inmate's lived experiences of HIV within this African cultural setting.

The first phase of this study, which measured the prevalence of mental illness, HIV and trauma in 126 female inmates at this correctional centre in KZN, found that 36.5% of women had experienced a psychiatric disorder, or a relapse of their psychiatric disorder in the past year, while 90.4% of the women had a lifetime history of suffering from a psychiatric disorder (20). In addition, in phase one of this study, 64.3 % of the participants interviewed were WLWH (20). Phase one also revealed an association between HIV and post-traumatic stress disorder and between HIV and alcohol use disorder (20).

The aim of this manuscript was to explore the HIV narratives amongst female inmates with a lifetime history of mental illness in order to gain an in-depth understanding of their lived experiences and perceptions of HIV, in a South African setting.

MATERIALS AND METHODS

The findings reported in this manuscript form part of the second phase of a larger mixed methodology, sequential, explanatory design study which aimed to describe the mental health needs of female inmates in Durban, SA. This study, in keeping with a design as described by Creswell and Plano-Clark (21), began with a quantitative analysis. A qualitative arm, which was used to explain findings from the quantitative phase (i.e., the high prevalence of trauma, HIV and mental illness), followed and helped to contextualize these quantitative findings. It enriched the quantitative findings and generated new data. The qualitative phase was conducted in keeping with a constructivist epistemology.

This study also adopted a transformative framework (22). Transformative research helps to create a more just and democratic society. The transformative lens can be applied to taking a stand on a broad array of issues. In this study, the research is done through a social justice and feminist lens. The results of the research are intended to contribute to broader social objectives which include serving as an evidence base to create an awareness of the mental health needs of this marginalised population, and to inform future policy development for rehabilitative programmes for female inmates in the Department of Correctional Services (DCS) in South Africa.

This study was conducted at a correctional centre in KZN in SA, which is one of the largest correctional centres in sub-Saharan Africa. It accommodates mainly male prisoners but it also has a section for females. Females are referred from many parts of KZN as this is one of the only correctional centres in the province which accommodates women serving life sentences.

Participants

In phase one, 126 female inmates were recruited into the study and their prevalence of mental illnesses, trauma and HIV were quantitatively measured. After analysis of phase one data, 14 women (including sentenced offenders and remand detainees) were purposively selected and invited to participate in phase two, which took the form of individual, in-depth semi-structured qualitative interviews. The 14 women, who were from diverse cultural backgrounds, had a lifetime history of mental illness and trauma, and were either living with, or affected by HIV. This manuscript reports on the HIV component of the qualitative interviews. Including women who were not living with HIV, broadened our understanding of perceptions of all incarcerated women regarding HIV. Only women who were fluent in English were selected to participate in phase two as the qualitative interviews were conducted by the first author in English. When no new themes emerged from the data with respect to HIV narratives, saturation was achieved and sampling ceased.

Data Collection

The first author, who conducted the data collection and analysis, is a forensic psychiatrist and completed training in qualitative research at the University of the Witwatersrand. The interview followed an open-ended format with a few questions on each topic (HIV, trauma and mental illness) in the interview guide and with minimal probes. Participants were encouraged to speak freely and openly about their lived experiences. The semi-structured interviews were audio-recorded.

Ethical Considerations

Ethical approval was obtained from the University of the Witwatersrand Human Research Ethics Committee (Clearance number M181026) and approval was also granted by the DCS in SA. The study was fully explained to the selected participants and written informed consent, including consent for audio-recording, was obtained.

Analysis

After verbatim transcription of audio-recordings, the transcripts were read more than once to verify accuracy with the audio-recordings. Braun and Clarke's thematic analysis was the chosen method of analysis (23). Data analysis commenced with the first author familiarising herself with the data by reading through all the transcripts several times before commencing the coding process. A qualitative data analysis software programme, MAXQDA, was used to analyse (code) the data (24), which also ensured an electronic audit trail. A code book was then developed using MAXQDA. After the 14 transcripts were coded, the researcher began the process of compiling initial subthemes and later themes. Themes were revised multiple times and were subsequently correlated with actual extracts of quotations from participants which highlighted the theme. This was an iterative and cyclical process and was done in collaboration with the second author, a qualitative researcher and clinical psychologist. Idiomatic expressions were retained in the quotations. Participants are identified by pseudonyms in the manuscript.

Credibility, dependability, transferability and confirmability (which includes reflexivity) as defined by Guba and Lincoln were the constructs used to establish scientific rigour (25). Credibility was ensured by the first author conducting all the interviews, as well as through analyst triangulation by the first and second authors. Transparency was enhanced using a qualitative data analysis software programme. Thick descriptions of the study setting and population as well as detailed in-context descriptions facilitated transferability of the findings.

RESULTS

Socio-Demographic, Clinical, and Forensic Profile

The mean age of the 14 participants was 36.2 years (standard deviation 9.3). The majority of women had a high school level of education however, a large proportion were unemployed prior to incarceration. Most participants were from urban areas and were single, separated, divorced or widowed. The majority of women were living with HIV and were on anti-retroviral therapy (ART). Women were charged with offences including fraud, theft, possession of drugs, murder, robbery with aggravating circumstances and kidnapping. The most common lifetime mental illnesses among participants were major depressive disorder, post-traumatic stress disorder and alcohol use disorder. There was also an over-representation of borderline personality disorder in this qualitative phase sample.

Themes

Significantly, 27 years after the new democratic dispensation in SA, remnants of the destructive effects of apartheid (national policy of racial segregation) still linger (26). This was manifest in the strong racial sentiments which permeated the women's narratives. The relevant quotations were thus included in the manuscript to highlight the racial stereotypes and prejudices still present in SA today however, the actual words describing specific ethnic/cultural groups have been redacted. The authors

dissociate themselves from any prejudicial sentiments reflected in statements harboured by the participants.

The themes are summarised in **Table 1** and then described in detail.

CONTRACTING HIV

Intimate Partner Betrayal

Disbelief and Anger

Many women described being shocked at their diagnosis, as they expected their intimate partners to be faithful to them. Sibongile expressed her disbelief upon diagnosis as she had never engaged in sexual intercourse prior to marriage, "My husband…he was my first one, I didn't sleep with my boyfriend in high school…and then now I'm married, pregnant and then I'm HIV positive…I was very angry. I was shocked." Esther was enraged when she discovered she was HIV positive, "I think if there were not any walls here or any burglars or any cage holding me back, I was furious…I was very, very angry."

Injustice of Being Infected With HIV

Didi expressed her desire for vengeance at being betrayed by her husband and the injustice of being infected since she had been a faithful wife, "I know I was a good woman, I never cheat but now I find that I am HIV positive...it was so difficult. I could not even like my husband, I was feeling even to fight back because he was the one…I was so trustful, I was so faithful to him." Katlego also spoke about her feelings of being unjustly infected by her partner, "I never pursued the disease, in a sense as whereby I had a lot of sexual partners, but instead I got it from the one person that I trusted." Noma described how many women felt about being infected by their partners, "Most of them, especially the married ones, they feel that they have been robbed by their husbands because most of…women, they don't go around cheating. So, most of our…men, going around and cheating, it's kind of a norm. So, you'll be sitting at home doing everything by the book, then your husband will be going around, then he will bring the HIV to you. So, that is what is happening…because most married people are HIV positive and the carrier is their husbands."

Frustration at Partner's Denial and Lack of Support

Some participants explained that they had to cope with denial from their intimate partners and in some cases the women had to force their partners to get tested. Some assumed the role of a care-giver for their partners, whilst simultaneously having to come to terms with the illness themselves. This was manifest in Noma's account, "The minute you tell him that you're HIV positive, their attitude, they just snap and say 'No, you're the one who brought this', and they don't want to go and test…so, you have to gradually beg him to go and test so that you can start treatment together. So, i-role iyakho [your role] it becomes more of a nurse, more of a counsellor whilst you are also trying to figure out what to do about this. Whilst you're trying to adjust that now, I'm HIV positive whilst I'm being sincere and honest to my husband. The very same husband that brought this to you is also your responsibility." Sibusisiwe also expressed her frustration and disappointment at her partner's denial, "He was the cause of it and he was busy denying it and at times I would think what kind of a person he is who doesn't own up or doesn't man up and you know [say], 'I've done it, I'm sorry' you know, whatever, you know, he just denies everything."

Gender Differences in Sexual Behaviour

Men Having Multiple Sexual Partners Accepted

Some women alluded to infidelity among men being accepted as a norm and that this was frequently how HIV was introduced into

TABLE 1 | Summary of the main themes and subthemes.

Overarching theme	Theme	Sub-theme
Contracting HIV	Intimate partner betrayal	Disbelief and anger
		Injustice of being infected
		Frustration at partner's denial and lack of support
	Gender differences in sexual behaviour	Men having multiple sexual partners accepted
		Women are raised with traditional conservative values
	Fear associated with HIV	Fear associated with potential loss of physical integrity or loss of life
		Fear of contracting HIV in prison
	Importance of pre- and post-test counselling	
Living with HIV	HIV in the home community	Reluctance to disclose their status
		Lack of knowledge, misconceptions and prejudices about HIV
		Stigma and discrimination
		Cultural beliefs about HIV causation
	HIV in the prison community	Disclosure
		Support
	Coming to terms with an HIV positive life	Acceptance of diagnosis and starting treatment
		Rationalising their illness
		Adopting a healthy lifestyle

the relationship. Noma expressed the following, "It [cheating] is a norm, Doc. If you're not doing it, it's as if you're not an ordinary man…If you're married, you must be married, then you must have a concubine on the other side. If you're not doing that, you're not man enough. That is a norm…if you're having a problem with your husband, they will tell you that, 'Even my grandfather, even my great-grandfathers, that's how things were done in an…way'. It's a norm." Didi stated that her husband's family practised polygamy and he wanted to practise the same in their marriage, "Because he grew up in a family of a polygamy so he wanted to apply that how he grew up to me." Katlego described her father as having other partners while being married to her mother, "My mom and my dad were married, yes, but he was in and out of the picture. He had other women."

Women Are Raised With Traditional Conservative Values

Some participants stated that women were raised with strong, conservative, traditional values. They were raised to believe that they had to remain celibate until marriage, as Sibongile commented, "Yeah my culture plays a very important part…because I was told while I was still very, very young ukuthi [that] that you don't sleep with a man…you can have a boyfriend, but there's no sleeping with the boyfriend up until you get married, up until you have somebody whom we know ukuthi [that] okay this is your man; he must pay for your family and then you can have your home, you can start to have your children and everything. That is how I grew up." Similarly, Katlego noted, "We're taught that from a young age that you keep your virginity for as long as you can. That's your present to your husband, when your family gives you away to the next family."

With regards to the traditional role of women, participants described gender inequalities that persist in their culture as evident in Noma's comment, "In most African countries or cultures, the woman must always be submissive. That is the problem…They were conditioned to think that way and to act like that." Didi also described the traditional view of how a woman should be raised in her culture, "The role of the woman in that [deep rural] area, from the age of sixteen, eighteen when you have got an ID [identity document] you must get married, that is what they know. And when you are able to write a letter then it is how your schooling must stop. There is nothing more that a female must be more educated. You must have children, must have your family." These accounts, as described by the women, portray themselves as being disempowered and subject to a patriarchal society.

Fear Associated With HIV

Fear Associated With Potential Loss of Physical Integrity or Loss of Life

Women spoke about their overwhelming fear, upon diagnosis of having HIV, related to becoming severely ill and thoughts of imminent death, fuelled by memories of people from their past who had suffered such a fate. Didi feared her physical deterioration. She said, "When I look at my neighbours how they are facing this vulnerable disease, because some, they could not eat. Some they were full of sores. Some the legs were swollen. They have got a problem of rash. So, I was looking at the diseases that I will be facing, a giant. That is why I was so having that fear that 'Oh, it's me, it's my turn."' Katlego also expressed fears of premature death due to HIV, "Because I always used to see it as this disease whereby you'll get sick and drop dead…it's scary because to me, I thought it was a life sentence. I was just going to die at any time." Melissa related the same feeling of being overwhelmed with fear upon diagnosis, "It was terrifying. For me at first I thought it was just over you know." The fear of impending death was also evident in Nokukhanya's account, "When I went to the clinic here, they counselled me…I even told the person that was counselling me first that I'm too scared to get the result because I used to see my aunty getting sick, so I will be like that and I will die in prison."

Fear of Contracting HIV in Prison

A few of the women who were HIV negative stated that prior to coming to prison they had never interacted closely with family or friends living with HIV. They spoke about having many fears about contracting the virus in prison which was mostly due to a lack of knowledge as described here by Neeta, "Outside I didn't come into contact with people who are HIV positive, whereas here, I have. When I first came to prison, I was very cautious, you know, because [of] us using the showers together and all of that, it terrified me…so yeah, I was scared." Alicia, shared similar sentiments, "I have not come across someone close to me within my family or within my friends that are HIV positive…I was terrified of course of HIV. I didn't want to use the same anything as them [inmates living with HIV] because I thought, 'Oh my gosh, I could get it."'

Importance of HIV Pre- and Post-test Counselling Upon Diagnosis

Many participants spoke about the importance of HIV pre- and post-test counselling at the time that they were diagnosed. Women who did not get any counselling described how difficult the experience was and what a devastating impact the diagnosis had on them, because of their lack of knowledge about HIV as described by Katlego, "It was horrible. It was basically one of the worst moments of my life, whereby, what can I say, maybe being on the outside you get counselling, pre-test counselling, here there isn't most of that, so you're just thrown into the deep end of something that you don't know about and it's scary. Because to me, I thought it was a life sentence. I was just going to die at any time so maybe if I got pre-counselling and they told me that you know, this is the disease and this is what happens, you get treatment, then maybe I think I would have gotten, I would have taken it a little bit better." On the other hand, women who did get HIV pre- and post-test counselling described how this helped them accept and cope with the diagnosis as detailed by Noma, "The counsellor, I think he did a lot. The way he counselled me, he prepared me. He prepared me pre- and post. The time I left there, I did not have any regrets about testing, even the results, I just accepted them…I think the person who was counselling me was good enough because he told me that it's not the end of the world." Katlego also expressed the desire to become an HIV counsellor so she could help support others, "I like learning about

things even if it was HIV courses whereby I could maybe learn to be an HIV counsellor and help someone else."

LIVING WITH HIV

HIV in the Home Community

Reluctance to Disclose Their HIV Status

Many women discussed how difficult it had been for them to disclose their status to their families and friends while they were living in their home communities. Sibusisiwe expressed the need for PLWHA to conceal their status for fear of being judged and disparaged, even by those closest to them, "While I was outside, you have to be discreet, very discreet with what you do and how you do it, who sees you and who doesn't, because even in your own family, people will talk…and belittle you, and you feel like you, you [are] nothing." Melissa echoed this, stating that her lack of disclosure was due to fear of rejection and possible loss of relationships, "I would like to be open about my status. Currently I'm not though. I think I am also afraid of people judging me. Yes. I'm afraid of the rejection…like people not wanting to be around me maybe if they know that I am HIV positive." Didi also expressed that people's reluctance to disclose was driven by their fear of rejection by those they loved, "People, they are afraid to disclose their status because they know that they will lose something. They will lose their marriage. They will lose their friendship. They will lose even their children." Due to the stigma attached to HIV, Sibongile, a teacher, spoke about the need to conceal her status with regards to taking ARTs, "Like maybe you are going for a [matric] marking and I had to pack my medication, you see, and you have to drink your medication. So many people are there, you have to use those pill containers…so that people they won't see you carrying those containers that are written ama [the] antiretroviral and everything, you have to put them into those pill containers like you are drinking pills like everybody else is drinking pills." Mpumi concurred that people are hesitant to disclose their status because of the stigma attached to the diagnosis "Most people hide their statuses yeah, even getting into relationships, people hide their statuses. I've dated a few guys that have hidden their statuses from me, you know, and [you] end up finding ARVs in their cupboard, somewhere along the line during the relationship. Yeah, people still hide their statuses most of the time because it's still a stigma." This proved to be the case among women from all cultural backgrounds, as seen with Lisa, "Like in the…community, they still hide the fact that they're HIV positive." Didi alluded to people's reluctance to disclose their status impacting on their treatment adherence and ultimately resulting in negative effects on their health outcomes, "But outside it is hard to disclose…people have got their secrets, their confidentiality so that is why people they are not healed…because that is where [why] they do not take their medication on time."

Lack of Knowledge, Misconceptions, and Prejudices About HIV

Participants related how the lack of knowledge about HIV was still very rife and that this led to misconceptions and prejudices. Participants described how they would be treated by the community if they revealed their HIV status. Didi stated, "The problem is that, if you disclose your status to the outside community…they cannot share their food with you. There will be no contact…there is that myth of HIV, using my spoon, using the same toilet then you will be transmitting the HIV virus…They cannot even hug, if you hug a person where [when] they know you are HIV positive they say 'Oh'. That is the problem. It is hard because they lack knowledge." Katlego also remarked that there was a lack of knowledge about HIV in her community and that people were reluctant to openly engage in discussions about HIV, "The…community from what I know is not really educated about HIV. They're blind to it. It's there but it's not something they like talking about. It's not something they're educated about because it's automatically like the mentality that I had, which is automatically when you're sick, you're gonna die when you're infected." Lack of knowledge and misconceptions about HIV prevailed across women from all cultural backgrounds. Lisa commented, "I am from the…community, they're…very ignorant [about HIV]." Alicia admitted to a lack of knowledge as being responsible for her prejudices, "I would ostracise them [PLWHA] because I had no knowledge of it. Now I've got more knowledge of it and I see it differently." Esther also shared similar thoughts about the misconceptions that existed among people in her community, "…people are very naive because they only believe I'm sure that it's just amongst…people, which is utter nonsense because at [in] this day and age anybody can get HIV."

Stigma and Discrimination

Women described that they felt judged by society for being HIV positive. They quoted derogatory terms that were often used to describe WLWH and stated that the community would often blame the women for contracting the virus, as participant Sibusisiwe remarked, "They would think that maybe you [are] a whore of some sort. That you sleep around that's why you have HIV." Mpumi who was HIV negative also felt the same way, "But there's still that stigma, you know, having HIV sometimes people think that…the women that are HIV positive probably sleep around and that's why they got it, they deserved it or something." These sentiments were evident across cultures, as illustrated by Neeta, "The…community…they just assume you were sleeping around and that's how you became HIV positive…the moment you have this HIV positive status, you have a stigma attached to you that you're from the lower end of life and you're the trash of the world." Similarly, Alicia commented that women received disrespectful labels and were blamed for being infected with the virus, "If it were to happen to someone who's maybe…, it would be frowned upon as maybe something dirty…I thought it was a dirty thing and I am assuming that's what everybody else in my family or in the culture would feel as well…it would be self-inflicted, that's what I thought." This was also expressed by Seleste, "They [people from her community] think that you sleep around with…people and that you are a disgrace to the family. You are not part of the family because you slept around with so many guys and did so many wrong things and they cannot accept you in the family and all kind of things. And they always just give you bad names and everything." Melissa remarked, "If they

[people from her community] know that you're HIV positive, it's like a death sentence. Yes, so it's like you're the walking dead. You probably don't exist anymore…they would normally treat a person like that like trash, you know."

Participants also quoted non-verbal examples of discrimination which they encountered regularly. This enacted stigma evoked feelings of loss of worth and dignity, as detailed by Didi, "When you are taking your ARVs in the centre…so people they look at you, they name you. You are just stigmatised, there is that discrimination, 'This woman is taking the ARVs'…there will be spreading of news that our teacher is HIV positive…so this giant of being HIV positive, people they are still not accepting." This was echoed by Sibongile, "Like the look nje [just], even by not telling a word, like…outside the doctor will give you a script for 6 months. So you just take that script, you give it to the pharmacy, maybe there are so many people waiting in the pharmacy, they will say, 'Oh, ARVs, those are ARVs.' Just the look, only the look will tell you a lot without even speaking. So you will see that one is so judgemental."

Cultural Beliefs About HIV Causation

Women talked about how HIV was perceived, particularly in the rural communities, as being a spiritual illness due to bewitchment rather than as a medical illness. They would thus seek intervention from traditional healers rather than western medical practitioners, as described by Didi, "In my [rural] community there are two groups. Others, they say you are HIV positive, there is nothing of a such. They say if a person is HIV positive, it is only someone that is using the muti [African traditional medicine] to make that person sick. If you have got a problem with the legs, swollen legs, there is something that has happened. Maybe it is this spiritual ancestors, if [so] they want to take you to a spiritual sangoma [African traditional healer]. So, there is that demonic spirit that has come into your life to change you." Noma concurred with this notion, "Like, there are people who go to Joburg to work in the mines. So, when they come back, some of them they come back critical, sick, sick, sick [with HIV]. Then they [family] will take them to the sangomas and then they will say 'No, that person has been bewitched,' unedhliso [poison], and all those things. Then, taking the person to the clinic will be the last resort, but maybe by the time they take the person to the clinic, it will be too late. So, they rather go to the traditional healers than to the medical professionals."

HIV in the Prison Community

Disclosure

The women spoke about it being easier to disclose their status inside prison for many reasons. Outside prison many women felt as though they were alone, as if they were the only ones infected with HIV, whereas in prison, they saw that many women were living with the virus and this encouraged them. This was expressed by Katlego, "There are so many of us living with it here. The majority of us here have it…I think with me being…diagnosed in prison, was in a way I think a blessing because maybe if I was on the outside, I would have still been in denial because I would have thought it's only me that has HIV, but being in prison, I saw that there are women living healthy lives, looking healthy and alive with HIV." They stated that they did not feel judged like they did outside and that they felt more accepted. Sibusisiwe explains, "When you get here, it's unlike on the outside. On the outside world you feel everybody's on you, watching you and whatever you do, you must hide this, you must hide that. There's no judging here inside. When we go to the clinic, we go all to the clinic, we go to get our medication. No one says 'Oh this one is taking ARV'. No one is on anyone's case. You just do you." Esther shared a similar perception, "So, here it's no big deal because a lot of people here are [have] HIV, I can't say everybody because I don't know but you'll find that the way we know is when we fetch our medication which is obvious so that's the only way you're going to know."

As alluded to above, due to the lack of privacy in prison, all WLWH attended the same clinic every month to consult with the doctor and collect their ARTs, thus the women's status were revealed due to the nature of the prison system. Most women felt that this unintentional disclosure had a positive effect as the women did not feel alone. It encouraged adherence, they were able to enlist the support of other WLWH and it helped to eradicate stigma, as described here by Noma, "Then, you cannot hide it in prison. Like, what is happening, we are grouped okay, every Tuesday and every Friday there is a chronic clinic. They will call your names, 'So and so, and so, you're seeing Doctor H'. Everybody will know that Doctor H is the doctor for HIV, so you cannot hide it. Even if you hide it, you're staying with a roommate. At six o'clock, she will see when you're taking tablets and the container for HIV is very loud, you cannot hide them so, you cannot hide it…I think it's good because the more people know about you and now you don't mind, I think it's taking that stigma away. How I wish it can be like that even outside. Here, it's different from outside. There is more acceptance of HIV than outside." She elaborated on the positive side of being in prison which was that it encouraged good adherence which translated into better health outcomes for inmates, "I think it's better here than outside and I've noticed that most people who are in prison are taking ARVs better than people who are outside."

Support

Contrary to the participant's experience in the home community, most of them found the prison community to be very supportive. The women spoke about the importance of supporting each other with respect to their HIV status, as a coping mechanism for living with the illness. Didi detailed this, "If you are using the medication, we support each other. Even if the person does not have the medication, we even supply for each other if we are using the same medication. We remind us [each other], 'Time, tablets time'. So, we even bang the walls, 'Six o' clock'…It is good here in prison to disclose the status because we are altogether in one section, in one building for many years…so we must support each other because some other people, if they are having some problem, they do not take their medication, they do not take their food. So, we help each other to make us strong." The women alluded to support not only from other inmates but also from the staff who encouraged them, as Nokukhanya remarked, "Even if you lose weight, they [staff] will be more concerned, 'Have you

seen that you losing weight? Did you take your CD4 count? Did you take your medication regularly?"'

Participants also identified gaps in the current correctional system with respect to comprehensive management of their HIV illness. They expressed the need to establish support groups both inside and outside prison as described by Katlego, "I think I will gather information once I'm out of prison because here there aren't any of those facilities. There are no support groups, like no one to talk to about it basically. Yes, there are many of us that are positive, but it's every man for themselves basically. You just go to the hospital, you take your treatment and goodbye, that's it…maybe having someone that can tell me, 'Listen, I've had it for this long. I'm alive and kicking. I'm fine' would bring me more comfort. So, support groups to me, would mean a lot." Sibusisiwe went on to explain further how support groups would encourage and assist women to start treatment, eradicate their fear of ARTs, encourage adherence and how it would help women by instilling hope that they could live long and healthy lives, "There are people also who are here, maybe they don't want to take their medication and they don't understand and if I come to you, you see I look healthy and strong, and the person who doesn't know me, that I'm taking medication wouldn't even tell that I'm HIV positive…I would encourage that person to take the ARVs, tell them that it's going to be okay, it's their life and it's important for them to do as they are still going to live longer and they can see that you also look healthy…and strong and then they get motivated."

Coming to Terms With an HIV Positive Life

Acceptance of Diagnosis and Starting Treatment

Many women described taking a while to accept their HIV positive status but, after acceptance, they decided to start ARTs as stated by Katlego, "It took me a while to come to terms with it but eventually I thought I'm infected, I'm infected, I might as well take treatment and try and deal with it." Sibusisiwe shared similar sentiments, "Now I feel I've accepted and I'm on ARVs and I'm healthy, I'm strong…I adhere to the times how I'm supposed to take the medication, so I've dealt with it." Noma summed it up by saying, "So, taking treatment is the best thing that you can do for yourself."

Rationalising Their Illness

Many women rationalised their HIV by comparing it to other chronic illnesses and some even stated that they preferred having HIV, as it had a better prognosis compared to other illnesses such as diabetes or cancer as described by Noma, "The only difference between myself and the other person who is not HIV positive is that I have to take medication. And HIV, the way I look at it, it's better than cancer, because the minute you start taking ARVs, your viral load goes down and you can still live a normal life. Unlike cancer which is a silent killer. So, I think HIV, I think I like my HIV." Esther shared similar thoughts as well as the fact that HIV had a very simple treatment regimen which facilitated good adherence, "No, I mean my mum…was diabetic so there was a possibility of either having diabetes…which is a worse killer than HIV…There is only one tablet that I take daily so it doesn't affect me at all…I think diabetes is worse than having HIV really…. So, when you say you are HIV positive it's like okay. It's nothing really." They spoke about how HIV was not a huge problem in their lives, because they had other more stressful issues to deal with being incarcerated, as expressed by Sibongile, "HIV is just a small thing compared to the things that we are facing every day. There are so many things and so many problems around here, so…the HIV thing it is not a problem."

Adopting a Healthy Lifestyle

Women also spoke about adopting a healthy lifestyle and making positive changes in their lives after accepting the diagnosis, as mentioned by Noma, "But now that I discovered that I'm HIV positive, I started changing my lifestyle, changing the diet, starting taking care more of myself and choosing a better diet, multivitamins and stuff." Nokukhanya also started making better choices, particularly concerning alcohol use and safe sex practices, "I can say it's changed the way I used to live. I never used to care for myself. I used to drink [alcohol] outside, I used to sleep with women not knowing their status…I don't do that without knowing your status and before I do that, I tells you my status, so let's have condoms." Seleste shared a similar experience with respect to her illicit drug addiction, "It [HIV] did change my life…It makes me think of not doing the things that I did in my past, like going back to drugs."

DISCUSSION

This article situates one of the quantitative findings from the first phase of the study, that is, the high prevalence of HIV among female inmates, in a South African setting, and it explores the impact of this illness on the lives of these women, both before and during incarceration. In the narratives of the participants, themes pertaining to contracting HIV and also living with HIV were elicited. These themes revolved around intimate partner betrayal, gender differences regarding sexual conduct, fears surrounding contracting HIV and the consequences thereof, the importance of HIV pre- and post-test counselling, the experience of living with HIV in the home and in the prison community as well as coming to terms with an HIV positive life.

A strong theme of intimate partner betrayal was apparent, with many participants describing that they were unknowingly infected with HIV by their husbands or boyfriends. They lamented the injustice of being infected in this manner as they had trusted their intimate partners. Women spoke about their emotional experiences upon discovering that they were HIV positive, which included feelings of disbelief and anger. To add to their distress, they described their partner's denial of accountability and their frustration at having to force their partners to test for the virus. Similar negative reactions were cited by Maman and colleagues in a South African study in which male partners were reported to have overtly negative reactions when their female partners disclosed their own positive status (27).

Participants also alluded to their cultural background with respect to the common practice and social acceptability of men having multiple sexual partners, whether as part of polygamous relationships, or secondary to infidelity with married man having concubines. They also described the generational pattern of this practice. This is supported by the literature. Shisana discussed this practice whereby in some cultures in southern Africa, men

are expected to have multiple partners, while women are expected to be monogamous (5). This finding which related to men more commonly having multiple sexual partners was further reiterated in a South African study by Onoya et al. (28). Multiple sexual partners also represented the main cultural practice cited by participants as being a reason for the spread of HIV in a qualitative study conducted in Lesotho (29). This community-based study from Lesotho detailed this phenomenon which makes reference to the African culture accepting men having multiple sexual partners, but expecting women to have only one partner (29).

The women in our study spoke about the values which were inculcated in women such as the traditional gender roles and expectations of women which manifested in women feeling disempowered in relationships. Some African communities remain patriarchal, which contributes to gender inequalities in relationships, and by extension, the sexual relationships between men and women (5). This leads to women feeling unable to express and assert themselves with respect to issues like safe sex practices, which makes them more vulnerable to contracting HIV and has been cited as one of the reasons women in sub-Saharan Africa are disproportionately affected by HIV. Gender inequality thus drives the HIV pandemic (30).

Fear associated with HIV was also a common theme expressed in this study. WLWH reported experiencing an overwhelming fear associated with being diagnosed with HIV which was related to the potential loss of physical health and imminent loss of life. Women who were HIV negative spoke about their fear of contracting HIV in prison which was largely due to a lack of knowledge about HIV transmission. A recent qualitative community study in the North West province of SA also described prominent fear, among community members, of contracting HIV from HIV positive individuals (31). This fear, as was the case with our study participants, was rooted in their lack of knowledge regarding transmission. This underscores the continued need for education of the general population and incarcerated populations about the transmission of HIV.

WLWH in our study also highlighted the importance of HIV pre- and post-test counselling upon diagnosis. They detailed the devastating impact of the absence of counselling on acceptance of, and coping with the illness. HIV counselling and testing remains the gateway to all strategies related to the care, treatment and prevention of HIV infection (32, 33). Counselling and testing is crucial in not only helping those who test positive to come to terms with their illness, but it is also critical in bringing the rampant scourge of HIV under control, particularly in sub-Saharan Africa. In addition, some women also wanted to learn more about the illness and expressed a desire to become HIV counsellors so that they could educate and support other women both inside and outside prison. Empowering female inmates by training them to educate and support other inmates is an important step in managing and curbing HIV in prison environments (34).

WLWH also described the difficulty of disclosing their status to their family and friends while living in their home environment because they felt isolated and afraid of being labelled, judged or rejected. They stated that although HIV was prevalent in their communities, most people did not openly discuss the illness. Many lacked knowledge about HIV, particularly with regards to transmission. The study from Lesotho supported this finding and also described the dominant misperceptions and ignorance about HIV transmission prevalent in the community, which was another factor responsible for driving the HIV pandemic in Lesotho (29). Lack of knowledge and misperceptions about HIV inevitably led to stigma and discrimination, both verbal and non-verbal, which the WLWH in our study encountered regularly. Understanding HIV stigma is crucial to understanding HIV disclosure. The study in the North West province of SA, which was conducted in both rural and urban settings, demonstrated the high prevalence of HIV stigma that still exists and its inter-relationship with disclosure (31). The fear of stigma, discrimination, rejection and loss of relationships was cited in our study as reasons for WLWH not being able to disclose their status while living in their home environment. This was consistent with a systematic review of community studies from Nigeria (35). Stigma has been associated with negative consequences which include poor treatment adherence and adverse mental health effects (36, 37). This was also found in our study where WLWH felt the need to conceal their status for fear of being stigmatized. This compromised their treatment adherence outside of prison.

A recent social anthropological study in Kerala, India, found that intense, pervasive and multi-faceted stigma against PLWHA still exists in Indian society (38). PLWHA, like persons of lower caste in traditional Brahmanic systems in the region, are subjected to touch aversion, regimes of commensality and marital exclusion. They are also subjected to derogatory labels, being referred to as immoral and impure by HIV-negative individuals. This resonates with the findings of our study where WLWH described similar experiences of enacted stigma.

Some WLWH expressed that although HIV was prevalent in their communities, people avoided discussing it openly. This has also been expressed in other South African studies (39) and underscores the importance of advocating for direct public discourse on HIV/AIDS through education, awareness programmes and support organizations.

Contrary to their home environment, the WLWH described HIV disclosure in prison as being much easier for them. Although many WLWH felt that they were almost forced to disclose due to the lack of privacy in the prison environment, most felt this had a positive effect, as they realised they were not alone. They felt supported by fellow inmates and staff which had a positive impact on them. They described the beneficial effect that disclosure and support had on treatment adherence and health outcomes and discussed the important lifestyle changes they decided to make to live healthier lives. This is in contrast to a recent study conducted in a correctional facility in the United States of America, by Kutnick and colleagues, in which Black and Latin American prisoners spoke about feeling uncomfortable disclosing their HIV status in prison because they felt stigmatised, unsupported and discriminated against (40).

Finally, understanding the cultural context of WLWH is integral to understanding their experiences of contracting and living with HIV. Studies have found that cultural sensitivity is increasingly recognized as a means to enhance the effectiveness of health promotion programmes universally (18). Delivering

HIV/AIDS programmes to incarcerated populations should occur within a culturally-informed framework to encourage optimal engagement with inmates. This was evident in our study which highlighted the importance of understanding inmate's cultural beliefs and backgrounds.

CONCLUSION

The outcomes of this study revealed that HIV is prevalent in the female inmate population at this correctional centre in KZN, SA and that it has a significant impact on these women's lives biologically, psychologically and interpersonally. The multitude of challenges they face, particularly in their home environment, are highlighted. In contrast, this study underscores the support participants received in the prison setting. Thus, whilst incarcerated, attempts should be made to effectively support and manage the impact of HIV in inmates, which is a view that is supported by international literature (41–43). Further research should aim at exploring such strategies. If female inmates receive HIV education and training, not only can they engage in peer-based HIV education while incarcerated, but they can also form support groups to help other incarcerated WLWH to cope with their illness. More importantly, upon re-entry into their home communities they will be armed with the necessary knowledge and skills to successfully manage their own illness and to impact positively on the lives of other WLWH in their communities. This would play a pivotal role in curbing the epidemic, since the importance of educating society about HIV regarding causality and transmission, in order to eradicate misconceptions, stigma and discrimination as well as to encourage disclosure and health-seeking behaviour, has also been emphasized. Due to differing inmate profiles in other correctional centres in SA, the authors recommend that similar studies be conducted at these various centres in order to compare findings, and to serve as an evidence base for the development of national rehabilitation programmes aimed at addressing these challenges.

LIMITATIONS

The study was conducted at one correctional centre in SA. The home language for the majority of the women in the study was isiZulu, however, all qualitative interviews were conducted in English. Hence, it is possible that subtle nuances in the narratives might have been missed. The first author was also aware of the potential for asymmetry in the power dynamics between the interviewer and the participants, as the interviewer was a psychiatrist. Therefore, confidentiality, anonymity and the fact that the researcher was independent of the DCS was emphasised to participants. In addition, participants were informed that the first author could in no way influence their criminal proceedings. Lastly, there were limited qualitative studies for comparison, on the lived experiences of HIV in female inmates with a lifetime history of mental illness.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Human Research Ethics Committee: University of the Witwatersrand. The participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

SN conceptualized the study, collected and analysed the data, wrote the manuscript, and obtained funding. LF, US, and SP were involved in conception of the study protocol, supervision, and editing of the manuscript. All authors contributed to the article and approved the submitted version.

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SYSTEMATIC REVIEW
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A Systematic Review of Reviews of Correctional Mental Health Services Using the STAIR Framework

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Background: Rising demand for correctional mental health services (CMHS) in recent decades has been a global phenomenon. Despite increasing research, there are major gaps in understanding the best models for CMHS and how to measure their effectiveness, particularly studies that consider the overall care pathways and effectiveness of service responses. The STAIR (Screening, Triage, Assessment, Intervention, and Re-integration) model is an evidence-based framework that defines and measures CMHS as a clinical pathway with a series of measurable, and linked functions.

Method: We conducted a systematic review of the reviews of CMHS elements employing PRISMA guidelines, organized according to STAIR pillars. We assessed the quality of included studies using the AMSTAR-2 criteria. Narrative reviews were read and results synthesized.

Results: We included 26 review articles of which 12 were systematic, metaanalyses, and 14 narrative reviews. Two systematic reviews and seven narrative reviews addressed screening and triage with strong evidence to support specific screening and triage systems. There was no evidence for standardised assessment approaches. Eight systematic reviews and seven narrative reviews addressed interventions providing some evidence to support specific psychosocial interventions. Three systematic reviews and six narrative reviews addressed reintegration themes finding relatively weak evidence to support reintegration methods, with interventions often being jurisdictionally specific and lacking generalizability.

Conclusions: The STAIR framework is a useful way to organize the extant literature. More research is needed on interventions, assessment systems, care pathway evaluations, and reintegration models.

Keywords: prison, systematic review, mental health care, STAIR model, screening

INTRODUCTION

Rising prison populations internationally have been a source of major concern (1). Although the percentage of prison inmates who have a serious mental illness (SMI) has been relatively static over time at 15% (2), increasing prison musters mean there are many more people with SMI in custody (1, 3). Historically, there has been low access to mental health care in custody and few benchmarks

to measure the adequacy of services (4). Human rights standards [for instance UNDOC (5) also known as "The Nelson Mandela Rules;" Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment (6); Convention on the Rights of Persons with Disabilities (7); Council of Europe European Prison Rules (8)] have helped to provide levers to improve care, as has litigation arising from failures of service provision in some jurisdictions (9) (see for instance Brown v. Plata, 563 U.S. 493, 2011). Despite this, actual service delivery and quality of care delivered has generally remained inadequate to level of need (4, 10–13).

The key elements of correctional mental health services (CMHS) have been articulated for over 30 years. These elements are proactive case detection and assessment, offering a suitable range of services and reintegration planning (14, 15). Steadman et al. (16) first described the need to focus on multiple potential points of engagement or diversion for people with SMI in interaction with the criminal justice system noting key intervention points as being at police arrest, court appearance, remand prison and sentenced prison levels, including re-entry and probation/parole level in the community. This gave rise to conceptual models built along this journey, the most prominent being the Critical Time Intervention (CTI) Model of Draine et al. (17) and Draine and Herman (18) which is a framework providing specific time-based interventions to enhance supports and service provision at key points along this pathway. More recently, Forrester and Hopkin (19) have reviewed CMHS from the perspective of defining these service elements as part of a care pathway. This concept of a pathway or a trajectory for people with SMI is now common (20).

There have been three studies of an overall pathway of care for persons with SMI in correctional facilities in a single jurisdiction (21–23). These studies demonstrate the need for frameworks to address the core service quality issues in correctional mental health care, namely access rates, nature and quality of services delivered, resourcing of clinical teams and management of progression, most particularly between institution and at the point of release.

From work in the UK (1, 24), New Zealand (23, 25), Canada (4, 15), and Ireland (22) and building on the key elements of CHMS previously articulated, there emerged a consensus around the fundamental elements needed for service delivery in custody. We coined the acronym "STAIR" Model (1, 26) to define these elements. STAIR stands for Screening, Triage, Assessment, Intervention, and Re-Integration. The STAIR model also links key clinical functions to epidemiologically derived access and intervention targets, providing benchmarks by which to measure performance. Briefly, the model is as follows.

Screening should be available for all inmates at the point of reception, performed by health staff.

The major disorders being screened for are illnesses such as psychosis, major mood disorders, active suicidality or withdrawal from alcohol or other substances. The rate of positive screens is commonly over 30% of remand men and near 50% of remand women (27) allowing a clinical service to evaluate whether the expected rate of positive screen is being achieved.

Triage. Most current screening tools have high false positive rates, so a second stage of evaluation by mental health staff is required, referred to as triage. This is a more detailed assessment of the individual's mental health needs and current level of functioning allowing referral to a next level of primary or secondary care.

Assessment. Positive triage will lead to evaluation by a specialist mental health team, including psychiatric assessment and the development of an individual care plan. It should result in ∼15% of the standing prison population being attached to a specialist mental health team (2).

Intervention. A comprehensive range of culturally competent mental health services is required to respond effectively to the differential levels of presenting illness acuity (e.g., acute or intermediate care for those who are severely or acutely unwell, are suicidal or general prison mental health services for those with more stable conditions).

Re-integration. Planning for community reintegration should begin well in advance of the identified release date, to ensure the continuous delivery of healthcare services and that social care services are engaged. This package of care includes engagement with community mental health services and addressing unmet needs in respect of housing, employment and finance. The provision of transitional clinical support during the period of institutional release is preferred.

The purpose of this paper is to review the extant CMHS literature to assess the current evidence in relation to each of these core service elements. We undertook a systematic review of published review articles of each of the service components of the STAIR model. We aimed to describe the current state of knowledge, highlight areas of good quality evidence and identify gaps in knowledge to inform future research.

METHODS

Search Strategy

We performed a systematic review of reviews adhering to PRISMA guidelines as well as those laid out in the Joanna Briggs Institute Manual for Evidence Synthesis (28). Three separate searches were conducted for each of the following STAIR elements: (1) screening, triage, assessment (grouped together given that similar tools are used across these stages), (2) intervention, and (3) reintegration. Search terms were used to specify setting (correctional settings), population (severe mental illness), and study type (review paper) across all searches. Each of the three searches were conducted in MedLine and CINAHL. Each database search employed search terms describing (1) the STAIR component under investigation; (2) the setting (correctional); (3) population specifiers (severe mental health-related); and (4) specifiers for article type (reviews). These were combined using "AND" statements and each search was assessed for completeness using a set of pre-selected validation articles. The search was limited to review articles published in English from 1995 up until the search date (end of January, 2020) with no date or geographical restrictions.

The search was supplemented in several ways, given that some expected literature may not be indexed in MedLine or CINAHL. To this end, we also searched the Web of Science Core Collection, the Web of Science Conference Proceedings

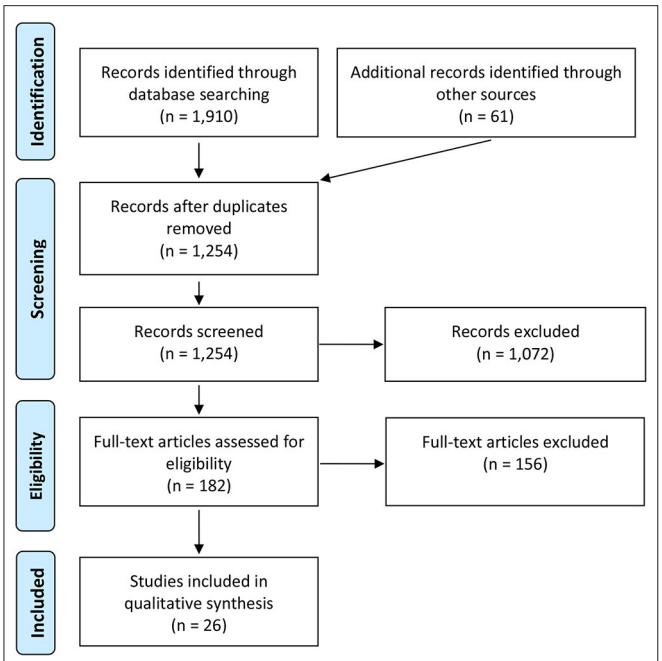

FIGURE 1 | PRISMA flow chart.

Index, Worldcat/OAlster, and searched government and non-governmental organization websites. Each of these searches used a condensed set of the terms (the search strategy is attached as **Supplementary Materials**).

Inclusion Criteria

We included reviews exploring core CMHS service elements; involving adult prisoners or jail populations with SMI (i.e., psychotic disorder, bipolar disorder, and current severe depressive disorder). Our outcomes of interest were improvement of mental health outcomes broadly (identifying need, reducing symptoms, improving functioning or well-being, accurately identifying SMI). We also applied these criteria to the supplementary searches, except that these were restricted to material that reported data (i.e., opinion papers and unsupported program descriptions were excluded). We excluded papers that (1) provided general discussion or recommendations of services without a review component, or (2) focused only on criminological (e.g., antisocial behavior, recidivism) outcomes among SMI inmates, or outcomes related to suicide or self-harm without specific reference to SMI outcomes, or (3) only focused on substance use or sex offending. Papers with outcome measures that overlapped with those listed above were not excluded. Refer to **Figure 1** for detailed PRISMA flow chart of the identification, screening, eligibility assessment, and inclusion of articles.

Study Selection

Two independent reviewers performed title and abstract screening and, where disagreements existed, a third reviewer arbitrated the decision. Finally, the first author (AS) reviewed the selected articles to exclude those that were superseded by a more recent, more comprehensive or higher-quality review in the same content area.

Data Extraction and Evaluation of Quality

One rater extracted the data into a pre-defined data extraction table (see **Table 1**), and a second rater confirmed the accuracy of the rating. Any disagreements were resolved by a third rater. The quality of reviews was also evaluated by two raters using the AMSTAR-2 (A MeaSurement Tool used to Assess systematic Reviews; see **Table 2**) except for non-systematic or narrative reviews which could not meet AMSTAR Criteria (48).

Data Synthesis

Narrative data synthesis was performed by examining the characteristics and findings of the included reviews, and summarized in the data extraction table. The breadth, quality and consistency of reviewed materials reported were considered in relation to the quality ratings of each review (AMSTAR), and according to clinical and research considerations as adjudged by the current study's authors. Key information pertaining to main findings, study methodology, gaps and future directions were highlighted.

RESULTS

We identified 26 reviews that met inclusion criteria for the study (see **Table 1** for a summary). Seven reviews referenced the need for an integrating model of care as a concept, but there were only two papers that provided primary data regarding models of care (22, 23) leaving insufficient comparative data to review overall care pathways.

Screening, Triage, and Assessment: General Overviews and Care Pathways

Our search found two systematic reviews (27, 37) and seven narrative reviews that discussed screening and assessment processes. The methodological quality of the systematic reviews was assessed by AMSTAR 2 and presented in **Table 2**.

Forrester and Hopkin (19) reviewed pathway models across the criminal justice system with a focus on developments since 2000. Part of their review concerned care in corrections, although they primarily referred to the systematic review of Martin et al. (27). They note that while screening has been a research focus in this area, additional work is needed to ensure coverage of the broad range of disorders seen in correctional settings. The major issue that concerns all individual screening tools is that of poor specificity or the problem of high false positive rates (3). In their narrative review, Kolodziejczak and Sinclair (44) emphasize the need to strike a balance between risks related to over-diagnosis and risks related to under-diagnosis. They note that while under-diagnosis in corrections has clear negative impacts given evidence that many persons with SMI do not access treatment, over-diagnosis has implications for stretching limited health resources which may result in under-attending to those with the most severe needs. Others (49, 50) have recommended a two-tiered screening process using a highly sensitive screen on admission to ensure that those in immediate

TABLE 1 | Data extraction table of included articles.

Reference	Main focus of review paper	Elements of STAIR[a]	Number of studies in systematic review	AMSTAR score[b]	Funding reported
Systematic Reviews/Meta-analyses = 12					
Barker et al. (29)	Evidence-based strategies for managing suicidal and self-harm behaviors in prisons	Intervention	12	Critically low	This review was supported by the Queensland Corrective Services.
Deslich (30)	Telepsychiatry in correctional facilities improves access to mental health care and costs	Intervention	49	Critically low	None stated
Fontanarosa et al. (31)	Evidence for treatments for offenders with serious mental illness in jail, prison, or forensic hospital, and transitioning from any of these settings to the community	Intervention Re-integration	19 papers describing 16 studies	High	None stated
Hopkin et al. (32)	Interventions for prisoners with mental health conditions that target transition from prison to community	Re-integration	14	Moderate	Self-funded
Kendall et al. (33)	Findings from qualitative evaluations of community re-entry programs	Re-integration	8	Moderate	Health Futures Development Grant from the University of Technology Sydney
Martin et al. (27)	Compared the sensitivity and specificity of mental health screening tools among adult jail or prison populations	Screening Triage Assessment	24	Moderate	None stated
Maruca and Shelton (34)	Summarizes correctional nursing interventions for incarcerated persons with mental disorders	Intervention	16	Low	None stated
Morgan et al. (35)	Treatment effects across studies from service providers to offenders with mental illness	Intervention	8	Critically low	None stated
Moyes et al. (36)	How prison-based services can improve to better meet the needs of prisoners with co-occurring substance misuse and mental health disorders	Intervention	67	Critically low	None stated
NICE (37)	This guideline was developed to advise on identification and management of mental health problems and integration of care for adults in contact with the criminal justice system	Screening Triage Assessment Integration Re-integration		High	NICE
Smith-Merry et al. (38)	Brings together existing evidence to inform policymakers and practitioners about current practices in transition support, and barriers and facilitators of effective practice	Re-integration	23	Low	Inner West Partners in Recovery Flexible funding
Yoon et al. (39)	Systematically reviews psychological therapies with mental health outcomes in prisoners and qualitatively summarize difficulties in conducting randomized clinical trials (RCTs)	Intervention	27	Moderate	Wellcome Trust (202836/Z/16/Z)

(Continued)

TABLE 1 | Continued

Reference	Main focus of review paper	Elements of STAIR[a]	Number of studies in systematic review	AMSTAR score[b]	Funding reported
Narrative Reviews = 14					
Baillargeon et al. (40)	Reviews challenges to community re-integration among mentally ill prison inmates and promising strategies for improving transition from prison to community	Re-integration		NA	None stated
Draine and Herman (18)	Reviews the utility of the Critical Time Intervention (CTI) model, and how to assess its effectiveness	Screening Triage Assessment Integration Re-integration		NA	National Institute of Mental Health (NIMH)
Draine et al. (41)	Reviews the utility of the Critical Time Intervention (CTI) model, and relevant background research on re-entry and integration	Re-integration		NA	National Institute of Mental Health (NIMH)
Edens et al. (42)	Review of dual diagnosis treatment programs developed for state and federal prisons in the U.S.	Screening Triage Assessment Intervention Re-integration		NA	None stated
Fazel et al. (3)	Review of clinical, research, and policy recommendations to improve mental health care in prisons	Intervention		NA	None stated
Forrester and Hopkin (19)	Review the nature and extent of evidence streams supporting health care delivery within interagency pathway developments	Screening Triage Assessment Intervention Re-integration		NA	None stated
Forrester et al. (1)	Reviews issues related to service provision of mental health care in prisons and jails and proposes the utility of the STAIR model	Screening Triage Assessment Intervention Re-integration		NA	None stated
Jemelka et al. (43)	Reviews the issue of mental illness in jails and prisons; Includes some treatment and reintegration practices in the U.S. as well as recommendations	Screening Triage Assessment Intervention Re-integration		NA	National Institute of Justice
Kolodziejczak and Sinclair (44)	Reviews a brief history and overview of mental health services in the U.S. correctional system, as well as a discussion of the barriers to and potential facilitators of providing effective care in the future	Screening Triage Assessment Intervention Re-integration		NA	None stated

(Continued)

TABLE 1 | Continued

Reference	Main focus of review paper	Elements of STAIR[a]	Number of studies in systematic review	AMSTAR score[b]	Funding reported
Ogloff (15)	An overview of Canadian-developed correctional and forensic mental health services to identify and accommodate the needs of mentally ill people in the criminal justice system. A six-component model for mental health services in corrections is advocated in this report. Covers related issues of diversion from jails and the need for suicide risk identification and management in jails.	Screening Triage Assessment Intervention Re-integration		NA	None stated
Peters et al. (45)	Review of the existing research, examination of key issues and evidence-based treatment, and supervision practices related to co-occurring mental and substance use disorders in the justice system	Screening Triage Assessment Intervention Re-integration		NA	None stated
Simpson et al. (4)	Reviews the required service components with particular focus on care models for people with serious mental illness in the Canadian correctional system	Screening Triage Assessment Intervention Re-integration		NA	None stated
Wallace et al. (46)	Provides evidence-based and promising treatment approaches to address the overlap among trauma, mental illness, substance abuse, and behavioral problems. A synthesis of research meant to guide practitioner and policy responses to the national challenge of meeting the needs of those undergoing re-entry	Re-integration		NA	National Institutes of Health (NIH)
Winters et al. (47)	Reviews interventions designed to prevent suicide among individuals with serious mental illness in forensic settings, and the need for research to inform the development of assessment tools and intervention strategies for this population	Screening Triage Assessment Intervention		NA	None stated

[a]*STA, Screening, Triage, and Assessment; I, Intervention; R, Re-integration; MoC, Model of Care.*
[b]*NA, Not applicable; narrative review articles that were not graded with AMSTAR.*

TABLE 2 | AMSTAR-2 ratings for included systematic reviews and meta-analyses.

