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Mental health of transgender people in prison: a systematic review and meta-analysis

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ABSTRACT

This systematic review aims to explore the condition of Transgender Inmates (TGI) in correctional facilities (CF), focusing on their mental health, their access to Gender-affirming Treatments (GAT), and their placement within the CF. Medline, Embase, Scopus, PsychInfo, and CINAHL were searched for studies on TGI in CF. Pooled Odds Ratios (ORs) with 95% confidence interval (95%CI) were estimated through inverse variance models with random-effects. A narrative synthesis of each study's findings was also performed since only a few studies included a control group. Thirteen studies were selected and four considered in the metaanalysis, corresponding to 1,255 TGI and 174,314 controls. Although limited by the small number of studies, the meta-analysis showed that TGI have a higher risk of depression, post-traumatic stress disorder, and suicide attempts during detention than the controls (OR = 3.07, 95% CI = 1.33–7.06; OR = 2.23, 95% CI = 1.46–3.43; OR = 2.25, 95% CI = 1.46–3.49, respectively). Limited access to GAT and housing based on sex assigned at birth rather than gender identity were additional challenges for TGI, threatening their safety and self-affirmation. Our findings highlight the critical role of incarceration as a social determinant of health for TGI. A comprehensive policy reform and staff education should be promoted to foster inclusive and supportive correctional environments and improve safety and health of TGI.

KEYWORDS

Transgender people; inmates; correctional facilities; sexual and gender minority; mental health; genderaffirming treatment

Introduction

Transgender is an umbrella term including all people whose gender identity differs from the one associated with sex assigned at birth (Coleman et al., 2022). The gender identity may be binary (i.e. male or female) or nonbinary. The percentage of the population identifying themselves as transgender varies considerably across the studies; however, the most recent estimates report that 0.5% (about 1.3 million) of US adults identify themselves as transgender (Herman et al., 2022). Many transgender individuals face unique challenges that, by interacting with other environmental or societal factors, may affect their health. Transgender people may need specific medical assistance for sex realignment with their perceived gender and gender-affirming care (Mueller et al., 2017). The awareness of these challenges and of the health and psychosocial needs of the transgender population is growing (Shrivastava & Shrivastava, 2023). Research has confirmed that transgender people report negative physical or mental health outcomes in comparison to the general population (Winter et al., 2016).

Recently transgender inmates (TGI) have become increasingly visible among the millions of people currently incarcerated worldwide. In fact, this population faces specific challenges and vulnerabilities concerning the medical, psychological, and social support they need or receive (Sexton et al., 2010). Also, incarceration impacts on transgender people's health, especially when compounded by other intersectional vulnerabilities, such as substance use, mental illness, HIV, or belonging to an ethnic minority, which cause a significant disease burden in this population (Sevelius et al., 2023). Furthermore, incarceration contributes to interruptions in housing, employment, medical services, and social support, with an additional high level of instability for this population (Anderson et al., 2021; Scheidell et al., 2021). However, little is known about the living conditions of TGI and the difficulties they cope with in the correctional setting; a comprehensive synthesis of quantitative data on TGI is lacking as well. It is fundamental to focus on health needs of TGI and the consequences of their incarceration. One of these aspects is how mental health is affected by incarceration. The minority status of the sexual and gender minority population often leads to social oppression, rejection, and victimization, especially in correctional settings (Bačák et al., 2018). The resulting psychological trauma can widely affect mental health (Alessi et al., 2021; Marchi, Elkrief, et al., 2022; Marchi, Travascio, Uberti, De Micheli, Grenzi, et al., 2023; Marchi, Travascio, Uberti, De Micheli, Quartaroli, et al., 2023). Specifically, transgender people may experience maltreatment in the form of mis-gendering or violence by other prisoners and prison staff (Van Hout, 2022). Some studies showed that TGI are more likely to be sexually assaulted than nontransgender inmates (Braver, 2020; Jenness, 2010), especially transgender women in men's prisons (Bačák et al., 2018; Sexton et al., 2010). Most correctional facilities (CF) assign inmates according to their sex assigned at birth and not to gender identity, with consequent challenges for the safety and identity affirmation of TGI (Redcay et al., 2020). Qualitative and mixed-method studies in the field show that transgender women housed within a

men's section may face difficulties to get clothing, make-up, or other products helpful to express their gender identity, and, to protect them from abuse, TGI may often be removed from the general population of the CF and isolated in solitary confinement, with poor social interactions, leading to mental health distress and suffering (Jenness & Fenstermaker, 2014; Jenness & Gerlinger, 2020; Kilty, 2021; Mahaseth & Jain, 2023; Tadros et al., 2020). Different authors agree that a possible solution to protect TGI and promote their self-affirmation is to decide where they should be housed on a case-by-case basis. However, this practice is still far from being widely applied in the CF (Brömdal et al., 2019; Sevelius & Jenness, 2017; Van Hout et al., 2020).