References	AMSTAR questions[a]																Overall confidence
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Barker et al. (29)	Y	N	Y	PY	N	N	N	Y	N	N	NM	NM	N	Y	NM	N	Critically low
Deslich (30)	Y	N	N	PY	N	N	N	PY	N	N	NM	NM	N	Y	NM	Y	Critically low
Fontanarosa et al. (31)	Y	PY	Y	Y	Y	Y	Y	Y	Y	Y	NM	NM	Y	Y	NM	Y	High
Hopkin et al. (32)	Y	PY	Y	Y	Y	N	PY	PY	Y	Y	NM	NM	N	Y	NM	Y	Moderate
Kendall et al. (33)	Y	N	Y	PY	N	Y	Y	Y	N	N	NM	NM	N	Y	NM	Y	Moderate
Martin et al. (27)	Y	N	Y	PY	N	Y	PY	PY	Y	N	NM	NM	N	N	NM	Y	Moderate
Maruca and Sheldon (34)	Y	PY	Y	PY	N	N	N	Y	Y	N	NM	NM	Y	Y	NM	Y	Low
Morgan et al. (35)	Y	N	N	PY	N	Y	N	Y	Y	N	Y	N	Y	N	Y	N	Critically low
Moyes et al. (36)	Y	N	N	N	N	N	N	N	N	N	NM	NM	N	N	NM	N	Critically low
NICE (37)	Y	Y	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	High
Smith-Merry et al. (38)	Y	N	Y	PY	Y	N	N	N	N	N	NM	NM	N	Y	NM	Y	Low
Yoon et al. (39)	Y	Y	Y	PY	N	Y	PY	Y	Y	N	Y	Y	Y	Y	Y	N	Moderate

Y, Yes; PY, Partial Yes; N, No; NM, No meta-analysis conducted.

[a] *1. Did the research questions and inclusion criteria for the review include the components of PICO? 2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol? 3. Did the review authors explain their selection of the study designs for inclusion in the review? 4. Did the review authors use a comprehensive literature search strategy? 5. Did the review authors perform study selection in duplicate? 6. Did the review authors perform data extraction in duplicate? 7. Did the review authors provide a list of excluded studies and justify the exclusions? 8. Did the review authors describe the included studies in adequate detail? 9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review? 10. Did the review authors report on the sources of funding for the studies included in the review? 11. If meta-analysis was performed, did the review authors use appropriate methods for statistical combination of results? 12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis? 13. Did the review authors account for RoB in primary studies when interpreting/discussing the results of the review? 14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review? 15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) a discuss its likely impact on the results of the review? 16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review.*

need (including those with SMI, or at high risk for self-injury or suicide) are attended to without delay followed by a later, more comprehensive and specific stage that can sort those positive screens into those who do and do not need further mental health assessment. This is essentially the logic of the "ST" component of STAIR (1).

Special Considerations for Comorbid Substance Use in SMI

Some reviews had a focus on those inmates with comorbid substance use and mental health diagnoses (i.e., concurrent disorders). While the focus of the Moyes et al. (36) review was on treatment, they noted that screening for concurrent disorders was lacking in many facilities. They recommended the integration of concurrent disorder assessment into existing, post-admission visits made by in-reach teams (i.e., during the "T" or "A" components of STAIR), given the challenges of performing such assessments upon admission. In contrast, Peters et al. (45) recommended that concurrent disorders be screened at admission, as well as at several other junctures, including initial probation/parole and re-entry points. They note that there are few screening measures that simultaneously address SMI and substance use disorders, and recommend the use of a combination of tools to ensure coverage of both domains.

Screening, Triage, and Assessment: Specific Tools

Martin et al. (27) performed the seminal systematic review and meta-analysis of screening and triage tools in prison. They identified three screening tools and one triage tool that had robust developmental data and independent validation.

Correctional Mental Health Screen for Women and Correctional Mental Health Screen for Men

The CMHS-W and CHMS-M are gender-specific tools containing eight and 12 staff-administered items, respectively. Martin et al. (27) cite two studies meeting inclusion criteria; the development paper (51) and a replication by the same authors (52). For the CMHS-W, they found consistent sensitivity rates between the two studies (65 and 64%, respectively). For the CMHS-M, somewhat higher, similarly consistent sensitivity rates were found between the development and replication studies (74 and 70%, respectively). These two tools have been replicated in a separate sample performed by the original authors with highly consistent findings. QUADAS assessment (26) identified high risk of bias in both of the Ford et al. (51, 52) studies with regard to index test use, and applicability concerns in Ford et al. (51) with regard to index test use. The more recent NICE Guideline on the Mental Health of Adults in Contact with the Criminal Justice System (37) did not uncover additional studies on these measures up to 2016.

Brief Jail Mental Health Screen

The BJMHS (53) is a widely-used staff-rated screening tool. It consists of six symptom-related items and two additional items related to medication and hospitalization. Martin et al. (27) found the original Steadman et al. (53) development article and four additional validation articles; one by the scale's authors (54)

and three independent studies. The BJMHS was found to show sensitivity of ∼60–65%, with the notable exception of one study (55) that yielded a sensitivity of only 34% among male inmates. When used to screen female inmates, it was found to yield lower sensitivity [e.g., 46% per Steadman et al. (53)] and may not be considered well-validated for female inmates [as noted in Kubiak et al. (56)]. With regard to rigor, QUADAS ratings were generally positive, with no concerns noted for the Evans et al. (55) study. For three of the studies reviewed (53, 54, 57), they note risk of bias in patient selection (in addition to risk related to flow and timing in the latter paper), and with regard to Ford et al. (51) they note risk of bias related to the index test used. NICE (37) revealed one additional study (58) yielding an Area Under the Curve (AUC) of 0.72 in a police jail context. NICE appraised the risk of bias in this paper to be high in terms of index test use and reference standard.

England Mental Health Screen

The EMHS (59) is a four-item tool with a yes/no format, with items focusing on historical factors. A single "yes" response constitutes a positive screen. Martin et al. (27) found four studies including a small pilot, two follow-up studies by teams including the scale's primary author, and one independent study (55). They note that the scale achieved 100% sensitivity in the pilot (59) but in validation studies involving all-male populations, achieved sensitivities of 42 and 76% (55, 60) In terms of rigor, QUADAS ratings revealed low risk of bias in the original pilot and Evans et al.'s (55) validation, but raised concerns regarding index test selection in the Birmingham et al. (60) study and multiple issues with a study by Gavin et al. (61). The inconsistency in findings across available studies give rise to caution and the potential importance of moderating variables.

Jail Screening Assessment Tool

The JSAT (15) is a structured professional judgment guide and, as such, requires expertise to administer, having the characteristics of a triage tool, in terms of the STAIR model. It is a semi-structured interview lasting ∼20 min. It reviews a broad range of factors including mental health issues, current symptoms, substance use, social support, legal situation, and violence. Martin et al. (27) reviewed the original development study (15, 62) and two independent validations (57, 63). Among males, JSAT showed a sensitivity between 38 and 84%, with the latter figure coming from the development study. Among women, it achieved a sensitivity of 75%. Martin et al. (27) highlighted the wide range of findings and interpret this as stemming from the manner in which the JSAT employs structured professional judgment. When a structured scoring cut-off was proposed in one study (57), it yielded a sensitivity of 67–72%. In terms of the rigor of the reviewed studies, QUADAS ratings reflect concerns with bias stemming from patient selection in all studies.

Interventions

We found eight peer reviewed systematic reviews and seven narrative reviews that discussed interventions within correctional institutions. One gray literature systematic review (37) met our inclusion criteria. The methodological quality of the systematic reviews was assessed by AMSTAR 2 and presented in **Table 2**.

Kolodziejczak and Sinclair (44) in their narrative review concluded that there is a lack of interventions proven effective for SMI typically available in prisons and noted that, when mental health services are received, they may be limited to medication management due to high caseloads. They nonetheless noted the effectiveness of combined pharmacological and psychotherapeutic approaches, and stressed the importance of addressing comorbid substance use and SMI. They concluded that very little literature specifically evaluates the treatment of SMI within correctional facilities, due to a number of barriers and limitations. Fazel et al. (3) likewise concluded that few studies exist in this area, and those that do tend to be small and yield inconsistent results. A paucity of pharmacological studies was specifically noted.

Yoon et al. (39) conducted an extensive review and meta-analysis of RCTs for psychological interventions in corrections and found a moderate overall effect size of $d = 0.50$ across interventions, outcomes and comparators, albeit with large heterogeneity. No difference was found between group and individual administration, but the authors cautioned against assuming equivalence given differences in mean duration between these modalities. Their review yielded seven RCTs with high quality ratings (among the 37 assessed) and found specific support for mindfulness-based and CBT-based interventions, especially for treating depression and anxiety. Martin et al. (64) also conducted a large meta-analysis of interventions designed to reduce criminality or improve mental health in inmates with SMI. They analyzed 25 studies with various modalities, comparators and treatment goals and found evidence for reduced recidivism, better functioning and reduced symptoms across studies. High attrition/rapid turnover, small samples, difficulties in implementing manualized treatments, and loss of effect at follow-up time points were commonly identified.

Some reviews focused on specific treatment modalities, as outlined next.

Pharmacotherapy

Fazel et al. (3) and Fontanarosa et al. (31) found very few trials for pharmacotherapy in correctional settings, relative to psychological interventions. Fazel et al. (3) included only two, including a trial of ADHD medication improving functioning and promoting abstinence from amphetamine use post-release (65, 66) and a trial for a pharmacotherapy decision-making algorithm that resulted in a null finding (67). Fontanarosa et al. (31) reported that evidence is lacking to draw any strong conclusions regarding pharmacotherapy interventions specific to correctional settings; these authors limited their review to trials with active control arms.

Cognitive-Behavioral Therapy

CBT was, across reviews, the most widely-studied form of psychotherapy in correctional settings. This category included reviewed studies of standard CBT as well as interventions employing CBT principles. Yoon et al. (39) performed the most exhaustive review of CBT among the studies reviewed, and examined CBT separately in their meta-analysis. They found 14 RCTs of CBT with a variety of outcome measures and

control groups, and concluded that there is moderate-quality evidence supporting this treatment, particularly for anxiety and depression. They did not find evidence supporting the superiority of CBT over other modalities.

Dialectical Behavioral Therapy

DBT is a highly structured intervention that includes individual psychotherapy (normally 12 months or more), concurrent skills training groups, and structured consult groups for practitioners. Given the challenges of implementing the full DBT model in correctional settings, it is often implemented in an abridged format, and its primary goal has often been the reduction of aggressive incidents (68). Yoon et al. (39) reviewed one RCT with an adequate quality rating, finding a positive but null effect of DBT on trauma and depression symptoms (69). Fazel et al. (3) reviewed a single RCT of DBT for incarcerated women (compared with a shorter-duration DBT regimen plus case management) and found that the former group showed reduced psychopathology.

Interpersonal Therapy

The reviews by Yoon et al. (39) and NICE (37) uncovered only one RCT of ITP (70). NICE concluded that it provided very low-quality evidence for a clinically significant treatment effect in depression.

Meditation-Based Interventions

Several current psychotherapies incorporate meditation techniques, such as mindfulness. This category considered approaches based primarily on meditation, including mindfulness-based interventions and Yoga-based interventions. Yoon et al. (39) uncovered five studies in four separate papers examining mindfulness-based interventions in correctional settings, all with risk of bias adequately addressed. They concluded that these therapies were beneficial for symptoms of depression and anxiety. Fazel et al. (3) uncovered one additional, large RCT of a Yoga-based intervention that yielded lower distress and improvements in cognitive function in a prison setting (70). In their review of nursing interventions, Maruca and Shelton (34) additionally found one feasibility study (71) supporting Yoga as a potential treatment for stress and anxiety in incarcerated women.

Trauma-Based/Trauma-Informed Interventions

Yoon et al. (39) in their systematic review of trauma informed interventions in corrections found six RCTs of therapies classified as trauma-related (including one additional study of cognitive processing therapy, a CBT-based PTSD treatment). Together, the six RCTs failed to achieve statistical significance in meta-analysis. Individual trials that did yield significant effects vs. waitlist or no-treatment controls included Trauma Incident Reduction Therapy (72) Trauma Recovery and Empowerment Model (TREM) for male inmates (73) a brief trauma group (74) and a DBT-based group (69). Two therapies that did not achieve statistical significance were compared to active therapy. NICE (37) reviewed a subset of the same studies; they rated the evidence stemming from the non-null trials reviewed as being of very low to low quality.

Arts-Based Interventions

NICE (37) reviewed one large RCT of arts-based therapy, yielding very low-quality evidence of clinically significant impact on depression (75). Yoon et al. (39) included this study and three additional trials of art- and music-based therapies, and found that two trials of art-based therapies vs. no treatment, and one out of two trials of music-based therapy vs. an active comparator, yielded positive effects.

Telehealth Interventions

Deslich (30) reviewed the implementation of telepsychiatry services in correctional settings (vs. in-person services) and found that although telehealth is a platform rather than an intervention, these services improve access without appearing to negatively impact inmate experiences of care, while significantly reducing costs. Fontanarosa et al. (31) cite a prior review by Khalifa et al. (76) suggesting effectiveness of telepsychiatry across multiple forensic settings, including prisons, but note limited outcome-related evidence in this area.

Substance Use and Concurrent Disorders

Multiple reviews noted the particularly high rate of substance use disorders in those with SMI in incarcerated populations [e.g., up to 80% (2)], and the importance of simultaneously treating both disorders as per the Integrated Dual Diagnosis Treatment (IDDT) model. This broad framework treats substance and mental health disorders together rather than in parallel or serially, often incorporates intervention models such as CBT and therapeutic community approaches, and yields outcomes superior to approaches targeting either disorder category alone or in parallel (36, 45). In their narrative review, Peters et al. (45) noted that given the relatively short time frame of admission to jails, focus should be on acute care, withdrawal management, and community linkage. They found very few studies of in-jail programs and these tended to be non-integrated and lacking in quantitative data. In terms of prison settings, they found that therapeutic communities (TCs: see the subsection below) had support in comparison with other mental-health focused programming in terms of long-term impact on relapse and re-arrest. Some additional recommendations in this area included the future collection of better-quality evidence, tailoring treatments to gender and stage of change, using peer mentorship, minimizing confrontation and addressing criminogenic thinking (36, 42, 45).

NICE (37) evaluated several other approaches to substance use disorders, including psychological (e.g., CBT and Acceptance and Commitment Therapy) and pharmacological (e.g., Naltrexone and methadone maintenance) approaches. The majority of these were not specific to SMI populations and examined only substance-related and legal outcomes. The evidence for psychological approaches was of very low to low quality, primarily used active psychological comparison groups and revealed predominantly null findings. They notably examined several RCTs of Naltrexone vs. placebo and found very low-quality evidence of opioid use reduction with Naltrexone treatment.

Therapeutic Communities

TCs are milieu-based, interdisciplinary, multifaceted approaches to treating substance use disorders, often incorporating cognitive and behavioral components. Fontanarosa et al. (31) concluded that there is insufficient evidence to judge the comparative effectiveness of TCs and traditional in-prison care for comorbid conditions. NICE (37) uncovered eight RCTs examining TCs and Modified Therapeutic Communities (MTCs) in corrections, yielding very low to low quality evidence for efficacy on a number of psychological symptom and substance use-related indicators, including improvements in substance use for MTCs vs. a CBT-informed group and vs. a traditional mental health program, and mood improvements in an MTC vs. a TC. Several comparisons between TCs, MTCs, and other active control arms in this review were null and considered of very low quality.

Suicidality Interventions

Winters et al. (47) conducted a review of suicide prevention strategies in SMI populations in corrections and noted that, while CBT, DBT, and IPT programs have shown efficacy in preventing suicide in general settings, these are difficult to implement in corrections, and sparse research exists on corrections-specific programs. They did not find any corrections-specific literature on pharmacological interventions. Barker et al. (29) performed a systematic review of effectiveness literature on suicide and self-harm prevention strategies in prisons, which yielded 12 relevant studies. These were predominantly program implementation studies with AB designs, and included improved assessment and monitoring, training (notably including the training of peer supporters), special focus on SMI populations and inmates with borderline personality disorder, and review/debriefing strategies. They concluded that such multi-factored interventions focused on mitigating risk factors are particularly effective in reducing suicide outcomes across reviewed studies.

Reintegration

Reintegration programs focus on the transition period for inmates with SMI who are being released from custody to ensure continuity of their mental health care and other social needs. We found three systematic reviews and six narrative reviews of interventions aimed at transitioning individuals with SMI from custody. Additionally, three gray literature articles met inclusion criteria (see **Table 1**). The majority of reintegration programs reviewed were from the United States (37) and targeted both the pre- and post-release periods though the actual length of the programs varied widely (31, 32, 38). The results of the AMSTAR 2 quality assessments of the included reviews are presented in **Table 2**.

Certain common features of reintegration programs were pre-release planning and post-release support with a combination of practical resources and empathic support (32, 33, 40). These supports can be through remote follow-up or in-person engagement to assist patients having trouble navigating the system (32) and linking them with appropriate community case management (40). This requires trained staff with knowledge of community services. Individualized assessment with a written release plan of the needs and the public safety risk of the inmate (40) are also crucial to avoiding gaps in treatment. Different approaches are required for remand or pre-trial populations due to the shorter term stays and more unpredictable discharge requiring the assessment of needs to be fast-tracked (17). Traditionally, the goal of re-entry has been to reintegrate the individual into the community with the focus of protecting the community from future harm (41) as opposed to the recovery-oriented and patient centered care that is now the industry standard for mental health services generally (38).

Outcome measures commonly employed included health outcomes such as service use, hospitalizations and medication adherence, and criminal justice outcomes such as reoffending and reincarceration. Severity of symptoms of SMI were rarely used as an outcome measure. Only four of the reviews employed evidence quality assessments in their review methodology (31–33, 37). Lack of blinding was the biggest issue for weak studies (32).

Effectiveness of programs using criminal justice outcomes was assessed in several studies with only one reporting a significant reduction in reoffending and reincarceration (77) though the evidence was weak due to factors including selection bias and confounders. The evidence for research on other programs were rated of low to high quality. The two studies rated as high reported a non-significant reduction in re-arrests (78) and an increase in reincarceration, respectively (79). Hopkin et al. (32) posited that the increased monitoring offered by the reintegration program may serve as a possible explanation for the increased reincarceration. Studies assessing mental health outcomes were also reported to be of varying quality. IDDT programs that reported reduced psychiatric hospitalizations and mental health service use were of low quality (31, 37) with insufficient evidence for impact on substance abuse (31). Research on other interventions reported significantly higher mental health service contacts than the comparator groups and were assessed by Hopkin et al. (32) to be of moderate to high quality.

Three of the trials reviewed by Fontanarosa et al. (31) were conducted in urban areas making it not transferrable to rural areas where community resources may be scarce. Evidence for the impact of specialist vs. mental health generalist care on psychiatric symptoms, psychiatric hospitalization, substance abuse, quality of life, and completed suicide was insufficient as only one trial reported these outcomes (31). The same authors also reported an RCT on Interpersonal therapy (IPT) demonstrating reduction in depressive symptoms but no change to substance-abuse relapse with low risk of bias though this was on the only study on this program and thus insufficient to draw conclusions. A more recent qualitative study of this program also reported program satisfaction with high quality (33).

Multiple barriers to reintegration have been described including lack of funding (38, 40) complex post-release care pathways, the need for greater direct service connectivity, insufficient planning resources, a lack of collaboration between correctional facilities and the community and unavailability of medication at release (38). Additionally, the chaotic nature of release particularly for remand inmates may limit the ability of community services to respond to referrals (19). Programs including CTI (80) may not be feasible in rural or

regional settings where community mental health resources are scarce (38). Unconditional releases (without parole and mandated treatment) pose the most difficult challenges with transitional planning (40). This may be due to difficulties accessing inmates for their participation in re-entry support and lack of participation may reflect concerns and motivations that are independent of the need or desire for mental health care (38).

The majority of reintegration programs fell into the following categories:

1. Bridging plus assistance with benefits application: Programs reviewed were specific to the US where 90% of jurisdictions terminate or suspend Medicaid upon incarceration and lack of affordable healthcare may mean that many inmates need benefits to continue accessing care upon release (38). The bureaucracy involved in reinstating benefits may impede those with SMI. Transition planning teams have been shown to improve post-release benefit enrolment (40) but the impact on improving mental health outcomes is unclear with limited evidence reported for future contact with the mental health system (31, 32, 38).
2. ACT programs: Adapted ACT programs ensuring ongoing care for individuals leaving custody is common. One RCT measuring psychological and clinical outcomes demonstrated no significant difference between ACT, forensic caseworkers and treatment as usual (32). Another program used an ACT model to pair probation officers with mental health workers for persons with comorbid SMI and substance use showing less likelihood of re-incarceration though these results were not significant (32, 78).
3. Critical time intervention (CTI) and short-term bridging: CTIs for transition support are focused, time-limited interventions that aim to develop an individualized housing, education and employment strategy to increase social inclusion. Such programs are designed to be short-term and connect individuals with community care (18, 38). These programs are less effective in areas where community resources are scarce and not feasible unless the case manager is located in the correctional facility (38). In the UK, an RCT on CTI (4 weeks pre and 6 weeks post-release) demonstrated significantly higher registration with a general practitioner (87 vs. 38%; $p = 0.01$) and medication administration (80 vs. 38%; $p = 0.03$) although the results lack sufficient power due to the high attrition rate (19, 32). A larger RCT by Shaw et al. (81) found that CTI significantly improved engagement with community mental health services at 6 weeks (53 vs. 27%, $p = 0.012$) and this was maintained at a later follow up 6 months ($p = 0.029$) after release (19, 32).

With regard to co-occurring substance use, while some reintegration programs addressed substance use together with SMI (32) re-entry services were often fragmented and were only focused on mental health issues and not sufficient to address other risk factors for criminal recidivism which may not be a result of mental health symptoms (45). Advances have been made in co-occurring disorders (CODs) treatment but such programs are still absent in many communities and correctional facilities (45). IDDT programs shows promise for reducing hospitalization post-release but replication studies are needed (31). Services integrating mental health and substance misuse services should be delivered by staff who have expertise in both areas rather than sequentially or in parallel (45). There are few studies on CODs programs targeted toward female offenders (45). In their review of qualitative studies, Kendall et al. (33) reviewed one such study on female inmates with SMI noting that women valued continuity of care with the same worker.

DISCUSSION

The needs of persons with SMI in correctional settings remain of major concern. In this review of the reviews of correctional mental health care elements, we set out to describe the state of knowledge of the span of the care pathway during incarceration. To do this we used the organizing structure of the STAIR model to define the key service domains of this care trajectory to enable us to evaluate the strength of knowledge at each step.

We found a very significant number of reviews. However, many were narrative in form and, whilst informative and containing much wisdom about the development and implementation of correctional mental health services, are limited in their generalizability because of the lack of empirical studies upon which to base their guidance. We found 12 systematic reviews or meta-analyses that focused on the domains of screening, interventions and re-entry programs. The areas of greatest knowledge are in screening and triage, psychological therapies and aspects of reintegration in certain jurisdictions.

In the screening and triage area, there are two high quality systematic reviews of multiple tools with independent validation studies. This evidence is sufficient to make recommendations for service design using two screening tools of adequate psychometric integrity (BJMHS and CMHS) and one triage tool (JSAT). Both independently validated screening tools have problems of high false positive rates necessitating triage processes if they are employed in settings with large numbers of persons to be screened. The JSAT is the only validated longer form assessment tool that may be appropriate for the triage of persons referred on the basis of shorter tools such as the BJMHS or CMHS. Proper staff training in the JSAT is crucial given evidence for wide variability in performance across settings in this largely subjectively-rated instrument, while screening tools offer more consistent results and can be administered by non-specialists. These tools remain poorly validated for women, and for those of minority ethnicity. All of the reviews in the S-T-A area focused on measures that are typically implemented in the S and T stages of STAIR. There is a lack of evidence concerning in-depth assessment tools and processes in these populations.

There were eight systematic reviews of interventions, with a sufficient number of robust studies for meta-analyses of some psychosocial interventions. There were few studies of biological interventions in custody. This limited research base in the specific context of correctional facilities may reflect the assumption that the effectiveness of pharmacotherapy interventions for specific disorders are reasonably generalizable from trials of similar patient groups in other settings. The same may well not be

true for psychological interventions, which may be more heavily moderated by contextual and population-specific factors, and often require modification in correctional settings. There is thus less need to replicate efficacy studies of psychotropic medications in custody than there is a need to demonstrate the efficacy of psych-social interventions. For instance, an effective intervention such as DBT requires significant modification for correctional settings (67) meaning specific trials are needed to demonstrate effusiveness of the modified intervention specific to the mental health and environmental challenges of living in custody. Study in this area is challenging, given setting- and duration-related restrictions. There is now a solid body of evidence for CBT for anxiety and depressive symptoms for persons in custody, whereas sparse or low-quality evidence supports the efficacy of other modalities and the psychological treatment of other presenting problems. Feasibility studies, on the other hand, appear common in this area and support the application of modified forms of several psychological therapies in corrections. Heterogeneity and inconsistent findings are the norm in this field, suggesting that the examination of modifying factors might be a fruitful avenue for future research. Telehealth also appears to be a promising delivery mode for psychotherapy, with early support for non-inferiority and feasibility; this could reduce access barriers in many correctional settings, including for those in segregation.

Reintegration remains a major transition point where particular models of interventions are required to achieve continuity of care for those with SMI to reduce relapse and recidivism (18). To ensure that help is not misplaced, there is a need for individualized post-release plans to address prisoners' unique needs (38, 40); prisoners may view mental health needs as secondary to economic considerations such as obtaining housing and employment (82). Programs such as Housing First that aim to address inmates' economic needs have showed weak evidence (20).

The body of evidence for reintegration studies is significant but often limited in generalisability because the studies address jurisdictionally-specific issues such as Medicaid enrollment. Though countries such as Canada, the UK, Australia, and New Zealand have public healthcare, inmates may still need support with drug plan applications to ensure continued access to medications such as antipsychotics necessary for managing symptoms and preventing recidivism (83–85). There is a crucial need for more studies addressing comprehensive support models at the point of release that address social determinants of health (benefits, housing) as well as health and criminogenic issues. The problem of rapid re-incarceration of many persons with SMI being released from custody (86) underlines this need. While the purpose of reintegration has shifted from protecting the community from future harm to addressing the inmates' recovery needs, only one study assessed symptom improvement as an outcome (38). Among people with severe mental illness, incarceration is five times more likely among those with a co-occurring substance use disorder (38, 87) yet few re-entry programs were aimed at substance abuse.

Few reintegration studies were specific to women, though research has shown that woman have different demographic, health, and criminal characteristics (3). Factors such as women being more likely to have children will impact their reintegration needs. There were no studies of reintegration of aboriginal populations or other racialized minorities that are overrepresented among incarcerated populations. There was a lack of studies assessing re-entry programs in middle and low income countries despite higher rates of SMI amongst their prison populations (2). Community reintegration programs need effective community mental health care to pick up the care of the person exiting custody. Lower income, marginalized neighborhoods having disproportionately higher numbers of the incarcerated individuals where the scarcity of community mental health resources may result in a cycle of reincarceration (88). Bridging programs may also be particularly challenging in countries that have large regional, rural and remote areas such as Australia (38).

We also found areas of weakness. Whilst the screening tools are well-studied, all have problems with high false positive rates; there are few studies of cross gender effectiveness and cross-cultural effectiveness. Given that persons of minority ethnicity are over-represented in custody, ensuring tools are effective for the particular ethnic groups in a jurisdiction remains a challenge that has been rarely addressed. Second, there are no studies of standardized assessment tools of severity of illness measures in routine use, both to describe need at point of service entry and as measures of effectiveness of interventions or systems of care. The Clinical Global Imopression-Corrections (CGI-C) scale is one promising such tool that has been validated in Canada and Germany (86, 89). There are few studies of the overall care pathway, the studies of O'Neill et al. (22) and Pillai et al. (23) being notable exceptions. More studies of this type are needed linking service provision to quality indicators at multiple points across the care trajectory. The systematic review of intervention studies found too few intervention studies to inform services of effective intervention approaches.

We employed the STAIR model to organize this literature and found it a helpful framework to show areas of strength and areas of weakness in existing research in each area. The principle of seeing CMHS as an integrated care pathway, with measurable levels of access and expected quality outcomes, is crucial to focusing forensic research and delivery initiatives to improve service outcomes.

Limitations

The major limitation is the diversity of the literature, and too few studies in a number of areas to come to clear recommendations about evidence-based recommendations. As we chose to only review reviews, there may be primary studies in some areas and smaller studies that are in need of replication that we have not included. There may be promising practices in these excluded studies that need to be more rigorously tested in an experimental paradigm.

CONCLUSION

There is a rich literature in correctional mental health services with some areas of strength but other areas of weakness. The STAIR model provides a framework to organize our thinking about these needs and to focus more research on care pathways and performance measures. New research is needed into therapeutic interventions and reintegration needs in particular.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/**Supplementary Material**, further inquiries can be directed to the corresponding author/s.

AUTHOR CONTRIBUTIONS

AS conceived of the review. CG, MM, VA, TV, LF, and TK performed review, the data extraction, and quality ratings. MM, CG, AS, AF, and RJ drafted the manuscript. All authors contributed to the article and approved the submitted version.

SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2021.747202/full#supplementary-material

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REVIEW
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Benefits of Digital Mental Health Care Interventions for Correctional Workers and Other Public Safety Personnel: A Narrative Review

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Chronic exposure to stressors and potentially psychologically traumatic events contributes to the high prevalence of mental health disorders in correctional workers (CWs) and other public safety personnel (PSP). Digital mental health interventions are an accessible and scalable method of improving and maintaining the mental health of this population. The current review explores the benefits of digital mental health interventions for PSP–with a focus on CWs–and how these innovations can address the limitations in in-person mental health care. A systematic literature search of five databases (Medline, PsycInfo, Embase, CINAHL, Google Scholar) was conducted until March 2022. The search yielded 16 publications that focused on digital mental health interventions or care available to CWs and other PSP. The benefits of digital innovations were summarized into five categories which discussed (1) their ability to enhance accessibility and reduce stigma; (2) the provision of evidence-based and structured psychotherapy programs; (3) variability in the degree of therapist engagement; (4) the integration of proactive interventions; and (5) enhancing engagement by acknowledging unique experiences and interpersonal relationships. Although digital mental health technologies for CWs are still in their infancy, there is strong evidence to support their effectiveness in ameliorating symptoms of mental distress. Future research should consider how ethnicity, gender, culture, sexual orientation, and socioeconomic status can be integrated into these therapies and how the interplay between different stakeholders and organizations can impact the effectiveness of online therapies and programs.

Keywords: behavioral therapy, correctional workers, depression, internet, mental health, online, psychotherapy, public safety personnel

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INTRODUCTION

Correctional workers (CWs) are public safety personnel (PSP) who work in prisons, jails, courthouses, and correctional centers and ensure the safety, security, and provision of services of staff and inmates (1). The complex and challenging work environment frequently exposes CWs to ongoing stressors and potentially psychologically

traumatic events (PPTEs) (2–5). These factors increase the risk of occupational stress injuries (OSIs)–mental health disorders or conditions that result from PPTEs or stressful incidents in the workplace (6). Compared to the general public and other PSP sectors, there is a higher prevalence of mental health disorders in CWs (4, 7). A sample from Ontario, Canada ($n = 1487$), reported positive screens of 37% for major depressive disorder (MDD), 30.7% for post-traumatic stress disorder (PTSD), and 30.5% for generalized anxiety disorder (GAD) (8). Another study reported that 35.2% of CWs experience lifetime suicidal behavior with no significant difference based on years of service (9). Similar trends have also been observed in US-based CWs (10). In one report, since starting work in corrections, 49% of CWs experienced anxiety, 46% depression, 43% obesity or being overweight, 40% high blood pressure, 39% PTSD, and 23% alcohol use disorder (11).

The need for accessible mental health programs and therapies has substantially increased amid the COVID-19 pandemic (12). Prior to the pandemic, most mental health services offered by correctional institutions were delivered in person and focused on preventing or managing OSIs. For example, the Employee Assistance Program (EAP) is a frequently used voluntary service that aims to improve employee productivity by addressing personal and work-related concerns. EAPs can also help clients identify and resolve mental health-related concerns by providing assessments, short-term counseling, referrals, and follow-up services at no cost. Some institutions also provide critical incident stress management (CISM) and critical incident stress debriefing (CISD) programs for those at risk or exposed to PPTEs (13). Drawing on cognitive behavioral therapy (CBT) strategies, these programs promote treatment-seeking and support in affected individuals. Many external agencies also train PSP to provide peer mental health support. These programs promote emotional and social support, encouragement, and hope to colleagues exposed to workplace PPTEs (14). Training programs include CISM and CISD, peer support, psychological first aid, and trauma risk management (15). Lastly, the *Road to Mental Readiness Program* (R2MR) is a 160-min training program that assists PSPs in retaining their psychological well-being while working in high-risk occupational settings (16). The program uses CBT principles and psychoeducation to help individuals manage physiological stress responses and engage in psychological self-monitoring and attentional control (17).

Currently, there is limited evidence of the benefits of these interventions in mitigating PPTEs (15). In a review of 14 different mental health programs available to Canadian PSP, there was considerable variability in perceived intended use and delivery (13). Moreover, there was little evidence that the programs robustly impact symptoms of (OSIs), either positively or negatively (13). However, PSP training programs were associated with a greater willingness to access support and decreased odds of screening positive for most mental disorders (8). In another review and meta-analysis of well-being interventions for correctional officers (18), only nine studies met the exclusion criteria, and none were randomized controlled trials. The programs consisted of crisis interventions, psychoeducational programs, and an exercise program. Results indicated that the treatments did not affect stress and psychopathology. However, the authors noted that the interventions lacked a strong theoretical and context-specific basis, emphasizing a need for validated interventions based on sound models of psychological processes associated with well-being. The absence of well-established and targeted programs may partly explain the low treatment-seeking behaviors of CWs.

With the persistence of the pandemic, mental healthcare delivery has rapidly pivoted from in-person to online formats that adhere to physical distancing laws (19, 20). Digital health technologies enable mental health care to be primarily delivered through telephone, internet, or mobile applications. The online delivery of mental health programs and therapy is an easily scalable, affordable, and relatively accessible option (21). Some digital programs also demonstrate efficacy that is comparable to in-person care (22–25), even within PSP (26). Digital interventions can overcome many mental healthcare barriers as they are cost-effective, require less therapist time, and can be accessed from any private location at any time (19). These factors contribute to the appeal of online therapy and programs for CWs.

Exploring the mental health needs of CWs and their response to current in-person treatments can inform the development of internet therapies and programs tailored specifically for this population. The objective of the current narrative review was to explore the benefits of digital interventions for PSP and how they can address barriers that frequently exist in in-person care. Although a sizable proportion of empirical research does not distinguish the PSP sectors, the application of the findings to CWs specifically are discussed. The findings have been summarized into five broad categories. The benefits describe how digital mental health delivery can adequately address barriers and improve the quality of mental health care for this population.

METHODS

The present review adhered to PRISMA-P (Preferred Reporting Items for Systematic Reviews and Meta-analyses) guidelines (27, 28). A systematic literature search was conducted on the web databases Medline (OVID), PsycInfo (EBSCO), Embase (OVID), CINAHL (EBSO), and Google Scholar. Combinations of MeSH (Medical Subject Headings) and keywords related to correctional workers, digital interventions, and mental health were used in syntax with other Boolean terms to develop the search algorithms. A full list of terms can be found in **Supplementary Table 1**.

Peer-reviewed studies published in English and until March 2022 were included. Studies were included if they focused on digital mental health interventions or training available to correctional employees within all sectors. Studies pertaining to prisoner mental health or trauma were excluded. Studies on PSP

that did not recruit or report sampling CWs were also included if they defined CWs as being part of PSP and/or reviewed programs that have been used by CWs in other studies.

RESULTS

After removing duplicates, 2, 468 studies were screened and 16 studies were identified from the search (**Supplementary Figure 1**). The majority of the studies were reviews (n = 5), followed by mixed-methods ($n = 4$) and qualitative ($n = 3$) studies (**Supplementary Figure 2**). Most of the research studies sampled from or examined an intervention in Canadian PSP (n = 10). One of these studies (29) was conducted using members of the Canadian Armed Forces. This study was included in the review since the program they assessed is available to CWs and other PSP (7). One study (30) recruited PSP but the sample did not include CWs and two studies did not specify the PSP sectors recruited (26, 31). These papers were also included for the same reason as the (29) study. Studies exclusively reviewing digital interventions only focused on mental health apps for PSP ($n = 3$) (32–34). These studies were included since they acknowledged CWs as being part of PSP. Lastly, all papers were published between 2019 and 2022, with the majority published in 2021 ($n = 9$). A full summary of the papers can be found in **Supplementary Table 2**.

Summary of Benefits

Enhanced Accessibility and Reduced Stigma

Shift work and long hours can compound stress and make it challenging for CWs to find the time to seek care (35, 36). In a study of PSP perceptions of electronic CBT (e-CBT), time flexibility and convenience were the most commonly cited benefits, followed by anonymity and privacy (37). Qualitative data indicate that although CWs prefer to work with a therapist, they favor off-site assessments to safeguard privacy (35). Specifically, the fear of breached confidentiality and others becoming aware of their mental health status has been reported as a barrier to treatment-seeking in CWs (35). This phenomenon is also reflected in the type of therapy sought out by PSP. In one study, 74% of PSP would first access a spouse for mental health support (8). Many (43-60%) refrain from seeking professional support or only do so as a last resort (8). Online interventions address confidentiality concerns by eliminating the need for CWs to drive to a physical location, accessing therapy from wherever they are comfortable while better-preserving anonymity within their community and family.

The central importance of CWs accessing mental health care and sharing their concerns in a private space may be due to the high levels of workplace stigma surrounding mental health (7, 38). Although one study reported that CWs experience less stigma than other PSP sectors, it is still a significant problem in this population (7). Stigma can be broken down into two dimensions, public and self-stigma. Public stigma refers to societal prejudices and discrimination toward individuals seeking or receiving mental health care (39). Self-stigma occurs when individuals hold negative or self-condemning personal views (39–41). The correctional work culture frequently discourages visible emotional responses to trauma or stressors, reinforcing both types of stigmas (42). Most notably, the detection of mental health concerns can raise questions of whether the individual can perform their job duties. As a result, many CWs avoid seeking care for fear of shame, being discriminated against, labeled as pariahs, lazy, or weak, being discredited, or experiencing workplace repercussions (43, 44). Negative media portrayals and public perceptions of CWs as incompetent, brutal, and indifferent to human suffering can further fuel this stigma (45, 46). In CWs, a negative public image is a strong predictor of job stress and low community support (47). The outcome is that CWs avoid seeking timely mental health care, sharing their mental health concerns with others, and giving and receiving mental health support from their colleagues (38). Resultantly, stigma can bolster a work culture that normalizes toxic masculinity (i.e., socially regressive male traits), distress, isolation, and lack of support from colleagues–all of which can contribute to and worsen adverse mental health outcomes (42, 48).

One way that online interventions can reduce stigma is by increasing community and workplace mental health knowledge and recognition (35, 49, 50). Similar to other mass communication channels, internet-based mental health interventions have broad reach and can be accessed by large numbers of people (51, 52). In CWs, greater mental health knowledge is associated with reduced stigma and greater recognition of mental health needs and intent to use mental health services (7, 35). In a recent study comparing male and female correctional employees, male participants (38.6% of the sample) were significantly more likely to exhibit stigma toward individuals with mental disorders and were less likely to seek care if they developed a mental health disorder (49). Conversely, females were less likely to exhibit stigmatizing attitudes and more willing to seek mental health care–characteristics ascribed to their greater mental health knowledge and awareness of the stigma associated with mental health injuries. Although gender-based differences toward stigma exist, the study highlights mental health knowledge as critical to reducing stigma. Online interventions may counteract stigma by contributing to a more informed individual. Greater awareness in a less stigmatizing environment can encourage PSP to discuss mental health concerns, identify, self-report, and seek help, and take advantage of available services that promote positive mental health (7).

While the most salient features of online interventions are their convenience and accessibility, it is necessary to determine the type of online intervention appropriate for this population. For example, in some cases, the use of discreet online mental health interventions may perpetuate social avoidance. Active users of an online support group experienced less self-stigma and a greater likelihood of seeking formal support (53). On average, participants spent 1 h per visit, with 60% visiting more than once a day. However, increased frequency of use was associated with reduced self-stigma recovery and lower offline treatment-seeking. This pattern indicates that an overdependence on online support groups could be a form of social avoidance rather than a means of reducing stigma. Although there is only a modicum of research in CWs and other PSP (26), the highly stigmatizing mental health views in this profession may similarly reduce the benefits

of certain online interventions with increased use. Therefore, researchers must ensure that programs and therapies encourage symptom improvements and reduce stigma rather than become an escape from reality (54–56). For this reason, the dissemination of online interventions based on empirical research is critical in this population.

Provision of Evidence-Based and Structured e-CBT Programs

Psychological interventions guided by relevant data produce cost-effective and efficacious psychiatric treatments (57). Implementing programs without rigorous evaluation may allocate already-limited funds toward ineffective or even harmful programs (58). Despite the demonstrated benefits of evidence-based in-person and online psychological interventions for CWs, the number of programs available are limited (18). Even so, the data indicates that the success of CISM and CISD programs can be attributed to their use of CBT techniques–an evidence-based treatment modality (8). CBT is the first-line treatment for several mental disorders, including anxiety, depression, and PTSD (59–61). Most available evidence-based programs for PSP and CWs utilize CBT since it can be easily adapted for different mental disorders and populations (25, 62). The therapy is typically divided into structured sessions consisting of psychoeducation, thought records, and behavioral experiments (63). At the end of each session, patients will complete and submit homework essay questions to reinforce and practice what they have learned. The homework is then sent to their therapist who reviews and provides personalized feedback on the patient's progress. e-CBT uses the same traditional concepts and skills as its in-person counterpart and demonstrates comparable efficacy (64). However, e-CBT is considered a more convenient form of care as it typically consists of weekly lessons and virtual therapist support (19, 64). In a recent study, PSP perceived e-CBT positively and believed it to be an appropriate means of addressing the community's high prevalence of mental health concerns (65). PSP also indicated that therapy should be tailored to address a range of symptoms while also acknowledging their focal concerns (65). In another study from the same research team, prospective clients ($n = 259$ PSP; 55 CWs) had a positive outlook on e-CBT and predicted a 55% improvement in their symptoms (66). In a study of 132 PSP, 93% reported that they would use e-CBT if they experienced mental health concerns (37).

In 2019, the Government of Canada initiated a National Action Plan (67) in which e-CBT was identified as a potential solution to overcome barriers to care and provide mental healthcare to PSP (68). To date, only two e-CBT programs have been tailored for CWs (69–71). One uses a modified version of the Well-being Course (PSP Well-being Course) for all PSP (70). The PSP Well-being Course consists of five psychoeducational lessons released over 8 weeks (72). These lessons focus on (1) the cognitive behavioral model and symptom identification; (2) thought monitoring and challenging; (3) de-arousal strategies and pleasant activity scheduling; (4) graded exposure; and (5) relapse prevention. The second study uses the Online Psychotherapy Tool (OPTT) to deliver unique programs for CWs at risk or diagnosed with PTSD, GAD, or MDD (69). OPTT is a virtual platform that offers online psychotherapy programs specific to different disorders and populations. Through weekly sessions, OPTT's 12-week program teaches core CBT concepts and skills. Both programs include case studies unique to the population of interest and homework that follows each session. In addition, both programs have varying degrees of therapist support. The use of evidence-based interventions strongly suggests greater improvements in the mental health of CWs–likely more than what is observed in current programs. Already, both programs have demonstrated beneficial effects in other populations (71–76). Initial outcome data ($n = 83$; 9 correctional workers) indicates that the PSP Well-being Course effectively treats symptoms of depression, anxiety, PTSD, panic disorder, and is moderately effective for treating anger (70). Furthermore, 54/62 (86%) of study participants found that the course made them feel more confident in their symptom-management abilities, and 61/62 (98%) of participants found that the course was worth their time. Qualitative data from a PSP sample with 11% CWs demonstrated positive client views of the PSP Well-being course and that the program was suitable for developing coping skills and normalizing mental health experiences (68).

Despite the positive views, virtual therapy is not the primary treatment choice for CWs (8). The relative novelty of e-CBT in this population may partly explain this preference. Since treatment outcome expectations are associated with treatment outcomes (77), participants may not be aware of the online program's benefits, thereby reducing its efficacy and use. Indeed, in a study exploring PSP perceptions of e-CBT, many of the questions posed by the participants indicated the need for educational material explaining the logistics of e-CBT and its delivery methods (37). Providing this information can also address low technological competence and familiarity issues that can contribute to attrition (31, 32, 34, 78–80) and may increase openness toward e-CBT amongst CWs.

Variable Therapist-Engagement

Most CWs prefer some degree of therapist or human support when partaking in mental health interventions (81). After psychologists, e-CBT with therapist assistance was ranked second to the most preferred treatment type in this population (81). Therapeutic alliance over the digital realm can mimic in-person therapies amongst PSP (82–85). At the same time, the degree of therapist interaction can be easily modified to meet the needs of the individual (76, 86). This factor makes online interventions a more cost-effective way to connect with therapists since they require less time commitment per client (87, 88). In a study of an e-CBT program for PSPs, most preferred therapist support once a week (74/83, 89%), followed by twice per week (6/83, 7.2%), and lastly on an as-needed basis (3/83, 4%) (70). Although a small portion of participants opted for optional online therapist support, in individuals with anxiety and depression, it is associated with lower completion rates and lower correspondence than those with standard weekly support (72). These findings indicate that online programs should offer some degree of therapist contact.

The therapeutic alliance is more likely to occur with synchronous video or telehealth compared to other delivery methods, since it provides a more direct opportunity for CWs to build relationships and trust with their therapists (89). The PSP Well-being course and OPTT utilize asynchronous text-based communication with the therapist. The benefit of these delivery formats is that there is some degree of therapist contact while still addressing many facets that make digital interventions appealing to CWs. For example, some PSP report difficulties finding a private space in their home (90), providing sensitive information online, or conveying and reading emotions and non-verbal cues (91, 92). Both e-CBT programs acknowledge these limitations by providing asynchronous treatments that are textual and can be completed over a few days. In addition, previous research has demonstrated that therapeutic alliance can be formed in e-CBT (93). However, to better address the impersonality that may arise, programs may benefit by integrating live and/or video-recorded options into their interventions. One study proposed the inclusion of initial in-person meetings with therapists to increase rapport and adherence (94).

Although confidentiality is a frequent concern of CWs, most prefer therapist-guided e-CBT to self-guided e-CBT (37, 68). The inclusion of a therapist in online mental health interventions can help mitigate feelings of isolation and enhance accountability (95). In addition, PSP report barriers to face-to-face treatment such as unaffordability, not being understood by the therapist or counselor, time constraints and concerns about mental health stigma (66). Moreover, the therapeutic alliance is strengthened when PSP work with therapists who have sufficient knowledge and experience working with this population (65, 68). A more customized and option-friendly approach is needed for both the intervention and the degree of therapist contact.

Integration of Proactive Interventions

Most studies on CW and PSP mental health interventions report favorable results (96–99) but vary in their strength of evidence (15). These studies frequently sample PSP with different employment lengths, mental health statuses, and sectors. The heterogeneity of results indicates that a one-size-fits-all approach may not be appropriate for this population.