TGI also experience discrimination through the restriction or denial of access to gender-affirming treatments (GAT), including hormone replacement therapy, sex reassignment surgery, and psychotherapy (Van Hout et al., 2020; White Hughto et al., 2017). For instance, a previous report showed that 28 US states do not allow TGI to obtain hormone therapy in any case and only 13 states allow the initiation of the treatment in the CF; only seven states authorize the sex reassignment surgery (Routh et al., 2017). These limitations negatively impact mental health of TGI, leading in some cases to severe self-harm behaviors including auto-castration and auto-penectomy (Brown, 2010). Also, the lack of mental health professionals specifically trained to address these issues within the CF adds additional difficulties in the provision of accurate assessments, treatments, and support to TGI (Braver, 2020; Tadros et al., 2020; White Hughto et al., 2017).

Thus, in this systematic review we aim to explore the mental health conditions of TGI, their access to the GAT, and how they are housed within the CF in relation to their gender or gender identity.

Methods

This systematic review and meta-analysis was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page et al., 2021). The protocol of the study was registered with PROSPERO (CRD42023456340).

Data sources and search strategy

We searched the PubMed (Medline), Scopus, PsycINFO, CINAHL, and EMBASE databases until 30 June 2023, using the strategy outlined in [Supplementary Table S1](#). No restrictions regarding language of publication or publication date were set.

Eligibility criteria

We included any observational or experimental study involving TGI in CF, thus including both prisons and jails, in any local, federal, and national setting, and providing information on at least one of the following aspects: (1) the mental health status of TGI; (2) their access to the GAT; or (3) their placement during detention in relation to their gender.

We included both binary and non-binary TGI, regardless of their transsexual status. We did not put restrictions on age or ethnicity of study participants, on their sexual orientation, on the reason for detention, or on the country where the study was performed.

We excluded reviews (although the reference lists of those reviews were screened to identify any potentially eligible studies), qualitative studies, case-reports, and book chapter. We only included studies published in peerreviewed journals, excluding conference abstracts and dissertations. If data from the same sample were published in multiple works, we considered only that study reporting more exhaustive information. Sample overlaps were ruled out through a careful check of the registration codes as well as the place and year(s) of sampling.

Terms and definitions

In our review, transgender status was mainly self-reported. We considered any mental health condition, including alcohol or substance abuse, diagnosed according to the standard operational diagnostic criteria up to, but not limited to, their latest versions (i.e. according to the Diagnostic and Statistical Manual of Mental Disorders 5 Text Revision [DSM 5-TR] (American Psychiatric Association, 2022) or the International Classification of Diseases 11 [ICD 11] (World Health Organization, 2018)), or assessed using specific psychometric tools. GAT comprises hormone replacement therapy, sex reassignment surgery, or psychotherapy; transgender people may need some of these treatments, depending on various factors, including the degree of gender-identity congruence and the subjective level of experienced distress. Finally, TGI placement in CF, related to their gender, may comprise a special section for transgender people, or a section based on their biological sex as well as a section based on their perceived gender.

Data collection and extraction

Three authors (MM, IC, and EV) in the first instance reviewed titles and abstracts of retrieved articles. The initial screening was followed by the analysis of full texts to check their compliance with our inclusion/exclusion criteria. All disagreements were explored until a consensus was reached and, if consensus was not possible, a different member of the team was consulted for a final decision (GMG). A standardized form was used for data extraction. Information concerning the year of publication, country, setting, name of the study/cohort, characteristics of study

participants including sample size, age, and transgender status, information on the outcome of interest including the mental health status of TGI, their access to GAT, and their placement in relation to their gender were independently collected by two authors (MM and IC). Where available, data on detainees identified as cis-gender were also extracted and used as a control group for comparisons.