Although evidence-based therapies like e-CBT may reduce burnout and stress (100, 101), they do not address the spectrum of mental health statuses that exists. It may be difficult for the general CW population to relate to the concepts discussed in reactive interventions like e-CBT. Conversely, proactive interventions are unlikely to be effective in individuals already struggling with clinical levels of psychological stress (15). Reactive interventions consisting of targeted digital mental health treatments can benefit employees at risk or diagnosed with mental health disorders. In contrast, proactive internet programs that promote CW well-being can help prevent mental health injuries, and assist with job retention (102, 103). Notably, proactive programs can equip individuals with skills and strategies they can use before or during stressful or traumatic events.

Some of the recommendations made by CWs ($n = 67$) for a healthier workforce included more training opportunities and programs, scheduled appointments with mental health professionals who can track their mental health status, and team-building opportunities that acknowledge interpersonal conflicts at work (35). These suggestions indicate that CWs embrace proactive interventions and see their value in the workplace. Proactive interventions can include promotion and education surrounding trauma and mental health to increase awareness, peer support and trauma-informed advocacy programs, access to mental health professionals, and increasing employee insurance benefits for mental health services (103). Many of these suggestions can be integrated into digital interventions.

Current mental health services available to CWs–including those in an online format- tend to be reactive and focus on staff who experience significant psychological distress. Programs for CWs struggling with daily stressors and challenges due to their adverse work environment are limited (16, 104). As a result, empirical research is lacking in CWs who do not meet clinical levels of cognitive deficit or mental health issues but still fall on the spectrum of psychological distress. A greater focus on proactive programming may benefit CW well-being (16). Moreover, proactive programs have been shown to enhance resilience and well-being and reduce emotional exhaustion, mental concerns, and burnout in CWs (105, 106). Many PSPs report a motivation to learn skills to manage their mental health symptoms, indicating the appropriateness of skills-based and resilience-building proactive treatments (66). Mental health training offered to US-based correctional officers varies considerably and ranges from 1.5 to 80 h. These training programs center around the safety and security of inmates and other officers and mainly focus on crisis intervention (84.62%) and general psychoeducation (46.15%) (107). However, standardized training programs specific to mental health and mental illness are lacking, as is research assessing their effectiveness in CWs (107). Similar trends have been observed in Canadian samples (8, 13). Cost-effective online interventions can offer users a wide selection of customizable proactive programs and help enhance the efficacy of current in-person programs without exhausting already-limited healthcare resources (108–110).

For example, leveraging digital technologies to complement the R2MR program is a suitable example of modifying a traditionally classroom-based proactive program to increase program length and enhance efficacy in a specific population. The low efficacy of the R2MR program in PSP (111, 112) indicates that a 160-min training program may be a great start to initiate mental health dialogue but may be insufficient in addressing the multifaceted mental health challenges in PSP sectors. Since the positive improvements and adaptive coping skills gained from these programs can diminish over time, continuous access may sustain beneficial effects (113). Repeatedly applying and practicing skills have demonstrated success in program retention and effectiveness (114). In line with this, the R2MR app complemented the current program by providing on-the-go training to help with stress management, short- and long-term performance and mental health outcomes, and encouraging treatment-seeking behaviors (17). The online program provided customizable life skills and access to additional care resources

(29). Moreover, users could track their progress over time, receive reminders to practice resilience and executive functioning skills taught in the app, view multimedia and graphics to enhance engagement, and have immediate access to mental health information whenever they need it (29). Although the app is relatively novel, usability studies in members of the Canadian Armed Forces (CAF) have indicated that compared to civilian participants, CAF participants were more accepting of the app as a prescribed training tool and expressed a desire to view their progress relative to others (29, 33). Taken together, online interventions allow for the rapid implementation of a resource pool of proactive and reactive interventions that are cost-effective, easily customizable, and meet the diverse mental health needs of CWs (33).

Enhancing Engagement by Acknowledging Unique Experiences and Interpersonal Relationships

Despite the benefits of online interventions, low engagement, high dropout, and unsustained use are frequent problems (115–117). Online mental health interventions for PSP also have low participant adherence and completion, despite significantly reducing post-traumatic stress injuries and improving well-being, coping, and resilience (102). Although there are different facilitators of user engagement (118, 119), the two most relevant to CWs are (1) the importance of developing programs that acknowledge their unique experiences and (2) consideration of interpersonal relationships.

Given that each PSP sector experiences different types of traumas, stressors, and mental health symptomatology (4, 120), online interventions should be industry responsive and acknowledge the unique experiences of CWs. For example, the Before Operational Stress (BOS) program is a year-long CBT-based group program that aims to enhance positive mental health habits, self-awareness, and healthy relationships in early-career PSP (30). Qualitative findings demonstrate participants' positive views of the program. Additionally, small but statistically significant improvements were observed at 6 months in PTSD, anxiety, depression, and alcohol use symptoms, quality of life, stigma and perceived social support (30). The small effect may be due to the large individual variability present in the sample, highlighting the importance of developing occupationally responsive programs that meet the unique needs of CWs.

Although most studies amalgamate PSP (e.g., firefighters, police officers, correctional workers, paramedics), there are distinct differences in the job requirements and frequency and type of mental disorders and traumas experienced in each sector (4). For example, only CWs provide care, custody, and control of individuals housed in correctional facilities. Working in the same confined living space of prisoners substantially increases the risk of PPTEs and stress (121). Compared to other PSP, CWs display the highest rates of mental health disorders and suicidal behaviors despite having the greatest mental health knowledge, least stigma, and highest intentions to use mental health services (4, 7, 9). Generally, users prefer interventions that can be personalized to meet their unique preferences and needs, are accessible and interactive and offer support (122). Tailoring digital interventions to meet population-specific needs and interests can improve user engagement and instill a sense of ownership and control of health in users (123, 124). Based on these findings, interventions designed for all PSP are unlikely to have the same degree of efficacy and engagement as those that are sector-specific.

To enhance engagement, online interventions should draw on sector-specific examples and case studies that make it easier for users to relate their experiences. Because feelings of isolation and loneliness frequently co-occur with mental health concerns, tailored online interventions can improve engagement by reducing stigma and normalizing how common mental health concerns are amongst CWs and other PSPs (68). A recent e-CBT intervention for PSPs guided by Oinas-Kukkonen and Harjumaa's persuasive systems design (PSD) (125) demonstrated increased engagement in users (68). The PSD framework consists of 28 recommended design principles to enhance user engagement in online programs and interventions. Although the study did not indicate which principle resulted in the greatest engagement, it is speculated that the social learning principle may be the most important since it aligns closely with the social nature of the CW profession (43, 126). In addition to pursuing self-betterment and learning skills to independently manage their mental health, many PSP seek e-CBT to improve their family functioning and offer peer support to their colleagues–socially based motives (66). The importance of social learning is also evidenced by the relative success of peer support programs in PSP (15). At the same time, seeking social support may be problematic for some CWs as the associated stigma can jeopardize their social standing in the workplace (2). Therefore, CWs may be more inclined to engage with online programs that include real-world examples from their colleagues without the worry of sharing their private information as they would in a peer support setting.

DISCUSSION

The relatively recent rise in publications related to digital mental health technologies for CWs highlights the novelty of this research area. The majority of these studies were either reviews or explored the perceptions of PSP and CWs toward digital delivery of mental health care. Even so, preliminary evidence supports the success of these innovations in this population (70). Despite the scant research, the potential for online mental health interventions to mitigate the deleterious effects of occupational trauma and stress is well-demonstrated (66, 68, 103).

The high accessibility of online interventions can foster rapid dissemination of mental health knowledge–a critical factor to consider when tackling the problematic levels of stigma in the correctional profession. Due to the benefits of CBT (68–70), most of the interventions discussed in the current review focused on its online delivery. While reactive interventions like internet CBT can ameliorate the clinical symptoms of mental disorders, the findings indicate that CWs will also benefit from consistent access to proactive programs (102). Adapting traditionally in-person proactive and reactive programs into a digital format has shown some success in PSP (33), rendering it an area that demands greater investigation. Lastly, the findings

indicate that engagement is one of the most fundamental factors to consider when developing online interventions for CWs, since most online programs are riddled with low adherence and completion (102). Although most of the current studies are not sector-specific, it is posited that CWs will better relate and engage with programs explicitly focused on their vocation. Additionally, virtual therapist contact will create a more personalized experience and will reduce the impersonality that is commonly cited as a limitation of online interventions.

An eclectic mix of digital mental health interventions with variable therapist involvement has the potential to foster precision mental health and improve care (127–129). Providing treatment options may bring forth a greater sense of control, autonomy and trust, making it more appealing for CWs who rely on these factors in the workplace (130, 131). In a sample of US CWs, 55% agree and 33% strongly agree that staff behavior influences the behavior of those incarcerated in the unit (11). Although more than half of the sample agreed that they rely on their coworkers to respond to an emergency, more than half also believed there was a lack of trust and teamwork in their work environment. While the stressful work environment is an inevitable part of this profession, providing accessible online resources that cater to variable mental health needs may contribute to a more positive work culture. In turn, a mentally healthy workforce may reduce the probability of biases and stress-related decision-making, contributing to a more compassionate work environment that is beneficial to both employees and offenders (132).

Future Directions

The broad reach of digital technologies serves as the impetus for future interventions to not only acknowledge an individual's profession but perhaps other critical factors such as their ethnicity, gender, culture, sexual orientation, and socioeconomic status. In PSP exposed to PPTEs and other stressors, men are more likely to rely on families or spouses for social support and women are more likely to seek friend groups or reciprocity-based relationships and formal programs (133). While the relationship between gender and mental health has been somewhat outlined in CWs and other PSP, future research needs to consider how the other demographic factors impact the different facets of care. A systematic review included in this review highlighted the importance of examining gender, racial, and cultural factors when designing digital mental health interventions for PSP since they may result in differential outcomes, preferences, and needs (26, 134, 135).

The majority of the studies in this review focused on Canadian CWs and PSP–an emphasis that was a by-product of the locations in which the available studies were conducted. While it may be too early to determine the implications of digital mental health programs, their success may inspire other communities and populations to consider the mental health of those offering care and protection to prisoners. Future research should also consider how the interplay between different stakeholders and organizations can impact the effectiveness of online therapies and programs. For example, some skepticism has been detected in PSPs completing online courses that are government-sponsored (68). Future research is needed to determine how relationships with and the perceived credibility of the stakeholders and organizations offering online evidence-based programs can impact treatment outcomes. Researchers, institutions, and correctional facilities that develop and promote these online interventions may see greater benefits in users if they establish trust and conducive dialogue (136, 137).

Closer relationships and systematic trust within the community and PSP organizations can also generate a platform where users can provide constructive feedback on improving these evidence-based programs (137). For example, patients enrolled in an e-CBT program for depression and anxiety suggested improvements in the breadth of patient stories, course timeline, and matching therapist availability to patient needs (138). Perceived organizational support can moderate the deleterious effects of correctional work (139). To strengthen mutual trust and integrity, open conversation and acknowledging the patient voice are critical (35, 140). Hence, treatment, mental health, and well-being insights shared by CWs can not only offer invaluable feedback on improving online therapy but can subsequently strengthen trust, positive treatment outcomes, and promote a supportive and psychologically healthy (141, 142).

CONCLUSION

Taken together, online interventions are a burgeoning method of obtaining mental health and well-being for CWs and other PSP- professions marked by high levels of occupational stress and trauma. The benefits explored in this review are necessary to inform the development of digital programs and therapies for this population. The high prevalence rates of mental disorders in CWs indicate that the current interventions and work environment require some degree of reform. It is noted that online interventions alone are not sufficient in initiating sustained change. To promote a mental health-positive work culture in corrections, all levels of the organizations–from government to administration to the individual–should be considered. Digital programs and therapies have the potential to assist with the multi-level shift in organizational mental health views. Ultimately, and as demonstrated in this review, what sets digital interventions apart from other delivery methods is that it provides a more personalized form of mental healthcare delivery that can actively adapt to an individual's clinical needs, goals, and lifestyles (143).

AUTHOR CONTRIBUTIONS

EM and NA were responsible for study design, conducting the systematic literature search, and writing the review. Subsequent drafts were edited and finalized by YK, MO, NN, CS, GL, and AIFS. All authors contributed to the article and approved the submitted version.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2022.921527/full#supplementary-material

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The inter-connections between self-harm and aggressive behaviours: A general network analysis study of dual harm

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Dual harm is the co-occurrence of self-harm and aggression during an individual's lifetime. This behaviour is especially prevalent within criminal justice and forensic settings. The forms of aggression that should be included in the definition of dual harm have not yet been established. This study aimed to use network analysis to inform an evidence-based definition of dual harm by assessing the relationship between self-harm and different forms of aggressive behaviour in young people (N = 3,579). We used data from the Avon Longitudinal Study of Parents and Children (ALSPAC). Results revealed low correlations between the variables, leading to sparse network models with weak connections. We found that when separated into their distinct forms, aggressive acts and self-harm are only weakly correlated. Our work provides preliminary evidence to assist in understanding and managing dual harm within clinical and forensic settings and informs recommendations for future research.

KEYWORDS

dual harm, self-harm, aggression, co-occurrence, violence, ALSPAC

Introduction

Rather than engage in self-harm *or* aggression (i.e., sole harm), some individuals will show both behaviours during their lifetime; this is referred to as dual harm (1). Up to 5% of individuals living in the community have been reported to engage in dual harm (2–5). This figure rises to 11–15 and 19–56% in prisons and forensic mental health services, respectively, indicating that dual harm is of particular concern amongst forensic and criminal justice populations (6–10). Self-harm and aggression have been reported to increase and peak during adolescence, underlining the importance of interventions that target harmful behaviours during this period (11–13). Richmond-Rakerd et al.'s (5)

study of adolescents found that twins who had engaged in self-harm were three times more likely to perpetrate a violent crime compared to their co-twins who had not engaged in self-harm. By examining differences between twins raised in the same family, these findings highlight an association between self-harm and aggression amongst young people, in which self-harm is a predictor of aggression risk independent of genetic or familial factors.

There is evidence that, compared to persons with a history of sole harm, individuals who have engaged in dual harm are more likely to have had various harmful experiences during adolescence, including adverse events (e.g., maltreatment, family violence, neglect), psychotic symptoms, substance dependence, and traits relating to interpersonal and emotional problems (5, 6, 14–16). Therefore, early intervention models that target risk factors during adolescence may be effective in preventing the development of dual harm. The importance of early prevention is demonstrated by findings showing that individuals who engage in dual harm show a riskier pattern of behaviours and are more likely to experience negative outcomes, including higher risk of dying from external causes (5, 9, 17). Negative outcomes have especially been highlighted within forensic and criminal justice settings. Despite forming a minority, it has been reported that prisoners with a history of dual harm spend 40% longer in prison and twice as much time in segregation compared to those who engage in aggression alone (1). These findings highlight the limited effectiveness of current strategies in helping those who engage in dual harm, as well as the importance of preventing this behaviour before it arises in forensic and criminal justice settings (18). It is important that we investigate dual harm during adolescence to thereby learn how this behaviour may emerge and develop.

Despite the duality of self-harm and aggression in a subset of affected individuals, research and practice tend to make a separation between these two behaviours. Consequently, we have limited knowledge of the understanding and management of dual harm within clinical and forensic services. There is no agreed definition of dual harm, making it challenging to reach an evidence-based conclusion regarding the nature, determinants and consequences of this behaviour. Whilst dual harm includes both self-harm and aggression, it is unclear which exact harmful behaviours should be included under these broad terms. Self-harm is a broad term that encompasses both suicidal and non-suicidal forms of self-directed harm, covering a range of behaviours, including physical self-injury (e.g., self-cutting) and overdose. Aggression may range in severity from minor behaviours (e.g., verbal aggression) to more extreme behaviours (e.g., physical violence), and only a minority of aggressive or violent episodes result in arrests, criminal charges or convictions. Whilst some studies assess self-harm and physical violence when examining dual harm (e.g., 4), others expand their definition by also assessing behaviours such as property damage and verbal aggression (19). Studies tend to measure dual harm by cross-tabulating responses to separate questionnaires of self-harm and aggression. This method has led to inconsistency of measurements and conceptualisations of dual harm, leading to difficulties with comparisons in the literature.

To strengthen our understanding of dual harm, it is important that we first arrive at an empirically derived definition of this behaviour. Within the context of dual harm, self-harm and aggression are thought to be linked (10, 18, 20). Therefore, one way of informing an agreed definition of dual harm is to assess how various aggressive behaviours are associated with self-harm and with each other. For example, incorporating aggressive acts that are strongly associated with self-harm and with each other could lead to a more clinically meaningful definition of dual harm. Whilst there is evidence that self-harm and aggression are correlated, it is less clear which forms of aggressive acts contribute to this association (20). Studies tend to assess aggression more generally by combining items that measure different forms of aggression into one construct. Consequently, it is unclear as to which aggressive behaviours are relevant to consider when assessing dual harm.

Therefore, our study aimed to delineate between separate aggressive acts and assess how these behaviours and self-harm could be interrelated amongst young people within a network model. By investigating how harmful behaviours are associated with each other during their key stage of development in adolescence, findings may inform an evidence-based definition of dual harm that suggests how this behaviour should be understood and measured within research and practice.

Methods

We used data from the Avon Longitudinal Study of Parents and Children (ALSPAC) – a longitudinal population-based birth cohort study (21–23). We chose this dataset, as variables relevant to our research question were available (**Appendix 1**). ALSPAC researchers collected data from children born to pregnancies and their parents between April 1991 and December 1992 at regular intervals since birth. The initial number of pregnancies enrolled in the study was 14,541. When the oldest children within this sample were approximately 7 years old, there was further recruitment of children from the initial cohort who had not initially joined the study. ALSPAC is a three-generation study and the present work used data from the G1 generation. This generation is the original cohort, in which there are 68 data collection time-points from birth to 18 years old. The protocol for this study was pre-registered in the Open Science Framework.[1]

We assessed the following variables for the purpose of this study:

1 https://osf.io/fpcgb

Self-harm

Data about self-harm were obtained through a self-completed questionnaire when participants were, on average, 16.5 years of age. Participants were asked if they had ever "hurt themselves on purpose in any way." Those who answered "yes" were then asked the frequency at which they had self-harmed in the past year.

Physical aggression, verbal aggression, property damage, arson, and violence toward animals

Participants self-reported the frequency to which they had engaged in the above aggressive behaviours over the past year. Participants were, on average, 15.5 years of age when they reported these behaviours. Items included "hit/kicked/punched someone," "threatened to hurt someone," "rowdy or rude in a public place," "deliberately damaged or destroyed property," "set fire or tried to set fire to something," and "hurt or injured animals or birds on purpose."

Bullying

This behaviour was assessed when participants were, on average, 12.5 years, using the Bullying and Friendship Interview Schedule (24). Participants were asked whether they had perpetrated various aspects of bullying, including "threatened/blackmailed," "hit/beaten up," and "called someone nasty names."

Dating violence

This behaviour was assessed when participants were, on average, 13.5 years, using an interview that consisted of items obtained from a revised version of the Conflict Tactics Scale (25). The interviewer asked participants whether they had intentionally used any of the seven behaviours in the context of dating or romantic relationships. Behaviours included "scratched," "slapped," "kicked," "bent fingers," "pushed/grabbed/shoved," "thrown something," "hit with their fist," or "another form of violence."

The study website contains details of all data items that are available in ALSPAC through a fully searchable data dictionary and variable search tool.[2] The items can be accessed by searching for specific codes (see **Supplementary Material**) in the variable search tool.

Ethical approval for the study was obtained from the ALSPAC Ethics and Law Committee and the Local Research Ethics Committees.[3] Informed consent for the use of data collected *via* questionnaires and clinics was obtained from participants following the recommendations of the ALSPAC Ethics and Law Committee at the time.

Analysis

Missing data were removed using listwise deletion. Network analysis (26) was then applied to assess how self-harm and various aggressive behaviours were connected to each other. Four models were computed using the Mixed Graphical Model approach within R's mgm package (version 3.6.3) (26–28). We fitted four extra models as the addition of each new variable led to a decrease in sample size due to missing data. Therefore, we aimed to assess whether the addition of variables and changes to sample size would affect the associations between the harmful behaviours. All models were estimated using the "bootnet" package and visualised with the "qgraph" package (29, 30). In each model, variables were represented by nodes that connected to each other *via* edges. Participants who had complete data for all variables in each model were included in the analysis. The first model consisted of self-harm, physical aggression, verbal aggression, property damage, arson, and violence toward animals, comprising 3,579 individuals. For the second model, bullying was added, comprising 3,366 individuals. For the third model, instead of bullying, dating violence was included, comprising 2,043 individuals. Finally, the fourth model consisted of all the above variables, and comprised of 1,981 individuals.

We also examined the following *post hoc* question: what is the association between self-harm and aggression when all aggressive behaviours are considered together as one construct? To answer this, we calculated the correlation between self-harm and all aggressive behaviours by creating one composite aggression variable. This was done by summing the items for the separate aggressive variables into one composite variable.

Given differences in frequency at which self-harm and violence occur between males and females (31–33), we also examined the following *post hoc* question: how does the relationship between harmful behaviours differ between males and females? This was done by computing two gender-specific network models that assessed the interconnections between all harmful behaviours in males and females separately.

Furthermore, we calculated the prevalence of dual harm and sole harm amongst the 1,981 individuals who had complete data for all examined variables. Given the varied conceptualisations of dual harm across the literature, to allow

2 http://www.bristol.ac.uk/alspac/researchers/our-data/

3 http://www.bristol.ac.uk/alspac/researchers/research-ethics/

comparability between previously reported studies, we only considered physical violence when calculating prevalence rates. This is because physical violence is typically included in all conceptualisations of dual harm. Therefore, we examined the prevalence of dual harm by identifying those who had engaged in both self-harm and physical violence.

Results

Five percent of individuals had engaged in both self-harm and physical violence (i.e., dual harm, $n = 105$), 14% had engaged in self-harm alone ($n = 269$) and 16% had engaged in physical violence alone ($n = 319$).

The computed models did not show strong connections between nodes, resulting in sparse networks with mostly weak edges or no evident edge (**Appendix 2**). **Figure 1** shows the network model with all the variables of interest. The weak networks should be attributed to the low bivariate correlations between the variables, with 18 correlations estimated at $r < 0.20$. Specifically, all the correlations between self-harm and the different aggressive behaviours were small, ranging from $r = -0.03$ to 0.12 (**Table 1**). In contrast, there was more variability between the distinct forms of aggression, with correlations ranging from $r = 0.02$ to 0.48. **Table 2** presents the adjacency matrix between all variables of interest in the network model. The adjacency matrix represents partial correlations, where the association between two variables is the association that is left when controlling for all other variables within the network model. Where there was an edge present between nodes (i.e., two variables were connected in the model), this is indicated by 1, whereas 0 indicates that there was no edge between the two nodes.

Given the low correlation between self-harm and the separate aggressive behaviours, we examined how self-harm is associated with aggression when all aggressive behaviours are considered as one construct. The analysis revealed a correlation of $r = 0.15$. Whilst this represents a weak relationship, the correlation coefficient was higher than those found between self-harm and each individual aggressive behaviour.

We also carried out gender-specific analyses examining whether there are differences in how harmful behaviours are related to each other between males and females. The computed network models and adjacency matrix are shown in **Supplementary Material** (**Appendix 3**). The network model for males consisted of 826 individuals, and for females, 1,153 individuals. Three percent ($n = 28$) of males engaged in dual harm, compared to 7% ($n = 77$) of females. In the network model for males, no edge was present between self-harm and any of the aggressive behaviours. Nevertheless, the aggressive behaviours in this model were grouped together and shown to be linked by the presence of multiple edges connecting different harmful behaviours to each other. In contrast, the network model for females showed that aggressive behaviours were not as interconnected. However, there was an edge present between self-harm and arson, indicating that these two behaviours are linked.

Discussion

Findings from this study revealed weak correlations between different forms of aggression and self-harm, resulting in network models with weak connections between nodes. Whilst there is evidence that self-harm and aggression are associated with each other (20), it may be that when aggression is distinguished into its specific forms, this association becomes less apparent. This may be demonstrated by findings that when aggressive behaviours were combined into one variable, the albeit weak correlation between aggression and self-harm was somewhat stronger when compared to the very weak associations between self-harm and most of the separate aggressive variables. A higher correlation would be expected when variables are combined. This may highlight that the correlation found between self-harm and aggression in previous research may be inflated as a result of not distinguishing between distinct forms of aggressive behaviours.

The network models show that whilst the bullying and dating violence nodes are further apart, other aggressive behaviours, such as verbal aggression, property damage and arson, tend to cluster together. This suggests that relational forms of aggression may arise from distinct processes compared to non-relational aggressive behaviours and should not be included in our definition of dual harm. These findings highlight the potential importance of delineating different types of aggression when conceptualising dual harm, as it may be more clinically meaningful to consider aggressive behaviours that have stronger associations with each other and self-harm.

Post hoc analysis revealed a higher prevalence of dual harm in females, as well as differences between males and females in how harmful behaviours are connected to each other. It should be noted that these network models may be unstable given the small number of dual harm cases that are present in each, and should therefore be interpreted with caution. Nevertheless, findings may suggest that the aetiologies of dual harm and of harmful behaviours differ somewhat between the genders. Whilst we found no connection between self-harm and aggressive behaviours in males, self-harm may be connected to arson in females. Previous research has found that self-harm and arson have the same psychological processes in women (e.g., communicating distress), suggesting that there may be a shared causal pathway that underlies these behaviours (34). There are differences in the reported prevalence rates of harmful behaviours between males and females. Whilst higher rates of self-harm have been reported in females (31), research has suggested that the prevalence

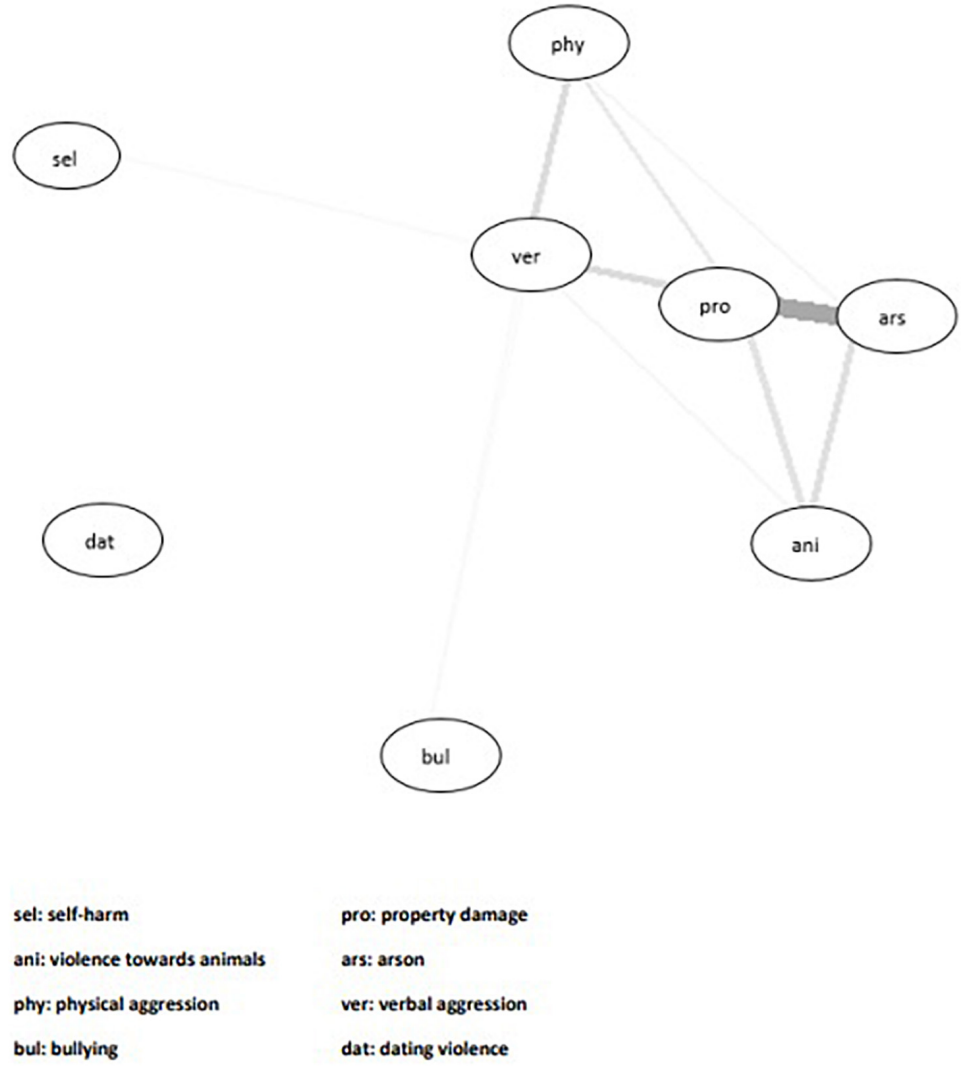

FIGURE 1
Network model showing the interconnections between all harmful behaviour variables in the entire sample. A connection between two variables is demonstrated by an edge between nodes.

TABLE 1 Correlation matrix between all harmful behaviours examined in the study.

	Property damage	Violence toward animals	Arson	Physical aggression	Verbal aggression	Bullying	Dating violence
Self-harm	0.06*	−0.03	0.09**	0.04	0.12**	0.08**	0.1**
Property damage		0.24**	0.48**	0.35**	0.47**	0.11**	0.05*
Violence toward animals			0.25**	0.13**	0.2**	0.06*	0.02
Arson				0.28**	0.39**	0.09**	0.03
Physical aggression					0.47**	0.15**	0.08**
Verbal aggression						0.16**	0.11**
Bullying							0.08**

*$p < 0.05$, **$p < 0.001$.

TABLE 2 Adjacency matrix for the network model examining interconnections between all the harmful behaviour variables.

	Self-harm	Physical aggression	Verbal aggression	Property damage	Violence toward animals	Arson	Bullying	Dating violence
Self-harm	–	0	1	0	0	0	0	0
Physical aggression	–	–	1	1	0	1	0	0
Verbal aggression	–	–	–	1	1	0	1	0
Property damage	–	–	–	–	1	1	0	0
Violence toward animals	–	–	–	–	–	1	0	0
Arson	–	–	–	–	–	–	0	0
Bullying	–	–	–	–	–	–	–	0

rates of aggression in males and females differ based on the form of violent behaviour being examined (32, 33). Such findings highlight the importance of assessing gender-specific differences in co-occurring violence and self-harm, as well as determining which aggressive behaviours to include in defining dual harm.

The weak connections in our network analysis may be attributed to the study sample. To the best of our knowledge, this is the first study to examine the association between self-harm and different aggressive behaviours in young people within a network model. There is evidence that the pattern and aetiology of harmful behaviours differs across age, suggesting developmental differences in self-harm and aggression (35–37). As such, it may be that the nature of harmful behaviours amongst adolescents is distinct to that of adults and an aetiological link between self-harm and aggression is less apparent amongst younger populations. Furthermore, harmful behaviours, including dual harm, have been shown to be more prevalent amongst clinical and forensic populations than among persons living in the community (2–10, 15). Therefore, it may be that the associations between harmful behaviours are stronger in high-risk populations, such as those in forensic settings.

It should be noted that the prevalence of dual harm in other studies of adolescents living in the community has been reported to be between 4.7 and 31.1% (5, 15, 38, 39). This distinction in prevalence rates may reflect differences in methodology, including definitions of harmful behaviours. For example, Gould et al.'s (38) study, which reported a higher dual harm prevalence of 31.1% adopted a broad definition of aggression by assessing a wide range of items in their measure, including torturing animals, bullying, losing your temper, and arguing with adults at school. On the other hand, Richmond-Rakerd et al. (5) only assessed violent crime when examining aggression, which may have accounted for the lower dual harm prevalence of 4.7%. Given the range of reported prevalence rates, it is challenging to determine the degree our sample is representative of the wider population. These studies highlight the importance of establishing an agreed definition of dual harm to facilitate comparability across all studies reported in the literature.

Although the network models demonstrated weak connections, our findings nevertheless revealed the presence of dual harm amongst an adolescent sample and associations between various harmful behaviours that are present early on in life. Such findings may have implications for clinical management at the level of both services and the individual. For services, given that persons who engage in dual harm are more likely to be in contact with criminal justice and health services, it may be important to adopt more robust coordinated and integrated approaches within these sectors that recognise the relationship between self-harm and aggression. At the individual level, this relationship should be considered and built into assessment, management and intervention processes to enable effective prevention and to reduce the co-occurrence of self-harm and aggression within clinical and forensic settings. Furthermore, research of adolescents and prisoner samples has revealed that those who engage in dual harm are more likely to use more severe self-harm methods compared to those who engage in self-harm alone (5, 9). Therefore, early and systematic consideration of the duality of harmful behaviours may not only help reduce the likelihood of aggression in those who have self-harmed and vice versa, but also reduce lethal risk to self among those who engage in dual harm.

The limitations of our study ought to be considered. Harmful behaviours were assessed at different time points and so age may have confounded the observed results. As with aggression, self-harm is a broad term that includes non-suicidal self-injury (self-harm without intent to die) and suicidal behaviour (self-harm with intent to end one's life). Our study assessed self-harm more broadly by not distinguishing between these behaviours. Future research should aim to assess differences in how non-suicidal self-injury and suicidal behaviours may be associated with aggression in those who have engaged in dual harm. Furthermore, most harmful behaviours were assessed over a 1 year period. A longitudinal study in which harmful behaviours are measured over a longer time period may reveal stronger associations. The data used in this study were collected *via* self-report. However, there is evidence that both self-harm and aggression are underreported, which may have contributed to the lack of strong correlations between the

variables in this study (40, 41). Future investigations should assess the relationship between different aggressive behaviours and self-harm using more than one data source to generate more accurate findings (e.g., self-report, informant-report, official administrative databases). Finally, given that dual harm is especially prevalent within forensic settings, future research should examine the link between self-harm and aggressive behaviours amongst forensic and criminal justice populations.

In conclusion, this study found weak connections between self-harm and specific types of aggressive behaviour amongst adolescents. Nevertheless, the network models highlighted associations between harmful behaviours during adolescence and provide preliminary evidence that relational forms of aggression should not be included in an established definition of dual harm. By following our recommendations for future research, studies may be able to provide more robust findings as regards to how dual harm should be conceptualised within both academic research and clinical practice. Identifying an evidence-based conceptualisation of dual harm will help inform the development of more effective management strategies aiming to address dual harm within forensic and clinical settings.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Ethical approval for the study was obtained from the ALSPAC Ethics and Law Committee and the Local Research Ethics Committees (http://www.bristol.ac.uk/alspac/researchers/research-ethics/). Informed consent for the use of data collected *via* questionnaires and clinics was obtained from participants following the recommendations of the ALSPAC Ethics and Law Committee at the time. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

Author contributions

MS was responsible for the data analysis and wrote a first draft of the manuscript, with all authors contributing to the final manuscript. All authors contributed to the formulation of research questions and design of the study.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

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A qualitative exploration of the mental health challenges and therapeutic needs of Canadian correctional workers

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Purpose: Correctional work is described as a high-stress environment associated with increased prevalence of mental health disorders in employees. Identifying appropriate healthcare services necessitates investigating the mental health challenges and needs of correctional workers (CWs).

Methods: Individual interviews (n = 9; 5 M and 4 W) and a mixed gender focus group (n = 6; 3 M and 3 W) were conducted to gather a general sense of the mental health landscape. Data were analyzed to develop a targeted and comprehensive question guide for gender-specific focus groups (n = 14 unique participants; 6 M and 8 W).

Results: Eight themes emerged from the gender-specific focus groups. Themes focusing on work culture described the negative repercussions of job stress and the inability to discuss challenges openly due to confidentiality concerns and feelings of seclusion associated with the CW profession. Men were more likely to be subjected to physical violence and women to emotional and sexual harassment from staff and inmates. Themes related to mental health care described the benefits and limitations of the current services and digital mental healthcare. Stigma and accessibility were notable treatment barriers. Lastly, sector-specific therapy was seen as an important component in enhancing engagement and therapist interaction.

Conclusion: The study demonstrates the interconnection between work culture and CW mental health that needs to be acknowledged when addressing mental health care.

KEYWORDS

correctional workers, internet, mental health, online, psychotherapy, public safety personnel, mental health disorders

Introduction

Correctional workers (CWs) are public safety personnel (PSP) responsible for the security, safety, and provision of services for staff and inmates within prisons, jails, courthouses, and correctional centers (1). CWs often report highly stressful work conditions and frequent exposure to potentially psychological traumatic events (2). The demanding nature of this profession may partly explain why the risk of suicide and mental health disturbances is typically greater in CWs than in the general population (1, 2). In a survey of correctional service employees in Ontario, Canada ($n = 1{,}487$), 59% of correctional officers met the diagnostic criteria for one or more mental health disorders (3). Furthermore, women were significantly more likely to meet diagnostic criteria for psychiatric disorders than men (3). The repercussions of untreated occupational stress and mental health concerns can also impact physical health and interpersonal relationships and increase familial anger, stress, and strain (4).

Although different stressors can contribute to the overall risk of mental disorders in CWs, the genesis of specific mental disturbances seems to stem from various aspects of the work environment. Commonly reported contributors include safety concerns, physical assaults and verbal threats, bullying and harassment, witnessing murder or suicide attempts, and dealing with constrained work conditions such as high workload, understaffing, and overcrowding (1–6). The amalgamation of these stressors can contribute to CW distress and mental un-wellness, which can lead to suicidal thoughts and behaviors (7). In a systematic review of mental disorders amongst CWs, post-traumatic stress disorder (PTSD) was strongly associated with physical violence and work injury (1). Major depressive disorder (MDD) and anxiety disorder were strongly associated with low perceived administrative support, job satisfaction, and perceived social value of the work role (1). In a recent qualitative study, the cultural norms of discouraging behaviors or reactions that may be perceived as weak or emotional may also contribute to the high prevalence of mental health disorders in CWs (8). Many CWs also find that there is limited mental health support (9). Moreover, systematic and individual factors such as stigma, repercussions at work, and understaffing are reported barriers to treatment-seeking (10). How these factors are associated with specific mental health disorders and treatment-seeking requires further exploration.

The lived experiences of CWs can provide rich and detailed insights into the dynamics of the mental health and treatment-seeking challenges they face in their work environment. The current study is the first phase of a larger randomized controlled trial (RCT) that will investigate the efficacy of online psychotherapy in this population (11). The virtual platform (Online Psychotherapy Tool; OPTT) offers electronic cognitive behavioral therapy (e-CBT), the first-line psychotherapeutic treatment for many mental health disorders (12–14). The current study explored CWs' personal experiences with their mental health concerns and care delivery. In-depth 1:1 interviews and focus groups focused on how CWs interacted with prisoners and colleagues, their work conditions and conflicts, mental health challenges they faced, perceptions of mental health resources and support, and their attitudes toward mental health care. Participants were also asked to provide feedback on previous modules for PTSD and depression available on OPTT (11, 15). The findings of the current study will guide the development and evaluation of e-CBT programs for CWs in the subsequent phases.

Methods

Participants and study design

The study recruited current or previous correctional employees in Canadian federal and provincial facilities in Ontario, Canada through social media, flyer advertisements, and clinician or self-referrals. Telephone screening was conducted by a trained research assistant (RA) to confirm eligibility. The RA explained the study to participants ($n = 21$; 10 men and 11 women), answered any questions, and obtained informed consent to participate in interviews and focus groups. The study used individual interviews and five successive focus groups. The interviews were ~60 min in length and the focus groups were 90–120 min. All open-ended question guides were pilot tested before use. The focus group sample sizes were between 3 and 6 participants to create an intimate setting for experiences to be shared in depth (16). All interviews were conducted via a secure online video platform and participants were given the option to turn their webcams on or off to preserve their anonymity. Prior to commencing the interviews and focus groups, the participants were informed that they could leave at any time, that they did not need to answer all the questions, and that this was a confidential conversation. Participants received a $75 Amazon gift card for their time. The study was reviewed for ethical compliance by Queen's University Health Sciences and Affiliated Teaching Hospitals Research Ethics Board; File Number 6029966.

Individual interviews

Semi-structured 1:1 interviews of a mixed-gender sample of CWs ($n = 9$; five men and four women) were conducted by trained RAs ($n = 3$). The 36-item question guide explored the participant's work in the correctional facility (four questions), violence, harassment, and other challenges experienced at work (twelve questions), support networks (six questions), past psychiatric history (four questions), the relationship between mental health and correctional work (six questions),

and thoughts about online care (four questions). Participant responses were recorded by RAs through type-written notes.

Mixed-gender focus group

A purposive sample of individuals who completed the interviews ($n = 6$; three men and three women) participated in the focus group. The semi-structured question guide explored the level of interaction with prisoners, types and frequency of violence at work, work conditions, socioeconomic factors, mental health challenges, care resources and frequency of use, preferred methods of support, and attitudes toward online care. Participants were also presented with previously validated modules for PTSD and depression for the general population through short video screen captures (17–19) and a brief explanation of how the therapy sessions would be structured. Participant responses were type-written by RAs conducting the focus group ($n = 3$). A member check of the individual interviews and focus group was conducted (20). Here, participants and interviewers were emailed a summary of the emergent themes and asked to provide written feedback.

Gender-specific focus groups

Data from the individual interviews and mixed-gender focus group informed the development of four semi-structured and gender-specific focus groups (MFG1, MFG2, WFG1, WFG2). Five individuals (MFG1 $n = 3$; WFG2 $n = 2$) who had agreed to participate did not attend the focus groups due to reasons unknown ($n = 4$) and not feeling comfortable sharing their experiences ($n = 1$). The final sample size for the men's focus groups were, MFG1, $n = 3$; MFG2, $n = 4$ and for women were, WFG1, $n = 6$, WFG2, $n = 2$. One male participant had to leave within the first half-hour of MFG1 and agreed to join MFG2. Data from his participation in both focus groups were analyzed. The question guide comprised five open-ended questions and additional probes exploring participants' thoughts and opinions on the previously generated themes and how therapy could address them, strategies to make therapy more easily available to CWs, and general opinions of a CW-specific module that would be available on the OPTT platform. Participants were also asked to discuss how their gender impacted their work experience and how therapy could be designed to address gender-specific needs. The focus groups were conducted by a postdoctoral fellow and three RAs.

The screen-recorded sessions were transcribed *verbatim* by the postdoctoral fellow conducting the focus groups and the resulting transcripts were proofread by an RA involved in the focus groups. To protect anonymity, identifying information was omitted, and random numbers along with gender symbols (W = woman; M = man; e.g., PW1, PM1) follow the presented quotes. Where needed, the quotes were edited for correct grammar and spelling while maintaining their meaning and tone. A member check was also conducted and all study participants ($n = 21$) were emailed a summary of the final themes and asked to provide their written feedback.

Data analysis

The consolidated criteria for reporting qualitative research (COREQ) checklist was used to report qualitative findings (21). Textual data from the individual interviews and mixed-gender focus groups were analyzed using systematic text condensation, informed by Giorgi's psychological phenomenological analysis methods (22). This descriptive and exploratory method is frequently used for thematic cross-case analysis of different types of qualitative data to uncover meaning behind a person's experience (22). The themes centered around the lived experiences of CWs with their mental health and how it may have been impacted by their profession. The data were analyzed by a co-author (YK), a clinician-scientist with experience in qualitative analysis methods. The emergent themes were presented to the research team for discussion and finalization.

Data from the gender-specific focus groups were analyzed using inductive thematic analysis (23) by the postdoctoral fellow and RA who conducted the interviews. Thematic analysis was conducted (24). Initially, the transcribed screen recordings from each focus group were uploaded onto NVivo 12 (25), and open codes were generated that captured prevalent ideas amongst CWs. These codes were then organized into primary, secondary, and tertiary categories, and a codebook of themes was generated. With the analysis of each subsequent focus group, the codebook was modified and revised to capture new insights generated. The themes were then discussed amongst the research team and revised where necessary.

Results

Participant demographics

The average age of demographic questionnaire respondents ($n = 19$) was 43.47 years (SD = 11.18). The majority were white (17/19, 89.4%) and married. In addition, most possessed a bachelor's degree (12/19, 63.2%) and were correctional officers (12/18, 66.7%). The average years of employment were 13.86 years ($n = 18$, SD = 9.64). Most participants continued to work full time (13/19, 68.4%) and had an annual income between $75K-99,999 (12/19, 63.2%). Lastly, most participants reported that they were diagnosed with a mental health condition (17/19, 89.5%). Additional demographic details are outlined in Table 1.

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TABLE 1 Summary of participant demographics.

	All participants
Gender (*n*, %$_{totalres}$)	
Man	10, 47.6
Woman	11, 52.4
Age (*n*, Mean, SD)	19, 43.47, 11.18
Ethnicity (*n*, %$_{totalres}$)	
White	17, 89.4
Other	2, 10.5
Marital status (*n*, %$_{totalres}$)	
Married	10, 52.6
Divorced	4, 21.1
Single	3, 15.8
Other	2, 10.5
Number of children (*n*, Mean, SD)	19, 1.47, 1.5
Highest education (*n*, %$_{totalres}$)	
Bachelor's degree	12, 63.2
College diploma and high school diploma	6, 36.8
Employment years (*n*, Mean, SD)	18, 13.86, 9.64
Employment status	
Full time	13, 68.4
Time off work	4, 21.1
No longer employed	2, 10.5
Annual income (*n*, %$_{totalres}$)	
$50K-74,999	3, 15.8
$75K-99,999	12, 63.2
$100K+	4, 21.1
Self-reported mental diagnosis (*n*, %$_{totalres}$)	
Depression	4, 21.1
Anxiety	3, 15.8
PTSD	5, 26. 3
Multiple diagnoses	5, 26.3
No diagnosis	2, 10.5

n = sample size; %$_{totalres}$ = percent of total respondents; SD = standard deviation.

TABLE 2 Summary of initial interviews and mixed-gender focus group themes.

Theme	Subthemes
Roles and responsibilities	(1) Hidden and unrecognized emotional labor (mental) from overlapping roles and additional tasks
	(2) Negotiating roles (guard vs. therapist vs. nanny vs. clerk vs. housecleaner)
Relationships/Interactions	"Single warrior" vs "brotherhood"
	Distrust and frustration with "Big Brother watching"
Coping	Low support and care from administration and management and "feeling like you don't matter"
	Detachment as coping (to protect themselves emotionally from inmate and staff-related trauma)
	Work around and "try to ignore dumb rules from management"
Preparedness	"Reality is different from training… [training] is inadequate to deal with reality"
	"Threw binders" type of training (using textbooks and making little practical sense)
Work environment	"Variable depending on the amount of chaos"
Mental health needs	Accessibility (time, money, knowledge of resources)
	Attainability (can actually dedicate time)
	Regularity and support (managerial, colleagues)

Initial interviews and mixed-gender focus group

Themes

Six themes emerged which described the correctional workers' roles and responsibilities; relationships and interactions; coping; preparedness; work environment; and mental health needs. The themes have been summarized in Table 2.

Member check of individual interviews and mixed-gender focus group themes

The themes were sent to 12 individuals (nine participants and three interviewers). Three individuals responded (two interviewers and one participant). Non-respondents ($n = 9$; one therapist and eight participants) were assumed to accept that the data were valid and reflected reality. The sole participant, a man, expressed, "this will sound very short and lazy, but that hit the nail on the head and I can't add much more." Both interviewers found that the themes and descriptions resonated with their experience in the interviews and reflected the mental health needs and concerns that were discussed.

Gender-specific focus group

Themes

Eight themes and 21 subthemes emerged from the gender-specific focus group responses. The themes were divided into two categories that described the correctional work culture and mental health care (Table 3).

Category: Work culture

Theme: Job stress

Subtheme: Trauma and violence

Participants described frequent exposure to trauma and violence: "I don't think I know one officer that hasn't been

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TABLE 3 Summary of gender-specific focus group themes.

Work culture	
Theme	**Subtheme**
Job stress	Trauma and violence
	Multiple roles at work
	Relationship with management
	Long-term effects
Seclusion of profession	Hiding weakness
	Disconnect between work and personal life
	Job transparency
Gender differences	Violence
	Harassment of women
Mental health care	
Theme	**Subtheme**
Workplace mental health support	Institutional programs
	Peer support
	Workplace training
Treatment benefits	Normalization
	Coping mechanisms
Treatment barriers	Accessibility
	Stigma
Therapy needs	Proactivity
	Therapy design
Online modules	Convenience
	Engagement
	Therapist interaction

through something traumatic or violent or whatever it is. A lot of their deep-seated mental health issues stem from issues of that nature" *(PW16)*. CWs were aware that enclosing individuals in a confined space would result in a natural restlessness. However, what distinguished correctional work from other PSP sectors was:

> Where we work, there's no place to go. If there's an incident, you stay where you are, and the perpetrator goes out to the hospital and comes back to the same unit and you have to deal with the same guy that you had issues with. Paramedics will get to an incident and they won't see them again, ever, the people that they fix. People that we try to fix, we see them again and again and again. Some of them for ten, fifteen, 20 years *(PM4)*

Subtheme: Multiple roles at work

The work environment expected CWs to assume different roles, even if they were not trained in that area: "sometimes I get a feeling that our role has merged into semi-counselors but without all the education," *(PW12)*. Another participant stated that there's "not enough support given to perform tasks outside of your job description. That is definitely something that has frustrated me" *(PM1)*. Many CWs described the general work as monotonous and that wearing multiple hats usually occurred during incidents:

> You have your routine, your feed, you do your meds, walks, regular things over and over and over again and that gets really monotonous and tedious. But then when something does happen, you become all of the above. You are the fire department, you are the paramedic, you're the social worker, you're the police officer. You have all these different hats that you may be required to wear at any given time throughout your day or your week. So I think that can become a little strenuous, having to be everything all at once. *(PM3)*

Subtheme: Relationship with management

Participants described having different experiences with different managers: "I've had some managers that are really supportive and really great and I've had others that are absolutely horrible" *(PW13)*. Another participant described differences in the level of management: "some people that work in senior management have never worked in a day in the life of a correctional officer" *(PW14)*. *One* of the criticisms was that during incidents, staff mental well-being was not prioritized:

> If there's an incident that happens, the first thing you hear is to make sure to cross your T's and dot your I's instead of, how are you guys doing? Did you guys survive that swing or [the offender] trying to kill you? Or did you make sure that your documentation is right? *(PM4)*

Mental health views were reported to differ amongst managers and staff who had been in service for a longer period of time: "If you've got a manager that might be coming around 30 years, in my firsthand experience, I hear that mental health isn't really pushed. It's kind of like an old guard mentality with that person," *(PF16)*. Mental health services promoted by management also seemed disingenuous: "it's kind of like they do it because they have to do it, not because they want to do it" *(PM3)*. These feelings may be due to a lack of perceived care and concern: "They put up all the posters but I've never had a manager stop me and ask me actually how I'm doing" *(PM2)*. CWs also indicated a disconnect between management and the frontline: "there was no meaningful dialogue which again adds to that frustration" *(PM5)*.