Preferentially, the outcomes were measured as the frequency of people presenting a specific identified outcome as well as the mean score of a validated assessment for mental health conditions, where available. Since only a few studies provided outcome data in these formats, we also extracted the studies aim and conclusions to perform a narrative synthesis of the evidence. Extraction sheets for each study were cross-checked for consistency and disagreements were resolved by a discussion within the research group.

Statistical analyses

The first meta-analysis was performed by comparing the mental health status between TGI and non-TGI. A second meta-analysis was performed for comparing the risk of those mental health outcomes reported by at least two studies among TGI and non-TGI controls. Pooled Odd Ratio (OR) for dichotomous outcomes and a Standardized Mean Difference (SMD) for continuous outcomes, with respective 95% confidence interval (95% CI), were generated using inverse variance models with random effects (DerSimonian & Laird, 1986).

The results were summarized using Forest plots. Standard Q tests and the I^2 statistic (i.e. the percentage of variability in prevalence estimates attributable to heterogeneity rather than sampling error or chance, with values of $I^2 \geq 75\%$ indicating high heterogeneity) were used to assess between-study heterogeneity (Higgins & Thompson, 2002). If the number of studies was sufficiently large to yield meaningful results, leave-one-out analysis and meta-regression were performed to examine the sources of between-study heterogeneity.

When the meta-analysis included more than 10 studies (Sterne et al., 2011), funnel plot analysis and the Egger test were performed to test for any publication bias. The Egger test quantifies the bias captured in the funnel plot analysis using the value of effect sizes and their precision (i.e. the standard errors [SE]) and assumes that the quality of study conduct is independent of study size. When the analyses showed a significant risk of publication bias, the ‘trim and fill’ method was employed to estimate the number of missing studies and the adjusted effect size (Duval & Tweedie, 2000; Sutton et al., 2000; Terrin et al., 2003). All the analyses were performed in R (RStudio Team, 2021) using *meta* and *metafor* packages (Balduzzi et al., 2019; Viechtbauer, 2010). Statistical tests were two-sided and used a significance threshold of p -value < 0.05.

Risk of bias assessment and the GRADE

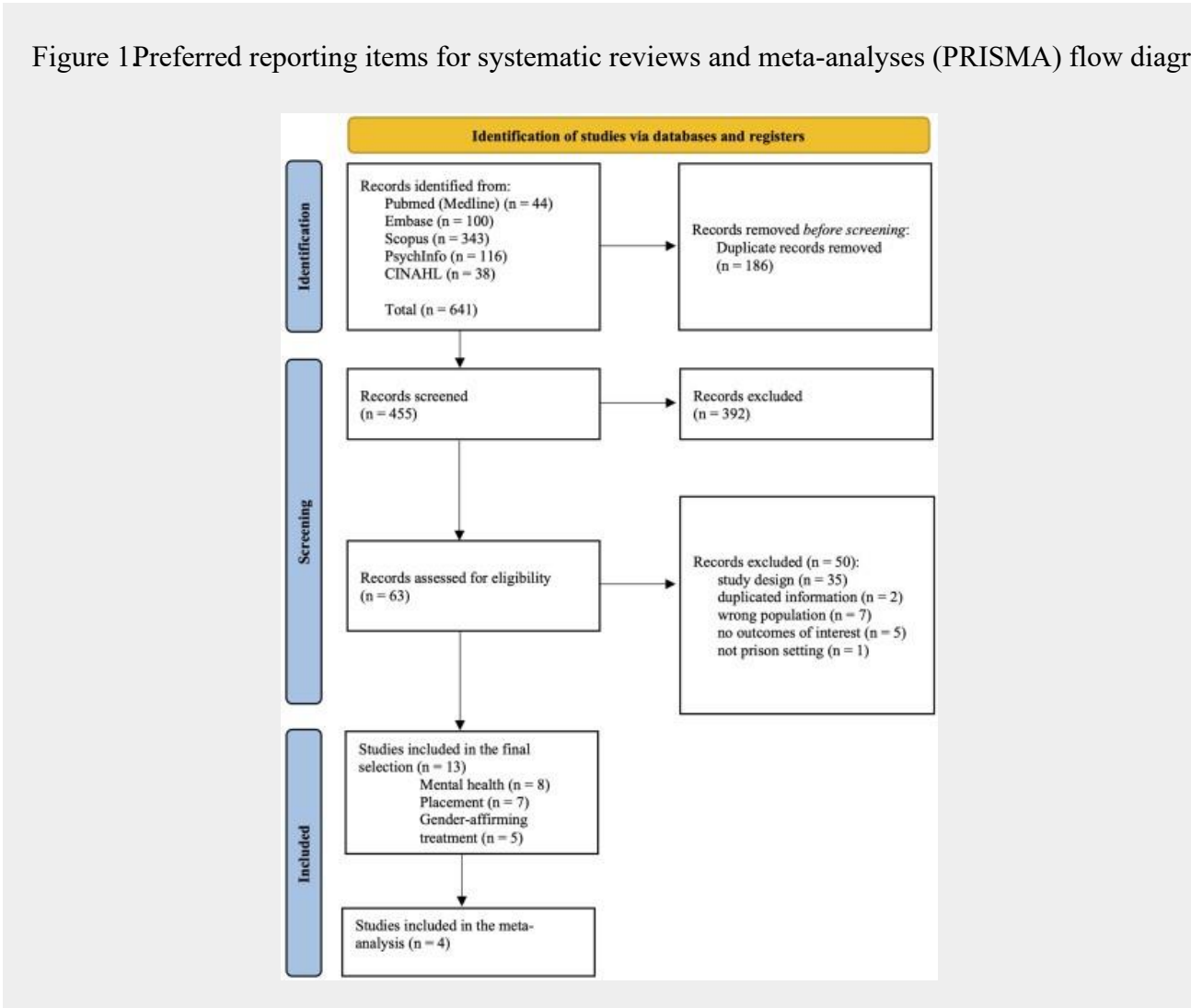
The bias risk in the included studies was independently assessed by two reviewers (MM and IC), using the Cochrane risk of bias tool (Higgins et al., 2011). All disagreements were discussed until consensus and, if necessary, another member of the team was consulted for the final decision (GMG). Each item on the risk of bias assessment was scored as high, low, or unclear, and the GRADE tool was used to assess the overall certainty of evidence (Schünemann et al., 2013). Further information is available in the [Supplementary Appendix](#).