Subtheme: Long-term effects

Many CWs experienced the slow and cumulative effects of workplace stress and violence in the long term: "mine was insidious...it just accumulated to the point where my family

doctor said, you can't do it anymore…I don't know how really to describe it other than it was a slow development of losing myself" *(PM5)*. Correctional work was described as changing behaviors over time: "it completely changed me. Where I wasn't this aggressive person, I became completely aggressive" *(PM6)*. The negative effects also extended to other areas of a person's life: "I love what I do…However, it's taken its toll personally, professionally, with relationships, with mental health. It's taken its toll in so many ways," *(PW16)*. Emotional detachment was seen as a way to cope with traumatic experiences and burnout: "it's a quiet survival mechanism" *(PM5)*. Another participant found that positive behaviors outside of the work environment were not beneficial and resulted in emotional detachment at work:

> I'm a very caring, courteous, polite person and I tried to maintain that inside of that environment. That creates a lot of emotional labor because it's very difficult for me and was sort of the cause of my mental injury, that conflicting emotion in there. Obviously, I did cope with it by emotionally detaching. *(PM1)*

Theme: Seclusion of profession

Subtheme: Hiding weakness

CWs found that expressing concerns at work was associated with weakness: "you're supposed to be strong and in control and to say that having an incident affect you is showing weakness" *(PM3)*. The correctional culture was described as "the culture [of] bottle it up" *(PW16)* and the "culture of just suck it up and carry it on" *(PW15)*. *One* participant reported that "a bravado exists amongst both sexes or genders" *(PM2)*. This culture was also described as one frequently practiced by the older generation of CWs with an influence on younger employees:

> They [new officers] see or they hear about these older officers and how they act in this sort of macho environment way, this toxic masculinity way, and they try to act in that way too to fit in. And I think that's a big issue. *(PW13)*

A fear of judgement was listed as a reason why CWs refrained from addressing mental health needs:

> I find with trying to access all of that stuff is the fear that someone that you know, [who] is one of those stereotypical macho guards will literally call you out for it and make you feel like garbage because you need help when you know that they're almost as broken, if not more broken than you are. Just the façade is very intimidating. *(PW12)*

Subtheme: Disconnect between work and personal life

Most CWs found a disconnect between their identities inside and outside work:

> When you leave the gate, leave the institution, you turn the [correctional worker] off a little bit and then you turn into the husband, or the father, or the friend, or whatever role you're going to have that you name on your rest days. It's a little bit of a disconnect. *(PM3)*

Some participants also expressed that it was hard to disconnect from work and that it had an impact on their personal life:

> I was always on the edge. We're always in a state of readiness, right?...This is why when you see a lot of the guys going to the restaurants, they always have their back to the wall. Because you always have that state of readiness. *(PM6)*

Many CWs also reported that control was necessary at work but became problematic in their personal lives:

> Every aspect of somebody's [offender] life is controlled by us in some regard…it's hard for us to lose control…I know when I go home and my wife and I argue or bicker about something, it's very hard for me sometimes to relinquish that control because I'm so used to having it. *(PM2)*

Many of the participants found that those outside corrections did not understand the nature of their job: "they [friends and family] don't get that your job is literally so stressful that your anxiety levels are at 100 most of the time," *(PW12)*. Some CWs described the public as being in the dark regarding the details of the CW profession, making it hard for them to share their work experiences:

> People who are not in corrections don't understand what life is like inside and so it's hard to be able to share any of that experience or for them just to have a basic understanding of what everyday life is like there. *(PW11)*

The inability to confide in family members was reported to be guilt-inducing: "I carry a lot of guilt, you know opening up to my family about things like that because I don't want to traumatize them and vicarious trauma is a real thing," *(PW16)*. Feelings of isolation and exclusion were also apparent in the participants:

> [We're] behind the wall, nobody really knows about us, nobody really has talked to us, we haven't really been included in a lot of things. If they talk about a law enforcement day, correctional officers are rarely included. We're typically excluded from most things. *(PM2)*

Subtheme: Job transparency

Many CWs expressed a lack of clarity from the organization regarding their work-related duties: "they kind of try to leave

out the dangers and the long-term effect of what you will be seeing all the time," *(PW12)*. The lack of transparency also added to CWs feeling unsupported in the workplace: "I think the negativity, the lack of support, lack of opportunities. I think that has been the most detrimental to my mental health, than it has been dealing with inmates stabbing each other" *(PW16)*. Some suggested that the institution should disclose the dangers associated with the profession and offer peer support:

> I think right at the beginning when somebody is hired that I think we should be really honest with the person that's being hired that these are the things you're going to go through. Let's not make it a pink sky, it's gonna be rough. You're gonna go through these things and maybe have people like us talk to them and have discussions with new recruits to explain these are the things you're gonna go through at different times in your career. *(PM6)*

Theme: Gender differences

Subtheme: Violence

Aggression was reported to vary by gender: "men experience a lot more physical violence and women experience sort of a more psychological or emotional violence" *(PM2)*. With respect to employee duties, the only gender difference reported by males was related to strip searches: "besides having to do all of the strip searches because I'm a male, there's not really much in the way that differentiates the strain between or the difference between a male and a female correctional worker in my mind" *(PM1)*. Strip searches made men CWs more vulnerable to physical assaults by inmates: "uses of force stem from strip searches and incidents like that…I can't really think of a time when female officers were attacked. I can think of multiple times per month where male officers were attacked" *(PM3)*. Gender differences reported by men CWs also focused on the motherly nature of women CWs that could de-escalate potentially violent situations:

> Women are able to speak with inmates on a more mother-to-child level than perhaps males do. I find a lot of women are really great at talking down or diffusing the situations where with some men, I think ego tends to get involved and it becomes a pissing match. *(PM2)*

Subtheme: Harassment of women

Women CWs were vocal about workplace gender discrimination - in the form of emotional and sexual harassment - and found it to be integrated into the culture:

> If you're a female working in a male jail, you're basically getting it from all sides. You're getting disgusting comments from your coworkers and from the inmates. It's a different culture because you're a female and you're weak. It's that whole thing of females in roles that are traditionally male. It's another one of those crappy parts of the job. *(PW16)*

One participant also pointed out that men are unaware of how women experience the workplace:

> I've had the male staff not even recognize how different their experience is… they'll walk past and hear an interaction and they'll come up after saying, "oh," completely unaware of the challenge of that sort of emotional labor that we have to deal with. *(PW12)*

The constant need for the women to set boundaries with colleagues and offenders was described as emotionally taxing: "I find that the whole limit setting and boundaries thing with both offenders and fellow [CWs] to be one of the most draining things that I have to go through consistently every day" *(PW10)*. When asked about the perception of training programs to address workplace harassment, one participant stated: "It's mandatory training, like do this stupid little quiz and then give the manager my certificate" *(PW10)* and another woman CW added, "I think the top really doesn't want this to be an issue" (*PW4)*. Many of the women described hypersexuality in their colleagues to be a result of the work culture:

> "I actually wonder if some of the hypersexuality of some of the female officers with male officers is because that's their defense…Some of it might be stressful, but I think some of it is that toxic male culture where, you know, every woman is a notch in the belt and then some of the women are like, 'well, if it's good for the man, then it's good for me, and I'm gonna do it.'" *(PW4)*

Another participant added, "yeah, and for a lot of women, I wonder if it's a way of trying to fit [in] or gain approval of some of the male officers," *(PW10)*. When the women were asked if they prefer to work in an all-women institution, most said no:

> Women are just a lot more manipulative and try to get under your skin a lot more. To me, they're a lot more crazy, whereas with the men, for the most part, what you see is what you get. Yeah, you have guys that are trying to be manipulative but I find they're not as good at it as the women would be. I find that women coworkers alone can be really difficult and I couldn't imagine being in a whole prison of women. *(PW13)*

Category: Mental health care

Theme: Workplace mental health support

Subtheme: Institutional programs

The limitations of mental health services offered by institutions were described by participants: "mental wellness is talked about constantly in everything we do and then these services are so limited that it just feels like lip service" *(PW15)*. Although some of the mental health programs offered by institutions were seen as helpful, participants expressed many drawbacks associated with the therapy-related services, namely, "it doesn't even scratch the surface of how traumatic the things you can see and how much that's going to affect you, even in your every day" *(PW12)*. The number of sessions offered was viewed as insufficient in addressing CW concerns: "the [program] offerings are so limited that by the time you've made a connection with somebody who understands your work and understands what's going on with you, you're out of sessions" *(PW15)*. Many participants pointed out that the help was not specific to their profession: "I find that through our [program] there is a lot of access, but the person you're getting isn't necessarily catering toward what we do" *(PM3)*. Sector-specific programs were also seen as necessary: "not having anybody on the [program] that is an officer…if they don't come from an officer background, it makes it hard to make that connection with someone who might work in admin or finance, you know?" *(PW14)*.

Subtheme: Peer Support

Peer support was widely seen as a positive addition to mental health support: "peers were a big support group for us" *(PM5)*. Moreover, positive relationships in the workplace were essential in managing many stressors and mental health concerns: "if I didn't work with [colleague] I probably wouldn't last this long…I think if we were working with somebody that you cannot trust and we've seen it before, we've seen people freeze in situations" *(PM4)*. Peer support was also viewed as improving treatment-seeking:

> Sometimes you need that guy to say, 'you know what, I know you're going through some tough times, come with me,' you know? And have that friend or that guy that works with you, just to help you go through it. *(PM6)*

Another CW indicated that programs with peer support contributed positively to her relationship with colleagues:

> I found it kind of created an environment where people could open up a little bit more and have that sense of trust. I could see how it would really help when it's another [CW] because they know what you're going through. *(PW14)*

A structured peer support system was described as a way to reduce feelings of isolation and to enhance debriefing, "an opportunity to debrief as a team makes you feel less alone in this situation, it's validating, it's got growth, there's personal development that comes from that" *(PW15)*.

Subtheme: Workplace training

The need for workplace mental health training was expressed by most participants. Although the current training was somewhat helpful, there were areas of improvement disclosed. Some participants expressed that the training programs do not reflect their work experience, which reduces the authenticity of the services offered:

> I don't think it's authentic. I think it's like someone sitting behind a computer making this PowerPoint and has no idea what I'm doing on the frontline…I think where the information comes from is so out of touch with us on the front lines that it doesn't really do anything. *(PF16)*

This inauthenticity was also reflected when CWs explained their perceived intention of the institution and management behind the trainings:

> Every year, we have to take this 5-min online course about workplace violence and harassment. But nobody really pays attention to that, nobody puts effort into it, nobody reads the material.…[The institution believes]: Okay, we have some harassment, so we'll do a harassment training, people will take it, everything will be solved. They [institution] don't really want to admit the problems we have and actually do the work to fix them. *(PF16)*

Theme: Therapy benefits

Subtheme: Normalization

A notable benefit of therapy was its ability to normalize the experiences of CWs: "the most helpful thing was just having someone kind of normalize my thoughts and feelings and things that happened to me" *(PF13)*. As feelings of isolation were frequently reported by CWs, therapy provided comfort that they weren't alone in their mental health struggles:

> It gave me the ability to go back to work and realize that this is something that everybody struggles with and we just need, as a collective group, to do better at talking to each other about it and therapy really helped me do that. *(PM1)*

A space to talk openly was seen as an important component of normalizing therapy: "having someone to just kind of bounce your experiences off of and also just kind of to let you know that it is normal, that is really helpful" *(PM3)*.

Subtheme: Coping mechanisms

CWs who had previously received therapy described its effectiveness in teaching positive coping mechanisms.

Participants also shared how therapy improved relationships with family members: "therapy was helpful to learn how to recognize when I was feeling overwhelmed and rather than take it out on my family, to remove myself from the situation so that things didn't get out of hand," *(PF11)*. Therapy was also described as providing skills to help participants relax:

> The PMR [progressive muscular relaxation], the imagery, and the mindfulness. When I feel like I can't cope or if I feel like things are really starting to get out of control, I use those to help me and my mind just run through it naturally. *(PM1)*

The same participant also expressed the benefits of these strategies in his personal and professional life:

> You're a different person when you're at work. You tune into what's going on and you're very focused and hypervigilant, which is good for your job but bad for us as people. I'd like to be able to have something that can help my mind relax a little bit more or my body relax a little bit more inside the prison system so that I don't feel so tense and uptight all the time. *(PM1)*

Theme: Treatment barriers

Subtheme: Accessibility

Easier access to care was viewed as a good preventative measure: "just the need for easy access and mental health care and a therapist. That would be nice, beforehand and before getting to the point where I was," *(PM1)*. Due to the nature of correctional work, it was also important for programs to provide faster access to those seeking care:

> When I call [program], and they're like, 'well, it'll be two days and someone will get a hold of you,' and two days goes by, I'm immediately like, 'am I forgotten about? Do they not care? Who am I getting put with?' And then I just go through like worst case scenario because my job is all what-ifs. *(PM2)*

Subtheme: Stigma

Workplace mental health stigma was frequently listed as a barrier for CWs to seek help and talk about their mental health challenges:

> I think there's still a huge stigma attached to mental health. Even myself, it took me years to step up. And I knew I was having issues but I was just like, 'I can get through it, I can get through.' And finally, I wasn't. I broke down. *(PM6)*

Because some interventions were offered in a public environment, it prevented some CWs from accepting them: "the sad thing is because they offer it in a public environment, everybody's gonna decline or most people are gonna decline even if they might not have declined in another situation," *(PF4)*. Stigma contributed to a fear of judgement within the workplace culture, which discouraged CWs from receiving care. When the idea of an onsite mental health care office emerged, one participant expressed:

> The stigma is still there and as much as we want to say that it's not or it's changing, I think that some people will still have that fear, like 'ok, I'm going to go there [onsite office for mental health care], what are my people going to think?' *(PF14)*

One participant described the fear of work repercussions which prevented CWs from seeking help:

> A lot of people worry that you're gonna be labeled with something, that you're gonna go and talk to somebody and then a doctor is going to recommend that you take some time off…and while you're off, people at work are gonna be seeing you taking time off, not dealing with what they're dealing with…and the stigma of waiting and getting yourself right while they [coworkers] have to deal with it [mental health challenges] is what's really difficult for a lot of people to seek help. *(PM2)*

Normalizing mental health and addressing the "macho culture" *(PF10)* was seen as an important way of reducing stigma, "I don't know how we can do it, but I think we need to normalize mental health as much as we do physical health…we need to help staff realize that mental health problems are still health problems," *(PF4)*. Some CWs were hopeful that the younger generation will contribute to greater awareness and changes in workplace mental health stigma:

> I know officers who have said, 'I'm broken and I'm getting help for this and I'm doing whatever treatment or therapy,' and they speak openly about [it] and that gives me hope for a new generation and a new future for corrections. *(PM4)*

Theme: Therapy needs

Subtheme: Proactivity

Participants described a reactive work culture and many expressed the need for proactive mental health interventions:

> The service, in general, is very reactive. It's not just mental health, it's not just taking care of their employees, it's in all aspects. I think that a really big part of what they need to break is trying to figure out how to fix things or stop problems before they happen. *(PF16)*

Another participant described, "you know, everything was after the fact. There's nothing that was proactive" *(PM5)*.

Subtheme: Therapy design

Many aspects of therapy design were discussed amongst the participants. The benefits and limitations of individual and group therapies were described by participants. One of the benefits of individual therapy was that there was no judgement: "You just feel like you can say what you need to say without judgement" *(PF14)*. Another participant who preferred individual therapy said: "it's really hard as a [CW] to open up in front of a group of people…It's one thing to do it [with] other staff…It is way harder to do it in front of people that you know," *(PM2)*. At the same time, confidential group therapies were also viewed positively: "[CWs] can get together and have those discussions in a form that's safe and shared by everyone" *(PF11)*. Another participant indicated that sharing experiences can be "kind of an education" *(PM6)*. The majority of participants believed that individual therapy could be the first line of treatment, followed by group therapy:

> I think I'd like individual [therapy] maybe initially. [Then] I think developing a support group of peers who literally are going through the exact same thing, or very similar anyway. A one-on-one with someone who has maybe a more psychotherapy background can provide actionable tools. *(PF10)*

Participants had variable opinions on online and in-person therapy. Most preferred in-person delivery and felt they would be more committed to it because "not everyone has the time or the structure in their life to necessarily do things online…not everybody's self-driven" *(PF4)*. Some attributed their preference for in-person delivery to the social nature of their work: "my interactions with people are always face-to-face with eye contact and I find that is an important part of relaying your proper mental state - is to be able to look at somebody and say that" *(PM1)*. Some participants also described the impersonal aspect of the online delivery method: "there's kind of a little bit of a disconnect when you do something over zoom, or teams, or via phone. There's that lack of personal aspect to it," *(PM3)*. In contrast to most CWs, one participant described the benefit of writing things down in online therapy: "I know I feel like I have a hard time articulating from my head to verbally. So sometimes I write it down and reassess it, just to get a clear picture of what I'm trying to say," *(PF14)*. Having therapy that acknowledged CWs' experiences was also a way to make them feel cared for: "I think having firsthand knowledge and experiences integrated into the therapy makes it feel like they give a shit about what we have to say and about how we want to make it better for the next person" *(PF16)*.

Lastly, the majority of CWs expressed the importance of working with therapists who had a strong background in corrections: "we should have therapists who know what our work environment is and the baggage that you can take from there into your everyday life" *(PF4)*. *One* of the reasons experienced therapists were necessary was because: "they [therapists without correctional experience] really can't empathize with us very well. They understand trauma, I believe, or they understand trauma from their point of view, but it's not perhaps the same trauma that we go through" *(PM2)*. Working with experienced therapists was also viewed as a way to enhance treatment-seeking: "if I knew right away that I was going to talk to so had a background in it [corrections] rather than just somebody from the street, I would be personally more inclined to call" *(PM2)*.

Theme: Online CW-specific psychotherapy modules

Subtheme: Convenience

The online modules were viewed as a convenient form of therapy by some:

> I like the idea that you can take it in chunks if you need to, you know. Some weeks maybe I'd sit there and do the whole thing and the other ones maybe I'd do it over a couple of days. *(PM5)*

The time flexibility of the platform was also appealing to a participant who was unable to concentrate for long periods of time due to his mental health injury. However, concentrating on a screen was challenging for another participant: "it's just the fact that I have to sit there and concentrate on a screen instead of just talking with someone. And I have difficulty concentrating, so that's my issue" *(PM6)*. The accessibility of the therapy was also a positive feature for some CWs:

> It sounds like it would work. It would allow people to access mental health care from their homes, which would be a little bit more comfortable for them if they're having a hard time with the social aspect of life. *(PM1)*

Another CW also acknowledged the program's broad reach: "let's say, 15% are going to do it, that's wonderful that you've reached that 15% that you wouldn't before" *(PM3)*. *One* participant summarized the advantages and disadvantages as follows:

> So advantages, definitely would be, it's online, if you have an internet connection, you can access it. You can go back and review the material. You can kind of do it at your own pace, kind of like an online course sort of thing…But I think the disadvantage is if someone is pretty far into a spiral of their mental health, they may not want to take the time out of their day [or] give a crap in general. They may not understand what the material means, or they might be an older person that's not

> computer savvy or things like that, that might need more traditional talk therapy or go in-person or something like that *(PF16)*

For some, the exercise due dates had drawbacks:

> Some people do very well with a due date and other people would really struggle with it and I know I'd really struggle if it was like, 'here's your PowerPoint, you have to check through and do the homework and click on it and send it back,' and one week you'd get great work from me and the next week you'd get pretty rough work from me. *(PM2)*

Subtheme: Engagement

Due to the novelty of the online programs, many of the participants were willing and open to trying it: "I think it looks pretty neat. I'd be interested in doing it" *(PF14)*. The negative aspect of the program described by some CWs was that it seemed to resemble other online training programs:

> Everything in our training now these days is online. And most people don't even read through it. It's just a matter of going through it and then checking. It's just a checkmark and so I think another online format, would be another issue I think. *(PM6)*

Another participant added: "I think other people see it as another online training that they have to click through…there's no engagement whatsoever. Whereas, if I sat down and talked to somebody in person, it's a much different scenario" *(PM2)*. A suggestion largely expressed by CWs was the inclusion of relevant examples within the therapy modules designed for CWs: "real-life videos of not necessarily actors, but maybe people going through certain situations and talking about certain situations can help," *(PF4)*. The cartoonish examples in the modules were pointed out by two participants. One participant expressed:

> [If cartoonish images are used in modules designed for CWs] They don't feel real. They're kind of cartoony, but then we experience that a lot…it's insulting. Give me a picture of a real person who looks like they're going through distress rather than a cartoonish or screenshotted image of somebody. *(PF4)*

Another participant added:

> I do know that most of the training that I did, was all cartoons. There would be some videos that would have definite correctional workers in them and actors, which were funny. But a lot of them, I find that the more serious things tend to be animated. *(PF12)*

When asked if they would prefer real-life examples with CWs integrated into the modules, one CW responded: "I would definitely be more apt to take it if I knew there was information in it from coworkers or other people who have been in corrections," *(PF12)*.

Subtheme: Therapist interaction

Some participants found the text-based platform a limitation: "I find it a lot more difficult and I'm not as inclined to go on because it just feels a lot more like empty typing a note than talking to an actual person" *(PF13)*. Another participant outlined the difference between online and in-person therapy: "Even if it's got great pictures, great stories, great videos to play, I never take the same thing out of it than if someone face-to-face teaches me the information" *(PM2)*. However, the benefits of the virtual therapist were expressed, even if there was an impersonal aspect to it:

> I can see how it can feel really impersonal because it's a pre-recorded set of slides but the feedback that you get from your individual therapists, I think is what will make it better for anyone who participates in this. (*PF4)*

One participant suggested adding a virtual face-to-face therapist instead of solely communicating through text:

> I can do it [the therapy] on my phone or my laptop or whatever and it gives a little bit more freedom even to go back to the material and read it over again. But again, maybe a weekly session to go along with that, to speak with a therapist and they would kind of review the material with you, might be beneficial as well. Just for somebody that may not have prior knowledge of the terms that you may use or therapy in general, that piece might be beneficial. *(PF16)*

This idea was also expressed by another participant: "I would say maybe having a time where you are on a call, like a zoom call, with your therapist and talking through what you said for that week or two weeks or what not," *(PF13)*. Another participant included, "I agree with that, or perhaps for the initial assessment and goals, [it] would be helpful to have an in-person call," *(PF11)*. Another CW suggested having optional therapist contact each week:

> I think maybe if there is an option box for each week, where you could say, 'hey I think I need to talk to someone this week,' or maybe I'm just gonna write my answers, or maybe you can do both. *(PF14)*

Providing homework feedback during virtual meetings instead of textual content was also expressed:

> I think for a response, even a 15 min [meeting]. Because you're basically just going to try to convey what you would normally write in that paragraph you sent back. But you're gonna give the person in therapy the option to ask real-time questions and have a quick little conversation, maybe explain things they don't quite understand and just kind of give them the opportunity to have that back and forth. *(PM3)*

These strategies were seen as good ways to develop a good therapeutic relationship:

> I really like having an idea of who you're talking to and knowing that you're talking to a person and not just a computer and that you can develop a therapeutic relationship. *(PF4)*

Member check

The themes were sent to all study participants ($n = 21$; 10 men and 11 women). Three individuals responded (one man and two women). Non-respondents were assumed to accept that the data were valid and reflected reality. All respondents participated in the gender-specific focus groups and one woman was also present in the individual interviews. These participants agreed with the summarized responses. Another respondent, a man, indicated that the best support they received was from a psychologist who had first-hand experience in a correctional environment.

One of the women also added that not being able to tell the family what happens at work or disclosing too much can be a problem. She included that women experienced emotional and sexual violence. She also mentioned that CWs cannot choose their own therapist through internal programs. Lastly, she suggested being able to download sessions from the platform.

Discussion

The current study provided insight into the mental health challenges and needs of CWs in Ontario, Canada. Interviews and focus groups explored the lived experiences of CWs, including gender-specific experiences in the workplace and opinions on psychotherapy modules previously designed for the general population and validated by the research team (17–19). The findings suggest the need to reform correctional work culture and reassess the mental health services available to this population.

Work culture

In line with the current body of research (6), correctional work culture was described as one marked by high stress, trauma, and violence. The findings support role overload as having a large effect on job stress (26). The pervasiveness of job stress was also reported to stem from role boredom and monotony. Hypervigilance, a dominant trait in CWs (27), can be a result of the interaction between monotonous correctional work and chronic trauma exposure (28). The current study provides a novel perspective that inadequate preparation stemming from the multiple roles that CWs take on can worsen sentiment toward workplace monotony. The stress of separating work and personal life identities may also add to the significant work-life conflict observed in CWs (29–31). As a result, detachment and decompressing behaviors were frequently reported by participants. In British prison officers, those who successfully detached themselves from work-related challenges were more likely to have a good work-life balance and experience greater psychological health (30). At the same time, ignoring the work conditions that instill these behaviors can have a pernicious effect on employee mental health and burnout risk in the long term (32, 33).

Although a previous study observed no significant difference in the rate of violence experienced by male and female prison employees (34), the current findings indicate that violence type may be influenced by gender. The experiences of women CWs are in line with concerns of gender inequality and sexism that appear in this male-dominated profession (35). These factors may partly explain why all the women in the study kept their webcams off while all the men kept theirs on. Threats to identity safety may result in women being less vocal in expressing their concerns without anonymity (36, 37). It may have also contributed to the negative views some women CWs expressed toward members of their own gender. At the same time, workplace harassment training programs were not viewed as effective by participants. Similarly, a recent study also demonstrated the ineffectiveness of these training programs (38). Paradoxically, these training programs have been shown to increase the likelihood of victim blaming amongst men due to a defensive reaction (38). In line with the current findings, the study authors suggested manager and leadership training to help detect and de-escalate early signs of harassment. Working with employees to develop actionable tools and strategies may encourage men to have a proactive role in promoting a positive work culture. In turn, this approach could potentially discourage the toxic masculinity expressed by the women CWs in the study.

Mental health care

As indicated by study participants and supported by other studies (39), organizational and managerial support, mutual trust, and an opportunity to provide constructive feedback on services are effective ways to improve program efficacy and protect against the harmful mental repercussions of correctional work. Although stigma and fears of judgement

were expressed by study participants, many highlighted the importance of peer support and being able to talk to someone who understood their experience. Stigma is a key factor in the normalization of toxic masculinity (i.e., socially regressive male traits) and isolation, all of which can contribute to and worsen adverse mental health outcomes and discourage individuals from seeking care (40, 41). Conversely, social support is associated with lower odds of PTSD positive screens in CWs (42). Indeed, study participants described the protective effects of supportive interpersonal relationships with management, colleagues, and family.

Participants also advocated for sector-specific therapy. Previous research on public safety personnel indicates that sector-specific therapists can strengthen therapeutic alliance (43, 44). The findings extend on this by shedding light on the seclusion of this profession and difficulty in explaining work experiences to individuals outside of the profession, including therapists that CWs had worked with. Previous findings also demonstrate that therapists available through institution-provided programs typically lack knowledge of correctional work (45) and their services are less likely to be used for work-related reasons (46). Participants also suggested including real-life examples in therapy that they can better relate to. These examples may be a lesser but beneficial form of social support and an alternative way for CWs to feel connected while refraining from sharing information they perceive will jeopardize their standing in the workplace (47). Many hailed in-person therapy for creating a more personable experience and enabling strong therapeutic connections. Similar to previous findings (48), although participants found the online programs to be convenient, accessible, and time-flexible, many pointed out that the lack of a face-to-face therapist could make the program impersonal. Some suggested including a video component to enhance working alliance.

Strengths and limitations

The study had several strengths. The combination of individual interviews and focus groups was meant to increase the credibility and validity of the findings (49). The triangulation of individual interviews and the focus group aimed to enhance data richness and provide a more comprehensive understanding of the mental health landscape in corrections (50). In addition, exploring perceptions of digital mental health programs is a unique novelty of the current study. These insights are valuable considering that the use of digital mental health programs is gaining traction in correctional facilities (11, 43, 51). Providing a platform for CW voices can help guide clinical practice surrounding digital therapies for this population. Not only can this strengthen mutual trust and integrity (33, 52), but it can aid in developing programs that acknowledge limitations and barriers expressed by users.

Although the study had many strengths, it also warrants discussing its limitations. The study participants were ethnically homogenous with the majority identifying as white. Since low racial diversity exists in correctional work (53, 54), the current sample may reflect these trends. At the same time, it is important to explore factors that may prevent BIPOC groups from sharing their mental health experiences and needs. Differential outcomes in mental health care preferences and needs of diverse racial and cultural groups (55, 56) suggest consideration of these groups in future studies. Lastly, most of the study participants had a mental health diagnosis and detailed their frustrations navigating through the current care system. Future studies may want to consider the experiences of participants who are not diagnosed or have recovered from their mental diagnoses. These individuals may provide additional perspectives on mental health challenges and services that may not have been previously considered.

Summary and conclusion

The needs expressed by CWs reflected a culture of mutual trust, where employees feel supported in the workplace and a better relationship with management exists. In general, social connectivity was an important characteristic in CWs and cited as an integral part of therapy and peer support. CWs also expressed the need to work with therapists with expertise in the correctional field and the same belief was extended to digital mental health programs. When presented with samples of previously validated online psychotherapy modules, many participants described their convenience, but suggestions were made to enhance the therapeutic relationship. Taken together, the study demonstrates the importance of considering work culture and mental health needs when developing appropriate programs.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The study involving human participants was reviewed and approved by Queen's University Health Sciences and Affiliated Teaching Hospitals Research Ethics Board. The patients/participants provided their verbal informed consent to participate in this study, which was documented by a research assistant on the team.

Author contributions

EM, NA, and YK were responsible for designing the study and writing the manuscript. The focus groups and interviews were conducted by EM, YZ, AnK, and AlK. EM, YZ, and YK conducted data analysis. Subsequent drafts were edited and finalized by YZ, AnK, AlK, CP, MO, CG, MM, and AFS. All authors contributed to the article and approved the submitted version.

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Conflict of interest

Authors NA and MO cofounded the care delivery platform in use (i.e., OPTT) and have ownership stakes in OPTT Inc.

The remaining authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Prevalence and correlates of mental illness among inmates in North-western Ethiopia: A new look into the roles of rehabilitation service use

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Data on the magnitude of mental illnesses and associated factors among inmates in Ethiopia, in general and in the Amhara region in particular are scarce. The available studies either focused on specific type of mental illness or include inmates from a single correctional center and leave aside the role of rehabilitation service use in inmates' mental illness. Therefore, the present study was conducted to look into the prevalence of mental illnesses and to examine the associated demographic, imprisonment related and rehabilitation service use related factors among inmates in Northwestern Ethiopia. The study employed cross-sectional, descriptive and explanatory research design where data was collected from 422 inmates from three randomly selected prisons. Inmates' mental illness was assessed using the Self Reporting Questionnaire (SRQ-20). Frequency, percentage, bivariate and multiple logistic regressions were used to analyze the collected data. In the study it was revealed that 74.6% of the inmates in Northwestern Ethiopia have mental illnesses. Feeling unhappy, difficulty to play important role in life, headaches and bad sleep were experienced by majority of the respondents. Male inmates (AOR = 2.39, 95% CI = 1.07–5.37) and inmates who participate in the educational training services (AOR = 2.20, 95% CI = 1.36–3.55) were found to have higher chances of having mental illnesses. On the other hand, inmates who participate in life skill training programs (AOR = 0.45, 95% CI = 0.28–0.74) and inmates who participate in recreational and cultural activities (AOR = 0.26, 95% CI = 0.14–0.46) were found to have lower odds of developing mental illnesses. A high prevalence of mental illnesses among inmates was found in Northwestern Ethiopia and inmates' participation in rehabilitation services were important

correlates of their mental health. Thus, prison administrators and policy makers need to conduct large scale studies and develop tailored interventions that could reform the rehabilitation services provisions, including mental health service provisions.

KEYWORDS

mental illness, inmates, prisons, rehabilitation services, North-western Ethiopia

Introduction

Mental illness is now being recognized as a major public health problem throughout the world. Prevalence studies highlight the gravity of the problem and thereby challenge policy makers to take appropriate action. In Ethiopia mental illness comprised 11% of the total burden of disease and the disability associated with it is high (1).

Although no population group is immune to mental illnesses, some population groups are at higher risks of developing mental illnesses. The prison populations are among the high risk group of population for developing mental illnesses. In reality inmates were found to have higher levels of mental illnesses than the general population (2, 3).

The high prevalence of mental illnesses in the prison population could be attributed to pre-prison situations and/or to the prison environment. On the one hand, individuals with mental illnesses have higher chances of incarcerations for they are more likely to break the law (4). On the other hand, the prison environment characterized by overcrowding, violence, isolations, etc. could increase the probability of inmates developing mental illnesses (1, 4, 5).

Understanding the prevalence and associated factors of mental illnesses among prison inmates would help to provide targeted interventions and design appropriate health care services to the prison inmates (4, 6). Lack of such understanding could have dire consequences. Inmates with mental illnesses are at higher risk of suicide, self-harm violence, victimization, premature death and reoffending (3, 4). Therefore, it is imperative to examine the prevalence and associated factors of mental illnesses among prison inmates.

In practice, studies on the mental illness levels of inmates reported different prevalence rates ranging from 86% in Southwestern Uganda (2) to 29.2% in Zambia (7). With regard to contributors, a host of factors contributed to the high prevalence of mental illnesses among inmates. In resource poor countries like Ethiopia there are a host of factors that increased the risk of mental illness in prisons (1, 5).

While these are the facts on the ground, studies on mental illness prevalence and associated factors among inmates are scant in low and middle income countries (2, 7–10). Likewise, data on the magnitude of mental illnesses and associated factors among inmates in Ethiopia in general and in the Amhara region in particular are scarce (5, 6, 11). The available studies either focused on specific type of mental illness or include inmates from a single correctional center. For example two studies in Northwestern Ethiopia focused on psychological distress (6) and anxiety (12) while a study on mental illnesses of inmates in Northwestern Ethiopia collected data from Debremarkos correctional institute only (13). The focus on specific mental illnesses and specific facility will not give proper insights about the total picture of the mental illness situations of inmates to policy makers and prison administrators. In addition the studies examined the associated demographic and prison related factors which leaves aside the roles of important factors like participation in the available rehabilitation services.

Meanwhile studies in different corners of the globe have depicted rehabilitation service use related factors associated with mental illness of inmates. For instance, participation in life skill training programs (14, 15) and involvement in recreational and cultural activities (16–18) were associated with inmates' mental illness.

Besides, the Ministry of Health considers the inadequate services in prisons, particularly the mental health service, as important factor that increased the risk of mental illnesses in prisons (1). Moreover, in a study in North-western Ethiopia it was depicted that low to no satisfaction with prison services significantly associated with inmates' psychological distress level (6). These all implied that there is a need to examine the associations of service use with mental illness among inmates.

In the present study we argued that inmates' participations in the rehabilitation services are associated with their mental illnesses. However, the association between prison rehabilitation service use and mental illnesses are least explored, at least to the knowledge of the present researchers. Hence, the present study was conducted to look into the prevalence of mental illnesses and to examine the associated demographic, imprisonment related and rehabilitation service use related factors among inmates in North-western Ethiopia. In doing so, the findings of the present study will help policy makers and prison administration bodies to plan targeted interventions, hire more mental health prison staff members and reform mental health service provisions.

Materials and methods

Research design

Based on its data collection timing, the present study employed cross sectional research design where data were collected at a time from all the respondents. In terms of its methods of analysis, the study employed both descriptive and explanatory research designs. It is descriptive in that it summarized and described the characteristics of respondents and their mental illness levels. It is explanatory because it tests the associations that exist between mental illness and potential predictor variables.

Setting

Amhara regional state hosts 31 correction facilities from which 30 of them are under the administrative jurisdiction of the region and one (Shewarobit Rehabilitation and Correction center) is that of the federal government. Correctional centers in the region are divided into two levels: (a) Higher level (12 in number); and (b) medium and lower level (18 in number). Of the 30 prisons in Amhara National Regional State (excluding the center administered by the federal government), 10 of the prisons are found in the North-western part of the regional state. Simple random sampling technique was used to select three prisons: Gondar, Debretabor and Bahirdar prisons. Gondar and Bahirdar prisons are higher level correction centers while Debretabor correction center is included under lower and medium level centers. Based on the data collected from the three prisons there were 7,164 prison inmates. Specifically, there were 2,417 inmates in Gondar prison, 2,099 inmates in Debretabor prison and 2,648 inmates in Bahirdar prison.

Sample size

For the purpose of determining the sample size of the study, single proportion formula was used because the total population was already known. Based on the computations using the formula, the minimum sample size was 384. Assuming 10% non-response rate, i.e., 38, the final sample size was 422.

Quota sampling is used to include proportional number of inmates from the three prisons. Simple random sampling was used to select participants from each correction center. Therefore, 142, 124, and 156 inmates from Gondar, Debretabor and Bahirdar prisons, respectively, were participated as questionnaire respondents in the present study. Inmates who were above 16 years and who were willing to participate in the study were included in the present study. On the other hand, inmates who were seriously ill and unable to communicate were excluded from participating in the study.

Instrument

In the present study data was collected using a structured and pretested questionnaire. The questionnaire has four sections. The first section collects data about inmates' demographic data (age, gender, educational status, religion, marital status and employment status before incarceration). The second section collects imprisonment related data that includes frequency of imprisonment, convict status, length of stay and types of crimes committed. The respondents were requested to report their number of imprisonment, convict status and the time they have stayed in prison. In terms of the crimes the inmates committed, the respondents list various kinds of crime. For ease of analysis, the types of crimes committed are categorized in to three: Crime against person, Crime against property and Crime against Society. Crimes like murder and rape are included under crimes against person. Crimes like automobile theft and robbery are categorized under crime against property. Crime against society includes crimes like human trafficking and corruption.

The third section includes lists of rehabilitation services (guidance and counseling services; life skill training program; educational training; vocational training; work experience/employment services; medical services; library services; recreational and cultural services; psychiatry services; social relation with family; and substance abuse treatment). Then, respondents were asked to indicate their participation in the listed services with "Yes, I participate" and "No, I don't participate" options.

The fourth section of the questionnaire assess inmates' mental illness level. Inmates' mental illness was assessed using Self Report Questionnaire (SRQ-20) developed by WHO to be used in low income countries to assess mental illness symptoms (19). The SRQ was developed to assess 5 psychotic symptoms and 20 neurotic symptoms. The SRQ-20 which assessed 20 neurotic symptoms is used in the present study. Based on the user guide the inmates were presented with 20 statements and were asked to indicate if they have the typical symptom in the past month. They are also presented with Yes/No options and replying Yes (1) was considered as having the symptom while relying No (0) implying not having the symptom.

SRQ-20 has been used in prison settings in Africa. For example, it has been used in Zambia with a cut off score of > 8 (7). It has also been used among inmates in Ethiopia with different cut off scores. For instance, it was used in Debremarkos with a cutoff scores of ≥ 6 (13) while a study

in Addis Ababa (10) and a study in Jimma correctional institute (9) used a cut off score of 8. In the present study a cut off score of 8 was used to categorize an inmate as having mental illness or not. In the present study SRQ-20 has been found to have high reliability with a Cronbach's alpha score of 0.907.

Data collection procedure

The questionnaire was translated to Amharic by a psychologist and language experts. It was then back translated by other psychologists and language experts who were not familiar with the purpose of the study. And minor differences in translations were resolved through a focus-group discussion.

Data collection process was carried out by six trained M.A. holders who are also the research team members. Two data collectors each visited the three prisons and collect data from the prisoners. Formal letters directed to the selected facilities were written from the college of social science and humanities at UoG requesting permission to collect data. While delivering the letters, the purpose of the research was vividly communicated to prison administrators.

Before data entry, collected data was examined and validated for completeness, and thereby incomplete data was eliminated to be replaced by other data.

Data analysis

Both descriptive and inferential statistics were used in the present study. Frequencies and percentages were computed to describe respondents' demographic, imprisonment related and rehabilitation service use related characteristics. Frequencies and percentages were also employed to describe prevalence of mental illnesses among inmates. To examine association between mental illness and the associated factors, bivariate and multiple logistic regression models were used. The statistical significance of mental illness and associated factors was determined using an adjusted odds ratio with a 95 percent confidence interval. All data analyses were carried out using SPSS version 23.

Results

Demographic descriptions of the respondents

As can be seen from **Table 1** majority of the respondents are young aged between 18 and 40 years (74.2%), are males (92.2%), attend secondary education (39.3%), are Orthodox Christians (96%), are married (48.6%) and are employed (42.7%).

TABLE 1 Demographic characteristics of the respondents (N = 422).

Variables	Category	Frequency	Percentage
Age	18–40	333	78.9
	41–60	83	19.7
	>60	6	1.4
Gender	Male	389	92.2
	Female	33	7.8
Educational status	No education	47	11.1
	Primary education	147	34.8
	Secondary education	166	39.3
	Diploma	28	6.6
	Others	34	8.1
Religion	Orthodox	405	96.0
	Muslim	17	4.0
Marital status	Single	195	46.2
	Married	205	48.6
	Divorced	22	5.2
Employment status	Unemployed	63	14.9
	Employed	180	42.7
	Self-employed	179	42.4

Imprisonment related characteristics of the respondents

Imprisonment related characteristics of the respondents are presented in **Table 2**. Majority of the respondents are imprisoned once (95.7%), have convicted status (85.5%), stay in the prison between 1 and 5 years (67.8%) and committed crimes against person (57.8%).

Inmates' participation at rehabilitation services

Inmates' participation in the available rehabilitation services are presented in **Table 3**. Of the available services in the prisons, higher number of inmates participates in guidance and counseling service (66.1%); educational trainings (51.7%); vocational trainings (58.8%); work experience/employment services (54.3%); medical services (72.5%); and social relations with family (89.1%). Lower levels of participation was found at life skill training program (30.1%); library services (41.7%); recreational and cultural activities (14.9%); psychiatry services (13.3%); and substance abuse treatment (10.4%).

TABLE 2 Imprisonment characteristics of the respondents (*N* = 422).

Variables	Category	Frequency	Percentage
Frequency of imprisonment	First time	404	95.7
	Second time	8	1.9
	Third time	10	2.4
Convict status	Pre trail	23	5.5
	Accused	38	9.0
	Convicted	361	85.5
Length of stay	>1 Year	120	28.4
	1–5 years	286	67.8
	>6 Years	16	3.8
Types of crime	Crime against person	244	57.8
	Crime against property	123	29.1
	Crime against state	55	13.0

TABLE 3 Respondents' rehabilitation service use status (*N* = 422).

Variables	Category	Frequency	Percentage
Guidance and counseling service	Use	279	66.1
	Don't use	143	33.9
Life skill training program	Use	127	30.1
	Don't use	295	69.9
Educational training	Use	218	51.7
	Don't use	204	48.3
Vocational training	Use	246	58.3
	Don't use	176	41.7
Work experience/employment services	Use	229	54.3
	Don't use	193	45.7
Medical service	Use	306	72.5
	Don't use	116	27.5
Library services	Use	176	41.7
	Don't use	246	58.3
Recreational and cultural activities	Use	63	14.9
	Don't use	359	85.1
Psychiatry services	Use	56	13.3
	Don't use	366	86.7
Social relation with family	Use	376	89.1
	Don't use	46	10.9
Substance abuse treatment	Use	44	10.4
	Don't use	378	89.6

Prevalence of mental illness among inmates

Of all the participants of the study, 74.6% of them (374 in numbers) were found to have mental illnesses. Besides, feeling unhappy (308 inmates), unable to play useful part in life (286 inmates), head ache (282 inmates) and sleep badly (282 inmates) were symptoms reported by high number of inmates. On the other hand crying more than usual, suicidal thoughts and shaking hands were symptoms experienced by lower numbers of inmates, reported by 145, 115, and 114, respectively (see Figure 1).

Factors associated with mental illness

Bivariate logistic regressions were computed to examine the association among inmates' mental illness and the independent variables of the study (demographic variables, imprisonment related variables and rehabilitation service use

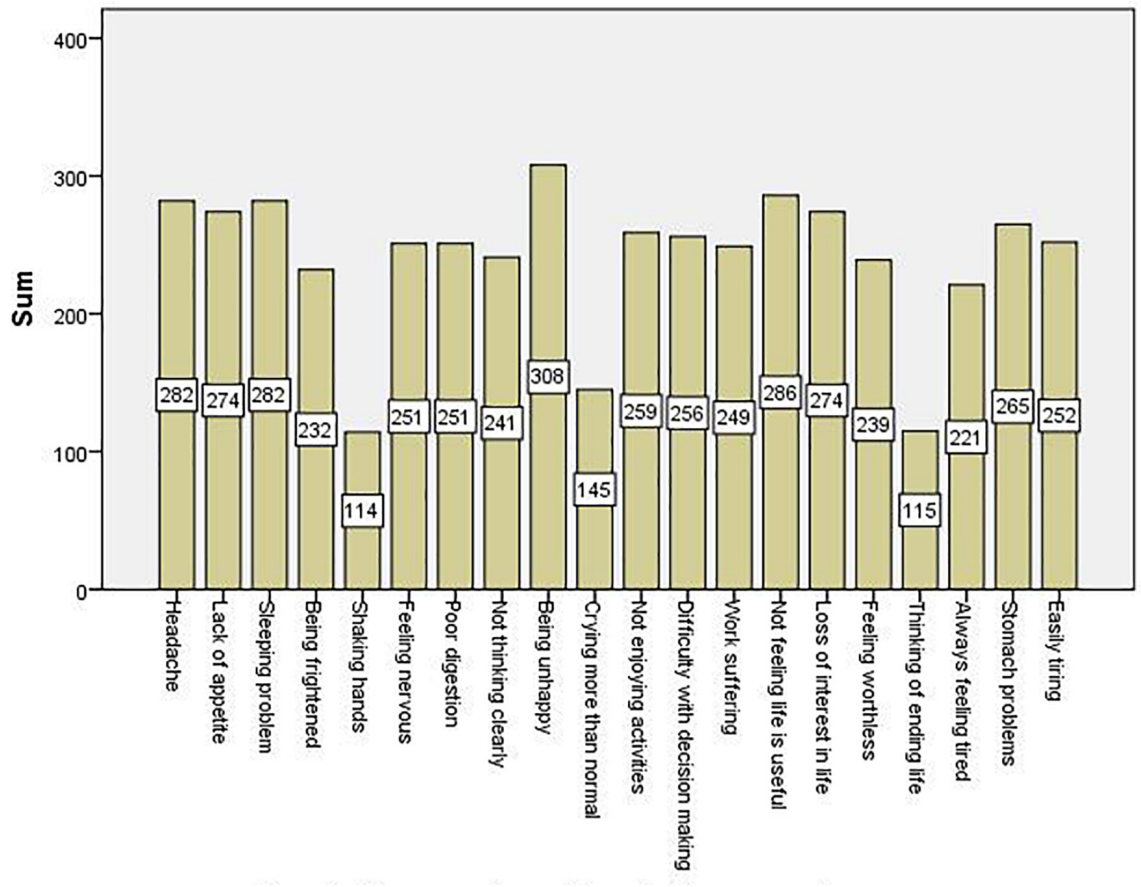

FIGURE 1
Frequency of reported mental illness symptoms.

related variables). In the bivariate analysis gender, length of stay, participation in life skill training program, use of educational training services and involvement in recreational and cultural activities were found to be significantly associated with inmates' mental illness.

Following that multiple logistic regressions were computed to look into the individual contributions of each independent variable after adjusting for the effects of other potential predictor variables. In the multiple logistic regression analysis, all these variables, except length of stay in the prison, remained significant. In **Table 4** variables which were significant in the bivariate analysis are included and data for other variables are not included (see **Supplementary File 1**). Specifically it was found that males were 2.39 times more likely to have mental illnesses (AOR = 2.39, 95% CI = 1.07–5.37) than female inmates. In terms of rehabilitation service use, inmates who participate in life skill training programs were found to have lower chances of developing mental illnesses (AOR = 0.45, 95% CI = 0.28–0.74) than inmates who don't participate in life skill training programs. However, inmates who participate in the educational training services were found to have higher odds of having mental illnesses (AOR = 2.20, 95% CI = 1.36–3.55) than inmates who don't participate in the educational training services. On the other hand, the odds of inmates developing mental illnesses were found to be lower for inmates who participate in recreational and cultural activities (AOR = 0.26, 95% CI = 0.14–0.46) than the inmates who don't participate in these activities.

Discussion

The present study explored the prevalence and correlates of mental illness among inmates in North-western Ethiopia. This study is one of its kinds in the sense that it considers rehabilitation service use as correlates of mental illness alongside demographic and imprisonment related factors.

In the present study it was revealed that about three quarter of the inmates in North-western Ethiopia have mental illnesses. A similar mental illness prevalence rate was reported

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TABLE 4 Bivariate and multivariable logistic regression results of predictor variable.

Variable	Category	Mental illness		OR (CI)	*p*	AOR (CI)	*p*
		No	Yes				
Gender	Male	91	298	3.08 (1.50, 6.34)	0.002	2.39 (1.07, 5.37)	0.035
	Female	16	17	1			
Length of stay	>1 Year	38	82	1.66 (1.08, 2.54)	0.021	0.17 (0.02, 1.42)	0.102
	1–5 Years	68	218	0.14 (0.02, 1.13)	0.065	0.20 (0.02, 1.57)	0.124
	>6 years	1	15	1			
Life skill training program	Use	45	82	0.49 (0.31, 0.77)	0.002	0.45 (0.28, 0.74)	0.002
	Don't use	62	233	1			
Educational training	Use	44	174	1.77 (1.13, 2.76)	0.012	2.20 (1.36, 3.55)	0.001
	Don't use	63	141	1			
Recreational and cultural activities	Use	32	31	0.26 (0.15, 0.45)	0.000	26 (0.14, 0.46)	0.000
	Don't use	75	284	**1**			

in Iran where a prevalence rate of 73.9% was reported among prisoners (20).