Results

Study characteristics

[Figure 1](#) summarizes the selection process: from 455 records screened by title and abstract, 63 full texts were analyzed. The review process led to the selection of 13 studies (Brown & Jones, 2015; Drakeford, 2018; Hereth et al., 2021; Jacobsen et al., 2023; Jaffer et al., 2016; Jenness & Gerlinger, 2020; Reisner et al., 2014; Rogers et al., 2023; Rosentel et al., 2021; Sevelius et al., 2023; Sexton et al., 2010; White Hughto et al., 2019, 2022), referring to 12 different samples, corresponding to a total of 1,255 TGI and 174,314 controls, which were included in the quantitative synthesis.

Figure 1 Preferred reporting items for systematic reviews and meta-analyses (PRISMA) flow diagram.



Seven studies (53.8%) included male-to-female TGI, one study (7.7%) female-to-male TGI, four studies (30.8%) both categories, and one study (7.7%) did not specify if the status of TGI participants was male-to-female, female-to-male, or non-binary. The mean age of participants across the studies was 36.3 ± 8.00 years, ranging from 16–65 years old. The selected studies were all conducted in the US and one (7.7%) was conducted in Canada. Publication date ranged from 2010–2023, corresponding to collected data covering 2007–2019. Most of the studies were observational ($n = 12$, 92.3%), with only one (7.7%) classified as a randomized controlled trial. Eight studies (61.5%) reported mental health outcomes consisting in rates of mental illness, and further detailed as major depressive disorders (MDD), anxiety disorders, post-traumatic stress disorder (PTSD), suicide attempts/ideation, and alcohol and substance abuse. Seven studies (53.8%) reported information on placement of TGI according to their gender, and five studies

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(38.5%) reported information on the access to the GAT. All studies' characteristics are summarized in [Table 1](#).

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Table 1. Characteristics of the included studies.