Slightly lower prevalent rates of mental illness among inmates were reported in Ethiopia and other African countries. The prevalence of mental illness among prisoners in Debremarkos correctional institute was found to be 67.6% (13) slightly lower than the prevalence rate in the present study. The prevalence rate of mental illnesses among inmates in Addis Ababa was 58.4% (10). The prevalence rate of mental illnesses in Jimma correctional institute was 62.7% (9). A 63.2% prevalence rate of mental illness was reported among inmates from a study in Kenya (4). In a systematic review among studies in Africa, the pooled prevalence of mental illnesses among adults is 59% while it is 61% among the youth (8). Methodological differences and the characteristics of the respondents included in the studies are behind the differences in findings. For example, in the study in Addis Ababa half of the respondents (50.1%) are females while only 7.8% of the participants in our study are female inmates.

Higher prevalence rates of mental illnesses among prisoners than the prevalence rate in the present study was reported in other studies. For instance, in a study in South-western Uganda mental illness was observed in 86% of the inmates (2). Likewise, a study in India reported a mental illness prevalence rate of 83.5% (21). Psychological distress was identified among 83.4% of inmates among prisons in North-western Ethiopia (6). The differences in findings are attributed to the tools used to measure mental illnesses. The studies in Southern Uganda and India used Mini-International Neuropsychiatric Interview (M.I.N.I.) that measured the prevalence of psychotic disorders while the study in North-western Ethiopia employed K10 that examined psychological distress.

Significantly lower mental illness prevalence rates are also reported in other African countries. The prevalence of mental illness reported in Zambia is 29.2% (7). Similarly, a mental disorder prevalence rate of 34.8% was reported from a study in a correctional prison in Yaoundè, Cameron (22). The differences are attributed to differences in the settings the data is collected and the tools used to assess mental illness. For example the study in Zambia is conducted in maximum security prisons among remanded, sentenced, and condemned inmates. Besides, the study in Cameron used M.I.N.I. to assess mental illness while our study employed SRQ-20.

Alongside to reporting the prevalence of mental illness, the present study depicted the most and the list reported mental illness symptoms by inmates. Feeling unhappy, difficulty to play important role in life, headaches and bad sleep were experienced by majority of the respondents. These symptoms were reported as high in the study among prisoners in Jimma correctional institute, South-western Ethiopia (9). Hands shake, suicidal thoughts and crying more than usual were the symptoms least reported by inmates in the present study. These symptoms are also among the least reported symptoms in the study in South-western Ethiopia (9). These all could imply that the typical symptoms experienced by inmates are similar in different corners of the country.

Of all demographic variables considered, gender as an important correlate for inmates' mental illness was found in the present study. Unlike the findings from other studies, the present study found that male inmates have higher odds of having mental illness than their female counter parts.

Contrary to our findings, the study at Debremarkos correctional institute found that female inmates have higher probability of having mental illness than male inmates (13). In a study in Bonga town correction center female inmates were found to feel worthless and nervous than male inmates (23). Similarly, in the study in Kenya female inmates were

found to have higher chances of having mental illnesses than male inmates (4). The difference in the findings could be attributed to the high number of male inmates (92.2%) included in our study.

The present study highlights the important effects of rehabilitation service use on inmates' mental illness. Of the 11 rehabilitation service use related variables considered in the study, three of them were found to be important correlates of inmates' mental illness: life skill training program; educational training; and recreational and cultural activities.

In the present study, inmates who participated in the life skill training programs were found to have lesser chances of developing mental illness. Likewise, in a study in Iran the mental health of women inmates who participated in anger management trainings were improved after the training (14) indicating the importance of life skill trainings. Another study in Iran found that inmates who participated in life skill trainings were found to have higher scores in positive mental adjustment (measured by assertiveness and self-esteem) and lower score in negative adjustment (measured by anxiety, depression, stress and aggressiveness) (15).

Participations in recreational and cultural activities are found to have a buffering effect against mental illness among prisoners. In line with our finding, participation in recreational and cultural sport activities were reported as buffering against mental illnesses among inmates. For example, in a study in the USA inmates who participated in group activities were found to have lower chances of experiencing anxiety. On the contrary, the study depicted that being idle is associated with higher odds of anxiety and depression implying the importance of participation as a buffering against mental illnesses (17). In a study in Nigeria, inmates who participated in sport activities have better psychological and social wellbeing than inmates who don't participate (16). Likewise, in a qualitative study in Northern Ireland it was depicted that participation in sport activities increases social interaction thereby improves inmates' psychological wellbeing (18).

Surprisingly, in the present study, participation in educational training services was found to be associated with higher chances of having mental illness among inmates. In the literature, participation in prison educational programs was associated with lower recidivism, higher employment chances after release, reduced misconduct while in prison and strong return on investment (24). Findings of the present study associates prison education with increased mental illnesses. This could be potentially attributed to the many challenges associated to prison education in Africa, for example in South Africa (25) or the low quality and relevance of the educational service provisions reported among prisons in Amhara National Regional State (26) or other additional covariates that need further investigations.

Conclusion, recommendations and limitations

A high prevalence of mental illnesses among inmates was found in Northwestern Ethiopia. Besides, inmates' participation in rehabilitation services was important correlates of their mental health. The high rates of mental illness among the inmates calls up on an urgent intervention and prison mental health service reform to satisfy inmates mental health needs. Prison administrators, policy makers at regional and national levels, ministry of justice, and ministry of health as well as non-government organizations need to come together, discuss on potential immediate interventions and implement the interventions so as to combat the potential consequences of having such a huge number of inmates with mental illness in our prisons. Furthermore, the quality of the rehabilitation services rendered to the inmates need to be properly examined thereby appropriate measures need to be in place by concerned bodies.

Issues surrounding inmates' mental health, including prevalence, types of illness, services that targeted mental illness, among other things are untapped research area for future researches. The role rehabilitation service use played against/toward inmates' mental illness need detailed, potentially longitudinal, studies at a wider scale.

Finally, the facts that this study is conducted with only three prisons and its cross-sectional nature are the limitations of the study. Moreover, the numbers of female respondents in the present study are small in that it would be difficult to generalize the results to female inmates in the region. In addition, mental illness is not clinically diagnosed with trained professionals and there could be recall bias and/or over reporting of symptoms.

Data availability statement

The original contributions presented in this study are included in the article/**Supplementary material**, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by the College of Social Science and Humanities Research Review Committee. The patients/participants provided their written informed consent to participate in this study.

Author contributions

YY, AAB, and BA conceived the study and developed the tool. AAB, BA, ABB, and NA collected the data. YY and AAB analyzed the data. YY, AAB, and AGB discussed the findings. YY, AAB, ABB, and NA developed the manuscript. All authors have read and approved the final manuscript.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2022.983355/full#supplementary-material

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Imprisonment following discharge from mental health units: A developing trend in New Zealand

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Introduction: Contemporary models of care for people with mental disorders continue to shift to community-based care, requiring fewer inpatient mental health beds, shorter inpatient lengths of stay, and less use of coercion. It has been suggested that some mentally unwell people, whose behavior can no longer be safely contained in overstretched mental health units where seclusion and restraint are discouraged, are now left to the criminal justice system to manage. It is unclear whether the risk of imprisonment following discharge from a mental health unit has increased over recent years.

Methods: A quantitative, retrospective cohort study design was used to investigate any association between an acute inpatient mental health service admission in Aotearoa (New Zealand), and referral to a prison mental health team within 28 days of hospital discharge, from 2012 to 2020. Data were extracted from the national mental health dataset managed by the Ministry of Health.

Results: Risk of imprisonment within 28 days of inpatient discharge increased over the study period. People experiencing this outcome were more likely to be younger, male, of Māori or Pacific ethnicity, presenting with substance use and psychotic disorders who were aggressive or overactive, and were subject to coercive interventions such as seclusion and compulsory treatment during their admission.

Discussion: We concluded that contemporary models of less coercive predominantly community based mental health care may be increasingly reliant on the criminal justice system to manage aggressive and violent behavior driven by mental illness. It is argued from a human rights perspective that mental health inpatient units should retain the capacity to safely manage this type of clinical presentation.

KEYWORDS

prison, mental health, inpatient, violence, coercion

Introduction

Deinstitutionalisation, or the process of shifting from institutionally based mental healthcare to community-based care has been happening around the world since the 1950s. It is now well established that with sufficient resourcing of community-based services, most people who were previously in long-term inpatient psychiatric care can be successfully treated in the community (1), where there is evidence for a higher quality of life than formerly experienced in institutional

care (2). However, for a small number of people with mental disorders, hospital admission is necessary to provide safe and appropriate care (3). More controversially, the number of inpatient psychiatric beds needed to ensure appropriate care for the population is the subject of ongoing debate. The Treatment Advocacy Center have advocated for a bed target of approximately 50 beds per 100,000 population (4).

In Aotearoa (New Zealand), the process of deinstitutionalisation saw the number of residents in inpatient mental health facilities fall from 350 per 100,000 population in the 1970s to about 50 per 100,000 population by the late 1990s (5). Over the last two decades psychiatric bed numbers have continued to fall and now average 28 beds per 100,000 population (Welsh, 2022[1]). At the same time, the average length of stay (LOS) has fallen to 18 days, while the occupancy of many inpatient services often exceeds 100% (Memorandum from the Ministry of Health to the Minister of Health, March, 2021).

Internationally, Aotearoa is not unusual in dramatically reducing mental health bed numbers, while at the same time reducing LOS. In Australia, in 2019–2020 the national rate of public sector mental health beds per 100,000 population had fallen to 27.5 (6). In the United Kingdom, Tyrer et al. (7) raised concerns that the number of mental health beds had fallen from 100 beds per 100,000 population in the late 1990s to less than 50 per 100,000 population by 2014, with the average LOS reducing to 15 days. In the United States, mental health beds were reduced to 25 beds per 100,000 population, with an average LOS of only 6 days (3). The same trends have also been observed in Central and Eastern Europe (8).

Further complicating matters, in Aotearoa as elsewhere, a paradigm shift toward a human rights-based framework has challenged more traditional models of compulsory inpatient care, as has our increasing awareness of the negative impact of trauma and coercive models of compulsory care, seclusion, and restraint (9). Government policy now encourages the elimination of seclusion and restraint. Service providers are also encouraged to reduce the application of compulsory treatment in the community to Māori (the indigenous people of Aotearoa), who are subject to more compulsory treatment than are non-Māori (10). This is despite evidence that Māori suffer higher rates of serious mental illness (11, 12). Additionally, new facilities are now being constructed to embrace less coercive models of care, staff training has an emphasis on preventing the use of restrictive practices (13) and legislative reform of the Mental Health Act is proposed to move away from coercive practices, and toward a capacity-based framework for compulsory care (14).

However, emerging from the laudable motives to reduce iatrogenic harm caused by coercive care, concerns are now raised that with shortages of available acute mental health beds and new models of less coercive inpatient care, those who cannot easily be cared for in non-coercive environments are at risk of being progressively denied access to a critical part of the continuum of care needed for this service user population.

A primary concern in this regard, is the suggestion that this shift may lead to increased criminalization of behavior driven by mental illness, and in some cases to custodial remand as an alternative to inpatient treatment (2, 8, 15). The prison remand population in Aotearoa increased from 1,800 in 2012, to 3,409 in 2020 (16). This increase in the remand prison population was in contrast to the number of individuals charged with a criminal offense, which almost halved following a peak in 2009/2010 of more than 120,000 individuals to 67,123 in 2020/2021 (17).

It is against this background of New Zealand's mental health bed reduction below international benchmark standards and coercive care being increasingly discouraged that we sought to investigate whether there was any evidence of a trend toward increasing custodial remand for persons with serious mental illness recently discharged from inpatient mental health units. Anecdotally, the authors were aware of many cases of psychiatric inpatients arrested after an assault in the inpatient unit and remanded to prison, and other remand prisoners recently discharged from a psychiatric inpatient unit but still subject to the Mental Health Act.

We therefore undertook a secondary analysis of available operational data. The study period was limited to recent years from 2012 to 2020 (when nationally collected data was sufficiently reliable to interrogate). If a trend toward increasing numbers of recently discharged remand prisoners was revealed, we were interested to better understand whether this trend could be explained by changes in inpatient characteristics, as well as broader social factors which may be contributing to the observed trend, such as the availability of supported accommodation and illicit drugs.

Materials and methods

A quantitative, retrospective cohort study design was used to determine any association between the exposure event (an acute inpatient mental health service admission) and the outcome event (opening a referral to a prison mental health team within 28 days of hospital discharge), over time. Data was extracted for all discharges from an acute mental health inpatient unit in New Zealand over a 9-year period, from 1 January 2012 to 31 December 2020.

The outcome event was not linked to Justice data on custodial remands. However, universal screening for mental health contact occurred throughout the study period on the day of reception to prison, utilizing a screening tool which combines the Brief Jail Mental Health Screen and the English Mental Health Screen (18). This should result in all people recently discharged from a mental health unit being referred to a prison mental health team. The authors' experience is that this screening is very effective in identifying recently discharged patients. We concluded there would be very few people remanded to prison within 28 days of discharge from a mental health unit who were not captured in the dataset.

All data were extracted from the Programme for the Integration of Mental Health Data (PRIMHD). This national data set of mental health and addiction sector activity is managed by Te Pou, on behalf of the Ministry of Health (19). The data was initially extracted and downloaded by the data manager at Te Pou and released to the researchers as an anonymous Excel spreadsheet, which was then imported into SAS version 9.4[2] for data cleaning and analysis.

Measures

The data extract included demographic, clinical, social, and model of care variables to describe the characteristics of the cohort,

1 Personal communication.

2 www.sas.com

and determine the influence of potential confounding variables on the outcome variable (reception to remand prison).

Demographic information included gender, ethnicity, and age.

Clinical information included clinical diagnosis and individual Health of the Nation Outcome Scale (HoNOS) scores (20) at admission and discharge. Clinical diagnoses were determined from International Classification of Diseases (ICD) codes reported at discharge from mental health services. The ICD codes were collapsed into groupings based on numbers and relevance. These groupings were mental and behavioral disorders due to psychoactive substance use (F1, 6.1%), schizophrenia, schizotypal, delusional, and other non-mood psychotic disorders (F2, 25.7%), mood (affective) disorders (F3, 21.9%), anxiety, dissociative, stress-related, somatoform and other non-psychotic mental disorders (F4, 6.8%), other mental health diagnoses (F0 2.4, F5 0.5, F6 4.4, F7 0.1, F8 0.4, and F9 0.4%), and other diagnoses which included: diseases of the nervous system (G 0.6%), symptoms and signs involving cognition, perception, emotional state and behavior (R4, 0.6%), general symptoms and signs–illness unspecified (R69, 0.2%), factors influencing health status, and contact with health services (Z, 5.3%). In a minority of cases there was no clinical diagnosis at discharge, which usually records an admission for observation for a suspected condition ruled out at discharge.

The HoNOS scores were categorized into quartiles and because many individuals did not have HoNOS scores reported, a separate category was created for those with no HoNOS data, recognizing that lack of HoNOS scores may indicate specific operational conditions.

Social information was derived from the HoNOS, which considers a range of social variables including relationships, daily living, living conditions, and occupation/activities (HoNOS items 9–12).

Model of care information included LOS, whether seclusion was used during the admission, legal status at discharge (whether subject to Mental Health Act order or not), and the geographical region of the inpatient admission, to see whether different model of care approaches in different regions were yielding different results.

Analysis

An initial descriptive analysis of the cohort variables was undertaken, using sums, and percentages. A Cochran–Armitage trend test examined the observed trend in the rate of reception to remand prison by discharge year. Inferential analyses were then untaken using repeated measures logistic regression with the outcome variable of referral to a prison mental health team within 28 days of inpatient unit discharge, the repeated measures model utilized a compound symmetry covariance structure for repeated individual effects. Firstly, bivariate associations were examined between the outcome variable and each of the other variables individually. Variables with a p-value of 0.2 or less were then considered for inclusion in the multiple variable model building process, from which the best subset of significant variables determined the final multiple variable models.

Ethics

Given that this was observational research, a full ethics approval was not required by the Ministry of Health's Health and Disability Ethics Committees. A letter of approval was obtained as a result of an expedited research application.

Results

Cohort description

The national dataset identified 95,206 inpatient admissions over the 9 year study period, involving 46,299 individuals, some of whom were admitted on more than one occasion (range 1–84, mean 2.1).

A total of 708 of the 95,206 hospital admissions (0.7%) were followed by a mental health team contact in prison within 28 days of inpatient discharge. This involved 575 individuals, some of whom had been admitted on more than one occasion in the study period. Among this group, the number of inpatient events per individual ranged from 1 to 6, averaging 1.2.

Despite reasonably even gender split of hospital admissions (51.4% male), subsequent mental health contact in prison was disproportionately male (83.5%). In terms of ethnicity, whereas Māori were 29.8% of hospital admissions, they accounted for 51.7% of subsequent prison referrals. Younger age groups were also more heavily represented in the outcome events. For example, 24.8% of inpatient admissions were under age 25, whereas 33.3% prison referrals were under age 25 (for detail see **Table 1**).

Nearly a third of the 708 admissions followed by mental health contact in prison occurred within 7 days of discharge (n = 229 of 708; 32.3%). Seclusion was used at more than three times the rate among discharged people remanded to prison (8.5% as compared to 29.8%). Of all inpatient events, 63.9% were discharged on a Mental Health Act order, while 77.3% remanded to prison were discharged under an order (see **Table 1** for detail of clinical and model of care variables). Total HONOS score at hospital admission averaged 14.8, and at discharge averaged 6.7.

The proportion of inpatient discharges subsequently seen by mental health services in prison within 28 days of discharge increased during the study period, from 0.6% of discharges in 2012, to a high of 0.9% of discharges in 2019 (see **Table 1**). Examining this trend with the Cochran–Armitage trend test demonstrated that this was a statistically significant trend (p = 0.0025).

Bivariate results

Results of the bivariate analyses demonstrated significant associations with the majority of variables and the outcome measure of mental health contact in prison.

Examination of the socio-demographic variables demonstrated significant differences by gender ($p < 0.0001$), ethnicity ($p < 0.0001$), and age group ($p < 0.0001$). Expressed as an odds ratio (OR), Māori had an OR of 2.76 and Pasifika 2.19 times NZ European/Pakeha; and men had an OR of 5.32 times women, of custodial remand within 28 days discharge (see **Table 2**).

Clinical measures demonstrated significant differences by year discharged (p = 0.03), primary diagnosis ($p < 0.0001$), (see **Table 2**) and many of the HoNOS items at both admission and discharge (see **Table 3**). The risk of prison referral within 28 days of discharge, expressed as an OR, was significantly higher for individuals with a diagnosis of a substance use disorder, or a psychotic disorder (OR = 2.91 and 1.37, respectively; $p < 0.0001$) (see **Table 2**). An inpatient discharge rating of substance abuse (HoNOS item 3) as severe to very severe also increased the risk of the outcome event (OR = 6.71, $p < 0.0001$) (see **Table 3**). In contrast, individuals with

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TABLE 1 Demographics of mental health inpatient discharge events (2012–2020).

		All inpatient events		Prison follow-up events at 28 days		Rate
		No	%	No	%	%
Socio-demographic variables						
Gender	Female	46,314	48.6	117	16.5	0.3
	Male	48,892	51.4	591	83.5	1.2
Ethnicity	Mâori	28,340	29.8	364	51.4	1.3
	Pacific	5,372	5.6	55	7.8	1.0
	Other	6,036	6.3	34	4.8	0.6
	NZ European/Pakeha	55,458	58.3	255	36.0	0.5
Age	16–20	10,643	11.2	81	11.4	0.8
	20–25	12,988	13.6	155	21.9	1.2
	26–30	11,149	11.7	131	18.5	1.2
	31–40	17,700	18.6	189	26.7	1.1
	41–50	17,145	18.0	94	13.3	0.5
	51+	25,581	26.9	58	8.2	0.2
Clinical characteristics						
Year discharged	2012	9,985	10.5	56	7.9	0.6
	2013	10,581	11.1	59	8.3	0.6
	2014	10,912	11.5	77	10.9	0.7
	2015	10,694	11.2	84	11.9	0.8
	2016	11,015	11.6	92	13.0	0.8
	2017	10,645	11.2	85	12.0	0.8
	2018	10,502	11.0	80	11.3	0.8
	2019	10,519	11.0	98	13.8	0.9
	2020	10,353	10.9	77	10.9	0.7
Primary diagnosis [International Classification of Diseases (ICD) 10 codes]	Psychoactive substance use (F1)	5,983	6.3	108	15.3	1.8
	Psychotic disorders (F2)	24,967	26.2	224	31.6	0.9
	Mood disorders (F3)	20,873	21.9	74	10.5	0.4
	Anxiety and other non-psychotic mental disorders (F4)	6,040	6.3	41	5.8	0.7
	Other mental health diagnoses (F)	5,607	5.9	57	8.1	1.0
	Other diagnoses	8,037	8.4	47	6.6	0.6
	Not diagnosed	23,699	24.9	157	22.2	0.7
Total HoNOS–at admission	0–9	13,496	14.2	77	10.9	0.6
	10–13	15,511	16.3	90	12.7	0.6
	14–18	17,333	18.2	130	18.4	0.8
	19+	16,600	17.4	222	31.4	1.3
	Not done	32,266	33.9	189	26.7	0.6
Total HoNOS–at discharge	0–2	13,073	13.7	38	5.4	0.3
	3–4	11,678	12.3	54	7.6	0.5
	5–8	19,892	20.9	133	18.8	0.7
	9+	18,943	19.9	279	39.4	1.5
	Not done	31,620	33.2	204	28.8	0.6

(Continued)

TABLE 1 (Continued)

		All inpatient events		Prison follow-up events at 28 days		Rate
		No	%	No	%	%
Model of care variables						
Region	Auckland RFPS	28,794	30.2	168	23.7	0.6
	Canterbury RFPS	17,058	17.9	112	15.8	0.7
	Central RFPS	17,574	18.5	130	18.4	0.7
	Midland RFPS	22,664	23.8	221	31.2	1.0
	Southern RFPS	9,116	9.6	77	10.9	0.8
Seclusion events	0	87,114	91.5	497	70.2	0.6
	1	5,489	5.8	127	17.9	2.3
	2+	2,603	2.7	84	11.9	3.2
Length of stay (days)	0–6	29,662	31.2	318	44.9	1.1
	7–12	20,718	21.8	150	21.2	0.7
	13–24	22,080	23.2	132	18.6	0.6
	25+	22,746	23.9	108	15.3	0.5
Mental Health Act at discharge	Yes	60,842	63.9	547	77.3	0.9
	No	34,364	36.1	161	22.7	0.5
Total		95,206		708		0.7

mood disorders were at reduced risk (OR = 0.57; $P = < 0.0001$) (see Table 2).

The predominant diagnosis of the "other mental health diagnoses" category was personality disorder (F6), which increased over time, and was associated with follow-up in prison. This trend therefore explained some of the increased number of prison follow-ups, and is discussed further below.

In considering model of care variables, bivariate analyses showed significant differences by region ($p = 0.0005$) and number of seclusion events ($p < 0.0001$). Seclusion events during the inpatient admission also elevated the OR for prison referral following discharge (1 seclusion event OR = 3.51, 2+ seclusion events OR = 4.51; $p < 0.0001$) (see Table 2). Shorter lengths of stay were statistically more likely to result in subsequent imprisonment, with admissions of 0–6 days attracting more than twice the odds imprisonment when compared to admission durations of 13–24 days (OR = 2.38; $p < 0.0001$) (see Table 2). Individuals discharged on a Mental Health Act order had significantly increased odds of subsequent prison referral (OR = 1.7, $P < 0.0001$) (see Table 2).

HoNOS

Health of the Nation Outcome Scale scores at admission and discharge provided an objective record of symptom severity and social information. In general, discharge ratings were more powerful predictors of prison referral to mental health than admission ratings (see Table 3).

Behavior subscale (aggression, self-harm, and substance abuse)

Those with severe to very severe aggression/overactivity (HoNOS item 1) either on admission or on discharge from hospital were at much higher risk of subsequent prison referral (OR = 3.57 at admission, 22.37 at discharge; $p < 0.0001$). The data did not find a significant relationship between self-harm (HoNOS item 2) at discharge and subsequent prison referral.

Impairment subscale (cognitive impairment and physical impairment)

Cognitive impairment problems (item 4) at discharge were not correlated with prison referral, whereas physical impairment problems (item 5) at discharge were negatively correlated, suggesting they operate as a protective factor.

Symptom subscale (hallucinations/delusions, depressed mood, and other mental/behavioral problems)

All three symptom clusters at discharge were significantly more likely to result in post-discharge imprisonment. The "severe to very severe" category increased the risk of prison referral by odds of 2.69 for delusions/hallucinations ($p = 0.002$), while "severe to very severe" behavioral problems increased the odds of imprisonment by 3.07 ($p < 0.0001$). Depression at discharge significantly reduced the odds of post-discharge imprisonment ($p = 0.0003$).

Social subscale (relationships, daily living, living conditions, and occupation/activities)

The HoNOS also considers a range of social variables including relationships, daily living, living conditions, and occupation/activities (items 9–12). Relationships (item 9), living conditions (item 11), and occupation/activities (item 12) were all significant predictors of post-discharge imprisonment ($p < 0.0001$), while daily living (item 10) was also significant ($p = 0.02$). The "severe to very severe" category at discharge

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TABLE 2 Bivariate associations with custodial remand within 28 days: socio-demographic and clinical characteristics.

		No. of discharge events	% Prison follow-up at 28 days	OR	95% CI	*p*-value
Socio-demographics variables						
Gender	Female	46,314	0.26	1.00	–	<0.0001
	Male	48,892	1.27	5.32	4.18, 6.79	
Ethnicity	Māori	28,340	1.33	2.76	2.29, 3.33	<0.0001
	Pacific	5,372	1.04	2.19	1.57, 3.07	
	Other	6,036	0.58	1.28	0.86, 1.90	
	NZ European/Pakeha	55,458	0.50	1.00	–	
Age	16–20	10,643	0.84	3.31	2.24, 4.87	<0.0001
	20–25	12,988	1.24	5.02	3.53, 7.13	
	26–30	11,149	1.24	5.26	3.70, 7.47	
	31–40	17,700	1.11	4.81	3.44, 6.73	
	41–50	17,145	0.58	2.58	1.77, 3.76	
	51+	25,581	0.24	1.00	–	
Clinical characteristics						
Year discharged	2012	9,985	0.59	1.00	–	0.03
	2013	10,581	0.61	1.01	0.66, 1.54	
	2014	10,912	0.77	1.35	0.88, 2.07	
	2015	10,694	0.80	1.44	0.95, 2.19	
	2016	11,015	0.86	1.51	1.00, 2.28	
	2017	10,645	0.81	1.52	1.02, 2.27	
	2018	10,502	0.77	1.44	0.96, 2.15	
	2019	10,519	0.99	1.80	1.22, 2.67	
	2020	10,353	0.82	1.50	1.00, 2.24	
Primary diagnosis (ICD 10 codes)	Psychoactive substance use (F1)	5,983	1.87	2.91	2.19, 3.88	<0.0001
	Psychotic disorders (F2)	24,967	0.94	1.37	1.07, 1.76	
	Mood disorders (F3)	20,873	0.40	0.57	0.42, 0.78	
	Anxiety and other non-psychotic mental disorders (F4)	6,040	0.73	1.17	0.81, 1.71	
	Other mental health diagnoses (F)	5,607	1.11	1.84	1.25, 2.72	
	Other diagnoses	8,037	0.60	0.96	0.66, 1.41	
	Not diagnosed	23,699	0.69	1.00	–	
Model of care variables						
Region	Auckland RFPS	28,794	0.60	1.00	–	0.0005
	Canterbury RFPS	17,058	0.72	1.13	0.85, 1.49	
	Central RFPS	17,574	0.78	1.27	0.97, 1.67	
	Midland RFPS	22,664	1.05	1.66	1.30, 2.11	
	Southern RFPS	9,116	0.84	1.54	1.12, 2.12	
Seclusion events	0	87,114	0.60	1.00	–	<0.0001
	1	5,489	2.42	3.51	2.76, 4.47	
	2+	2,603	3.30	4.47	3.36, 5.95	
Length of stay (days)	0–6	29,662	1.13	1.00	–	<0.0001
	7–12	20,718	0.77	0.58	0.46, 0.72	

(Continued)

TABLE 2 (Continued)

		No. of discharge events	% Prison follow-up at 28 days	OR	95% CI	*p*-value
	13–24	22,080	0.64	0.42	0.33, 0.55	
	25+	22,746	0.49	0.68	0.55, 0.84	
Mental Health Act at discharge	Yes	60,842	0.95	1.70	1.39, 2.07	<0.0001
	No	34,364	0.49	1.00	–	

increased the odds of post-discharge prison referral by odds of 9.03 (for item 9), 1.96 (for item 10), 9.07 (for item 11), and 4.81 (for item 12).

Multiple variable results

The final multiple variable model is presented in Table 4. It includes the best subset of demographic and clinical measures and items of the HoNOS clinical scale at admission and at discharge.

It was recognized that due to the COVID-19 pandemic, 2020 may have experienced different service use patterns than other years. However, the exclusion of 2020 did not change the results, therefore it was left in the analysis.

The significant demographic variables included in the final multiple variable model demonstrated higher odds for men, higher odds for Māori in comparison to European; and higher odds for younger age groups.

The significant clinical variables included specific diagnostic categories: ICD 10 diagnostic codes related to psychoactive substance use, and psychotic disorders.

Some HoNOS items correlated negatively with post-discharge imprisonment, including depression/mood problems at admission, physical impairment problems at discharge, and hallucinations/delusions problems at either admission or discharge. The significant risk factors were self-harm at admission, substance abuse problems at admission, other mental health problems at admission, aggression/overactivity at discharge, relationship problems at discharge, and living conditions at admission and discharge.

The significant model of care variables included the region in which the inpatient admission occurred (New Zealand is divided into five geographic regions in the analysis), the increased risk associated with a greater number of seclusion events during the preceding hospitalization and higher odds for shorter lengths of stay during hospitalization (see Table 4).

The overall conclusion is that the observed significant increase in reception to a remand prison within 28 days of acute mental health services discharge is not a uniform increase. It can be explained by an increasing proportion of at risk patients discharged over time being: demographically younger, male, and Māori; clinically suffering more commonly with psychotic disorders and substance use disorders, experiencing a shorter admission with more seclusion while in hospital and being more aggressive/overactive at discharge from hospital; and socially experiencing living condition and relationship problems at discharge.

Discussion

The research question was raised because of concern that changing models of care in adult mental health services might be leading to a progressive transfer of clinical responsibility to the criminal justice system, a concern increasingly raised in other jurisdictions (21). We hypothesized that any transfer of care to prison based mental health teams would be more likely to affect people presenting with disturbed behavior, which has in the past been managed with coercive practices no longer supported by contemporary models of care, in an environment of reducing mental health bed availability. We were also concerned that although prisons are resourced to manage aggressive and violent behavior, they do so without the clinical environment, resources or staff necessary to appropriately treat people suffering from serious mental disorders. In addition, compulsory treatment is not permitted in New Zealand prison settings. Therefore, if such a trend is emerging, the human rights of affected persons would appear to be undermined rather than supported by the aforementioned policy shifts.

Over the 9-year study period that we examined, there were increasing numbers of individuals who, after discharge from mental health services, were followed up in prison. Over the same time period mental health discharges slightly decreased (see Table 1). Consequently, the rate of imprisonment following discharge from mental health units is shown to have significantly increased. However, once we adjusted for the at-risk characteristics, this time trend was no longer statistically significant. Therefore, the observed increase in imprisonment rate could be explained by the at-risk characteristics of the population changing over time, including changes in demographic, clinical, social, and "model of care" variables. In other words, it appeared that people discharged from inpatient units in Aotearoa increasingly have the characteristics of people who have always been at higher risk of imprisonment (younger men of Māori and Pacific ethnicity with psychotic and drug related clinical conditions who are subject to seclusion during relatively short admissions).

For reasons which were unclear, a personality disorder diagnosis at discharge also increased over the study period, and was also associated with imprisonment following discharge. With fewer inpatient beds and shorter lengths of stay, it is difficult to understand the clinical justification for this trend, although it may relate to the dearth of alternative residential options for personality disordered patients presenting in crisis.

Imprisonment following inpatient unit discharge is now an outcome facing nearly 1% of all adult inpatient discharges.

Although the demographic characteristics of the group at high risk of imprisonment following inpatient care are also disproportionately shared by the general prison population (16),

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TABLE 3 Bivariate associations with custodial remand within 28 days: Health of the Nation Outcome Scale (HoNOS) admission and discharge item scores.

		No of discharge events	% Prison follow-up at 28 days	OR	95% CI	*p*-value
HoNOS items at admission						
1. Aggression/Overactivity	0. No problem	18,317	0.48	1.00	–	<0.0001
	1. Minor problem	16,224	0.60	1.15	0.86, 1.55	
	2. Mild problem	13,431	0.78	1.43	1.06, 1.92	
	3. Moderately severe problem	9,451	1.14	1.93	1.42, 2.64	
	4. Severe to very severe problem	5,409	2.14	3.57	2.60, 4.90	
	Not done	32,374	0.60	1.19	0.91, 1.55	
2. Self-harm	0. No problem	35,171	0.88	1.00	–	0.02
	1. Minor problem	7,105	0.82	0.94	0.68, 1.30	
	2. Mild problem	6,118	0.64	0.80	0.57, 1.14	
	3. Moderately severe problem	7,944	0.63	0.81	0.60, 1.10	
	4. Severe to very severe problem	6,360	0.91	1.24	0.94, 1.65	
	Not done	32,508	0.59	0.76	0.62, 0.93	
3. Substance abuse	0. No problem	28,407	0.37	1.00	–	<0.0001
	1. Minor problem	6,796	0.69	1.67	1.15, 2.43	
	2. Mild problem	9,508	1.09	2.52	1.88, 3.38	
	3. Moderately severe problem	10,626	1.28	2.75	2.07, 3.65	
	4. Severe to very severe problem	6,013	1.86	4.02	2.93, 5.51	
	Not done	33,856	0.61	1.56	1.22, 2.00	
4. Cognitive impairment	0. No problem	35,901	0.71	1.00	–	0.002
	1. Minor problem	12,139	0.96	1.24	0.95, 1.61	
	2. Mild problem	8,406	1.05	1.34	1.01, 1.77	
	3. Moderately severe problem	4,778	0.94	1.17	0.81, 1.70	
	4. Severe to very severe problem	1,263	0.87	1.03	0.48, 2.21	
	Not done	32,719	0.59	0.86	0.70, 1.05	
5. Physical impairment	0. No problem	39,112	0.92	1.00	–	<0.0001
	1. Minor problem	10,623	0.85	0.95	0.74, 1.22	
	2. Mild problem	7,714	0.56	0.70	0.51, 0.96	
	3. Moderately severe problem	3,959	0.48	0.59	0.38, 0.94	
	4. Severe to very severe problem	1,254	0.24	0.28	0.09, 0.91	
	Not done	32,544	0.59	0.71	0.58, 0.86	
6. Hallucinations/Delusions	0. No problem	22,967	0.72	1.00	–	0.02
	1. Minor problem	6,257	1.13	1.43	1.06, 1.93	
	2. Mild problem	10,790	0.90	1.03	0.76, 1.40	
	3. Moderately severe problem	13,347	0.76	0.96	0.72, 1.29	
	4. Severe to very severe problem	9,150	0.83	1.07	0.79, 1.46	
	Not done	32,695	0.60	0.83	0.66, 1.05	
7. Depressed mood	0. No problem	20,711	1.23	1.00	–	<0.0001
	1. Minor problem	12,167	0.84	0.71	0.54, 0.94	
	2. Mild problem	12,553	0.61	0.58	0.44, 0.76	
	3. Moderately severe problem	10,998	0.46	0.44	0.31, 0.61	
	4. Severe to very severe problem	6,061	0.49	0.50	0.34, 0.72	
	Not done	32,716	0.59	0.56	0.45, 0.69	

(Continued)

TABLE 3 (Continued)

		No of discharge events	% Prison follow-up at 28 days	OR	95% CI	*p*-value
8. Other mental/Behavior problems	0. No problem	13,584	1.07	1.00	–	0.0003
	1. Minor problem	5,254	0.97	0.96	0.67, 1.37	
	2. Mild problem	16,946	0.62	0.60	0.45, 0.80	
	3. Moderately severe problem	18,009	0.70	0.70	0.54, 0.93	
	4. Severe to very severe problem	8,079	0.93	0.92	0.66, 1.27	
	Not done	33,334	0.61	0.64	0.50, 0.82	
9. Relationships	0. No problem	15,526	0.53	1.00	–	<0.0001
	1. Minor problem	13,259	0.60	1.08	0.79, 1.47	
	2. Mild problem	19,106	0.81	1.33	1.00, 1.78	
	3. Moderately severe problem	10,527	1.26	2.09	1.55, 2.82	
	4. Severe to very severe problem	3,848	1.72	2.62	1.80, 3.82	
	Not done	32,940	0.58	1.07	0.82, 1.39	
10. Daily living	0. No problem	28,931	0.75	1.00	–	0.006
	1. Minor problem	13,869	0.76	0.96	0.74, 1.25	
	2. Mild problem	12,037	1.03	1.31	1.02, 1.68	
	3. Moderately severe problem	6,201	0.81	1.10	0.79, 1.51	
	4. Severe to very severe problem	1,564	1.28	1.57	0.90, 2.72	
	Not done	32,604	0.58	0.82	0.66, 1.01	
11. Living conditions	0. No problem	38,859	0.52	1.00	–	<0.0001
	1. Minor problem	9,127	0.80	1.44	1.08, 1.92	
	2. Mild problem	6,157	1.28	2.03	1.51, 2.74	
	3. Moderately severe problem	3,444	1.77	2.76	1.96, 3.90	
	4. Severe to very severe problem	3,719	2.47	3.76	2.76, 5.13	
	Not done	33,900	0.60	1.13	0.92, 1.39	
12. Occupation/Activities	0. No problem	33,987	0.63	1.00	–	<0.0001
	1. Minor problem	10,516	0.82	1.25	0.96, 1.64	
	2. Mild problem	9,339	1.07	1.48	1.13, 1.94	
	3. Moderately severe problem	4,467	1.59	2.27	1.68, 3.08	
	4. Severe to very severe problem	2,440	1.72	2.31	1.55, 3.43	
	Not done	34,457	0.57	0.90	0.73, 1.11	
HoNOS items at discharge						
1. Aggression/Overactivity	0. No problem	41,595	0.44	1.00	–	<0.0001
	1. Minor problem	16,420	0.79	1.59	1.25, 2.03	
	2. Mild problem	4,069	2.19	4.15	3.11, 5.53	
	3. Moderately severe problem	1,033	4.65	8.62	5.87, 12.65	
	4. Severe to very severe problem	443	11.74	22.37	15.29, 32.73	
	Not done	31,646	0.65	1.43	1.16, 1.77	
2. Self-harm	0. No problem	52,106	0.79	1.00	–	0.27
	1. Minor problem	6,913	0.77	1.11	0.83, 1.47	
	2. Mild problem	2,711	0.66	0.97	0.60, 1.56	
	3. Moderately severe problem	1,190	1.09	1.56	0.88, 2.76	
	4. Severe to very severe problem	630	1.27	1.79	0.88, 3.66	
	Not done	31,656	0.65	0.88	0.73, 1.06	

(Continued)

TABLE 3 (Continued)

		No of discharge events	% Prison follow-up at 28 days	OR	95% CI	*p*-value
3. Substance abuse	0. No problem	41,652	0.47	1.00	–	<0.0001
	1. Minor problem	8,339	0.79	1.45	1.05, 2.01	
	2. Mild problem	7,220	1.27	2.20	1.64, 2.96	
	3. Moderately severe problem	4,616	1.91	3.11	2.28, 4.23	
	4. Severe to very severe problem	1,471	3.87	6.71	4.68, 9.62	
	Not done	31,908	0.65	1.30	1.06, 1.59	
4. Cognitive impairment	0. No problem	45,917	0.71	1.00	–	0.11
	1. Minor problem	11,884	0.88	1.11	0.86, 1.43	
	2. Mild problem	4,193	1.19	1.50	1.05, 2.13	
	3. Moderately severe problem	1,205	1.41	1.56	0.82, 2.97	
	4. Severe to very severe problem	285	1.75	2.22	0.82, 5.99	
	Not done	31,722	0.65	0.93	0.77, 1.12	
5. Physical impairment	0. No problem	45,648	0.89	1.00	–	0.0004
	1. Minor problem	9,881	0.55	0.65	0.48, 0.88	
	2. Mild problem	5,259	0.63	0.82	0.57, 1.17	
	3. Moderately severe problem	2,109	0.47	0.62	0.34, 1.13	
	4. Severe to very severe problem	622	0.16	0.22	0.04, 1.36	
	Not done	31,687	0.65	0.78	0.65, 0.94	
6. Hallucinations/Delusions	0. No problem	38,935	0.78	1.00	–	0.002
	1. Minor problem	12,306	0.72	0.87	0.66, 1.15	
	2. Mild problem	9,609	0.66	0.85	0.63, 1.15	
	3. Moderately severe problem	2,051	1.51	2.09	1.44, 3.03	
	4. Severe to very severe problem	571	2.28	2.69	1.39, 5.23	
	Not done	31,734	0.66	0.87	0.72, 1.06	
7. Depressed mood	0. No problem	34,440	0.98	1.00	–	0.0003
	1. Minor problem	18,006	0.62	0.71	0.57, 0.88	
	2. Mild problem	8,488	0.47	0.57	0.41, 0.78	
	3. Moderately severe problem	2,075	0.53	0.67	0.39, 1.15	
	4. Severe to very severe problem	511	0.39	0.45	0.12, 1.75	
	Not done	31,686	0.65	0.72	0.59, 0.88	
8. Other mental/Behavior problems	0. No problem	32,356	0.80	1.00	–	<0.0001
	1. Minor problem	12,714	0.50	0.67	0.50, 0.90	
	2. Mild problem	13,240	0.74	1.01	0.78, 1.31	
	3. Moderately severe problem	3,726	1.45	1.89	1.36, 2.61	
	4. Severe to very severe problem	840	2.26	3.07	1.86, 5.06	
	Not done	32,330	0.66	0.88	0.72, 1.08	
9. Relationships	0. No problem	26,650	0.44	1.00	–	<0.0001
	1. Minor problem	18,075	0.55	1.15	0.88, 1.52	
	2. Mild problem	13,873	1.19	2.40	1.85, 3.12	
	3. Moderately severe problem	3,812	2.12	4.06	2.92, 5.63	
	4. Severe to very severe problem	908	4.41	9.03	6.07, 13.45	
	Not done	31,888	0.64	1.40	1.10, 1.79	

(Continued)

TABLE 3 (Continued)

		No of discharge events	% Prison follow-up at 28 days	OR	95% CI	*p*-value
10. Daily living	0. No problem	44,752	0.72	1.00	–	0.02
	1. Minor problem	11,721	0.83	1.11	0.87, 1.42	
	2. Mild problem	5,381	1.28	1.62	1.22, 2.17	
	3. Moderately severe problem	1,319	1.06	1.35	0.68, 2.66	
	4. Severe to very severe problem	324	1.23	1.96	0.79, 4.88	
	Not done	31,709	0.64	0.93	0.77, 1.12	
11. Living conditions	0. No problem	47,609	0.55	1.00	–	<0.0001
	1. Minor problem	8,954	0.93	1.48	1.12, 1.94	
	2. Mild problem	3,754	1.31	2.05	1.42, 2.95	
	3. Moderately severe problem	1,260	2.46	3.49	2.11, 5.79	
	4. Severe to very severe problem	1,067	6.09	9.07	6.34, 12.97	
	Not done	32,562	0.67	1.21	1.00, 1.47	
12. Occupation/Activities	0. No problem	42,725	0.63	1.00	–	<0.0001
	1. Minor problem	11,462	0.81	1.19	0.91, 1.55	
	2. Mild problem	5,979	1.25	1.79	1.33, 2.39	
	3. Moderately severe problem	1,541	2.01	2.60	1.62, 4.18	
	4. Severe to very severe problem	704	3.27	4.81	2.98,7.74	
	Not done	32,795	0.66	1.07	0.88, 1.30	

a focus on equity would see greater resources directed to this population during inpatient admissions and at the point of inpatient discharge. Readmission to an acute psychiatric unit within 28 days of discharge is a commonly monitored key performance indicator (KPI) for adult mental health services (22). We suggest remand to prison within 28 days of discharge from an acute psychiatric unit may also implicate incomplete or ineffective treatment, and could also be monitored as a KPI.

The increased recreational use of methamphetamine and synthetic cannabinoid analogs in the community over the study period has been dramatic, as have the mental health sequelae (23), including substance induced psychotic disorders requiring an inpatient admission. We believe the observed increase in risk of imprisonment following discharge associated with aggression (both on admission and discharge) over the study period is likely to be related to the clinical diagnosis changes observed. A greater clinical focus on the post-discharge care of people with these disorders may be indicated.

The increasing level of homelessness and social deprivation in the New Zealand community over the time of this study has also been well publicized (24), making well supported community placements very challenging to secure at discharge, particularly when inpatient occupancy levels are regularly above 100% and precipitous discharges are necessary to make room for the next admission (25). There is an urgent need for more social resources for people recently discharged from inpatient psychiatric care.

Regarding seclusion, the Ministry of Health reported a 13% reduction in the number of people who experienced seclusion during an inpatient admission from 2009 to 2020 (26). Given this study's findings, it appears those still experiencing seclusion are now at higher risk of imprisonment shortly following discharge. Although there are a range of efforts to implement alternatives to seclusion (13), we suggest new models of care must be able to effectively manage aggressive and sometimes violent behavior known to be signs of some clinical conditions (27). The present paper suggests that contemporary models of care in inpatient mental health units may not yet provide satisfactory management solutions for some admitted people, even though alternative strategies have been reported to have a "*reasonably high degree of evidence for effectively reducing the use of coercive measures in clinical practice*" (9).

In terms of other coercive interventions, national data showed gradual increasing use of the Mental Health Act over the period of study (26). In our analysis, legal status was included in the multivariate model, but when HoNOS variables were included, it failed to add to the power of the regression model. We concluded that a combination of HoNOS items (including "aggression/overactivity" and "symptoms" which are part of the legal test for mental disorder) were independently capturing this risk.

In terms of social factors, this study suggests that people discharged from inpatient mental health units in New Zealand are increasingly struggling to secure stable and supportive accommodation, and meaningful employment, while their relationships are under more stress. Perhaps we should not be surprised that they are increasingly being remanded into prison following discharge.

Ministry of Health data revealed that regional differences in mental health bed numbers did not explain the regional differences in outcomes, although they have fallen well below international benchmark standards in all regions. Unless clinical presentations fall, fewer beds will drive shorter LOS, which we have shown is correlated with imprisonment within 28 days of inpatient discharge. The current level of investment in community mental health care

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TABLE 4 Final multiple variable model for custodial remand within 28 days.

		Adjusted OR	95% CI	Significant risk or protective factors	*p*-value
Socio-demographics variables					
Gender	Female	1.00	–		<0.0001
	Male	3.97	3.09, 5.09	R	
Ethnicity	Māori	1.94	1.59, 2.37	R	<0.0001
	Pacific	2.04	1.44, 2.90	R	
	Other	1.39	0.92, 2.12		
	NZ European/Pakeha	1.00	–		
Age	16–20	1.88	1.24, 2.87	R	<0.0001
	20–25	2.70	1.84, 3.98	R	
	26–30	2.65	1.79, 3.92	R	
	31–40	2.73	1.88, 3.97	R	
	41–50	1.77	1.17, 2.66	R	
	51+	1.00	–		
Clinical characteristics					
Year discharged	2012	1.00	–		0.26
	2013	0.98	0.65, 1.48		
	2014	1.19	0.78, 1.82		
	2015	1.43	0.95, 2.13		
	2016	1.44	0.96, 2.16		
	2017	1.43	0.97, 2.11		
	2018	1.19	0.80, 1.76		
	2019	1.33	0.91, 1.96		
	2020	1.08	0.73, 1.60		
Primary diagnosis (ICD 10 codes)	Psychoactive substance use (F1)	2.00	1.47, 2.72	R	<0.0001
	Psychotic disorders (F2)	1.30	1.01, 1.68	R	
	Mood disorders (F3)	0.83	0.60, 1.14		
	Anxiety and other non-psychotic mental disorders (F4)	1.42	0.94, 2.16		
	Other mental health diagnoses (F)	1.81	1.15, 2.84	R	
	Other diagnoses	1.40	0.92, 2.11		
	Not diagnosed	1.00	–		
Model of care variables					
Region	Auckland RFPS	1.00	–		0.0008
	Canterbury RFPS	0.93	0.69, 1.26		
	Central RFPS	0.93	0.69, 1.25		
	Midland RFPS	1.37	1.05, 1.80	R	
	Southern RFPS	1.65	1.17, 2.34	R	
Seclusion events	0	1.00	–		<0.0001
	1	2.33	1.84, 2.97	R	
	2+	3.60	2.67, 4.86	R	
Length of stay (days)	0–6	1.00	–		<0.0001
	7–12	0.74	0.60, 0.91	P	
	13–24	0.62	0.49, 0.79	P	
	25+	0.43	0.32, 0.57	P	

(Continued)

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TABLE 4 (Continued)

		Adjusted OR	95% CI	Significant risk or protective factors	*p*-value
HoNOS items at admission					
3. Substance abuse	0. No problem	1.00	–		0.03
	1. Minor problem	1.17	0.81, 1.69		
	2. Mild problem	1.42	1.06, 1.91	R	
	3. Moderately severe problem	1.38	1.04, 1.82	R	
	4. Severe/Very severe problem	1.72	1.24, 2.37	R	
	Not done	1.30	0.73, 2.34		
6. Hallucinations/Delusions	0. No problem	1.00	–		0.007
	1. Minor problem	1.18	0.86, 1.61		
	2. Mild problem	0.81	0.59, 1.12		
	3. Moderately severe problem	0.68	0.49, 0.93	P	
	4. Severe/Very severe problem	0.63	0.45, 0.90	P	
	Not done	1.26	0.51, 3.11		
7. Depressed mood	0. No problem	1.00	–		0.007
	1. Minor problem	0.78	0.59, 1.02		
	2. Mild problem	0.68	0.51, 0.90	P	
	3. Moderately severe problem	0.54	0.38, 0.78	P	
	4. Severe/Very severe problem	0.65	0.42, 1.02		
	Not done	1.13	0.45, 2.81		
8. Other mental/Behavior problems	0. No problem	1.00	–		0.03
	1. Minor problem	1.17	0.82, 1.67		
	2. Mild problem	0.71	0.54, 0.94	P	
	3. Moderately severe problem	0.82	0.62, 1.07		
	4. Severe/Very severe problem	0.93	0.65, 1.32		
	Not done	1.33	0.73, 2.40		
11. Living conditions	0. No problem	1.00			0.004
	1. Minor problem	1.26	0.92, 1.73		
	2. Mild problem	1.55	1.14, 2.12	R	
	3. Moderately severe problem	1.65	1.13, 2.41	R	
	4. Severe to very severe problem	2.05	1.43, 2.93	R	
	Not done	1.35	0.73, 2.50		
12. Occupation/Activities	0. No problem	1.00	–		0.0004
	1. Minor problem	1.10	0.82, 1.47		
	2. Mild problem	1.04	0.78, 1.39		
	3. Moderately severe problem	1.49	1.06, 2.10	R	
	4. Severe/Very severe problem	1.09	0.71, 1.67		
	Not done	0.30	0.13, 0.71	P	
HoNOS items at discharge					
1. Aggression/Overactivity	0. No problem	1.00	–		<0.0001
	1. Minor problem	1.36	1.06, 1.74	R	
	2. Mild problem	2.66	1.95, 3.62	R	
	3. Moderately severe problem	3.85	2.51, 5.90	R	
	4. Severe/Very severe problem	8.96	5.59, 14.38	R	
	Not done	7.51	1.30, 43.35	R	

(Continued)

TABLE 4 (Continued)

		Adjusted OR	95% CI	Significant risk or protective factors	*p*-value
5. Physical impairment	0. No problem	1.00	–		<0.0001
	1. Minor problem	0.70	0.51, 0.95	P	
	2. Mild problem	0.78	0.52, 1.17		
	3. Moderately severe problem	0.56	0.30, 1.06		
	4. Severe/Very severe problem	0.08	0.01, 0.72	P	
	Not done	2.35	0.28, 19.82		
6. Hallucinations/Delusions	0. No problem	1.00	–		0.03
	1. Minor problem	0.76	0.58, 1.00		
	2. Mild problem	0.64	0.46, 0.88	P	
	3. Moderately severe problem	0.87	0.57, 1.33		
	4. Severe/Very severe problem	0.76	0.39, 1.51		
	Not done	2.50	0.85, 7.35		
9. Relationships	0. No problem	1.00	–		<0.0001
	1. Minor problem	1.08	0.83, 1.42		
	2. Mild problem	1.64	1.24, 2.19	R	
	3. Moderately severe problem	1.86	1.28, 2.69	R	
	4. Severe/Very severe problem	2.58	1.56, 4.25	R	
	Not done	0.02	0.00, 0.39	P	
11. Living conditions	0. No problem	1.00	–		0.006
	1. Minor problem	1.08	0.82, 1.43		
	2. Mild problem	0.98	0.68, 1.41		
	3. Moderately severe problem	1.46	0.90, 2.36		
	4. Severe/Very severe problem	2.41	1.56, 3.73	R	
	Not done	1.95	1.08, 3.51	R	

appears insufficient to manage people returning to the community after these very brief admissions, in line with earlier research findings (3). The idea that as the number of psychiatric hospital beds falls, more prison beds are needed was first suggested by Penrose (28). Although a recent systematic review of cohort studies did not find general support for this hypothesis in deinstitutionalised long-stay populations (21), the authors queried whether new populations may be impacted negatively if they cannot access psychiatric hospital care. It may be that with very low mental health bed numbers and less coercive models of care, a type of "Penrose effect" is now emerging in response to more recent human rights and clinical environment developments. In the UK, serious concerns have been voiced regarding the consequences of failing mental health systems for the criminal justice sector (29).