Reference	Country	Study design	Setting	TGI (n) (Status)	Controls (n) (Status)	Mean age (SD) Range	Outcomes reported
Brown and Jones (2015)	USA	Retrospective case-control study	VHA	138 (NR)	188 (cisgender in CF)	1. (11.6)	Mental health: any MI; SA; MDD; ED; anxiety; PTSD; alcohol abuse; substance abuse.
Drakeford (2018)	USA	Crosssectional	CFs	1007 (MtF and FtM)	NA	NR 18–65+	Mental health: SA; substance use. GAT: general health services offered.
Hereth et al. (2021)	USA	Cohort study	Community	298 (MtF)	NA	NR 16–29	Placement.
Jacobsen et al. (2023)	Canada	Crosssectional	Community	104 (FtM)	NA	NR 18–84	Mental health: anxiety; SI.
Jaffer et al. (2016)	USA	Crosssectional	Jails	27 (MtF and FtM)	NA	NR NR	GAT: hormone replacement therapy. Placement.
Jenness and Gerlinger (2020)	USA	Crosssectional	Prisons for men	315 (MtF)	NA	NR NR	Placement.
Reisner et al. (2014)	USA	Crosssectional	CFs	748 (MtF)	3,130 (MtF, not in CF)	NR 18–65+	Mental health: substance abuse; SA. GAT: hormone replacement therapy; sex reassignment surgery.
Rogers et al. (2023)	USA	Crosssectional	Prisons	54 (MtF and FtM)	24,636 (cisgender in CF)	NR ≥18	Mental health: any MI; MDD; BD; SZ; PTSD; anxiety; PD; alcohol abuse; substance abuse.

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Rosentel et al. (2021)	USA	Crosssectional	Community	75 (MtF)	NA	30.8 (10) NR	GAT: hormone replacement therapy.
Sevelius et al. (2023)	USA	RCT	Jail	14 (MtF)	NA	32.0 (8.1) NR	Mental health: PTSD; MDD; anxiety; SZ; SI; SA. Placement.
Sexton et al. (2010)	USA	Crosssectional	Prisons for men	315 (MtF)	146,360 (cisgender in CF)	37.7 (11.2) NR	Mental health: any MI. Placement.
White Hughto et al. (2019)	USA	Cohort study	Community	221 (MtF)	NA	NR 16–29	Mental health: PTSD; anxiety; MDD; alcohol and substance use. Placement.
White Hughto et al. (2022)	USA	Crosssectional	CFs	76 (MtF and FtM)	NA	31.4 (11.2) NR	GAT: hormone replacement therapy. Placement.

Abbreviations: BD, bipolar disorder; CF, correctional facility (including both prisons and jails); ED, eating disorders; FtM, female to male; GAT, gender-affirming treatment; MDD, major depressive disorder; MI, mental illness; MtF, male to female; n, number; NA, information not available; NR, information not reported; PD, personality disorders; PTSD, post-traumatic stress disorder; RCT, randomized controlled trial; SA, suicide attempt; SD, standard deviation; SI, suicide ideation; SZ, schizophrenia; TGI, transgender inmates; USA, United States of America; VHA, Veterans Health Administration.

Meta-analysis of mental health outcomes among TGI and controls

Four studies (Brown & Jones, 2015; Reisner et al., 2014; Rogers et al., 2023; Sexton et al., 2010) reported data on mental health of TGI and controls and were included in the meta-analysis. The control group was made of cis-gender inmates in three studies, and the remaining studies used male-to-female transgender people not incarcerated as controls. The comparison of TGI and controls was performed on the following mental health outcomes: any mental illness, MDD, anxiety disorders, PTSD, suicide attempt, alcohol abuse, and substance abuse. The results of the meta-analyses are presented in Table 2, showing that TGI are at increased risk of mental illness (OR = 4.26; 95% CI = 2.10–8.66), MDD (OR = 3.07; 95% CI = 1.33–7.06), PTSD (OR = 2.23; 95% CI = 1.46–3.43), and suicide attempt (OR = 2.25; 95% CI = 1.46–3.49). No significant difference between TGI and controls was found for the risk of anxiety disorders (OR = 1.62; 95% CI = 0.63–4.17), alcohol abuse (OR = 1.15; 95% CI = 0.74–1.77), and substance abuse (OR = 1.71; 95% CI = 0.70–4.13). The estimates were limited by the small number of studies and the high level of heterogeneity, except for PTSD and alcohol abuse, for which the level of heterogeneity was small.

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Table 2. Results of meta-analysis of mental health among transgender inmates and controls.

Outcome	N studies	N TGI/ Controls	OR (95% CI)	p-value	I ² (p-value)
Any mental illness	3	507/171,184	4.26 (2.10–8.66)	<0.001	91% (<0.001)
MDD	2	192/24,824	3.07 (1.33–7.06)	0.008	81% (0.022)
Anxiety	2	192/24,824	1.62 (0.63–4.17)	0.316	75% (0.044)
PTSD	2	192/24,824	2.23 (1.46–3.43)	<0.001	32% (0.225)
Suicide attempt	2	886/3,318	2.25 (1.46–3.49)	<0.001	69% (0.072)
Alcohol abuse	2	192/24,824	1.15 (0.74–1.77)	0.544	7% (0.300)
Substance abuse	2	802/27,766	1.71 (0.70–4.13)	0.236	84% (0.012)

Abbreviations: 95% CI, 95% confidence intervals; MDD, major depressive disorder; N, number; OR, odds ratio; PTSD, post-traumatic stress disorder; TGI, transgender inmates.