Limitations

This study was limited by information available in the national mental health dataset, which did not include criminal records. Although we have reported and analysed national HoNOS data, this was missing in a third of cases which required accommodation in the statistical analysis. Further, ratings were made by unblinded treating clinicians potentially exposing rating biases. While clinicians are provided training in administering the HoNOS ratings, data quality may have suffered from the pressure of clinical demands.

Conclusion

People who were discharged from acute mental health units on a Mental Health Act order, after a short admission during which they were secluded, and who presented with behavioral symptoms related to psychosis and drug use were at higher risk of imprisonment in the post-discharge period. Affected people also showed a trend toward being younger, of Māori or Pacific descent, with compromised social supports, and appeared to be poorly served by contemporary models of care. Greater resources need to be applied to these cases to reduce the risk of imprisonment following inpatient discharge. This includes sufficient beds to avoid early discharge into unsafe community care.

We further believe more effort is needed to replace coercive practices with effective alternatives, which do not see behavior driven by mental illness as a criminal justice issue. Such alternatives will need to be co-designed with key stakeholders (including those with lived experience of such practices) and evidence for their effectiveness determined. Until evidence for this is more robustly available, it may be premature to abandon completely the use of some capacity for coercion in inpatient mental health units. Mental health services must

continue to embrace all behavior driven by mental illness as clinical issues, for which clinical services can provide safe and appropriate care. To recast these behaviors as a criminal issue would, in our view, abandon our clinical and ethical responsibilities to the population identified by this study.

Data availability statement

The data analyzed in this study is subject to the following licenses/restrictions: the dataset is managed and accessed through the New Zealand Ministry of Health. Requests to access these datasets should be directed to Data-enquiries@health.govt.nz.

Ethics statement

The studies involving human participants were reviewed and approved by the Ministry of Health's Health and Disability Ethics Committee. A letter of approval was obtained as a result of an expedited research application. Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

Author contributions

All authors contributed to the study concept, design, analysis, interpretation, reviewed, and approved the final version of the manuscript.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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A systematic review of the co-occurrence of self-harm and aggression: Is dual harm a unique behavioural construct?

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Introduction: Dual harm is the co-occurrence of self-harm and aggression during an individual's lifetime. It is unclear whether sufficient evidence exists for dual harm as a unique clinical entity. This systematic review aimed to examine whether there are psychological factors that are uniquely associated with dual harm when compared to those who have engaged in sole harm (self-harm alone, aggression alone) and no harmful behaviours. Our secondary aim was to conduct a critical appraisal of the literature.

Methods: The review searched PsycINFO, PubMed, CINAHL, and EThOS on September 27, 2022, resulting in 31 eligible papers that represented 15,094 individuals. An adapted version of the Agency for Healthcare Research and Quality was used to assess risk of bias and a narrative synthesis was conducted.

Results: The included studies assessed differences in mental health problems, personality, and emotion related factors between the different behavioural groups. We found weak evidence that dual harm is an independent construct with unique psychological characteristics. Rather, our review suggests that dual harm results from the interaction of psychological risk factors that are associated with self-harm and aggression.

Discussion: The critical appraisal identified numerous limitations within the dual harm literature. Clinical implications and recommendations for future research are provided.

Systematic review registration: https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=197323, identifier CRD42020197323.

KEYWORDS

dual harm, self-harm, aggression, violence, homicide-suicide, co-occurrence

1. Introduction

1.1. Background

Self-harm refers to intentional acts of self-injury, irrespective of suicidal or non-suicidal intent (1), whilst aggression is behaviour directed at others with the intention to cause harm (2). When considering their opposing targets, these behaviours appear as two separate constructs. Despite this, research has shown that self-harm and aggression are significantly associated with

each other and share risk factors, including early adverse events, problems with emotional functioning and dysfunction of the serotonergic system (3–8). Rather than engage in self-harm *or* aggression, some individuals will engage in both. The co-occurrence of self-harm and aggression during an individual's lifetime has been referred to as dual harm (9). If dual harm is viewed as a continuum, homicide-suicide may be considered as the most extreme form of this behaviour in regard to the level of harm caused (10), and will therefore be included in our definition of dual harm.

The presence of dual harm has been shown across different ages and populations, including prisoners, psychiatric patients and community samples (8). To our knowledge, the only systematic review that has examined dual harm without solely focussing on homicide-suicide is O'Donnell et al.'s (8) paper. This review found that in the majority of the 23 included studies, the prevalence of aggression in those with a history of self-harm was above 20%. Furthermore, most studies reported a significant positive association between self-harm and aggression ($r = 0.1–0.6$). In 24 studies that had not selected their sample for either harmful behaviour, the prevalence of dual harm was above 15%, with those who had engaged in one of the harmful behaviours being significantly more likely to engage in the other (OR—1.1–38.6, 8). Such findings highlight that not everyone who self-harms is violent (and vice versa), suggesting that those who engage in dual harm represent a distinguishable minority.

Dual harm has especially been reported amongst forensic populations, including prisoners and forensic mental health service users. Studies have reported that up to 56% of these individuals have engaged in both self-harm and aggression (4). As such, dual harm presents a particular concern amongst forensic populations. It is important to extend our understanding of dual harm and the factors associated with this behaviour in order to effectively prevent and reduce this behaviour in prisons and forensic mental health services.

Whilst O'Donnell et al.'s (8) work demonstrates the prevalence of co-occurring self-harm and aggression and their association, it is also important to identify factors that may be linked to dual harm. Hillbrand's (10) narrative review of 27 papers is the only non-homicide-suicide specific study that aimed to assess factors that could be associated with dual harm. The review highlighted that self-harm and aggression share risk (e.g., sexual abuse) and protective factors, and anger is significantly associated with risk of suicide in violent individuals, thereby implicating such factors in the co-existence of these behaviours (10). Hillbrand's (10) work highlights that rather than be completely distinct behaviours, self-harm and aggression share various factors that may contribute to their co-occurrence.

Whilst no systematic reviews have directly examined the characteristics associated with less extreme forms of dual harm, there have been a number of reviews that have done so for homicide-suicide. Such reviews have highlighted that compared to suicide alone and/or homicide alone, homicide-suicide perpetrators are more likely to be male, older, and have experienced early adverse events and stressful circumstances prior to the homicide-suicide (11–14). A commonly reported finding is that psychopathology is a risk factor of homicide-suicide, with studies reporting an association between homicide-suicide and mental health service contact and mental health problems, such as depression and personality disorders (11, 13, 14).

The above research highlights that rather than engage in self-harm *or* aggression, some individuals will engage in both. Moreover, these behaviours share risk factors and are significantly associated with each other. In light of such findings, rather than exclusively distinguish between self-harm and aggression, it is important to consider why individuals may engage in dual harm and the factors that may underlie this behaviour. Despite this, given the long-standing distinction made between self-harm and aggression within research and practice, our understanding of dual harm is limited. At the government level, aggression is primarily managed within the criminal justice system, whilst self-harm is typically managed within the mental health system (9). Moreover, there are currently no established clinical guidelines for how to manage dual harm within forensic (e.g., prisons, forensic psychiatric services) and clinical (e.g., psychiatric hospitals) settings (15). This may be concerning given reports that prisoners who have engaged in dual harm are significantly more likely to be in disciplinary programmes and spend longer in prison compared to those who have engaged in aggression alone (9). Such evidence suggests that our current approach towards dual harm is insufficient. In order to effectively prevent and manage co-occurring self-harm and aggression, it is imperative to develop our understanding of the mechanisms that may contribute to this behaviour.

1.2. Theories of dual harm

The literature around homicide-suicide and less extreme forms of dual harm has largely been separate, with theories of dual harm primarily emerging from the former. Homicide-suicide has largely been accounted for within existing theories of harmful behaviours, including psychodynamic (16), attribution (17), strain (18), and social integration theories (19, 20) [see Liem (11) for a full discussion]. These theories tend to explain homicide-suicide within a primarily suicide or aggression driven framework, reflecting the debate as to whether homicide-suicide is primarily motivated by homicidal or suicidal intent (21). For example, Durkheim (19) adopted a sociological framework to account for the relationship between self-harm and aggression using social integration theory. Social integration theory suggests that homicide and suicide are linked and driven by similar social mechanisms, including social organisation and integration within various communities in society. The rate of suicide within a society increases when an individual's relationship with their society is weak. Homicide-suicide is perceived as an extreme form of suicidal behaviour that occurs as a result of extensive social disintegration. Support for the social integration theory is provided by evidence that social isolation increases the likelihood of homicide-suicide (20, 22). However, research has shown that those who engage in suicide alone are significantly more likely to be socially isolated than those who have engaged in homicide-suicide, suggesting that social disintegration may not be the primary driving force of homicide-suicide (23).

Rather than be considered within a primarily self-harm or aggression framework, other theories have suggested that these behaviours co-occur due to a shared underlying aetiology. For example, within a psychoanalysis framework, self-harm has been viewed as violence turned inwards, in which a shared aggressive drive underlies both of these behaviours (24, 25). Similarly, the stream analogy of homicide-suicide suggests that homicide and suicide emerge from a single stream of violence. Here, social and cultural forces of direction influence whether an individual attributes the blame of their frustration towards themselves (internal attribution) or others (outwards attribution). While external attributions increase the risk of homicide, internal attributions increase the risk of suicide

(24). External attributions may be driven by perceived discriminatory deprivation and social subordination, in which an individual or group has an inferior position within the social hierarchy and blames their problems on such injustice. Internal attributions can include factors such as economic development, in which the individual may feel more in control of their outcomes and thus blame themselves for their problems (26). It is suggested that when both an inward and outward attribution for frustration exists, this increases the risk of homicide-suicide (21, 27, 28).

In keeping with the suggestion that self-harm and aggression are driven by shared mechanisms, Plutchik and Van Praag's (29) two-stage model of countervailing forces posits that an underlying aggressive impulse leads to both self-harm and aggression. In the first stage of the model, triggers (e.g., threat, loss of control) lead to an aggressive impulse that is then amplified or weakened depending on the presence or absence of certain factors. The interaction of such factors determines the likelihood of harmful behaviours. In the second stage, countervailing factors influence the object of the behaviour—self vs. the other. These factors are based on Plutchik and Van Praag's (29) research where it was found that specific variables, such as depression, hopelessness, and psychiatric symptoms, increase an individual's risk of directing their aggressive impulse towards themselves. On the other hand, factors such as impulsivity, recent life stresses and psychopathy were shown to increase the likelihood of the impulse being directed towards others (10). Hillbrand (10) suggests that in the context of Plutchik and Van Praag's (29) model, the presence of both sets of factors would increase an individual's risk of dual harm. As well as having a common underlying aggressive drive, co-occurring self-harm and aggression has been suggested to be driven by other shared factors, such as impulsivity, lack of behavioural control and emotional dysregulation (8, 26–28).

To the best of our knowledge Shafti et al.'s cognitive-emotional model (15, 30) provides the only comprehensive framework that accounts for how various factors may interact to lead to dual harm and the function of this behaviour. Self-harm and aggression are suggested to not only share a causal pathway, but also serve the same purpose in those who dual harm. In the distal stage, biological and environmental factors combine to develop a personality style that makes an individual vulnerable to harmful behaviours. Subsequently, in the proximal stage, this personality style predisposes the individual to emotional and interpersonal problems that increase their likelihood of engaging in both self-harm and aggression as a way to regulate their negative emotions. On the other hand, dual harm may also serve an interpersonal purpose, such as establishing autonomy. It is the social context and situation that an individual is in, combined with their expectancies, that interact to influence the specific function and behaviour that the individual chooses to engage in at a specific point of time (15).

1.2.1. Dual harm—A unique behavioural construct?

There is growing evidence that compared to those who have engaged in self-harm alone or aggression alone (i.e., sole harm), individuals with a history of dual harm show more frequent, severe (e.g., overdose, hanging) and wider range of harmful and antisocial behaviours (31–35). For example, despite representing a minority within the prison population, prisoners who have engaged in dual harm have been found to be responsible for twice as many incidents of misconducts compared to those who have engaged in sole harm (33). Moreover, compared to sole harm behaviours, there is evidence that dual harm is significantly more likely to be associated with various adverse social, environmental and psychological factors, including childhood polyvictimisation, substance use, childhood abuse, low self-control, difficulties with self-regulation, and psychopathy (35–38). The above research highlights that compared to those who sole harm, individuals that engage in dual harm show a greater level of risk across a range of factors, thereby representing a riskier group.

In light of such findings, it has been suggested that dual harm is a unique phenomenon that cannot be "reduced to a sum of its components" (9, 11, 12, 21, p. 1,182). In that, rather than be an overlap between self-harm and aggression, dual harm is as an independent behavioural construct with characteristics that make it unique from sole harm behaviours (**Figure 1**). If this is the case, it would be important to develop tailored interventions that target the distinct aspects of dual harm behaviour.

However, at this stage, it is unclear whether it is meaningful to approach dual harm as a unique behavioural construct with distinct characteristics. Although there is evidence that those who engage in dual harm are significantly more likely to present with various factors compared to individuals who sole harm, this does not necessarily mean that these factors are *unique* to dual harm. Conversely, it may be that these factors are separately linked to self-harm and aggression, and it is their interaction and multiplicative effect that lead to dual harm and the riskier profile shown by these individuals. In line with this, Boxer (4) suggested that co-occurring self-harm and aggression results from *a "high loading"* of risk across various personal and situational factors related to harmful behaviours. Accordingly, rather than be a unique behavioural construct, dual harm may develop as a result of the overlap between self-harm and aggression and their risk factors (**Figure 2**). In this case, it would be crucial for researchers and clinicians to adopt an integrated approach that considers the factors associated with self-harm and aggression together in the context of dual harm.

1.3. This systematic review

Despite the historic separation between self-harm and aggression, previous research has demonstrated the importance of considering these behaviours together in the context of dual harm. However, we still have limited understanding of dual harm and how to approach this behaviour within both research and clinical practice. It is unclear whether dual harm should be considered as a unique behavioural construct with distinct characteristics when compared to sole harm behaviours. Identifying how dual harm is most meaningfully understood is imperative in the effective management and intervention of this behaviour within forensic and clinical settings.

Therefore, we aimed to conduct the first systematic review that addresses the following question: *compared to those who have engaged in self-harm alone, aggression alone, and no harmful behaviours, are there psychological factors that are uniquely associated with those who have engaged in dual harm?* We focus on the role of psychological factors as these may be more modifiable through intervention than social, environmental and biological factors, and thus allow us to provide greater practical implications. Evidence that specific psychological factors are associated with dual harm when compared to *all* other behavioural groups (i.e., self-harm alone, aggression alone, no harmful behaviours) would support the notion that dual harm is a unique clinical construct with distinct characteristics. The secondary aim of this review was to evaluate the methodological

FIGURE 1
Dual harm as a unique behavioural construct.

strengths and weaknesses of the included literature to inform future studies of dual harm. Our work builds on previous empirical studies and reviews in order to extend our understanding of dual harm and the characteristics of this behaviour.

2. Methods

This systematic review was carried out in line with PRISMA 2020 guidelines using the PRISMA 2020 checklist (**Supplementary Appendix A**; 39). As is best practice (40), the protocol for this review was pre-registered and is available on PROSPERO (title: A systematic review of the co-occurrence of self-harm and violence: Is dual harm a unique behavioural construct? [CRD42020197323]): https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=197323.

The first version of the protocol for this systematic review was amended. We first intended to assess sociodemographic, psychological, and environmental characteristics that may be uniquely associated with dual harm. However, after our scoping review, we discovered that examining all of these factors would over-extend the scope of this review. We chose to focus on psychological factors as these are more modifiable with intervention. Furthermore, we made an amendment to explicitly state the exclusion of individuals with developmental conditions as their harmful behaviours may be a direct consequence of such conditions and be associated with distinct factors.

2.1. Search strategy

On September 29, 2022, we searched the literature within the PsycINFO, PubMed, CINAHL databases, as well as EThOS for theses. These databases were chosen based on the topic area of psychiatry and psychology and previous systematic reviews of dual harm (8, 13). The search was not restricted to time of publication, however, it was limited to papers written in English and human studies.

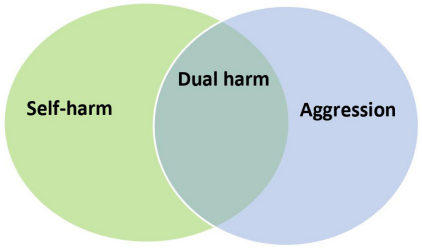

FIGURE 2
Dual harm as an overlap between self-harm and aggression.

The following search terms and Boolean operators were used: *("self-harm*" OR "self-injur*" OR "suicid*" OR "DSH" OR "NSSI") AND ("violen*" OR "aggressi*")*. DSH refers to deliberate self-harm, while NSSI refers to non-suicidal self-injury.

We also searched reference lists of eligible articles and key reviews of dual harm, carried out forward citation searching and contacted authors of eligible papers to inquire about other relevant work. The search further included grey literature by looking for dissertations and theses, and contacting authors of any identified conference abstracts about related papers.

2.2. Inclusion and exclusion criteria

We used the Population, Intervention, Comparison, Outcome, Study (PICOS; 41) design framework in **Table 1** to inform our inclusion and exclusion criteria for all peer-reviewed papers and theses. Papers and theses that only presented descriptive findings (i.e., summarising characteristics of the outcome) were excluded to allow more meaningful data interpretations. We focused the review on the adult population as studies have reported age to be linked to a distinct pattern of harmful behaviours and risk factors, suggesting developmental differences in the factors associated with dual harm (42–44). Moreover, given that dual harm has been shown to be a particular concern amongst the adult forensic population, this review aimed to highlight psychological factors that may be amenable to treatment within this group. The practical implications for supporting younger populations who dual harm are distinct (e.g., interventions in school, family environment), and therefore, warrants a separate review. Original quantitative research articles published in peer-reviewed journals and dissertations were eligible. Further exclusion criteria included articles in which the analysis did not provide new findings relevant to our review question, letters, newsletters, and book chapters.

Psychological factors were defined as variables relating to affective, psychological and cognitive functioning that may be modifiable with psychological intervention. In regard to dual harm, it has not been established which specific forms of self-harm and aggression encompass this behaviour, or how close in time these harmful behaviours should occur in relation to each other. In line with current definitions, participants in the dual harm group were

TABLE 1 PICOS framework.

Search domains	Inclusion criteria	Exclusion criteria
Population	• Individuals with a history of both self-harm and aggressive behaviour • Mean sample age 18 years old or over, or minimum age 18 if mean not reported • If longitudinal study, data was collected from participants when they were 18 years old or over	• Sample has developmental condition
Intervention (exposure)	• Psychological factors in relation to dual harm status	
Comparator	• Comparator group included those with a history of self-harm alone, aggression alone, or no harmful behaviours • Differences in psychological factors reported between participants in the dual harm group and comparator groups	
Outcome	• Harmful behaviour status, e.g., dual harm, self-harm alone, aggression alone, neither harmful behaviour • All definitions of self-harm and aggressive behaviours	• Ideation of harmful behaviours • Does not report dual harm as an outcome
Study design	• Quantitative designs • Mixed methods where the quantitative data is relevant to the review	• Qualitative designs • Case studies • Only descriptive findings reported

individuals who had engaged at any point during their lifetime in both self-harm and aggressive behaviour, regardless of intent (e.g., suicidal, homicidal) and outcome (e.g., injury or death). No restrictions were placed on the timeframe in which these behaviours must have co-occurred. Ideation of harmful behaviours was not included as research has found differences in factors associated with harmful ideations and behaviours (44). As mentioned, this review includes homicide-suicide in its definition of dual harm. An act tends to be considered as homicide-suicide if the homicidal and suicidal behaviour occur within 24 h. However, some studies extend this time-period, whilst others do not specify one at all (14). Given such inconsistencies in the literature, this review considered an act as homicide-suicide if the researchers defined it as so.

There is variability as to how self-harm and aggression are defined within the literature. Some researchers distinguish between suicidal and non-suicidal intent, whilst others do not assess intent at all (45). Furthermore, outcomes of self-harm differ in lethality, ranging from minor harm, severe harm and in extreme cases, death (i.e., suicide). Likewise, aggression can range from minor acts (e.g., verbal aggression, property damage) to more severe acts (e.g., physical fighting), and in extreme cases, homicide. Given that the literature has not restricted dual harm to intent or severity, this work will not limit the definition of self-harm and aggression to such criteria. Therefore, aggression is defined as any type of aggressive behaviour towards any target (e.g., property, person, verbal, physical), whilst self-harm refers to "intentional acts of self-poisoning or self-injury irrespective of motivation" (46, p. 255). All aggression and self-harm measures were eligible if they recorded behaviours that met the above descriptions.

2.3. Screening

The search results were exported and stored onto a reference management software—EndNote version X9 (Thomson Reuters, New York, NY, USA), which was used to remove duplicate references. The lead reviewer (MS) screened all titles and abstracts, then screened the full text of remaining articles. Articles that were not eligible were excluded. To ensure inter-rater reliability at both the title/abstract and full-text levels, a second independent reviewer screened a random sample of 10% of papers. Any disagreements between the reviewers were resolved by consultation with the research team. At the title/abstract and full text levels, inter-rater reliability was 98.5 and 95.2%, respectively, showing almost perfect agreement (Cohen's $k = 0.94$, $p < 0.001$, Cohen's $k = 0.90$, $p < 0.001$, respectively).

2.4. Data extraction

A data extraction form was developed to identify and extract data across the studies using a standardised method. A second reviewer independently checked the extracted data for errors. All inferential results regarding differences in psychological factors between those who had engaged in dual harm and sole harm behaviours or no harmful behaviours were extracted. Furthermore, we extracted data about the study location, design, relevant groups of study, number of participants, age and sex of participants, and the harmful behaviours and psychological factors examined. The relevant extracted data were entered into a table (**Supplementary Appendix B**).

2.5. Risk of bias (quality) assessment

An adapted version of the Agency for Healthcare Research and Quality (47; **Supplementary Appendix C**) was used to examine the risk of bias in the included articles. This tool has been used in previous systematic reviews of harmful behaviours (48, 49) and has been designed to be adapted to the review being carried out, as has been done in previous research (47). The Agency for Healthcare Research and Quality identifies the risk of bias in each study by examining the extent to which they meet key methodological criteria. In line with previous research, a summary rating was provided to demonstrate the total risk of bias present in each paper (50). A study was rated as having a high risk of bias if it fully met 0–2 criteria, moderate risk if it fully met 3–5 criteria and low risk if it fully met 6+ criteria (indicated by the number of "yes" ratings; 50). A second reviewer independently conducted the risk of bias assessment for all included papers and disagreements were resolved by discussion with the research team.

2.6. Reporting

In line with previous reviews of dual harm (8, 10), given that definitions and measurements of harmful behaviours vary

considerably in the literature, it was decided that a meta-analysis would not be appropriate. Therefore, a narrative synthesis of the included papers was conducted according to principles from the Economic and Social Research Council's guidance for narrative reviews (51). This included developing a preliminary synthesis of findings, exploring relationships in the data and assessing the robustness of the synthesis. Following such principles provided a systematic and transparent synthesis of the included literature. In this synthesis, relevant statistics provided by each study (i.e., effect size, prevalence rates) are reported. In cases where relevant data was missing (e.g., summary statistics), authors were contacted to ask about such data.

The literature of homicide-suicide and less extreme forms of dual harm has largely been separate and at the current stage, it is unclear whether it is meaningful to divert from this separation and examine these behaviours together as one construct. Given the conceptual, theoretical and methodological differences in how these behaviours have been approached, the authors decided to categorise the current synthesis into homicide-suicide and non-homicide-suicide research. For example, in order to be considered as homicide-suicide, the self-harm and aggressive acts must co-occur within a short time-period and by definition, must constitute the most lethal forms of these behaviours (i.e., homicide and suicide). However, these restrictions have not been placed in conceptualisations of non-homicide-suicide dual harm. Furthermore, given that homicide-suicide is a rare event, studies generally tend to use large national databases to identify these cases. This is distinct from less extreme forms of dual harm in which a range of measures have been used to assess this behaviour, including questionnaires, interviews and official records.

3. Results

As recommended by PRISMA guidelines (39), the search process for this systematic review is demonstrated using the PRISMA flowchart (**Figure 3**). Harford et al.'s (52) paper appeared to meet the inclusion criteria. However, upon reading the full text, we found that ideation was included in their self-harm measure. Since it was not clear whether the dual harm and self-harm alone group included those who had indicated to have engaged in self-harm ideation but not behaviour, we excluded the above paper. The excluded articles and the primary reason for their exclusion at the full text screening level is outlined in **Supplementary Appendix D**.

3.1. Study characteristics

Tables 2, **3** show the summary characteristics of the included studies. Only information relevant to this review are reported. Fifteen studies focussed on homicide-suicide, whilst sixteen examined less extreme forms of dual harm. In total, there was 15,094 participants in the included studies, 9,875 of which were from homicide-suicide studies and 5,219 from the non-homicide-suicide literature. The sample size of the dual harm groups ranged from 22 to 2,535 in homicide-suicide studies (23), and 11 to 1,060 in non-homicide-suicide research (38, 53). The included literature was conducted in nine reported locations, mostly North America and Europe. Hillbrand's (31) study did not report a location, but it was inferred that the research was conducted in the USA as the author was based there during the time of the study.

3.1.1. Non-homicide-suicide studies

Participants in the non-homicide-suicide studies were from community (n = 7), general psychiatric (including those discharged, n = 3), and forensic populations (n = 4 secure psychiatric; n = 2 prison). "Dual harm" was used to refer to the co-occurrence of self-harm and aggression in five studies (e.g., 54). Other terms used were "combined" or "co-occurring" aggression/violence (e.g., 55), and some did not use a specific term at all (e.g., 56). Most studies only assessed suicidal attempt (n = 9, e.g., 54), whilst six looked at self-harm irrespective of suicidal intent (e.g., 57). When examining aggression, six studies only assessed violent crime (e.g., 35). Five examined physical violence towards others (e.g., sexual assault, physical fights; 53), with Harford et al. (58) further examining stealing. Finally, four papers extended their definition of aggression by also assessing verbal aggression and property damage (e.g., 59).

More than half of the studies assessed harmful behaviours using bespoke non-validated self-report questionnaires that often comprised of one or two questions (n = 9, e.g., 55). Only two studies used validated questionnaires (31, 60) and others collected information through interviews (e.g., 56). Studies also obtained information from official records, such as psychiatric case files (e.g., 61), records of violent convictions and admissions to hospital (e.g., 57). Since there are no existing validated instruments for dual harm, this behaviour was examined by cross-tabulating responses to the separate self-harm and aggression measurements. Four studies used different timescales when assessing self-harm and aggression (e.g., 53), whilst three assessed lifetime history of both of these behaviours (52, 37, 56). The shortest time-period in which harmful behaviours were examined was 2 weeks prior to data collection (54). Three studies did not mention the time-period in which harmful behaviours were assessed (e.g., 62).

3.1.2. Homicide-suicide studies

Seven studies examined a general homicide-suicide sample that was not defined by victim type. Other studies focussed on filicide (i.e., the killing of one's child; n = 3) and intimate partner homicides (i.e., the killing of one's intimate partner; n = 5). Most assessed completed suicide (n = 11, e.g., 63), whilst five examined attempted suicide (e.g., 64). Seven studies defined homicide-suicide as a suicidal act that occurred within 24 h after the homicide (e.g., 65). Similarly, Haines et al. (23) stated that the homicide had to have been perpetrated immediately before the suicide, but an exact timescale was not provided. Other studies did not restrict homicide-suicide to the above short timeline (e.g., 66) and five did not specify a timeline at all (e.g., 62). Homicide-suicide cases were identified from official case reports, such as those in official databases (e.g., National Violent Death Reporting System, government reports, death review committees; 65), files from forensic psychiatric settings (e.g., 67) and coroner reports (e.g., 23).

3.2. Risk of bias (quality) assessment

The risk of bias assessment for all studies is provided in Supplementary Appendix E. This assessment was agreed upon with an independent reviewer.

3.2.1. Non-homicide-suicide studies

Most non-homicide-suicide studies were rated as having a moderate risk of bias (n = 10), followed by low (n = 5) and high risk of bias (n = 1). The majority of the research had used appropriate analytic methods (n = 15). Amongst the included papers, Richmond-Rakerd et al. (35), Steinhoff et al. (68), and Swogger et al. (69) adopted a longitudinal design with adequate follow-up periods (13 years, 3 years, 50 weeks, respectively). More than half of the studies were rated as being unbiased in the selection of their cohort (n = 10). However, there was not sufficient information to determine whether this criterion was met for five studies. Similarly, more than half of the included papers used a valid method for assessing predictor variables (e.g., validated questionnaires; n = 10). Other studies did not fully meet this criterion as they either failed to provide sufficient detail, utilised questionnaires that had not been validated, or relied on medical records without confirmation of the data by researchers. A common concern amongst the studies included lack of justification for their sample size. However, based on discussion with the research team, it was agreed that studies with sample sizes of more than 1,000 would have a lower risk of bias due to insufficient statistical power. Accordingly, seven other studies were rated as having met the criteria for having a justified sample size due to a large number of participants.

Half of the included research did not provide an adequate description of the different participant groups, adjust for pre-determined confounders or provide information on missing data (n = 8). Amongst the eight studies in which the researchers collected data, none reported blinding. Therefore, these studies may have been affected by researcher-related bias in which knowledge of how a participant scored on one measure may have influenced

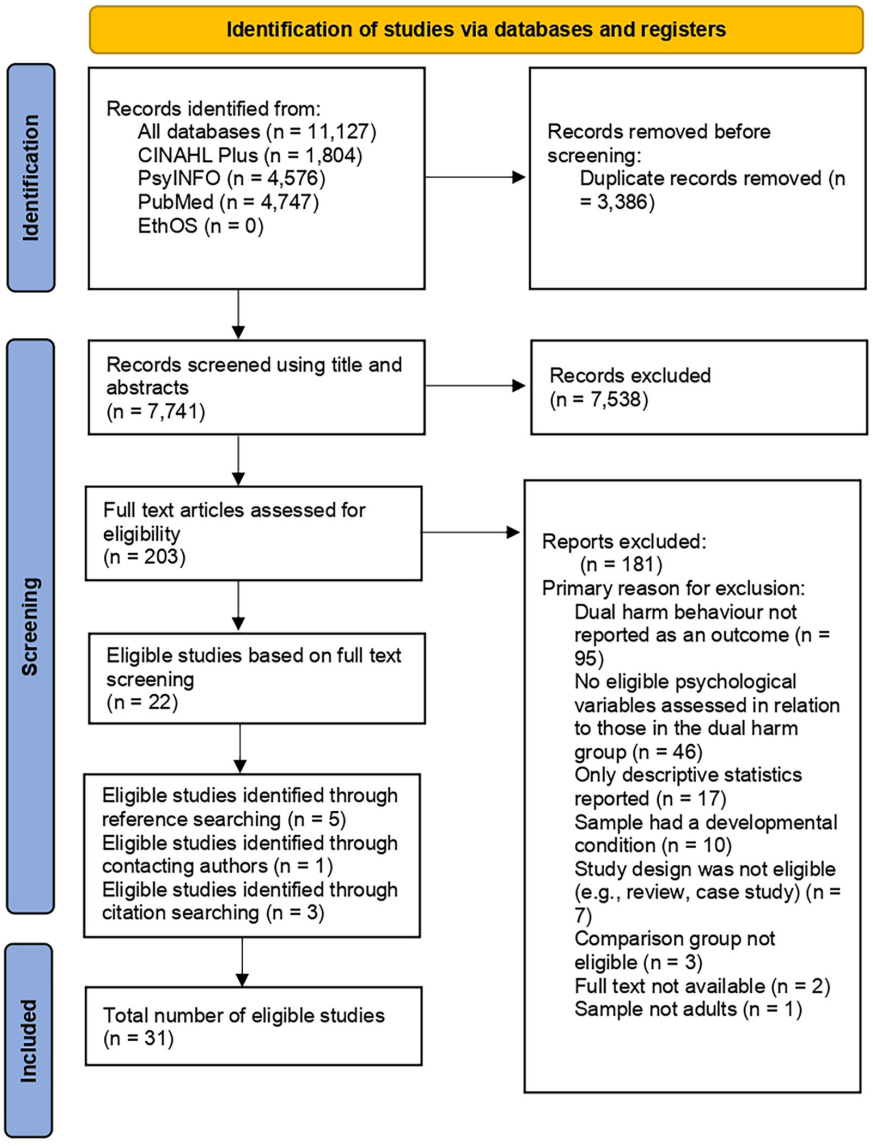

FIGURE 3
PRISMA flowchart.

TABLE 2 Summary characteristics of homicide-suicide studies.

References	Country	Relevant groups of study—N of participants	Harmful behaviours examined: measure(s)	Psychological factor(s) examined: measure(s)	Reported findings
Benítez-Borrego et al. (64)	Chile	1: Filicide-suicide perpetrators–33 2: Filicide alone perpetrators–35	Filicide-suicide and filicide alone: cases reported in the Legal Medical Service	Diagnosed psychiatric symptoms: forensic reports from forensic psychiatric and psychological evaluations in Legal Medical Service	No significant differences in diagnosed psychiatric symptoms
Flynn et al. (76)	England and Wales	1: Homicide-suicide perpetrators–203 2: Those who had engaged in suicide alone–46,358 3: Homicide alone perpetrators–5,096	Homicide alone, completed suicide, and homicide-suicide: case records from Home Office and police	Mental health problems: questionnaire completed by individual's mental health team	Compared to homicide-suicide perpetrators, those who engaged in suicide alone were significantly more likely to have a severe mental illness, while homicide-suicide perpetrators were significantly more likely to have a personality disorder No significant differences between homicide alone and homicide-suicide groups in schizophrenia, affective disorder, and personality disorder
Fridel and Zimmerman (65)	USA	1: Homicide-suicide perpetrators–2,048 2: Those who had engaged in suicide alone–103,195	Suicide alone and homicide-suicide: cases of deaths reported by the National Violent Death Reporting System (NVDRS) in 2003–2013	Mental health stressors: coroner/medical examiner reports and law enforcement reports in the NVDRS	All mental health stressors, including depressed mood, were significantly more prevalent amongst those who had engaged in suicide alone than homicide-suicide perpetrators
Fridel and Zimmerman (65)	USA	1: Homicide-suicide perpetrators–1,413 2: Those who had engaged in suicide alone–81,179 3: Homicide alone perpetrators–22,960	Homicide-suicide, homicide alone, suicide alone: cases of deaths reported by NVDRS in 2003–2013	Mental health: coroner/medical examiner records and law enforcement reports in the NVDRS	Homicide-suicide perpetrators were significantly more likely to have mental health problems than homicide alone perpetrators, with the risk of a suicide after homicide increasing for those with mental health problems Those who engaged in suicide alone were significantly more likely to have mental health problems than homicide-suicide perpetrators
Friedman et al. (65)	USA	1: Mothers who had perpetrated filicide followed by non-fatal and fatal suicide–29 2: Mothers who had perpetrated filicide alone–20	Filicide-suicide and filicide alone: records from coroner's office	Psychotic symptoms and depression: not specified	Compared to filicide alone and filicide-attempted suicide, mothers who engaged in filicide-completed suicide were significantly less likely to have been noted to be delusional. There were no significant differences in depression, auditory hallucinations, or command auditory hallucinations
Haines et al. (23)	Tasmania	1: Homicide-suicide perpetrators–22 2: Those who had engaged in suicide alone–22	Suicide and homicide-suicide: files from coroners at the Tasmanian Archives Office and Department of Justice	Psychological symptoms: files from coroners	There was a trend for fewer of the homicide-suicide group to have experienced anxiety in the time leading up to their death
Heron (70)	Canada	1: Intimate homicide-suicide perpetrators–64 2: Intimate homicide alone perpetrators–158	Intimate homicide-suicide and intimate homicide alone: case records from the Ontario Domestic Violence Death Review Committee (DVDRC)	Depression and other mental health problems: records from Ontario DVDRC. Diagnosis of depression based on the opinion of professionals and non-professionals	There was a significantly larger amount of homicide-suicide perpetrators who had been professionally and unprofessionally diagnosed with depression than homicide alone perpetrators Homicide-suicide and homicide alone perpetrators did not significantly differ based on other psychiatric diagnoses
Kalesan et al. (66)	USA	1: Homicide-suicide perpetrators–1,422 2: Those who had engaged in suicide alone–41,244	Homicide-suicide and suicide alone: cases of deaths reported by the NVDRS in 2003–2011	Depression and mental health issues: NVDRS records	Across all ages, depression decreased risk of homicide-suicide with a firearm compared to suicide alone Depression and mental health issues decreased risk of homicide-suicide compared to suicide alone in those under 30 years old and over 30 years old

(Continued)

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TABLE 2 (Continued)

References	Country	Relevant groups of study–N of participants	Harmful behaviours examined: measure(s)	Psychological factor(s) examined: measure(s)	Reported findings
Leveillee et al. (62)	Canada	1: Filicide-suicide perpetrators–38 2: Filicide alone perpetrators–37	Filicide-suicide and filicide alone: files of cases compiled by the Bureu du Coroner en Chef du Quebec	Depressive and psychotic disorders: coroner's reports, psychiatric and medical records, summaries of investigations by the Youth Protection Commission and the Youth Protection Directorate	Males who engaged in filicide-suicide were significantly more likely than those who engaged in filicide alone to have depressive disorders
Liem et al. (67)	Netherlands	1: Homicide-parasuicide perpetrators–77 2: Homicide alone perpetrators–430 3: Those who had engaged in parasuicide alone–160	Homicide-parasuicide and homicide alone: cases reported in a forensic psychiatric hospital Parasuicide alone—cases reported in a psychiatric hospital. Classified as a parasuicide using the Pierce Suicide Intent Scale	Psychopathological characteristic based on DSM-IV: case files in psychiatric hospital. If diagnosis not in files, a retrospective diagnosis was made according to file information	Homicide–parasuicide perpetrators were significantly more likely than homicide alone perpetrators to have a mood disorder, most notably depression. Depression raised the odds of a parasuicide following a homicide more than 15 times. However, there were no differences in psychotic disorder or personality disorder. Homicide-parasuicide perpetrators were significantly more likely to be diagnosed with a psychotic disorder and personality disorder compared to the parasuicide alone group. However, there were no significant differences in mood disorders
Liem and Roberts (25)	Netherlands	1: Intimate homicide-suicide perpetrators–44 2: Intimate homicide alone perpetrators–297	Intimate homicide-suicide and intimate homicide alone: archive of clinical records in a forensic psychiatric hospital	Psychopathology: case records from forensic psychiatric hospital	The homicide-suicide and homicide alone groups did not significantly differ in psychotic disorders Homicide-suicide perpetrators were significantly more likely to be diagnosed with a depressive disorder
Logan et al. (73)	USA	1: Homicide-suicide perpetrators–408 2: Those who had engaged in suicide alone–20,183	Homicide-suicide and suicide alone: cases of deaths reported by the NVDRS in 2003–2005	Mental health problems, depressed mood: NVDRS records	Compared with males who engaged in suicide alone, male homicide-suicide perpetrators were significantly less likely to have reports of depressed mood and mental health problems
Logan et al. (72)	USA	1: Intimate homicide-suicide perpetrators–1,504 2: Those who had engaged in suicide alone–28,755	Homicide-suicide and completed suicide alone: cases of deaths reported by the NVDRS in 2003–2015	Current depressed mood and mental health condition: NVDRS records	Intimate homicide perpetration was less prevalent among suicide decedents who had a known current depressed mood and mental health conditions
Vatnar et al. (63)	Norway	1: Intimate homicide-suicide perpetrators–44 2: Intimate homicide alone perpetrators–133	Homicide alone and homicide-suicide: cases identified from the Norway Criminal Investigation Service (NCIS)	Professionally diagnosed mental health diagnosis: reports from the NCIS statistics	No significant differences in mental health diagnosis
Zimmerman and Fridel (71)	USA	1: Homicide-suicide perpetrators–2,535 2: Homicide alone perpetrators–28,027 3: Those who had engaged in suicide alone–138,948	Homicide-suicide, homicide alone, and completed suicide: cases of deaths reported by the NVDRS in 2003–2015	Mental health problems: NVDRS records	Odds of suicide following homicide were significantly elevated for perpetrators with mental health problems

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TABLE 3 Summary characteristics of non-homicide-suicide studies.