Due to the limited number of studies included in the quantitative synthesis, we could not perform any supplementary analyses aimed at exploring the source of between studies heterogeneity, such as leave-one-out analysis or meta-regression, nor inform on publication bias. However, by looking at the Forest plots displayed in [Figures 2–4](#), it is possible to observe that, irrespective of whether the control group comprised transgender individuals in the community or cis-gender inmates, the risk of mental illness among TGI was higher. This may suggest that both the minority status of being transgender, and the experience of incarceration lead to adverse effects on mental health, and their intersection amplifies the vulnerability.

Figure 2 Meta-analysis of any mental illness in TGI and controls. **Abbreviations:** 95% CI, 95% confidence interval; MH, Mantel–Haenszel random-effects model; TGI, transgender inmates.

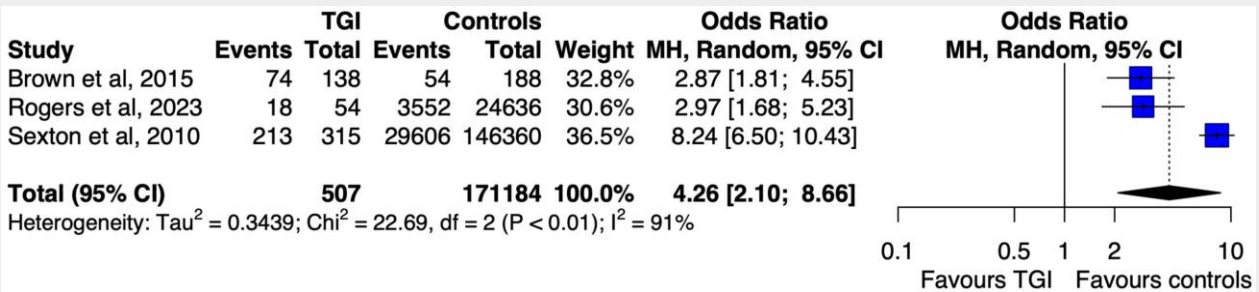


Figure 3 Meta-analysis of depression (a), anxiety disorders (b), and post-traumatic stress disorder (c) in TGI and controls. **Abbreviations:** 95% CI, 95% confidence interval; MDD, major depressive disorder; MH, Mantel–Haenszel random-effects model; PTSD, post-traumatic stress disorder; TGI, transgender inmates.