References	Country	Relevant groups of study–N of participants	Harmful behaviours examined: measure(s)	Psychological factor(s) examined: measure(s)	Reported findings
Ghossoub et al. (55)	USA	Nationally representative sample of non-institutionalised, household-based civilian population from the National Survey on Drug Use and Health (NSDUH): 1: Those who had engaged in dual harm–410 2: Those who had engaged in no harmful behaviours–259,914	Past year suicidal behaviour and physical attacks towards others: based on self-reported answers to two questions Dual harm: cross-tabulation of responses to the above measures	Past year substance use disorder and psychiatric disorder: self-reported survey based on DSM-IV criteria	Compared to those who had no history of harmful behaviours, substance use disorders and psychiatric disorders were significantly more prevalent in the dual harm group Alcohol use disorders, drug use disorders, and alcohol and drug use disorders significantly increased the odds of perpetrating dual harm compared to having no history of harmful behaviours, even after adjusting for sociodemographic characteristics
Harford et al. (75)	USA	Civilian non-institutionalised population from the National Epidemiological Survey on Alcohol and Related Conditions (NESARC): 1: Those who had engaged in dual harm–688 2: Those who had engaged in aggression alone–4,689 3: Those who had engaged in self-harm alone–996	Lifetime physical aggression towards others: bespoke self-report questionnaire of five items Suicidal behaviour: based on one question asking about lifetime suicidal attempt and one question asking about suicidal behaviour in those who screened positive for a DSM-IV major depressive episode Dual harm: cross-tabulation of responses to the above measures	Lifetime DSM-IV diagnosis of psychiatric disorders: Alcohol Use Disorder and Associated Disabilities Interview Schedule	Odds of substance use disorder was significantly higher for dual harm group compared to self-harm alone group Odds of personality disorder was significantly higher for dual harm group compared to self-harm alone and aggression alone group Odds of mood disorders was significantly higher for dual harm group compared to self-harm alone and aggression alone group Odds of anxiety disorders was significantly higher for dual harm group compared to aggression alone group
Harford et al. (53)	USA	Civilian non-institutionalised population from NESARC-III: 1: Those who had engaged in dual harm–1,060 2: Those who had engaged in aggression alone–4,038 3: Those who had engaged in self-harm alone–1,730 4: Those who had engaged in no harmful behaviours–29,481	Suicidal behaviour: one question asking about lifetime suicidal attempt and one question asking about suicidal behaviour in preceding 2 weeks during the time they experienced depression or mania Aggression: had engaged in at least one of seven aggressive behaviours since age of 15. Not specified whether these questions were self-reported Dual harm: cross-tabulation of responses to the above measures	Lifetime DSM-IV diagnosis of psychiatric disorders: Alcohol Use Disorder and Associated Disabilities Interview Schedule	Substance use disorder, bipolar 1 disorder, panic disorder, generalised anxiety disorder, post-traumatic stress disorder, schizotypal personality disorder, antisocial personality disorder, and borderline personality disorder were significantly associated with higher odds for dual harm relative to aggression alone and self-harm alone When adjusting for sociodemographic characteristics and lifetime DSM-5 disorders–all substance use disorders showed significantly higher odds for dual harm relative to no history of harmful behaviours. Alcohol, tobacco, and other drug use disorders showed significantly higher odds for dual harm relative to self-harm alone. Mood disorders showed significantly higher odds for dual harm relative to history of no harmful behaviours and aggression alone. Post-traumatic stress disorder, schizotypal personality disorder, antisocial personality disorder, and borderline personality disorder showed significantly higher odds for dual harm relative to no history of harmful behaviours. Antisocial personality disorder and borderline personality disorder also had significantly higher odds for dual harm relative to self-harm alone, as did borderline personality disorder for dual harm relative to aggression alone

(Continued)

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TABLE 3 (Continued)

References	Country	Relevant groups of study–N of participants	Harmful behaviours examined: measure(s)	Psychological factor(s) examined: measure(s)	Reported findings
Harford (58)	USA	Nationally representative sample of non-institutionalised, household-based civilian population from NSDUH: 1: Those who had engaged in dual harm–464 2: Those who had engaged in self-harm alone–2,289 3: Those who had engaged in aggression alone–7,286 4: Those who had engaged in no harmful behaviours–304,842	Past year suicidal behaviour and physical attacks towards others: based on self-reported answers to two questions Dual harm: cross-tabulation of responses to the above measures	Substance use disorders: based on DSM-IV diagnoses, but not reported how this was assessed Nicotine dependence: Nicotine Dependence Syndrome Scale and the Fagerstrom Test of Nicotine Dependence Serious psychological distress: Kessler-6	Compared with the self-harm alone, aggression alone, and no harmful behaviours groups, the dual harm group were significantly more likely to have serious psychological distress, nicotine dependence and four or more DSM-IV SUD criteria for alcohol, cocaine, pain reliever, and stimulant use disorders Compared to self-harm alone and no harmful behaviours groups, the dual harm group was significantly more likely to have four or more DSM-IV marijuana use disorder criteria
Hemming et al. (54)	UK	1: Prisoners who had engaged in dual harm–12 2: Prisoners who had engaged in self-harm alone–4 3: Prisoners who had engaged in aggression alone–25	Aggression assessed over past 2 weeks: bespoke five item questionnaire Suicide alone assessed over past 2 weeks: bespoke six item questionnaire Dual harm: cross-tabulation of responses to the above measures	Alexithymia: Toronto Alexithymia Scale Anger: The Novaco Anger Scale Impulsivity: The Dickman Impulsivity Inventory	No significant differences in alexithymia, anger, or impulsivity
Hillbrand (31)	Not reported (assumed USA)	Forensic psychiatric patients with a history of severe violence: 1: Those who had engaged in aggression alone–35 2: Those who had engaged in dual harm–15	Self-harm irrespective of suicidal intent and aggression during a 6 months period: Overt aggression scale Dual harm: cross-tabulation of responses to the above measures	Psychiatric diagnosis: medical records	No significant differences in personality disorders, alcohol/substance abuse or psychotic disorders
Huang et al. (37)	China	Individuals with serious aggressive behaviours and suspected mental disorder in seven forensic institutes in different provinces 1. Those who had engaged in dual harm–74 2. Those who had engaged in aggression alone–349	Lifetime self-harm (unclear if non-suicidal self-harm assessed): self-report questionnaire Serious aggressive behaviours: participants' forensic archives Dual harm: cross-tabulation of responses to the above measures	History of substance abuse and mental disorders: standardised data collection form and forensic archives Current mental disorder: evaluated by two psychiatrists using ICD-10 Psychopathy: Chinese version of Psychopathy Checklist-Revised (PCL-R) Psychiatric symptoms: Chinese version of Brief Psychiatric Rating Scale (BPRS)	Compared to the aggression alone group, the dual harm group were significantly more likely to have a history of mental disorder, current mental disorder, score higher on the anti-social scale of the PCL-R, and score higher on the anxiety-depression scale of the BPRD. There were no significant differences in substance use.
Laporte et al. (56)	Sweden	Young adult violent offenders: 1: Those who had engaged in dual harm–62 2: Those who had engaged in aggression alone–208	Lifetime suicidal and non-suicidal self-harm: files and interviews Dual harm: based on responses to above measure	Mental disorder: Structured Clinical Interview guides for Axis I and II disorders and file information Symptoms of autism spectrum disorders and other neurodevelopmental disorders: Asperger syndrome/high functioning autism diagnostic interview and structured DSM-IV interview protocol	The dual harm group had significantly more childhood attention deficit symptoms, adult attention deficit symptoms and adult hyperactivity disorder symptoms than the aggression alone group. There was no significant difference in childhood hyperactivity disorder symptoms

(Continued)

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TABLE 3 (Continued)

References	Country	Relevant groups of study–N of participants	Harmful behaviours examined: measure(s)	Psychological factor(s) examined: measure(s)	Reported findings
Lidberg et al. (61)	Sweden	Male homicide offenders: 1: Those who had engaged in dual harm–12 2: Those who had perpetrated homicide alone–23	Suicide attempts: forensic psychiatric reports Dual harm: cross-tabulation of responses to the above measure	Personality: The Eysenck Personality Inventory, Eysenck Personality Questionnaire, Marke-Nyman Temperament Scale, Gough Delinquency Scale	There were no significant differences in personality
Richmond-Rakerd et al. (35)	UK	Twins of the E-Risk Longitudinal Twin Study: 1: Those who had engaged in dual harm–97 2: Those who had engaged in self-harm alone–177 3: Those who had engaged in aggression alone–not reported 4: Those who had engaged in no harmful behaviours–1,475	Self-harm, irrespective of suicidal intent: life history calendar used to aid recall of self-reported self-harm behaviour since age 12 Aggression: official police records and self-report questionnaire assessing past-year violent offending behaviour Dual harm: cross-tabulation of responses to the above measures	Mental health difficulties: DSM-IV based symptoms/diagnosis of post-traumatic stress disorder, depression, psychosis, and substance dependence. No information on how this data was collected. Personality: Big Five Inventory Self-regulation: Shedler–Westen Assessment Procedure 200-item Q-Sort for Adolescents and an unvalidated questionnaire Self-control: Based on 9 measures, including observational ratings, parent and teacher reports, self-reports, and interview judgements	The dual harm group did not significantly differ from the self-harm alone group in childhood depression, childhood anxiety, or risk of developing post-traumatic stress disorder or depression. However, they were distinguished by a significantly higher prevalence of psychotic symptoms and more likely to meet criteria for alcohol and cannabis dependence Compared to the aggression alone group, the dual harm group exhibited significantly higher rates of childhood depression and all adolescent mental health difficulties Low childhood self-control significantly increased odds of engaging in dual harm compared to those who engaged in self-harm alone. Children rated as having more self-regulation difficulties were significantly more likely to be in the dual harm group than the self-harm alone group Compared to the self-harm alone group, the dual harm had significantly lower openness, conscientiousness, and agreeableness. They were also significantly higher on extraversion Compared to the no harmful behaviours group, the dual harm group were significantly higher on neuroticism and lower in conscientiousness and agreeableness Compared to the aggression alone group, the dual harm group were significantly lower in conscientiousness and higher in neuroticism
Stålenheim (38)	Sweden	Forensic psychiatric male patients: 1: Those who had engaged in dual harm–11 2. Those who had engaged in self-harm alone–12 3: Those who had engaged in aggression alone–15 4: Those who had engaged in no harmful behaviours–20	Suicidal behaviour: based on SCID interviews and filed information from the forensic psychiatric assessments. Repeated violent criminality: identified from participants' registered violent criminality. Dual harm: cross-tabulation of responses to the above measures	Personality: Karolinska Scales of Personality	No significant differences in psychopathy and aggression-related personality scales Compared to the aggression alone group, the dual harm group scored significantly higher on psychopathy, aggression and hostility factors
Steeg et al. (57)	Denmark	Cohort of individuals born to Danish native parents, alive and residing in Denmark on their 15th birthday: 1: Those who had engaged in dual harm–145 2: Those who had engaged in self-harm alone–287 3: Those who had engaged in aggression alone–228	Hospital treated self-harm episodes since age of 10, irrespective of suicidal intent: identified from National Patient Register and the Psychiatric Central Research Register Violent crime since age of 15: identified from National Crime Register Dual harm: cross-tabulation of responses to the above measures	Substance misuse, psychiatric disorder: data from Psychiatric Central Research Register	Among those who died from any external cause, the prevalence of substance use disorders was higher in the dual harm group compared to the self-harm alone and aggression alone groups There was no significant differences in regard to other psychiatric disorders

(Continued)

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TABLE 3 (Continued)

References	Country	Relevant groups of study–N of participants	Harmful behaviours examined: measure(s)	Psychological factor(s) examined: measure(s)	Reported findings
Steinhoff et al. (68)	Switzerland	Sample of first-graders attending public school from the Zurich Project on Social Development from Childhood to Adulthood: 1. Those who had engaged in dual harm–107 2. Those who had engaged in self-harm alone–240 3. Those who had engaged in aggression alone–197	Self-harm, irrespective of suicidal intent: self-reported at ages 13, 15 and 17 using one item Aggression: response to an item from a broader delinquency scale, reported at 13, 15, and 17 Dual harm: cross-tabulation of responses to the above measures	Anxiety/depression at age 20: Social Behaviour Questionnaire Self-control at age 20: Self-Control Scale Psychopathy at age 20: The Short Dark Triad Substance use at age 20: 14 item questionnaire asking about past year substance use	Adjusted associations between behavioural groups at age 13–17 and psychological factors at age 20, controlling for sex, parental educational and migration background, and child's education level at age 13: compared to no harm, self-harm alone, and aggression alone groups, dual harm group reported more anxiety/depression and psychopathy symptoms. Dual harm group also scored significantly higher on substance use and lack of self-control compared to no harm group.
Swogger et al. (69)	USA	Civil admission psychiatric patients: 1: Those who had engaged in dual harm–94 2: Those who had engaged in self-harm alone–149 3: Those who had engaged in aggression alone–144 4: Those who had engaged in no harmful behaviours–464	Self-harm, irrespective of suicidal intent: interview asking about self-harm behaviour during 10 weeks since the previous interview Aggression: follow-up interview and interviews with collateral informants. Not clear whether this was also assessed in the preceding 10 weeks Dual harm: cross-tabulation of responses to the above measures	Substance use disorder diagnosis: DSM-III-R checklist Psychopathy: PCL:SV Anger: Novaco Anger Scale	Unadjusted analysis: compared to the no harmful behaviours group, substance use disorder, anger and each psychopathy facet were significantly positively associated with dual harm Analysis adjusted for covariates: compared to no harmful behaviours group, anger and the antisocial facet of psychopathy predicted dual harm
Tardiff (60)	USA	Inpatients at psychiatric hospital: 1: Those who had engaged in dual harm–42 2: Those who had engaged in self-harm alone–52	Suicidal behaviour and physical aggression towards others in past 3 months: standardised measure reported by staff Dual harm: cross-tabulation of responses to the above measures	Psychopathology: adapted NOSIE scale	No significant differences in psychopathology
Watkins et al. (59)	USA	Veterans in residential treatment programme for post-traumatic stress disorder: 1: Those who had engaged in dual harm–202 2: Those who had engaged in no harmful behaviours–856 3: Those who had engaged in aggression alone–1,471 4: Those who had engaged in self-harm alone–41	Suicide attempt in past 4 months: one self-report question Aggression in past 4 months: self-report measure based on items in National Vietnam Readjustment Study Dual harm: cross-tabulation of responses to the above measures	Post-traumatic stress disorder symptoms: PTSD Checklist-Civilian for DSM-IV	More severe re-experiencing symptoms were related to a significantly higher probability of engaging in dual harm compared to no harmful behaviours Greater dysphoric arousal symptoms was related to a significantly higher probability of engaging in dual harm compared to no harmful behaviours Compared to dual harm, greater dysphoric arousal was significantly associated with a lower probability of engaging in self-harm alone Compared to dual harm, greater re-experiencing symptoms were significantly associated with a lower probability of engaging in aggression alone

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how the researcher scored other measures. A further frequent risk of bias was lack of valid method for ascertaining harmful behaviours (n = 12). For example, many studies used short self-report questionnaires that had not been validated. The greatest risk of bias was that no studies matched participant groups and so baseline differences in demographic factors between different groups were not minimised.

3.2.2. Homicide-suicide studies

Similar to the non-homicide-suicide literature, most homicide-suicide studies were rated as having a moderate risk of bias (n = 6), closely followed by low (n = 5) and high risk of bias (n = 4). The use of appropriate analytical methods was the only criteria that was fully met by all studies. Another commonly met criteria was the use of valid methods to ascertain harmful behaviours (n = 14). The majority of studies utilised official databases, such as the National Violent Death Reporting System (NVDRS), that collate information from various sources. Such databases are often crosschecked to identify cases as accurately as possible and so may be considered to be a valid approach for assessing homicide-suicide, suicide alone and homicide alone cases. Most studies also met the criteria for having an unbiased selection of cohort. Again, this is due to the use of the above databases in most studies to identify eligible cases (n = 10). For example, the NVDRS, which was used by many of the included studies, reportedly holds the largest sample of homicide-suicide events amongst other existing datasets (65). Failing to control for pre-established confounders was a concern for almost half of the studies, which may have biased effect estimates (n = 7). Furthermore, the majority of studies did not minimise baseline differences in demographic factors between different groups of participants. Only Haines et al.'s (23) study met the above criteria by matching the homicide-suicide and suicide alone groups in age and sex. Furthermore, only five papers provided adequate descriptions of the different participant groups. Consequently, it was not possible to ascertain the extent to which individuals in the included research were representative of those with different demographic characteristics.

None of the included research provided a justification for their sample size. However, seven studies were rated as having met the criteria as they had a sample size over 1000. A common concern amongst the included papers was lack of valid method for assessing predictor variables (i.e., psychological factors). Almost half of the studies (n = 7) did not provide sufficient information to allow us to identify whether their assessment methods were valid. For example, in studies where mental health problems were identified from the NVDRS, it was often not specified whether this data was collected from a combination of sources, or from one source (e.g., only police reports). Since most studies analysed pre-existing data, being blind to participant status was not relevant to the majority of the research. This criterion only applied to one study, in which no blinding was reported (25). Finally, most studies did not report missing data and so we were unable to determine the extent of missing data and whether this was adequately handled (n = 13).

3.3. Are psychological factors uniquely associated with dual harm?

A summary of findings regarding differences in psychological factors between the behavioural groups (i.e., dual harm, self-harm alone, aggression alone, no harmful behaviours) is presented in Tables 2, 3. The trends identified from the included papers is demonstrated in Table 4. The psychological factors investigated in the papers included mental health problems and personality and emotion related factors. Below is the narrative synthesis of findings. Relevant statistics are provided where reported by studies.

3.3.1. Mental health problems

Twenty-seven studies examined differences in various mental health problems between dual harm and other behavioural groups, including non-specific mental health problems, mood disorder (MD), anxiety disorder, psychotic disorders, personality disorders (PD), substance use disorder (SUD), and attention deficit hyperactivity disorder. Findings were largely mixed across studies, with no sufficient evidence that any of the above factors are uniquely associated with homicide-suicide or less extreme forms of dual harm. Nevertheless, there was some evidence that dual harm was significantly linked to non-specific mental health problems, MD, SUD, and PD when compared to *one* of the behavioural groups, but not when compared to *all* groups. This may suggest that these factors are not unique to dual harm, but rather driven by the separate self-harm or aggressive behaviours that constitute this act. Moreover, we found a different pattern of findings between homicide-suicide and non-homicide-suicide studies.

There was inconclusive evidence regarding how non-specific mental health problems and MD are linked to less extreme forms of dual harm. However, in regard to homicide-suicide, there was a trend for these factors to be significantly linked to this behaviour when compared to homicide alone [e.g., MD–(70), 37.3 vs. 20% for professionally diagnosed depression, 63.2 vs. 41.3% for non-professionally diagnosed depression; (62), 33 vs. 0%; (67), 31 vs. 7%; (25), 23 vs. 6%; mental health problems—(71), OR = 2.6; (21), OR = 4.4]. For example, Liem et al. (67) reported that when adjusting for variables such as gender, age, ethnicity and other psychiatric disorders, MD significantly raised the odds of a H-parasuicide (suicide attempt not resulting in death) by more than 15 times when compared to homicide alone. Moreover, Fridel and Zimmerman (65) found that the risk of a suicide after homicide increased by 341% for individuals with mental health problems. In contrast, when compared to suicide alone, there was evidence that those who had perpetrated homicide-suicide were significantly less likely to have a MD (21), [45 vs. 23%; (21), OR: 0.3; (66), OR = 0.3; (72), adjusted OR: 0.3; 63, adjusted OR = 0.5] and mental health problems [(21), OR: 0.5; (21), RRR = 0.1; (73), adjusted OR: 0.3; (72), adjusted OR: 0.4). This may suggest that the link found between these factors and homicide-suicide may be driven by the suicidal aspect of this behaviour. Benetiz-Borrego et al. (64), Heron (70), Vatnar et al. (63), Friedman et al. (74), and Liem et al. (67) further found that when age was stratified into those under (OR = 0.3) and over 30 years of age (OR = 0.3) in multivariate models adjusted for age, gender, ethnicity, marital status, and year of event, depression significantly decreased the risk of homicide-suicide when compared to those who had engaged in suicide alone. The above findings suggest that rather than be unique to homicide-suicide, MDs and mental health problems are linked to the suicidal behaviour of this act. It should be noted that several studies found no significant differences in these factors between homicide-suicide and other behavioural groups (72, 53, 62, 65, 74). Such differences in findings may be attributed to the high risk of bias present in the above research (e.g., unrepresentative sample) and the use of distinct methodologies (e.g., mental health

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TABLE 4 Summary of identified trends.

Psychological factor	Summary of trends
Mental health problems	Non-specific mental health problems: Significantly less likely to be linked to homicide-suicide when compared to suicide alone. Significantly more likely to be linked to homicide-suicide when compared to homicide alone.
	Mood disorder: Significantly less likely to be linked to homicide-suicide when compared to suicide alone. Significantly more likely to be linked to homicide-suicide when compared to homicide alone.
	Substance use disorder: Significantly more likely to be linked to less extreme forms of dual harm when compared to self-harm alone.
	Personality disorder: Significantly more likely to be linked to less extreme forms of dual harm when compared to self-harm alone.
Personality-related	Psychopathy (particularly impulsive/antisocial facet) significantly associated with less extreme forms of dual harm, but unclear whether this is uniquely associated with dual harm.
Emotion-related	Lack of sufficient evidence for how dual harm is associated with emotion-related factors.

problems assessed *via* professional mental health diagnoses vs. law enforcement reports).

Our review found evidence that SUDs and PDs may be linked to the aggressive behaviour in less extreme forms of dual harm, rather than be a unique characteristic of this behaviour. Harford et al. (53) examined differences in antisocial PD (ASPD), borderline PD (BPD), schizotypal PD, and DMS-5 SUDs between those who had engaged in dual harm, self-harm alone, aggression alone, and no harmful behaviours. When adjusting for sociodemographic characteristics and lifetime psychiatric disorders, the research found that alcohol, tobacco, and other drug use disorders had higher odds for dual harm [(53), OR = 1.4–1.7] when compared to self-harm alone, but not aggression alone. Similarly, ASPD was only significantly associated with dual harm when compared to no history of harmful behaviours (54, OR = 14.6) and self-harm alone (54, OR = 6.4). In support of the above findings, Harford et al. (75) revealed that every PD diagnostic criteria was significantly higher for dual harm only when this group was compared to self-harm alone (OR = 3.9). Moreover, three other studies found that those who had engaged in dual harm were significantly more likely to have SUDs when compared to individuals with a history of self-harm alone [(75), OR = 4.5, (35), OR = 3.3–4.3; (57), prevalence ratio = 1.8), but not aggression alone (37, 55, 68, 69).

Amongst homicide-suicide studies, whilst there was some empirical support for the notion that PDs may be associated with homicide-suicide when compared to self-harm alone (76, 67), this evidence was weak due to the small number of studies and their moderate to high risk of bias. In regard to SUD, only Benítez-Borrego et al.'s (64) study assessed this factor in relation to homicide-suicide and found no significant differences between those who had perpetrated filicide alone and filicide-suicide. Given that only one homicide-suicide study in this review examined SUD and this was rated as having a high risk of bias, there is not sufficient evidence for whether this factor is a distinguishing characteristic of extreme forms of dual harm. Nevertheless, in light of the trend that PD and SUD are significantly associated with less extreme forms of dual harm when compared to self-harm alone but not aggression alone, it may be that this relationship is driven by their link to the aggressive behaviour in dual harm.

3.3.2. Personality related factors

No homicide-suicide studies assessed personality related factors in relation to harmful behaviours. Amongst non-homicide-suicide studies, four had examined differences in psychopathy between dual harm and other behavioural groups. Whilst findings suggested that this factor, in particular its impulsive and antisocial aspect, is significantly associated with dual harm, it was unclear whether this association is unique to dual harm or primarily driven by the separate self-harm or aggressive behaviours. Specifically, Stålenheim (38) found that compared to those who had engaged in repeated violent criminality alone, individuals who had engaged in dual harm were significantly more likely to score higher on personality factors representing Impulsive Sensation Seeking Psychopathy, Aggression and Hostility. However, no significant differences were found between those who had engaged in suicidal behaviour alone and dual harm (38). Similarly, Huang et al. (37) found that compared to the aggression alone group, those who had engaged in dual harm scored significantly higher on the anti-social subscale of the Psychopathy Checklist-revised. On the other hand, Swogger et al. (69) found that when adjusting for confounders, such as substance use, age, gender, and ethnicity, the antisocial facet of psychopathy was significantly associated with dual harm when compared to self-harm alone (OR = 1.6) and no harmful behaviours (OR = 1.6). Furthermore, Steinhoff et al. (68) found that when adjusting for sociodemographic factors, those who had engaged in dual harm reported significantly more psychopathy symptoms compared to the no harm (coefficient = 0.20), self-harm alone (coefficient = 0.13) and aggression alone (coefficient = 0.08) groups. Given the above mixed findings, there is insufficient evidence for whether psychopathy is uniquely associated with dual harm.

In regard to other personality related factors, Richmond-Rakerd et al. (35) examined whether the Big Five personality traits (i.e., extraversion, neuroticism, agreeableness, openness, and conscientiousness) are uniquely associated with dual harm. Depending on which behavioural group dual harm was compared to (i.e., self-harm alone, aggression alone or no harmful behaviours), extraversion, neuroticism, agreeableness, and openness showed a distinct pattern of associations with dual harm. This suggests that the above traits are not a unique aspect of dual harm, but may be driven by the risk associated with the separate self-harm and aggressive behaviours. However, lower conscientiousness (i.e., lower impulse control) was found to distinguish dual harm from all other behavioural groups, suggesting that lower impulse control may be a unique characteristic of this behaviour (e.g., self-harm alone vs. dual harm group, Cohen's $d = -0.6$). Most of the above studies had a moderate risk of bias and so findings should be interpreted with caution.

3.3.3. Emotion related factors

No homicide-suicide studies assessed emotion related factors in relation to harmful behaviours. Amongst non-homicide-suicide papers, two examined differences in anger amongst participants (69, 54). Swogger et al. (69) found that anger was significantly associated with dual harm amongst discharged psychiatric patients when compared to those without a history of harmful behaviours

(OR = 1.02) and those with a history of self-harm alone, even when adjusting for confounders (e.g., sociodemographic characteristics). On the other hand, Hemming et al. (54) found no significant differences in anger between prisoners who had engaged in dual harm and both sole harm behaviours. Richmond-Rakerd et al.'s (35) found that compared to the self-harm alone group, those who had engaged in dual harm were significantly more likely to have low childhood self-control (OR = 1.8) and self-regulation difficulties as reported by caregivers (OR = 1.4) and teachers (OR = 1.6). In contrast, Steinhoff et al. (68) found that those who had engaged in dual harm were significantly more likely to have a lack of self-control only when compared to the no harm group (coefficient = 0.13), but not when compared to the self-harm alone or aggression alone groups. Given the above mixed findings, it is unclear how emotion related factors are associated with dual harm.

4. Discussion

This systematic review aimed to assess whether dual harm is distinguished by specific psychological factors when compared to self-harm alone, aggression alone and no harmful behaviours. The greatest commonality across the homicide-suicide and non-homicide-suicide literature is that findings are mixed. This is likely due to differences in methodologies and conceptualisations of harmful behaviours, as well as the moderate to high risk of bias present in most studies. Nevertheless, there is evidence that certain clinical factors, including MD, PD, SUD, and antisocial/impulsive related personality traits are associated with dual harm. There is a general trend for most studies to find differences in the above factors when comparing dual harm to only *one* of the behavioural groups (i.e., self-harm alone, aggression alone, or no harmful behaviours), but not when compared to *all* groups. Such findings suggest that these mechanisms are not uniquely associated with dual harm as a distinct clinical entity. Rather, they may be driven by the individual self-harm and aggressive behaviours that constitute dual harm. It is clear from our systematic review that further research is required in this field before a robust conclusion can be reached regarding the nature of dual harm.

4.1. Is dual harm a unique behavioural construct?

Our review found insufficient evidence that dual harm is associated with certain psychological factors when compared to *all* other behavioural groups. As such, findings do not support the hypothesis that dual harm is a unique behavioural construct with distinct characteristics. However, we found that some factors are associated with dual harm when this behaviour was compared to only *one* of the behavioural groups, but not the others (i.e., linked to self-harm alone but not aggression alone and vice versa). Such findings may suggest that the relationship found between certain psychological mechanisms and dual harm is driven by the individual self-harm or aggressive behaviour, rather than be associated with dual harm as a unique behavioural construct. For example, whilst homicide-suicide was significantly associated with mental health problems and MDs when compared to homicide alone, we found that these factors decreased the risk of homicide-suicide when compared to suicide alone. Accordingly, mental health problems and MDs are not unique to homicide-suicide, but may be linked to the suicidal aspect of this behaviour. In regard to PDs and SUDs, there was evidence that these factors are linked to the aggressive behaviour in less extreme forms of dual harm. Furthermore, there was evidence that impulsive and antisocial related traits (e.g., antisocial aspect of psychopathy, lower conscientiousness) are significantly associated with dual harm. However, due to mixed findings, it was unclear whether such factors are unique to dual harm, or driven by the separate risk associated with self-harm or aggression.

Our review found conflicting findings regarding mental health problems in homicide-suicide and non-homicide-suicide research. Such differences may reflect the distinct nature of these behaviours. For example, factors such as victim-offender relationship, intimate partner conflict and preceding stressors (e.g., marital conflict, financial problems), may be more likely to act as triggers for homicide-suicide than less extreme forms of dual harm (21, 66). It may be that rather than sit on the same continuum of behaviour, homicide-suicide is qualitatively distinct from less extreme forms of dual harm given its distinct conceptualisation and context. In order to assess whether it is meaningful to distinguish between homicide-suicide and non-homicide-suicide dual harm, studies could assess whether there are differences in how various psychological factors are associated with these behaviours. Furthermore, there is evidence that mental health problems are more prevalent amongst filicide-suicide perpetrators compared to intimate, family and extra-familial homicide-suicide (73). This could suggest that rather than approaching homicide-suicide perpetrators as a homogenous group, it is important to examine whether psychological differences exist between distinct types of homicide-suicide. Not distinguishing between subgroups of homicide-suicide perpetrators in our review may account for the lack of consistent findings regarding mental health problems in the included literature.

4.2. Theoretical support

Previous studies have demonstrated that dual harm is significantly associated with various factors when compared to other behavioural groups, leading to the hypothesis that this phenomena is a unique clinical construct with distinct characteristics. However, our review found insufficient evidence for the above notion. Findings suggest that rather than be linked to dual harm as a unique entity, the relationship found between dual harm and certain psychological factors may be driven by the separate self-harm and aggressive behaviours. Consequently, it may be more meaningful to consider dual harm as an overlap between self-harm and aggression and their risk factors, as opposed to a unique behavioural construct in its own right.

Plutchik and Van Praag's (29) model of countervailing forces is in line with the above suggestion. The model suggests that the presence and interaction of factors that are separately associated with self-harm and aggression lead to an individual directing their underlying aggressive impulse towards both themselves and others (i.e., dual harm). Moreover, our findings support Boxer's (4) notion that dual harm results from the presence of a wide range of risk factors that are associated with self-harm and aggression. Boxer (4) highlighted that from a developmental psychopathology stance, dual harm is an example of multifinality, in which a single range of risk factors can lead to different behavioural outcomes (i.e., self-harm or aggression).

It may be that those who engage in both self-harm and aggression are likely to have experienced a "high loading" of risk across various factors linked to harmful behaviours (4, p. 206). It is the accumulation and multiplicative effect of such risk factors that may lead to the riskier profile demonstrated by those who dual harm.

Rather than accounting for dual harm through a unique framework, it may be more effective for theoretical models to consider how various risk factors associated with self-harm and aggression may interact to lead to dual harm. Drawing from existing models of harmful behaviours could provide a comprehensive account of how dual harm may emerge. For example, theories, such as Durkheim's (19) social integration theory, that suggest homicide-suicide to be primarily driven by suicidal intent are supported by present findings that suggest mental health problems and MDs to be driven by the suicidal aspect of homicide-suicide. Nevertheless, it should be noted that Durkheim's (19) theory focuses on the social mechanisms of this behaviour. Similarly, although the stream analogy of lethal violence (21) suggests that the psychological process of attribution underlies homicide-suicide, it is a primarily social framework that focuses on structural and cultural factors. Our review provides evidence for the link between psychological factors and dual harm (both homicide-suicide and less extreme forms). Additionally, previous research has identified various social and environmental factors that are associated with this behaviour (35–38). In light of such findings, it is important to adopt an interdisciplinary perspective that expands on existing theories and considers the myriad of psychological, social and environmental factors that may contribute to dual harm. For instance, Shafti et al.'s (15, 30) cognitive-emotional model adopts numerous existing theoretical frameworks, such as the general aggression model and diathesis-stress theories, in order to explain how various evidence-based risk factors of self-harm and aggression, including psychological factors, may interact to lead to dual harm. Findings from the present review that antisocial/impulsive related personality factors are associated with dual harm offer support to the cognitive emotional model of dual harm (15). The model proposes that a personality style, such as secondary psychopathy, may increase an individual's risk of using both self-harm and aggression to regulate their negative emotions. However, the above model has not been empirically tested. It is important for future work to examine the psychological, social, and environmental factors that may contribute to dual harm in order to inform holistic theoretical accounts of this behaviour.

4.3. Critical appraisal

The secondary aim of this review was to conduct a critical appraisal of the included literature. Most homicide-suicide studies were rated as having an unbiased selection of cohort, largely due to the use of national databases. However, the studies were limited in their generalisability to non-Western countries. This is a concern given that cultural and structural differences across countries, such as cultural values, have been shown to influence harmful behaviours (77, 78). It is necessary to research dual harm in non-Western countries in order to assess differences in the aetiology of this behaviour across cultures. Many studies were limited in their design as they did not blind researchers to participant status or did not match different participant groups. The latter may have been of particular concern given that many papers found significant demographic differences between participant groups, including age, sex, and ethnicity. Moreover, the majority of the included research was cross-sectional. In order to provide stronger evidence for the causal role of psychological factors in dual harm, studies should assess the relationship between these variables over time using a longitudinal design.

There was variability in the definitions and measurements of harmful behaviours across the included research, reflected by the inconsistent terms used to refer to dual harm. A lack of agreed and empirically tested definition for dual harm is a major weakness of the literature, leading to variability in how this behaviour is conceptualised and assessed (30). For example, it has been debated whether it is clinically meaningful to consider a behaviour as dual harm if the self-harm and aggressive act co-occur at any point in time, or whether it is more appropriate to establish a restricted time-period (15). A priority in the literature should be to investigate the impact of adopting different definitions of dual harm. This may include restricting dual harm to different timeframes and severity of behaviours. Furthermore, whilst the standard definition of homicide-suicide is homicide immediately followed by suicide resulting in death of the perpetrator, some studies only assessed attempted suicide and did not restrict the timeline within which the two acts occurred. Future research should aim to use consistent measurements and conceptualisations of harmful behaviours to allow comparability. The importance of doing so is highlighted by reports that when broad definitions of harmful behaviours are adopted, the prevalence of dual harm is 3%, whilst narrower definitions provide a prevalence rate of 0.06% (53).

Many homicide-suicide studies did not use valid methods to measure mental health difficulties. Furthermore, in the case of suicide, it is challenging to measure psychological characteristics post-mortem, possibly leading to underreporting of such factors within the included research. A further concern is that self-reports of harmful behaviours have been found to be underreported and differ from medically and informant recorded data (79). Combing data across multiple sources (e.g., family reported, violent convictions, self-report, hospital admissions) may help in future research.

Most studies did not carry out a power analysis and so a lack of significant findings in papers with small sample sizes may have been attributed to inadequate power. Furthermore, half of the included research did not account for pre-determined confounders. This is a concern as various environmental, sociodemographic and psychological factors have been found to be associated with harmful behaviours. For example, Harford et al.'s (75) paper found that the likelihood of having experienced physical and sexual abuse was significantly higher in those who had engaged in dual harm (OR = 2.7, OR = 2.8, respectively) when compared to aggression alone. This relationship was modified by psychiatric disorders and sociodemographic factors. Given that we found various psychological factors to be associated with dual harm, future research should adopt multilevel theorising and multivariate analyses in order to capture the complexity of how various mechanisms may interact to lead to co-occurring self-harm and aggression.

4.4. Implications

At this stage, given the limitations within the literature, it is premature to recommend whether or not dual harm should be established as a unique behavioural construct within clinical practice. Nevertheless, this review adds to the growing literature by extending

our understanding of the characteristics of dual harm and the nature of their relationship to this behaviour. Our findings highlight that approaching self-harm and aggression separately within research and practice may be insufficient and that it is imperative to consider the potential duality of an individual's harmful behaviours (15). For example, it may be important to identify risk factors of self-harm in those who have engaged in aggression and vice versa, in order to lessen the likelihood of their co-occurrence. Identifying the extent to which an individual has been exposed to such factors, as well as careful consideration of their history of other harmful behaviours, may aid the identification of those who are likely to engage in future dual harm. Furthermore, a transdiagnostic approach that identifies the common underlying mechanisms of factors associated with self-harm and aggression and aims to reduce an individual's level of risk across such factors may help to prevent dual harm.

The present work highlighted the association between dual harm and various mental health (e.g., PD, SUD, MD) and personality related factors (e.g., antisocial facet of psychopathy, impulsivity) linked to self-harm and aggression. Future research should build upon this review by further investigating the link between these mechanisms and dual harm amongst forensic populations. Stronger evidence for the role of such psychological factors in dual harm would demonstrate the importance of their identification and treatment in risk assessments and interventions of harmful behaviours within forensic settings.

Whilst dual harm may result from the presence of risk factors that are separately associated with self-harm and aggression, it may be that these behaviours are used interchangeably to serve the same purpose in individuals who dual harm (e.g., regulating negative emotions; 15). Therefore, rather than approach self-harm and aggression separately, a key consideration for clinicians and future research may be to assess whether these behaviours are used to fulfil a shared function in the context of dual harm. Furthermore, although it may not be clinically meaningful to approach dual harm as an independent behavioural construct, it is important to recognise the distinct needs and risk profile shown by those who engage in this behaviour. For example, there should be a recognition of barriers to treatment that may be unique to those who engage in both self-harm and aggression as a result of the duality of their harmful behaviours and greater level of risk (15, 57). Steeg et al. (57) further highlighted that those who engage in dual harm are likely to have been in contact with healthcare, criminal justice, and social services. Therefore, a coordinated effort from the above sectors may allow more effective risk-assessment, prevention and treatment strategies for these individuals.

In regard to homicide-suicide, the most common finding was that those with a history of suicide alone are more likely to have a mood disorder and mental health problems compared to homicide-suicide. In a study of violent and non-violent patients, Apter et al. (80) found distinct patterns of correlations between various factors and the risk of suicide. Whilst in the violent group there was a significant correlation between anger and suicide risk (r = 0.7), there was a significant relationship between sadness and suicidal risk in non-violent patients (r = 0.5). Furthermore, happiness was negatively associated with suicidal risk in the non-violent participants (r = −0.6). Alongside the findings of the present review, it may be plausible to suggest that suicidal behaviour alone and suicidal behaviour in those who dual harm may have different underlying mechanisms. As such, it may be that distinct approaches should be used to manage suicide risk in those who have also engaged in extreme forms of aggression and those who have not. Nevertheless, given conflicting findings within the homicide-suicide literature and the limitations of such research, there is a need for future investigations of the aetiology of homicide-suicide that provide stronger evidence-based implications.

4.5. Limitations and strengths

This review should be understood in light of its limitations. The included studies were limited to those published in English and those that had examined adults. Therefore, we may have failed to identify relevant non-English papers and findings may not generalise to younger populations. It is important for future research to examine dual harm amongst younger samples in order to inform our understanding of the development and aetiology of this behaviour. Furthermore, self-harm was assessed more generally by not distinguishing between suicidal and non-suicidal forms of self-harm. Finally, it was not possible to conduct a meta-analysis and compute an absolute effect regarding how psychological factors are associated with dual harm. Therefore, this work should be considered as an exploratory systematic review that provides preliminary evidence for the nature of dual harm.

Despite its limitations, to the best of our knowledge, this work is the first systematic review to investigate differences in psychological characteristics between those who have engaged in dual harm, sole harm behaviours and no harmful behaviours. Integrating findings has allowed us to provide important contributions to the emerging field of dual harm by critically reviewing literature in light of previous theories and identifying gaps to be addressed by future research. Additionally, this review followed best practice by adopting PRISMA (39) and Economic and Social Research Council guidelines (51). Finally, by having an independent reviewer conduct checks at each stage of the review, we have reduced the risk of bias. This is evident by the almost perfect agreement between the lead and independent reviewer in the screening.

5. Conclusion

A holistic view of the literature provides preliminary evidence that psychological factors that at first glance seem to be uniquely associated with dual harm, are actually likely to be driven by their association with the separate self-harm or aggressive behaviours. These findings suggest that dual harm is not a unique clinical entity. Rather, it is the complex interactions between risk factors associated with self-harm and aggression and their multiplicative effect that may lead to dual harm. Whilst there has historically been a separation in how we perceive and approach self-harm and aggression, our review highlights the importance of adopting an integrated approach that assesses these behaviours and their risk factors together in the context of dual harm. Doing so may aid the prevention and management of co-occurring self-harm and aggression within forensic and clinical settings. Furthermore, our critical appraisal identified areas of improvement for future research. Studies that follow the recommendations provided by this review will help extend our understanding of those who engage

in dual harm, and thereby provide important implications for clinical practice.

Data availability statement

The original contributions presented in this study are included in this article/**Supplementary material**, further inquiries can be directed to the corresponding author.

Author contributions

MS, AF, DP, and PT were involved in the conceptualisation, design, and planning of the review. MS was involved in writing the protocol, literature searches, risk of bias assessment, data extraction, synthesis, and writing the manuscript. MS and FH were involved in the screening. AF, DP, FH, and PT contributed to reading and revision of the manuscript. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2023.1083271/full#supplementary-material

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Understanding the mental health needs of Scotland's prison population: a health needs assessment

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Introduction: This study reports on an assessment of mental health needs among Scotland's prison population which aimed to describe the scale and nature of need as well as identify opportunities to improve upon the services available. The project was commissioned by the Scottish Government to ensure that future changes to the services available to support the mental health and wellbeing of people in prison would be evidence-based and person-centered.

Methods: A standardized approach to health needs assessments was employed. The study was comprised of four phases. In phase I a rapid literature review was undertaken to gather evidence on the prevalence of mental health needs experienced by people in prison in the UK. In Phase II a multi-method and multi-informant national mapping exercise involving providers to all Scottish prisons was undertaken to describe the mental health services available, and any gaps in these services, for people in and leaving prison. In Phase III prevalence estimates of several mental health needs were derived for Scotland's current prison population, modeled from a national survey dataset of Scotland's community population using logistic regression. Finally in Phase IV, professional stakeholders and individuals with lived experience were interviewed to understand their experiences and insights on challenges to supporting the mental health and wellbeing of people in prison, and ideas on how these challenges could be overcome.

Results: Evidence across the four phases of this needs assessment converged indicating that existing provision to support the mental health of people in prison in Scotland was considered inadequate to meet these needs. Barriers to effective partnership working for justice, health, social work and third sector providers appear to have led to inadequate and fragmented care, leaving prisoners without the support they need during and immediately following imprisonment.

Conclusions: Joint and coordinated action from justice, health and social care, and third sector providers is needed to overcome enduring and structural challenges to supporting the mental health of people in prison. Eighteen evidence-based recommendations were proposed to the Scottish Government relating to the high-level and operational-level changes required to adequately meet the prison population's mental health needs.

KEYWORDS

mental health, vulnerable population, Scotland, health needs assessment, prison healthcare

1. Introduction

People in prison are more likely to have mental health needs[1] than the general population, from common problems such as anxiety, depression and substance dependency to serious mental disorder including schizophrenia (1, 2). These mental health needs are highly comorbid, meaning these individuals frequently experience multiple co-occurring problems (3). For many, these issues precede imprisonment and are thought to be associated with predisposing factors such as higher rates of traumatic or adverse life experiences (4) and head injury (5). Individuals who come into prison are also more likely to be from communities characterized by multiple deprivation (6), to have spent time in local authority care (7), and to have experienced interpersonal victimization (8). Imprisonment itself, however, can also be damaging to someone's mental health, with the remand period recognized to be one of particular vulnerability (9, 10).

Prison healthcare should be informed by the principle of equivalence, and offer the same level, range, and quality of healthcare as that provided in the community (14). However, some argue that this does not go far enough and that, to compensate for the levels of deprivation, risk factors for poor mental health and health inequalities experienced by the prison population, equivalence of health *outcomes* should be the focus (15). Unfortunately, not all people in prison with mental health needs are engaged with services to address these needs. Public stigma around mental illness and distrust of health professionals lead to a reluctance to disclose ongoing problems (11, 12). Ineffective screening procedures by prison in-reach teams and underdeveloped care pathways often fail to identify and meet mental health needs among this population (13, 16). However, the scale of need and degree of comorbidities often far outstrip the resources available to support individuals even when their needs are known. For example, a survey of prisons in England and Wales found mental health staffing numbers falling well short of equivalence with community mental health services and noted striking variation in mental health staffing between prisons, which has been likened to a "postcode lottery" within prison mental healthcare (14).

The literature stresses the importance of systematic and collaborative approaches to care pathways for people in prison who have mental disorder (17). There are five primary elements of effective service provision across the prison care pathway that have emerged from this literature. These are described in the STAIR model, an acronym that stands for screening, triage, assessment, intervention, and re-integration (18). The STAIR model is a framework that defines and measures prison mental health services as a clinical pathway with a series of measurable and linked functions (17). This should include, for all people coming into prison, an initial screen from trained mental health staff using validated tools to identify presenting issues which require immediate intervention (psychosis, suicidality, and substance withdrawal), followed by a subsequent second screen which provides a more detailed assessment of the individual's mental health need and current functioning. Individuals should then be triaged to the appropriate service and level of care following multidisciplinary case discussion of the information derived from screening. Research shows that ~15% of the prison population (2) will require assessment by specialist mental health services at this stage. Then, a range of culturally competent and evidence-based interventions should be available, tailored to the severity of the individual's needs. Finally, planning for community reintegration, with specification of the appropriate package of care for the individual transitioning to the community, should begin well in advance of release. There is a growing literature of studies evaluating prison mental health services against these standards, though more work is needed on standardized assessment approaches (17). There is a clear advantage to embedding data collection processes that enable service evaluation and quality improvement within existing clinical governance procedures. The STRESS-Testing approach (19) employed within an Irish remand prison demonstrates how such data, which covered screening, identification, service caseload, transfer of care, diversions, efficiency, self-harming behaviors, and service mapping, could be studied to identify aspects of service provision requiring improvement.

Health needs assessment is systematic tool to review the health issues facing a population and the effectiveness of healthcare services currently in place. Health needs assessments are often used to inform the commissioning and planning of health services (21). In the prison context, where demand for health care often appears to outstrip the capacity of services, a health needs assessment can help prison-based health services to plan their health care provision and move toward a service which will tackle health needs systematically rather than reacting to demand (20). Health needs assessments may incorporate elements of one or more categories: survey approach, rates-under-treatment approach, social indicator approach, key informant approach, and community forum (22). They typically utilize a variety of data sources and quantify incidence and/or prevalence of various health outcomes. One central feature to health needs assessment is the differentiation of true health need, the demand for healthcare services, and the supply and availability of these services (20).

Within the UK, there have been few attempts at a national level to systematically assess the mental health needs of individuals in prison, and none recently. In 1998 the Office of National Statistics published a landmark report on the mental health needs of people in prison (23). Over 3,000 people were surveyed and assessed through standardized clinical interviews across all prisons in England and Wales. Through comparison to the general population, the study reported clear evidence of increased psychiatric morbidity among the prison population across a range of mental health problems, including major mental disorder, personality disorder, substance use and self-harm. In Scotland, two national needs assessments were also conducted in the 1990s (24, 25), followed by a comprehensive national healthcare needs assessment published by the Scottish Prison Service (SPS) in 2007 (26). Though the Graham (26) report remains the most

1 This manuscript uses the term "mental health needs" to refer to the broad set of psychological and behavioral problems associated with mental disorder, personality disorder, substance use, neurodevelopmental disorder and other brain conditions for which mental health services can offer support.

recent national assessment of mental health needs in Scotland's prison population, it has been noted that the policy impact of its findings were limited by the report's reliance on existing data held by SPS to estimate the prevalence of mental health needs across Scottish prisons. At a local level, several NHS Scotland Health Boards have undertaken or are undertaking prison mental health needs assessments to inform planning for future service provision (27, 28).

Scotland has a prison population of 7,504 ($n = 283$ women) across 15 prisons, including one open, low supervision prison (29). SPS publicly manages all but two prisons, which are currently operated by private contractors. Accounting for its national population, Scotland's rate of imprisonment, 137 per 100,000, is one of the highest within Western Europe, alongside England and Wales. The Scottish prison population is 95% White, with the largest ethnic minority groups being Asian (2%) and African, Caribbean or Black (2%). Though the prison population size overall has been relatively stable in recent years, an increasing proportion of the prison population is on remand (pre-trial). During the year of the present needs assessment, ~25% of the prison population was on remand, which is the highest on record (29). The proportion of sentenced individuals in prison has dropped 15% since 2020, driving reductions in the proportion of women and young people under the age of 21 in prison.

SPS endorses a "whole-prison" approach (30) to health improvement, which advocates for addressing health factors through comprehensive and integrated programmes and recognizes a role for health promotion in all prison staff. While mental health is a whole-prison concern, involving multiple agencies working in partnership, NHS Scotland has been responsible for the delivery of primary and community healthcare in prisons in Scotland since 2011. Individuals in prison or who are accused of a criminal offense who have severe mental illness, or those with particularly complex needs, can access specialized, tertiary care including assessment and treatment by transfer to one of 20 high, medium, low security psychiatric units, locked wards or intensive psychiatric care units which accept transfers from prison. Secure hospitals, part of Scotland's forensic mental healthcare system, represent a largely separate system of care but one which interfaces heavily with prison mental healthcare in its operation. A range of third and voluntary sector organizations also provide programming and services, including throughcare support, to promote the mental health and wellbeing of people in prison in Scotland. Since 2011, SPS has had a more limited operational role in support for mental health services in prisons though it continues to be involved in promoting wellbeing, in identifying and supporting individuals with mental health needs in prison and in implementation of its suicide risk management strategy, "Talk to Me" (31).

Evidence has accumulated in recent years that existing prison mental health services in Scotland are not proactively designed to meet the needs of their patient groups. The provision of mental health services across the Scottish prison estate is variable and in need of improvement to meet the scale and nature of need (32, 33). There are recognized problems implementing the whole-prison health promotion approach and evidence of silo working among health, social work, SPS and third sector agencies (32, 34). The sustainability of the current mental healthcare model in prisons has been questioned, with likely demand outstripping available resources (35, 36). This is in part due to concerns about the numbers of nursing staff and the ability to provide an effective mental health service with clinical time routinely taken up by treating substance use problems (36, 37).

In 2020, the Scottish Government commissioned a series of national needs assessments in relation to Scotland's prison population to ensure that future changes to prison healthcare are person-centered and evidence based. This work culminated in the publication of four reports, on social care support (38), physical and general health (39), substance use (40), and mental health needs (41). This paper reports on the work of the mental health needs assessment, which was conducted from July 2021 to March 2022. By this time, an in-depth national mental health needs assessment was overdue, with SPS and the National Prisoner Healthcare Network calling for it in substantive reports in 2007 (26), 2014 (33), and 2016 (32). This study used a triangulation of sources and the best available data to determine the scale and nature of mental health needs within Scotland's prison population, to understand current service provision in custody, and as part of throughcare, and engage with stakeholders to gather their views and insights on current challenges.

2. Study procedure and governance

The study followed the Health Needs Assessment in Prisons approach (20) and incorporated three main elements of needs assessments: corporate, epidemiological, and comparative. In the corporate approach, stakeholders and others with special knowledge are engaged to determine their views on what is needed. In the epidemiological approach, the incidence and prevalence of various needs are described. Finally, in the comparative approach, existing services are compared with the services of other providers and major discrepancies are examined and address. The needs assessment was conducted in four substantive, linked phases: rapid literature review, service mapping exercise, quantitative analysis, and qualitative interviews with stakeholders. The latter three phases are reported here. Broadly, the service mapping exercise fulfilled the comparative element of health needs assessment, the quantitative analysis fulfilled the epidemiological element, and the qualitative interviews fulfilled the corporate element. Expertise and guidance was received throughout the project from a Research Advisory Group featuring representatives from health, justice, third sector, Scottish Government, and those with academic expertise in prison mental healthcare. The study also received input from a Lived Experience Panel, comprised of individuals who have previous experience of imprisonment and those who currently work to support individuals who have recent experience of being imprisoned.

The University of Edinburgh Medical School Research Ethics Committee and the NHS South East Scotland Research Ethics Committee confirmed that as a service evaluation the study was exempt from full research ethics review by their committees. The Scottish Prison Service Research Access and Ethics Committee provided access and ethical clearance to engage with SPS staff

and residents, and to access data held by SPS. Face-to-face data collection and interviewing was not possible during the course of the study due to the ongoing risks and challenges relating to COVID-19. Written informed consent for participation was not required for this study in accordance with national legislation and institutional requirements. However, for good practice written informed consent was received from lived experience participants.

3. Service mapping exercise

3.1. Approach

NHS Scotland is responsible for the provision of healthcare including mental healthcare to those in prisons, but it is recognized that other partners including SPS, prison-based social work teams and third sector organizations work together and independently to support the mental health of individuals in prison. A national mental health services mapping exercise was previously conducted in 2012 by the Forensic Mental Health Services Managed Care Network on behalf of the National Prisoner Healthcare Network Mental Health Subgroup (33). That mapping exercise found that service provision in nursing and psychiatry was related to historical factors rather than a true assessment of need, and there was very little input from clinical psychology into prison mental health teams across the country.

The aim of the present service mapping exercise was to understand current provision available to people in all of Scotland's prisons. The mapping exercise was undertaken by the Forensic Network, selected for its experience in conducting the previous national mapping exercise and for its links with prison health centers in relation to the care of individuals who require transfer from prison to forensic hospitals. Electronic proformas were sent to prison health center managers and prison based-social work team leads across all 15 prisons for completion and return in September 2021. A 100% completion and return rate was achieved. To gather third sector input into the mapping exercise, the research team and the Forensic Network partnered with a network called the Criminal Justice Voluntary Sector Forum (CJVSF), which connects over 30 third sector organizations working in criminal justice settings in Scotland. Input was gathered through proforma response and from a virtual discussion event hosted by CJVSF with attendance from organizations which support the mental health of individuals in and leaving prison.

3.2. Service size and configuration

Integrated primary and secondary mental health services are available in 13 of the 15 prisons in Scotland, with mental health services offered only through primary care in two prisons. Mental health and substance use services were found to be integrated in six establishments. In nine prisons these services were not formally integrated though work closely and collaboratively. Service staffing, according to number of qualified or registered professionals, across nursing, allied health professionals, psychiatry, and clinical psychology as reported by health center managers is set out in Table 1. Workforce figures are reported using the local standard by discipline; namely whole time equivalent [1 whole term equivalent (WTE) = full time / 37.5 h per week] for nursing and allied health professionals (AHP), and number of sessions per week (one session = ½ day, 10 sessions per week) for psychiatry and clinical psychology professionals. Table 1 includes the workforce totals by profession as well as the median and range per establishment, using prison resident to staff ratios in order to standardize prison size. Figures are reported separately for the closed and open prison estate. Scotland's only operating open prison is HMP Castle Huntly, which has a minimal NHS mental health team consistent with SPS's approach that individuals who are acutely mentally ill or experiencing a mental health crisis would not remain in the open estate. In such instances, the individual would be transferred back to closed conditions where their needs can be more closely and safely monitored and their mental health stabilized.

Across the prison estate there were 91 WTE nurses employed, with 76 being mental health nurses. The mental health teams in three prisons were noted to also include substance use or learning disability nurses. There was substantial variation across in the resident-to nurse ratio between prisons. The women's prison HMP YOI Cornton Vale reported one of the highest nursing staff complements. There were mental health nurse vacancies noted at six prisons, in several cases there were multiple unfilled posts within a prison. AHPs including occupational therapists and speech and language therapists formed part of the core multidisciplinary mental health teams in just over half of establishments, though there was wide variation across these prisons in terms of input per resident. Only eight of Scotland's 15 prisons employed AHPs as part of the mental health team. Across the entire prison estate there were 9.6 WTE AHPs employed, a quarter of them in one prison in eastern Scotland. It should be recognized that in prisons where AHPs were not reported to be part of the mental health team they may nevertheless provide support to individuals in the prison who have mental health needs. There was psychiatry input into each prison, totalling to 39 sessions (equivalent to just under four full time psychiatrists for the prison estate). The number of funded psychiatry sessions per week appeared relatively arbitrary[2] in relation to prison size, with relatively few sessions in several of the largest prisons serving Glasgow and Edinburgh. Thirteen prisons had clinical psychology input, totalling to 165 sessions across the estate (over 16 full time clinical psychologists for the prison estate). Review of the resident to staff ratio for each prison across these professions yielded evidence of inequities in terms of mental health input into certain prisons, and arbitrary service resource allocation not closely linked to the number of prison residents.