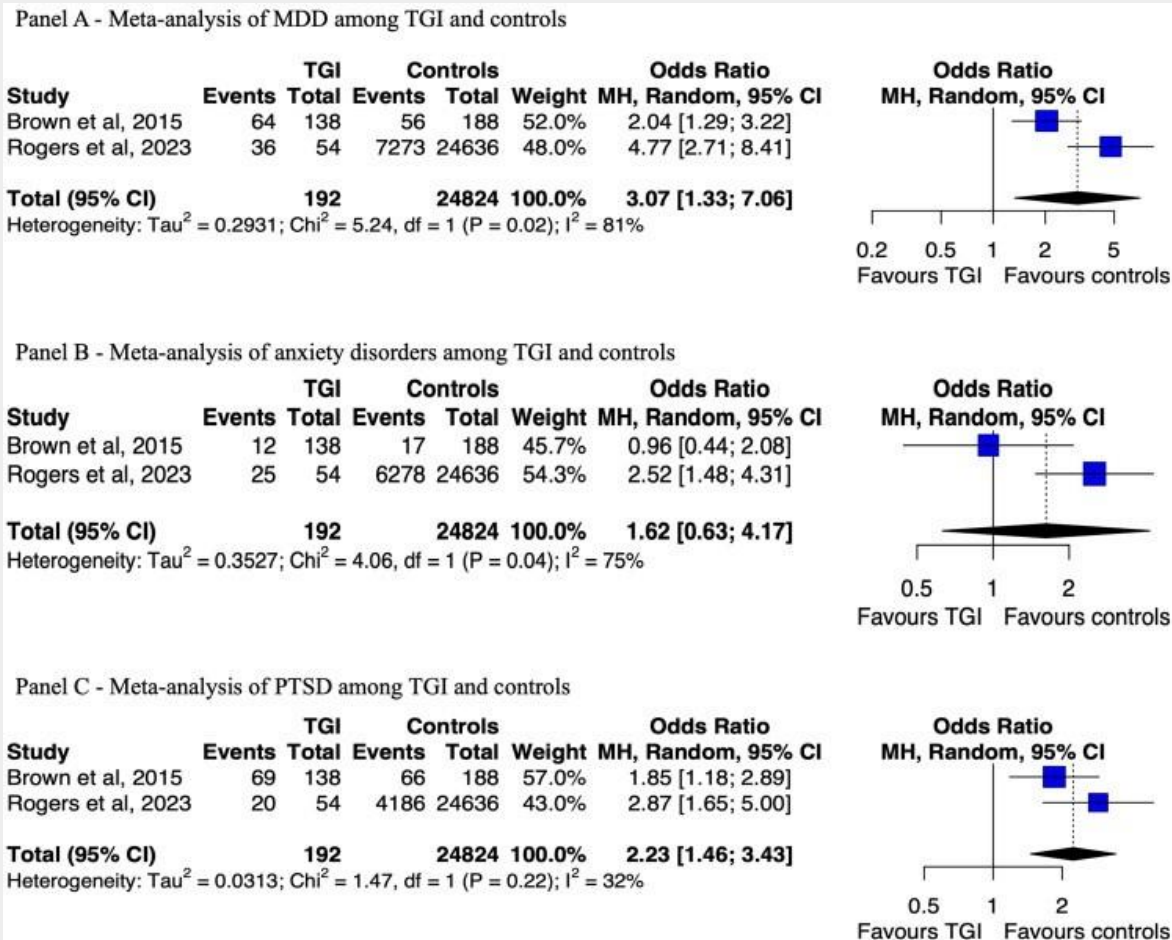
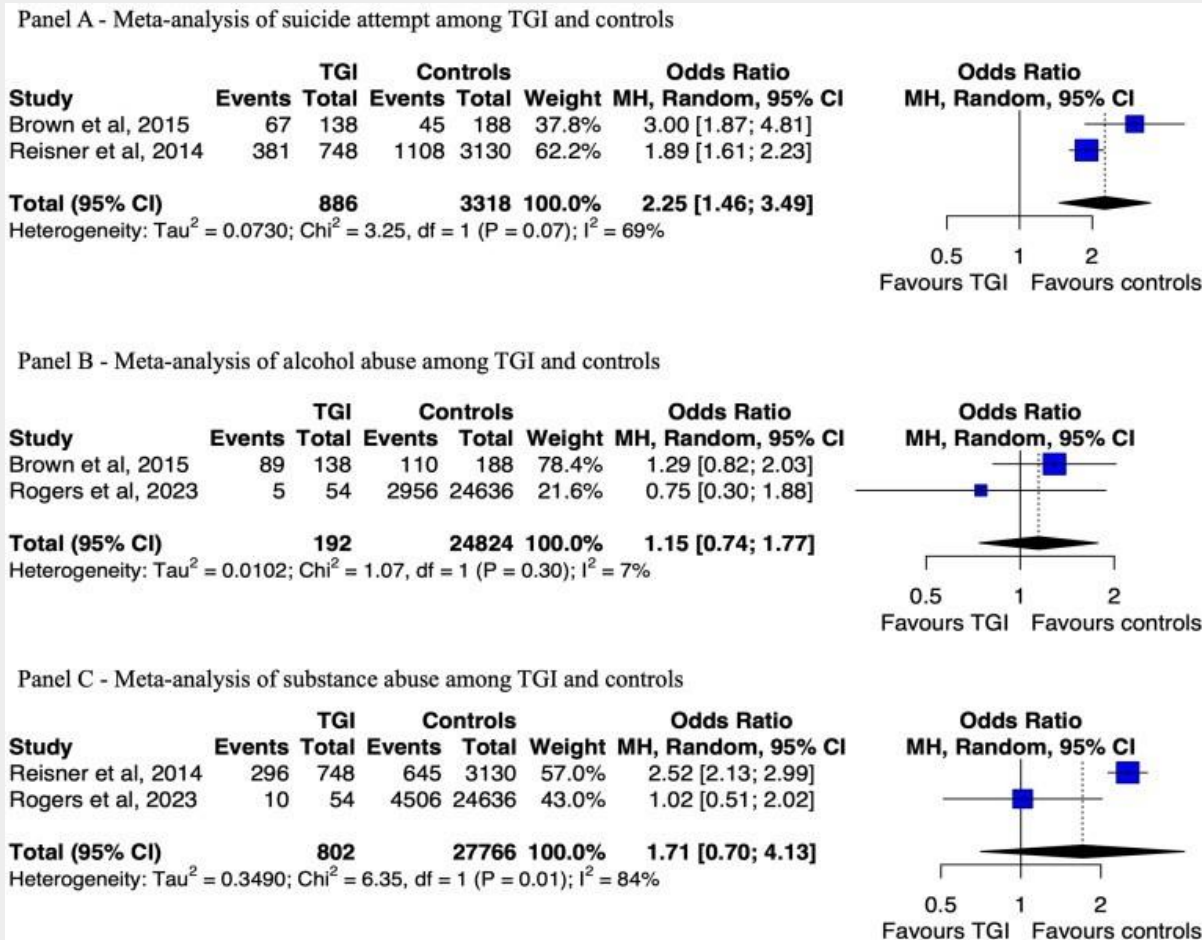