2 From the authors' perspectives, these apparently arbitrary differences in mental health team staffing across Scottish prisons may, to an extent, be driven by two factors. The first is local health board response to public inquiries following adverse incidents or inspection visits by the Mental Welfare Commission for Scotland. A second is the effect of having senior forensic mental health professionals employed in a health board area or specific prison establishments who is particularly supportive of expansion to the multidisciplinary mental health in-reach team.

TABLE 1 NHS mental health service resource in the Scottish prison estate.

	Unit	Total (across estate)	Prison residents per staff		
			Closed estate		Open estate
			Median	Range	
Nurses (any specialty; $k = 15$)	1 WTE	90.6	86	26–182	925
Mental health nurses ($k = 15$)	1 WTE	75.6	94	25–282	927
AHPs ($k = 8$)	1 WTE	9.6	391	237–1,817	925
Psychiatry ($k = 15$)	Half-day sessions	39	219	32–455	741
Clinical psychology ($k = 13$)	Half-day sessions	165	56.5	20–121	185

3.3. Service delivery

3.3.1. Screening and referral

All people being received into prison in Scotland complete a standardized health screening by a member of the prison nursing team, most often a general rather than mental health nurse. The mental health portion of the screening asks about previous history of mental illness, self-harm, prior contact with mental health services, previous inpatient admissions for psychiatric care and any medication prescribed at the time of reception into prison. A referral to prison mental health services can be made following screening where there is a current mental health concern or the individual is in receipt of medication for a mental health or substance use problem. Responses from three establishments recognized that the process could be more thorough, or that a mental health nurse should deliver that mental health screening. Social work and third sector colleagues highlighted the need for a more robust process in place to identify mental health needs for those coming into prison, however only one NHS team identified issues with the existing process.

3.3.2. Multidisciplinary case management

There was broad consistency in approach to the multi-disciplinary case management of mental health assessment and treatment. Most establishments reported having a larger fortnightly or monthly meeting called the multidisciplinary mental health team (MDMHT) meeting. MDMHT meetings are chaired by SPS and feature wide professional representation including, typically, forensic psychology, substance use nurses, social work and prison staff in addition to representation from the NHS mental health team. Respondents stated the these meetings have several purposes, including to discuss any mental health concerns amongst the individuals within the prison establishment, to review management of individuals on the Talk to Me strategy, and to discuss potential hospital transfers. Prisons which had a dedicated mental health team reported in nearly all cases a weekly or fortnightly NHS mental health team meeting, with health professionals that comprise the core service in each establishment. Respondents reported that in these meetings, existing cases may be reviewed, relevant complex care concerns identified and access to further assessments and interventions by the mental health team are discussed. In addition to these two primary forums, respondents detailed a range of multi-disciplinary meetings convened to support individuals, at which mental health or substance use concerns are discussed where relevant, on a case-by-case basis. These include Care Programme Approach meetings for the coordination of transitional care, Talk to Me Conferences, integrated case management meetings, and risk assessment and management meetings.

3.3.3. Interventions

Respondents described specific interventions delivered by members of the multidisciplinary team (MDT) offered to support individuals' mental health. Most establishments reported a range of individual and group interventions for common mental health and substance use problems, according to a tiered approach. Interventions vary in intensity and in the staff who deliver them. For example, information and self-help interventions, such as self-help pamphlets and literature and relaxation CDs, are available to individuals in prison without the need for referral. Other low intensity interventions involve direct clinical contact, initiated usually by clinical psychology, though they are facilitated or co-facilitated by nursing staff and other non-health colleagues, including prison based social work and SPS staff in certain establishments. These low intensity interventions typically target common and less severe mental health problems, for example anxiety management, mindfulness, psychoeducation and coping skills. High intensity interventions are typically delivered by clinical psychology and can include cognitive behavioral therapy, acceptance and commitment therapy, and trauma therapy. Interventions for personality disorder are delivered by clinical psychology, are driven by the individual's case formulation, and span a range of therapeutic models including cognitive analytic therapy, schema therapy, mentalization-based therapy and cognitive behavioral therapy. No establishments described a specific service or intervention in place for the prevention of suicide other than the local implementation of the Talk to Me strategy. There was little evidence of differential access to interventions for certain groups of individuals (for example, by the individual's gender or legal status) within prison, except for psychological interventions which in many cases is not initiated for individuals with <6 months to serve before their earliest date of liberation (release from prison).

3.3.4. Discharge planning and throughcare

Discharge planning and throughcare generally followed a matched-care approach whereby a referral is made to the relevant

community mental health team if ongoing support will be required following liberation from prison, for example in cases where the individual is receiving antipsychotic medication or would benefit from further psychological intervention. On a case-by-case basis, case conferences are held to plan for the transition of care, to which community providers are sometimes invited. Social work teams described a significant role for their profession in liaising with community agencies and third sector services on behalf the wider MDT. If ongoing support following liberation is not considered required, the individual is provided with information and advice on community mental health services and signposted to their general practitioner (GP) as the first point of contact for any developing problems. Individuals on medication-assisted treatment for substance use problems are provided with an appointment to attend the community substance use team on the day of, or the day following, liberation.

3.4. Issues and challenges

Professionals involved in the mapping exercise were asked to comment on whether there were service gaps or other barriers beyond mental health service provision, to meeting the mental health needs of individuals in their establishment.

3.4.1. Funding and service provision

Responses received from 12 NHS and seven social work teams recognized that the mental health needs of individuals in prison appeared to outstrip current mental health service resources. As a result, mental health teams must direct most of their resources to a relatively small proportion of the prison population who are acutely unwell, acknowledging that there are many more who have less severe, or less complex needs which would benefit from care but who are not "unwell enough" to progress past long waiting lists. Individuals in the community with mild or transient mental health problems would more easily be able to seek out and access self-help materials and digital health interventions, whereas these options are limited in prison. Two prison-based social work teams also highlighted inadequate funding to their service, citing that this limited their ability to support individuals on their caseloads with mental health needs.

3.4.2. Staffing

Respondents noted that staffing deficits, which existed prior to the pandemic, were exacerbated by COVID-19-related sickness absence and self-isolation requirements. Due to staff shortages during the pandemic, mental health nurses were required to cover shifts in the wider health team. This resulted in the cancellation of clinics and assessments or reviews of individuals in prison. Mental health nurses being pulled from their duties away to support wider health services was also an issue prior to the pandemic. Distinct from COVID-19 related issues several mental health teams highlighted difficulties in recruiting staff to posts, primarily mental health nurses.

3.4.3. Substances

Responses reflect the considerable challenge for mental health service provision from issues relating to access to and use of substances within prison, and the high proportion of people in prison who have dual diagnoses. NHS teams reported that changes in patterns and prevalence of substance use was driving mental health referrals, for example an increase over a 12-month period in the use of novel psychoactive substances was considered to be driving an increase in referrals related to drug-induced psychosis. Please note that a separate needs assessment into substance use needs (21) was commissioned by Scottish Government which explored this issue in detail.

3.4.4. Sharing information

NHS and social work teams both highlighted difficulty accessing relevant health information on individuals in prison. The experience of information sharing and handover between services based in the community and in prison was highlighted as poor in many cases, describing delays and the need for attempts to chase up reports retrospectively. Social workers highlighted frustrations regarding barriers to non-health staff accessing information from their health colleagues, reporting that as a result social work is sometimes required to complete risk assessment and management tools with limited or inaccurate information relating to an individual's mental health. For national service prisons such as HMP YOI Cornton Vale and HMYOI Polmont, which receive individuals in prison from a number of NHS Boards, accessing prior health records from other NHS Boards and held on other clinical information systems was reported to be difficult and time consuming.

3.4.5. Non-English speakers

Several social work teams described barriers to accessing prison mental health services linked to residents whose first language is not English. They described difficulty accessing translators for some appointments.

3.4.6. Partnership working

Challenges in effective partnership working was a recurrent theme raised in relation to barriers to meeting the mental health needs of individuals in prison. Three social work teams suggested that an increased awareness of the roles and responsibilities of all professionals involved in care of people in prison would better facilitate joint working. This was also highlighted by representatives from third sector organizations, who reported difficulties getting access into prisons to deliver services due to the inflexible structures in place, and also an under-recognition by NHS and statutory colleagues of the value of non-clinical services offered by third sector organizations.

3.4.7. Transitions

Service providers highlighted the impact that the process of transitioning from prison to the community can have on

someone's mental health is under-recognized. Upon liberation, people often return to similar circumstances in the community as they were in before prison, and which may have been made worse by or during imprisonment. Several respondents indicated that current support for employment, housing, and existing pre-release planning and throughcare support for mental health and substance use (limited largely to referral to community services) is inadequate and sets the individual up to fail upon release.

3.4.8. Facilities and prison regime

NHS teams in three prisons indicated that limited available physical space within the establishment for clinical and office spaces was an operational challenge. This was worsened at times during requirements for people to maintain a necessary minimum physical distance due to the pandemic. Multiple services highlighted that the limited window of 2 h available each morning and afternoon for health center clinics was problematic on account of working within the time constraints of the SPS regime (e.g., requirement of prison staff escort to health center, closure of health center at 5 pm).

3.4.9. Training

NHS teams reported good availability of training relevant to mental health through a range of sources including their local NHS Board, NHS Education for Scotland, and the Forensic Network's School of Forensic Mental Health. Social work teams overwhelmingly stated that they would welcome funding for and access to training related to mental health. Responses indicated there was no mandatory training relating to mental health (with the exception of training on the Talk to Me programme), despite the recognized high prevalence of mental health needs among people in prison. Social work teams viewed a foundation level of training on mental health as integral to good risk assessment and management planning. There was consistent recognition that some level of mental health training should be mandatory for all staff working in prisons including and in particular, prison staff as this staff group spend the most time with people in prison.

3.4.10. COVID-19

The pandemic was noted to have exacerbated many of the pre-existing challenges in service delivery. It also strained MDT working (through reliance on video conferencing and physical distancing requirements affecting team meetings). In prisons within NHS Boards where access to Near Me was limited, direct patient therapeutic activity ceased for a prolonged period during the pandemic.

With these challenges however, have also come positive learning points. Several third sector providers that adapted to working virtually reported that they planned to operate a hybrid model, continuing some remote delivery, which was found to be beneficial. A third sector organization working with individuals in HMYOI Polmont stated that by moving their services remotely by offering phone and digital support they were able to reach more people in need of support than they had been able to using a face to face approach.

4. Quantitative analysis to determine the scale of mental health need

4.1. Approach

Estimating the prevalence of mental health needs of Scotland's prison population can assist in planning service provision effectively in order to reduce the gap between health needs and interventions. Within the Marshall et al. (20) framework for health needs assessment in prison, data such as prison health surveys, routine service activity data provide helpful information which can be used to estimate the prevalence of mental health problems. However, there is no national, systematic process in place to comprehensively assess and monitor the level of mental health needs of those in Scotland's prisons. Additionally, due to COVID-19 restrictions, it was not possible to engage people currently in prison in screening or assessment for this study, and the brief project timescale coupled with ongoing service pressures for the NHS made it infeasible to gather and collate national data held by the NHS on routine service activity. In the absence of such direct data, quantitative analysis of existing secondary datasets were used to assist in estimating the proportion of people in Scotland's prisons who likely have a mental health problem. This is a valid alternative method to estimate prevalence of mental health need which is outlined in Marshall et al. (20).

4.1.1. Scottish Health Survey

The Scottish Health Survey (SHeS) (42) is an annual survey conducted on the Scottish population in private households and is used and monitored as an indicator of health of the people in Scotland. The self-reported prevalence of certain common mental health problems is derived from this dataset, including anxiety, depression, alcohol use disorders and history of self-harm or suicide attempt. Data from SHeS were used to estimate an individual-level probability model for the non-prison population of Scotland having mental health needs. The 2019 dataset was used in the present study as it was the most recent year for which its methods were not substantively affected by the COVID-19 pandemic.

4.1.2. Extract from the SPS PR2 system

SPS provided a dataset describing demographics of Scotland's prison population as of January 2022. These data were extracted from PR2, which is the operational information system used by SPS to manage the prison population. The PR2 variables used in this study were age, gender, ethnicity, and legal status.

4.1.3. Forensic inpatient care

People with a mental illness, learning disability or related condition who are accused of or convicted of a criminal offense may be placed under the Criminal Procedure (Scotland) Act 1995, which allows the individual to be treated in hospital. Hospitals that accept these transfers include high, medium, low security forensic hospitals and intensive psychiatric care units. The Mental Welfare Commission (MWC) and the Forensic Network monitor the transfer of individuals from prison to psychiatric units under

the Act. Data on prison-hospital transfers were retrieved from an MWC annual report (43) and from a report provided by the Forensic Network office.

4.2. Statistical analysis

The proportion of individuals in prison in Scotland who have mental health needs was modeled from available data on the non-prison population of Scotland. Individual likelihood of having one of five mental health problems was derived from the SHeS 2019 data using logistic regression and applied to the current prison population using the PR2 extracts. The five mental health problems modeled were:

- having a long-term mental health condition,
- having a history of deliberate self-harm or suicide attempt,
- drinking behavior consistent with a likely alcohol use disorder,
- anxiety symptoms in the previous week,
- and depression symptoms in the previous week.

Logistic regression was used to estimate the mental health needs of the prison population through modeling the mental health needs of the non-prison Scottish population. Demographic characteristics measured in both datasets were used as predictor variables: gender, age, ethnicity, and Scottish Index of Multiple Deprivation (SIMD) quintile.

Quantitative modeling occurred in a two-step process.

Step 1: The first step in this process was the estimation of the likelihood of having a mental health need based on individual demographics. The SHeS 2019 was used as it includes a nationally representative sample of individuals, both with and without mental health needs. Cases corresponding to individuals aged 16 years or older were retained for analysis. The following regression model was estimated using maximum likelihood estimation:

$$has\_mental\_health\_need = \beta_0 + \beta_1 female_i + \beta_2 ethnic\_minority_i + \beta_3 age_i + \beta_4 deprivation_i + \varepsilon_i$$

where:

- i represented each individual in the dataset,
- *has_mental_health_need* was a nominal dummy variable which takes the value of 0 if the individual does not have a mental health need and 1 if they do. A dummy variable was created for each of the five mental health needs modeled. The value of 1 was used according to the following criteria: the individual (1) reported having a long-term mental health condition; (2) reported a history of deliberate self-harm or attempted suicide; (3) scored 8 or higher on the AUDIT (44) indicating hazardous or harmful drinking; (4) reported two or more symptoms of depression in the previous week on the CIS-R (45) depression section; (5) reported two or more symptoms of anxiety in the previous week on the CIS-R anxiety section,
- *female* was a nominal dummy variable which took the value of 1 if the individual is female and 0 if the individual is male,
- *ethnic_minority* was a nominal dummy variable which takes on the value of 0 if the individual reported being white and 1 if the individual reported being from an ethnic minority group.
- *age* was an ordinal dummy variable indicating the individuals age in years according to specified bands: 16–20; 21–30; 31–40; 41–50; 51–60; 61–70; and over 70.
- *deprivation* was a dummy variable which takes on the value of 1 if the individual's SIMD is from the two most deprived quintiles, and a value of 0 if not.
- ε_i represented the error term corresponding to variance unaccounted for by the above predictor terms.

After estimating the equation, the probability of having each of the five mental health needs was predicted for each individual in the SHeS 2019 sample.

Step 2: In this step, the individual likelihood estimates derived from the SHeS 2019 sample were applied to every individual in Scotland's prison population, recreated using the PR2 extract. While the PR2 system does not hold information on the SIMD of the communities from which individuals come into prison, people in prison in Scotland are most likely to come from the bottom two SIMD quintiles (46). Therefore, in applying the likelihood estimates to the prison population, likelihood estimates corresponding to being in the bottom two SIMD quintiles were applied to the PR2 extracts.

After deriving probabilities for every individual based on age, gender, ethnicity, probabilities were then summed across different prison population subgroups to yield the proportion of the prison population who are likely to have a mental health need.

Descriptive statistics are reported relating to individuals in prison who require transfer to forensic inpatient facilities for assessment and treatment.

4.3. Results

4.3.1. Prevalence estimates

Likelihood Ratio Chi-Square (x^2) was significant for each model indicating improvement over the null model in each case.

- Long-term mental health condition: $x^2_{(9)} = 178.35, p < 0.001$.
- History of deliberate self-harm or suicide attempt: $x^2_{(9)} = 54.24, p < 0.001$.
- Alcohol use disorder: $x^2_{(9)} = 309.57, p < 0.001$.
- Symptoms of anxiety: $x^2_{(9)} = 27.98, p = 0.001$.
- Symptoms of depression: $x^2_{(9)} = 31.178, p < 0.001$.

Quantitative modeling found that, relative to the mental health needs in the non-prison population, the estimated prevalence of all five mental health needs is higher for individuals in prison in Scotland. The estimated prevalence of mental health problems is set out in Table 2. The relative difference between the two populations was greatest for alcohol use disorders.

TABLE 2 Estimated prevalence [with 95% confidence interval (CI)] of mental health problems in Scotland's non-prison and prison population.

	Scottish non-prison population ($N = 4,903$)		Scotland's prison population ($N = 7,507$)	
	%	95% CI	%	95% CI
Long-term mental health condition	9.9	7.7–12.8	15.5	12.1–19.8
History of self-harm	9.5	5.5–16.1	17.0	10.0–27.3
Alcohol use disorder	14.1	11.3–17.5	29.9	24.9–35.9
Anxiety	12.1	7.4–19.2	16.0	9.6–25.6
Depression	10.9	6.5–17.9	17.9	10.7–28.7

4.3.2. Use of forensic inpatient services

The Mental Welfare Commission for Scotland reports figures on the compulsory treatment of individuals subject to criminal proceedings. Assessment and treatment orders can be used to remand individuals to hospital for care. In 2018–2019, there were 222 assessment and treatment orders, 239 in 2019–20 and 204 in 2020–2021 (43). Orders of transfer for treatment direction (TTD) are used for the transfer of individuals who have been sentenced. According to the MWC there were 41 TTD orders issued in 2018–19, 36 in 2019–20 and 36 in 2020–21. Applying figures released by the Scottish Government (47) on the total number of sentenced individuals in custody each year, ∼1% require inpatient psychiatric care in a given year (1.1% 2018–19; 1.2% 2019–20; data was not available for 2020–21).

The Forensic Network provided additional information on prison hospital transfers. Between 2018 and 2021, 20% of transfers were for women, although women make up only 3.6% of the current prison population. The majority of those transferred (62.3%) are on remand, even though people remanded to prison comprise 29.6% of the current prison population. The average number of days between date of referral and date of transfer ranged from 14.6 to 25.6 calendar days, an average of 21.1 days in 2021. The Department of Health and Social Care for England (48) recommends transfer take no more than 28 days from referral. There is no standard set out for Scotland.

According to the Forensic Network's comprehensive inpatient census undertaken on 26 November 2013 (the most recent data available), there were 111 patients in hospital who were admitted from prisons, comprising 21.3% of the forensic inpatient population at that time. The most represented diagnostic category among the people in prison who require forensic inpatient care is psychotic disorders (81.1%), the next largest group being affective disorders (5.4%), and personality disorder (4.5%).

5. Semi-structured interviews with professional stakeholders and individuals with lived experience

5.1. Approach

Qualitative semi-structured interviews were conducted to capture the perspective of professional stakeholders, individuals with experience of prison and mental health needs as well as their carers. Six interviews were conducted with community-based individuals with experience of prison and mental health needs; either their own experience or that of a carer. Contributions were also obtained from a group of three individuals transferred from prison to the high secure State Hospital, Carstairs for treatment. Six executive and senior-level stakeholders from SPS (with strategic, health, justice, and governance remits) were interviewed alongside representatives providing third sector, legislative, and welfare oversight. The operational perspective was sought from among nine SPS and NHS staff (two NHS consultants, Forensic Psychiatrist and Clinical Psychologist, two prison officers, 1 NHS health care manager, and four NHS mental health nurses) based within prisons and who had caring roles and responsibilities. Representation was obtained from establishments across the four prison monitoring regions, including sites that housed women, older adults and people on remand.

Topic guides were tailored to each group (professional stakeholders, lived experience participants, and carers), informed by published reports concerning mental health within prisons and reflected main aspects of the prison journey from reception to liberation. They broadly explored how mental health needs were assessed and supported across the prison journey including the provision of medication and access to resources within both the remand and sentenced environments. Stakeholders were also asked about staff attitudes, drug culture, the needs of specific groups, barriers to service provision, the implementation of previously made recommendations and what service improvements had been observed. Topic guides were assessed and approved by the RAG and Lived Experience panel. All interviews were conducted and recorded using Microsoft Teams, transcribed and imported to NVivo 12 Pro (49) for thematic analysis (50). Except where specified, all forms of mental health support, e.g., Psychological therapies, Occupational therapy, etc. are included within the concept of mental health support.

5.2. Results

5.2.1. Perspectives of people in Scotland with lived experience of being in prison with mental health problems

5.2.1.1. Reception, remand, and "jail life"

There was consensus among lived experience individuals that establishing immediate suicidal intent was the primary focus of mental health enquiry at reception into prison. Individuals felt highly stressed and "wracked with nerves" during reception and

indicated it may be better to revisit some discussions a couple of days later. Those with multiple experiences of prison stated they were in "crisis mode" and thinking ahead to "jail life" issues such as "who's in prison? What have I got to worry about? Where am I going to get put? Who's going to be there? Have I got enemies and have I got friends... getting my stuff. Does my family know I've been moved prison?" They described how the responsibility was very much on the individual to engage and choose to share information with mental health services to gain any support.

Being housed within a remand hall presented a "chaotic," "noisy," and "volatile" environment. One person described being on remand as having "knocked me unwell." Uncertainty in their living environment, with people constantly arriving and leaving along with no end in sight regarding criminal proceedings, led to a very "draining" experience for people, with little available to provide purposeful activity and distraction. In contrast, for some, remand was seen as a stable environment, providing a break from the stresses of living with homelessness and substance use problems.

5.2.1.2. Relationships and interactions with officers and peers

Almost all individuals spoke of officer interactions in general terms that influenced how they expected officers to support their mental health needs. Day-to-day officer interactions shaped the development of trust and the extent to which they felt comfortable sharing mental health needs that are seen as a vulnerability in prison. Although individuals spoke of officers who "went above and beyond" providing or allowing "informal" mental health support, there was mention of those who "didn't give two monkeys." Individuals indicated that they were unable to share mental health concerns with officers due to a general lack of "respect and dignity" they received from them, with a need for officers to recognize residents as "human beings" or that officers lacked training to provide appropriate support. Officers were viewed as gatekeepers who could deny access to mental health support and medication. Individuals did not feel listened to when they attempted to talk to officers.

There were also mixed opinions about sharing mental health needs with peers. These this included not trusting peers, concern about being labeled vulnerable and potentially exploited, alongside not wanting to burden others who have similar problems. There were mixed perceptions of a peer-support scheme called Listeners, which aims to reduce suicide and self-harm. Some saw Listeners as a valuable resource, others viewed it as a service that could be abused or something they would never engage with due to the Listener's position as a fellow resident and unable to affect change in their circumstances.

5.2.1.3. Observation cells and the separation and reintegration unit (SRU)

Reinforcing a reluctance to share mental health needs with officers was a perception that "their answer to everything is throw you in a suicide cell. So, then you end up even more stressed because they put you in a daft outfit and then they put you on 15-min observations, even during the night." It was noted that where officers did talk to residents there was an undertone of risk aversion "if you do this [die by suicide] it's on us." The visibility of the observation cell next to the officer area was an additional reason given by individuals to lie about mental health needs even if questioned by officers. Placing someone in an observation cell has additional implications as the whole hall may need locked up to facilitate 15-min observations. Individuals described that this could lead to discord among peers, as could MH driven disruptive behaviors that disturb the whole hall.

Officers within the SRU were seen as more highly trained with a better understanding of mental illness than hall officers. The main negative aspect, which was also described in relation to observation cells, was that it was essentially an empty cell with nothing to distract from how they were feeling.

5.2.1.4. Mental health needs, support, and coping strategies

Several individuals described how they made multiple disingenuous attempts to seek drugs from mental health teams to support substance use habits, or to sell for financial gain. Others admitted damaging their cells to convince doctors they required medication. In some cases, this behavior led to disrupted relationships with officers and mental health teams apparently denying access to mental health services when individuals were genuinely seeking support when they realized that their mental health was significantly deteriorating. Individuals described adopting coping strategies that helped them manage their own mental health including reading, listening to music, breathing techniques, and talking with members of the mental health team.

Many respondents with lived experience described having positive relationships with mental health teams. However, while they felt that being offered antidepressant medication seemed to be the answer to every mental health need, they also voiced a desire for talking therapies and for mental health staff to encourage greater engagement with available self-help resources, such as by demonstrating coping techniques like guided breathing.

Some individuals described that despite spending time in observation cells, including following attempted suicide, they had little contact with the mental health team. Family members voiced concern that the opportunity of stabilizing and addressing substance use problems or other drivers of mental ill health was not being utilized. In their view, attempts generally fail as engagement is central to mental health treatment within prisons yet many are unable to do so with a carer commenting that their partner "was too unwell to know to engage." Family members also voiced that the needs of those with severe mental illness who avoid being placed in an observation cell or the SRU may be invisible to officers and therefore overlooked by the prison mental health team. This left families frustrated that missing the opportunity to address underlying needs would leave their loved ones repeatedly returning to prison.

5.2.1.5. Liberation

Most individuals had experienced liberation at least once with little, if anything, positive said about the process. This included people being liberated after long-term sentences and from prisons individuals considered to be generally "good." While liberation on parole was associated with greater throughcare planning regarding housing and benefit applications, little support for mental health and substance use problems was described except being told to see community teams, GP, etc. The lack of appropriate support after

release, which contributed to disrupted transitions from custody to the community was viewed by individuals as a missed opportunity, particularly by family members. People gave multiple examples of being recalled to custody or being remanded within a few days of being released. Several described how they were released from prison with no support and found themselves homeless.

Successful transitions were reported when people received support from community psychiatric nurses and third sector in-reach work. Individuals described how engagement with third sector organizations, fostered by interaction with peer support workers, supported them through those first few high-risk weeks and helped break the imprisonment cycle by, for example, securing accommodation and therefore avoiding homelessness and the chaotic lifestyle that can bring.

5.2.2. Executive and senior-level stakeholders

5.2.2.1. Prison as a part of the wider justice system

Senior stakeholders commented it was difficult to reflect on mental health within the prison setting without considering it as an element of the wider justice system. Diversionary schemes that should be efficiently directing individuals from custodial disposal due to their evidenced needs were not perceived as operating efficiently.

5.2.2.2. Scottish Prison Service corporate aims

Senior stakeholders recognized the impact of entering prison upon mental health and wellbeing. They also noted the corporate aims of SPS in relation to a role in identifying and supporting those with mental health needs. While SPS stakeholders acknowledged a focus on health within the prison service, they also mentioned the need for a more meaningful and joined up approach with greater strategic direction to overcome barriers. All senior stakeholders commented that improvements are being made, however further development was required with talk of the need for a "cultural shift" and that "a big sea change" was necessary for mental health to be more meaningfully supported within Scotland's prisons. It was commented that policy and practice needed to be more responsive to support the ever-changing needs of the prison population, for example the needs associated with looking after an aging population.

Most senior stakeholders discussed that underpinning this "cultural shift" was a focus on prisons adopting a more trauma-informed approach. Embracing a trauma-informed approach would place a greater emphasis on recovery within the prison environment and, in particular, the life journey that leads an individual to prison; for some on multiple occasions. While they recognized that prisons cannot "fix" everybody, their view was residents should leave prisons with better life opportunities than they arrived with. They noted that a lessening of the culture of risk aversion had led to a more person-centered approach within prisons. However, there were concerns surrounding the levels of scrutiny prisons are subject to, particularly where adverse events occur, such as a death in custody, and how that colors local decision-making in relation to mental health needs.

To reframe how prison officers care for individuals, most senior stakeholders mentioned a requirement for appropriate training, support, and resources to address the mental health issues facing officers on a daily basis and the development of a more trauma-informed environment. They indicated that the dynamic also requires change with officers engaging with residents rather than residents raising issues themselves. They indicated that relationships with partner agencies, such as third sector services, should be strengthened. It was voiced that both SPS and the NHS did not have a culture of sharing best practice or other knowledge exchange relating to service development.

5.2.2.3. Prison as an extension of the community

Frustration was voiced that the prison environment is perceived as similar to the community when it comes to implementing recommendations or delivering health services. A failure to consider the legislative and risk management aspects associated with caring for an individual within prisons, and how that was reflected in day-to-day management was highlighted. A lack of recognition of how the physical environment and layout of prisons could impact upon the implementation of recommendations was also raised. Although it was expressed that there should be parity of access to services available in the community and within prisons, it was emphasized that they need to be delivered in a different way, for example by different staff groups or via virtual services. It was highlighted that community GP practices receive additional funds where they support patients from areas with high levels of multiple deprivation. Disparity in funding was noted as prisons do not receive those funds despite higher prevalence of demographic and social risk factors for mental health problems, and complexity and comorbidity among mental health needs of the prison population.

5.2.2.4. Learning points from SPS's response to the COVID-19 pandemic

Concern was raised that access to mental health resources diminished during the height of the COVID-19 pandemic, primarily due to prison and NHS staff being required to cover essential services such as medication delivery. Residents who were already separating themselves from prison life due to mental health needs were also less visible to staff and could easily be overlooked.

Counterintuitively, positive feedback had been received from residents regarding being in small household bubbles with lock up at 5 pm and loss of evening recreation to limit viral spread through interpersonal mixing. Stakeholders described residents and officers reporting feeling a sense of safety through a reduction in mixing with others, better officer and resident interaction and the provision of mobile phones to facilitate in-cell communication with loved ones in the evening. SPS listened to feedback and indicated that a central tenant of prisons opening up after lockdown was that household bubbles and the associated sense of safety are maintained with a greater focus on providing meaningful activity to residents. It was highlighted, by a senior stakeholder, that the opportunity for staff and residents to get to know each other better within household bubbles led to improved, more trusting relationships and this could encourage residents to be more open about their needs with officers.

5.2.2.5. Shared values, SPS/NHS alignment, and working relationship

It was generally recognized that the NHS and SPS have different corporate aims, and although they operate as partners, their

relationship could be stronger. While there are difficulties for SPS in establishing consistency of approach across the nine NHS Boards that deliver services within prisons in Scotland, the NHS have similar challenges operating within prisons of different sizes leading to mental health teams operating differently. Senior stakeholders from both the NHS and SPS recognized the need for change to better support mental health needs within the prison environment. It was recognized that the COVID-19 pandemic had demonstrated that health was core to what SPS deliver: "If people don't feel well and feel safe and have got that emotional confidence that they can engage with people and with services, then we're not going to get very far." Some prisons have established joint NHS/SPS partnership boards and they were able to act on published recommendations more readily.

Although most senior and some operational stakeholders spoke of good NHS/SPS relationships, there was a view that SPS and NHS should be communicating and working together more cooperatively to better support people living in prison. The overall impression was that the NHS and SPS did not always fully appreciate the extent of support they can provide one another.

5.2.3. Executive, senior-level, and operational-level stakeholders

5.2.3.1. Mental health needs of the prison population

Although there was little consistency reported in how mental health needs were detected by different prisons during the reception process and the days that followed, all methods involved various screening tools and members of both SPS and NHS staff. The one commonality was the need for the individual coming into prison to engage with staff and choose to share how they feel or what they are thinking at a point when they were likely to be feeling scared, uncertain or vulnerable.

Obtaining information about previous health treatment within the community and current prescription medications on reception involves a somewhat patchwork approach, with pockets of information available from various sources in a range of formats. It was highlighted that computer information systems and NHS Boards cannot always easily communicate with each other, posing significant issues of information sharing at entry and exit from custody.

There was uncertainty about whether there had been an increase in the number of residents presenting with mental health needs or if their mental health needs were simply being more readily identified and referred to services. There was, however, a shared perception that those being referred to mental health services were presenting with more complex needs. Underpinning this increase in the complexity of needs was the concept of trauma with residents either more comfortable with disclosing past trauma or staff more readily identifying trauma-related needs. Mental health services were striving to make officers more trauma-informed and formally/informally providing training and support around how to keep people safe whilst treating them in a compassionate, empathic, trauma-informed way. Instances were highlighted where officers were endeavoring to understand and support residents without automatically placing them on the formal suicide prevention strategy. While officers understood that for confidentiality reasons they were not privy to health information, they indicated that knowing a little more about residents would help them better understand behaviors and interact with those under their care as would more appropriate training and support.

Stakeholders felt that services are collectively failing people who have been to prison multiple times by not addressing past trauma and that they are simply "putting [a] sticking plaster over it," and that "it feels like often it's firefighting." This failing was related to a need for greater resources and training within both SPS and NHS.

5.2.3.2. Resources and funding

Regarding resources, the overall picture was one of limitations relating to NHS staff shortages, the constraints of the physical environment within prisons and officer shortages, which affected service delivery and led to trained NHS staff underutilizing their skills covering non-role-specific tasks and delivery of medication. A clear view was that NHS staff were "under resourced and overworked" and that while there was a focus on mental health teams, this view extended across primary care and substance use services. Within prisons with only one mental health nurse, comment was made that their "caseload must be horrific." However, another stakeholder from a better-resourced but small prison noted that the "luxury of being a small prison [is] we can spend more time with our patients." These comments highlight the disparity across the prison estate in the number of residents cared for per WTE mental health nurse and the real-world impact that these differences make to resident care.

While an essential task, a majority of operational stakeholders noted that daily medication delivery takes a large amount of clinic time away from health care staff, with delivery highly dependent upon SPS regime. Individual prisons also operate different prescribing formularies with medications available within the community not always dispensed within prison.

NHS teams were creative in finding ways to adapt services to support the needs of their population within the available resources or address failures in recruitment and retention of staff. Operational stakeholders cited examples including making links with nursing courses and welcoming students on site. This served a dual purpose of raising the profile of nursing within the prison environment and providing extra support. Greater integration of substance use and mental health nursing teams helped provide a more wrap-around service to the exceptionally high numbers of residents with mental health and substance use issues. Advanced Nurse Practitioners have been recruited to support GPs with prescribing services. One service reported adopting a more community-orientated approach with all mental health referrals triaged through the GP service.

While NHS clinical psychology services have been developed at several prisons, not all have access. This disadvantages those in therapy who transfer to prisons without services. Despite limited staff and environmental resources, mental health teams are continually adapting and evolving to improve services, to meet their population needs and implement published recommendations.

More widely, there was a call for "more trained staff, be it officers or NHS staff, we need to understand more about it [mental health needs] before we can do anything about it." Respondents explained that better mental health training for officers would reduce "inappropriate" referrals to mental health teams that are

situationally driven and potentially transient rather than indicative of mental ill health. Appropriate training would also inform the development of a more trauma-informed environment and, along with the development of a directory of on-site and third sector service providers, support officers to signpost residents to services suitable to their needs.

5.2.3.3. Observation cells/separation and reintegration units

There were mixed views from prison officer stakeholders about how often observation cells were used. One stated that they were regularly used to ensure the safety of an individual due to staff shortages. However, another officer noted observation cells being used only as a "last resort" and was unable to recall anyone in the recent past being placed on observation due to their mental health.

An executive/senior-level stakeholder questioned the effectiveness of placing those who express any degree of distress within an observation cell, devoid of interaction and stimulation and dressed in an anti-suicide smock. The further impact upon a person's mental health and potential future willingness to share distress was also questioned. Seeing people being placed into observation cells may, in and of itself, act as a barrier to others disclosing mental health concerns among the wider population. It was noted that there was no middle ground for those in mental distress between single bare cells and accommodation in large halls, with "safer" cells not always being the answer, although SPS were assessing observation cells and how they are used.

The perception among some senior-level stakeholders was that SRUs were increasingly utilized to house residents in extreme mental distress, although it was acknowledged that there can be difficulty in distinguishing behavior related to mental distress from violent and disruptive behavior. Where a lack of stimulation, peace and quiet were required, then the SRU was noted to provide that environment in comparison to the main hall. However, the use of SRUs and prison more generally as a place of safety was questioned, particularly for those in acute mental distress who require assessment for transfer to forensic hospital.

Concern regarding access to forensic psychiatric beds was raised. While high levels of staff input could be offered within the SRU this could also lead to difficulties reintegrating residents back to the main hall leading to resistive behaviors. Stakeholders cited regular discussions surrounding what support a resident required to transition from the SRU to the prison hall and, if they could not be delivered within the current establishment, then exploring transfer to another prison.

Stakeholders described using observation cells/SRU for the management of residents displaying psychotic symptoms related to use of novel psychoactive substances due to the risk they presented to themselves and others. The use of these drugs within Scotland's prisons was seen as inextricably linked to mental health needs and the underlying reasons for seeking and using substances.

5.2.3.4. The needs of specific groups within the prison population

While recognizing that there were multiple specific groups within the prison population (for example, armed forces veterans, older adults, people with neurodevelopmental disorders), it was about "focusing on an individual and identifying what that person sees are their needs, rather than us [SPS/NHS] undertaking some sort of diagnosis or assessment. It's about that engagement." However, in many cases interaction and management would be guided by NHS staff. Although NHS staff may be able to provide initial assessments and offer advice in relation to specific issues (for example, cognitive decline or alcohol-related brain damage), ideally specialist community services would link into the prison. There was a need for specialist services such as old age or substance use psychiatry, with some prisons in receipt of limited support, however funding was generally unavailable for specialist services. Links with third sector services were warmly mentioned and their contribution was widely recognized. Third sector services provided primarily support and assistance for substance use problems during liberation with separate groups operating to meet the specific needs of women. Third sector services had no formal links with health and wellbeing teams and were commonly linked to the recovery café/hubs operating within most prisons.

In general, those on remand had equal access to mental health services, although referral to psychological services, where available, could be restricted due to the short length of time people were expected to remain within prison. The availability of self-help resources and material that signposted residents to the mental health team was highlighted, in addition to the referral process which could be self-initiated, or through peers, or any staff member.

5.2.3.5. Liberation

Executive stakeholders remarked that while third sector services provided support, there was a sense that it was an SPS responsibility to ensure a safe community transition and that all officers should be trained as Throughcare Support Officers. This could allow relationships built over time between residents and officers to be utilized, particularly for people serving longer sentences. While there were some good practices around liberation there was a lot more that could be done. Not every resident requires pre-liberation planning and neither was engagement with planning enforceable. NHS staff made links with mental health community teams where there was a need, set up appointments, shared information and provided a supply of some types of medication. There was, however, concern about the transition from custody to the community. It was recognized that the first few weeks of liberation could be challenging and chaotic. One mental health team member indicated they were attempting to standardize the liberation process while another noted that "the mental health and welfare [support] of our patients should cover people getting out."

Half of executive stakeholders highlighted that liberation support appeared to fail for people on remand, who could often be liberated without warning. Individuals on remand could also leave prison late in the afternoon with no support or plan. Supporting those with the most complex needs through the liberation process was previously an SPS role, as staff knew the individual and their needs.

6. Discussion

The current study was part of a series of national needs assessments commissioned by the Scottish Government in 2020 in relation to Scotland's prison population to ensure that future

changes to prison healthcare would be person-centered and evidence based. It was the first national assessment of the prison population's mental health needs since 2007 (26).

6.1. Key findings

The service mapping exercise found evidence of considerable variation in NHS service provision across Scotland's prisons. NHS staffing resources in prison did not appear to be closely linked with the size and characteristics of the prison population in individual establishments, which would be a parallel approach to how NHS Scotland resources are geographically allocated to individual NHS Boards (51). The observed and largely arbitrary variation is considered to lead to unintended inequalities leaving people who live in several prisons unfairly disadvantaged. Staffing vacancies, particularly among mental health nurses, appears to be a major barrier to meeting the mental health needs of individuals in prison. Beyond resourcing, service providers also highlighted wider challenges to supporting people in prison. They cited disruptions to care from mental health nurses being pulled away to support physical health and substance use services, problems in information sharing between professionals working in prisons, and constraints from prison facilities and the SPS regime on daily service delivery.

In the absence of robust indicators at the national level on the mental health needs of Scotland's prison population, the estimated prevalence of several mental health needs was modeled using data from Scotland's community population and fit to the prison population based on key demographic indicators. Analysis found that at least 15% of the prison population likely has a long-term mental health condition, 17% a history of self-harm, 30% an alcohol use disorder, 16% symptoms of anxiety, and 18% symptoms of depression in the past week. The derived mean prevalence estimates for each mental health problem was higher for all conditions relative to the non-prison population, consistent with known increased burden of mental health problems in people in prison (2). Data on the transfer of people from prison for inpatient psychiatric treatment between 2018 and 2021 indicated that, relative to Scotland's prison population as a whole, these individuals were disproportionately female or on remand, and a majority were transferred for the treatment of a psychotic disorder.

Interviews with professional stakeholders found there was a drive from the top of SPS to operate a more trauma-informed environment in Scotland's prisons. The COVID-19 pandemic had highlighted that the health and wellbeing of individuals in prison is foundational to the underlying aims of the prison service. Operationally, officers and NHS teams perceived residents as presenting with more complex mental health needs as well as trauma, and were striving to support residents with limited resources. From the resident perspective, the onus appeared to be very much on individuals to choose to engage and share information with prison mental health services to gain any support.

People with lived experience indicated that reception was a time of extreme stress and that beyond establishing acute needs (i.e., immediate suicidal intent), mental health needs should be explored more thoroughly a few days later. This group found being on remand to be a draining experience, characterized by uncertainty although for some it provided respite from homelessness. They acknowledged that some officers went above and beyond to support mental health needs, but the resident-officer dynamic needed improvement more generally. These participants found NHS mental health teams to be supportive when not operating under an excessive workload. Liberation was most successful where third sector and community services provided in-reach support ahead of someone being released and during the high risk first few weeks which could break the cycle of returning to prison, for example by securing housing.

6.2. Limitations

There are several limitations to the findings of this needs assessment resulting from the continuing COVID-19 pandemic. Face-to-face research was not possible during the timeframe of this project. This required taking an adapted approach using existing and secondary data and undertaking data collection through remote methods only. As the project was limited to use of secondary data, quantitative modeling was limited to use of fixed demographic variables as predictors of mental health needs, and could not include other relevant factors such as adverse life experiences and experiences related to imprisonment that increase the likelihood of having mental health needs. The prevalence estimates reported may therefore underestimate likely mental health needs. There were also several mental health needs including psychosis, personality disorder, and neurodevelopmental conditions, which were described in the literature review as experienced by people in prison in the UK, however the prevalence of these needs could not be estimated in this research due to the lack of available data. This report highlights the substantial service and workforce pressures experienced by those working to support people living in Scotland's prisons. Not all health professionals who wanted to engage with this needs assessment were able to due to pressures on clinical services and staffing problems exacerbated by the pandemic.

7. Conclusions

There is overwhelming evidence that individuals in prison are more likely to have a range of mental health needs, which are often multiple and complex. This study found that existing provision to support the mental health of people in prison in Scotland does not adequately meet these needs and that a change in approach is required.

Evidence from multiple elements of this needs assessment converged, indicating that a significant proportion of individuals in prison have, or will develop, mental health needs at some point in their journey. Our prevalence estimates were conservative, and taking into account the broader literature [reviewed in detail in the full report of this needs assessment (41)] people in prison are far more likely than not to have a mental health need. Like individuals in the community, the COVID-19 pandemic has likely had a negative impact on the mental health and wellbeing of Scotland's prison population. Recognizing this, and despite new challenges in service delivery resulting from the pandemic, many

of which are still ongoing, this report found that the fundamental barriers to supporting the mental health of individuals in prison are likely longstanding. Professional stakeholders endorsed the view that individuals should leave prison better off and with greater opportunities than when they entered prison. To deliver this, however, there are substantial changes required in services delivered throughout the prison journey.

A mapping of current mental health service provision for people in and leaving prison highlighted that services in several establishments are insufficiently resourced. In those prisons, this equates to only an emergency service being provided, working with the most acutely ill, and leaving the majority of people in prison without support they could benefit from. NHS mental health teams are under-resourced and overworked, attempting to innovatively manage their workloads as effectively as they can within their limited resources. While acknowledging these challenges, it should be highlighted that there have been major positive developments in both the overall size and multi-disciplinary composition of prison mental health teams in Scotland since the last previous national mapping exercise in 2012. Nearly all prisons now have formal input from mental health nursing, psychiatry, and clinical psychology and ∼½ have AHPs as part of the mental health team. Compared to the previous mapping exercise, input from clinical psychology and AHPs has increased considerably. Expansion of the mental health MDT increases access to appropriate care for more people, including some with mild mental health problems. These developments are welcomed.

Unfortunately, there are fundamental issues with attracting and retaining staff to work in prisons against the backdrop of high demand for services. Staff absences brought on by the pandemic have further exacerbated resource pressures. Professionals highlighted a number of challenges to meeting mental health needs of people in prison, but a common theme was observed in relation to difficulties in and barriers to coordinated and joint working across SPS, health and third sector organizations to support individuals in prison. According to Scotland's prison health promotion framework, all who work in prisons bear a duty to support the mental health and wellbeing of people in prison, and there are corresponding roles for all agencies in implementing the necessary actions to do so.

Several reports published in the last decade have highlighted concern around many of the same problems identified in this report and offered appropriate, evidence-based recommendations to address them (33, 52). Despite repeated scrutiny of the same issues, most recommendations have not been fully implemented. This suggests that current structures and operational arrangements do not facilitate the development of innovative practice or are too restrictive to enable the change required. A fundamental change to prison mental health services in Scotland is required.

7.1. High-level recommendations

Following on from the findings of this needs assessment, a series of evidence-based recommendations were developed. These are intended to address a range of issues identified by this study, from high-level, strategic issues to daily operations including resourcing and service delivery. Implementing these recommendations will require action and in many instances, coordinated action from multiple actors including the Scottish Government, NHS Scotland, the Scottish Prison Service, local authorities, and third sector organizations as relevant. Six high-level recommendations are listed below as they may resonate with professionals and researchers around the issues facing local prison mental health care in other countries. The remaining 12 recommendations are more straightforward solutions to operational issues, and likely to be more specific to the local Scottish context and service arrangements. These can be reviewed in the full published report (41).

7.1.1. Recommendation 1

A fundamental change is required in how the mental health of individuals in prison is perceived, given the demonstrated mental health needs of Scotland's prison population. A model of care should be adopted across all prisons that focuses on assessing and meeting individual needs, supporting individuals' wellbeing, and providing a caring and supportive environment. Trauma-informed care is one model that may be appropriately considered.

7.1.2. Recommendation 2

The model of care adopted should have individuals' needs and wellbeing at its center and strive to make the prison environment more therapeutic with a greater focus on meaningful activity. To break the cycle of repeated imprisonment, individuals should leave Scotland's prisons with better life opportunities than when they started their sentence.

7.1.3. Recommendation 3

Greater resources are required for NHS mental health services. Rather than use community-based formulations, modeling should be used to determine service provision, accounting for the known demographic and social characteristics of the population in each prison, recognizing that most individuals come from communities of multiple deprivation, have had adverse life experiences and many have multiple and complex needs. The outcomes of these models for each prison should be published.

7.1.4. Recommendation 4

An increase in funding for clinical psychology and allied health professionals within the multidisciplinary mental health team is needed in many of Scotland's prisons where current input is either none or limited. As the model of care is developed, a need for increased resources from other professional groups may too become apparent.

7.1.5. Recommendation 5

Standards for prison mental healthcare should be adopted. These could be newly developed or adopted from existing standards such as those published by the Royal College of Psychiatrists (53).

Adopted standards should include staffing requirements per prison resident to ensure consistency across the estate.

7.1.6. Recommendation 6

The development of a formal partnership between SPS (and private contractors), health and social care, and third sector organizations is necessary to drive forward the high-level changes recommended. This partnership should be empowered to deal with strategic and operational issues across the prison and health services. This must include a mechanism to empower decision making across all NHS Boards that interface with the prison estate. There should be mechanisms for governance, and processes embedded to enable routine quality improvement and assurance.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent for participation was not required for this study in accordance with national legislation and institutional requirements. However, for good practice written informed consent was received from lived experience participants.

Author contributions

LG, CR, SH, and LT designed the study and wrote the protocol. SH provided quality assurance role between the study team and the funder, Scottish Government. LG, CR, and CK designed data collection tools used and undertook data collection. LG and CR undertook statistical and qualitative analysis, respectively, and wrote the first draft of the manuscript. All authors commented on the manuscript and contributed to and have approved the final manuscript.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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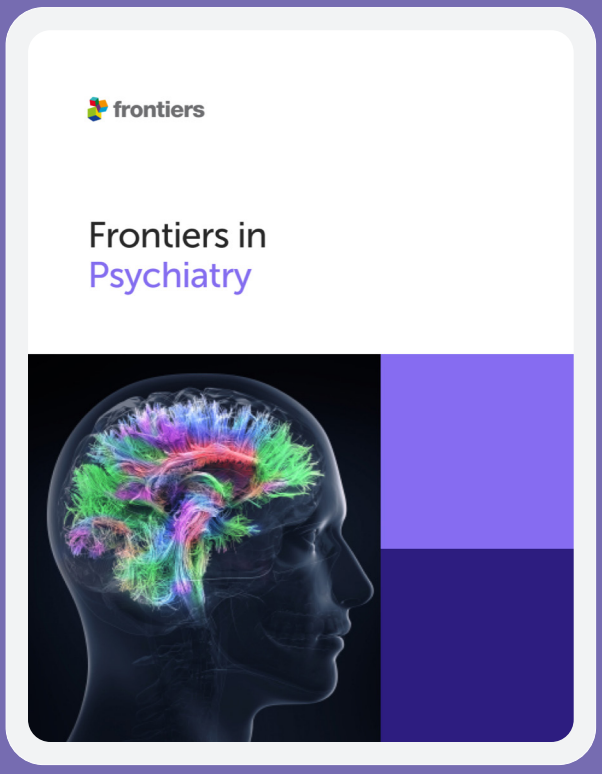

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