Figure 4 Meta-analysis of suicide attempt (a), alcohol abuse (b), and substance abuse (c) in TGI and controls. Abbreviations: 95% CI, 95% confidence interval; MH, Mantel–Haenszel random-effects model; TGI, transgender inmates.



Narrative synthesis of the findings of each study

Given the limited number of studies included in the meta-analysis, we also conducted a comprehensive summary of each study's findings, providing details on the outcomes of interest for this review. Concerning mental health, many studies suggested an association between poor mental health and a history of interpersonal violence and victimization for TGI both prior to and during incarceration. Notably, one study found an association between the lack of transgender-related medical services and suicide attempts among TGI during their detention (Drakeford, 2018). Another significant finding from this review was that only 50–70% of TGI had access to

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the GAT. With respect to the placement of TGI in relation to their gender, most reports indicated that they were housed in sections based on their sex assigned at birth, with studies’ participants pointing out

that housing should be based on individuals’ self-identification. These findings may underscore the need for transgender-inclusive policies within the CFs. The full narrative summary is presented in [Table 3](#).

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Table 3. Summary of the findings of each study included in the final selection.

Reference	Study aim	Mental health	GAT	Placement	Study conclusions
Brown and Jones (2015)	This investigation sought to describe characteristics associated with justice involvement in a sample of veterans with transgender identification and to determine whether health disparities exist when compared to nontransgender veterans with a justice involvement history.	Transgender veterans with justice involvement had significantly increased odds for depression, PTSD, serious mental illness, and suicidal ideation/attempts.	NR	NR	Transgender veterans with justice involvement suffer from several significant health and mental health disparities compared to matched nontransgender veterans with similar justice involvement.

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Drakeford (2018)	The aim of the present study is examining suicide attempts among transgender individuals who have been incarcerated, with emphasis on the role of correctional system policies.	(1) transgender inmates residing in states providing high levels of transgender-related medical services were significantly less likely to report attempting suicide; (2) transgender individuals who experienced genderbased victimization while incarcerated were more likely to report lifetime suicide attempts; (3) 13.8% participants reported current substance use, 27.6% previous use.	53.6% of the sample reported to have access to multiple health services.	NR	While incarceration is a stressful experience for most inmates, it presents particularly harmful risks for transgender individuals. Policies enacted by many correctional systems fail to adequately manage the incarceration of transgender inmates, leading to harassment, while preventing inmates from accessing adequate medical care. Changes in the current policy could potentially improve the mental health outcomes of transgender inmates.
Hereth et al. (2021)	The first aim of the study was to examine criminal legal involvement histories in a sample of 298 young transgender women recruited for Project LifeSkills.	NR, but same sample as White Hughto et al. (2019).	NR	79.2% housed with men; 2.8% housed with women; 4.2% housed with transgender women; 13.9% in single cell/isolation .	Transgender women in this sample reported high levels of arrest and incarceration, and the majority were charged with non-violent offenses when they were last arrested. Of those who had been incarcerated, most women were housed with men, increasing the risk of experiencing violence and victimization by other inmates and guards. Overall, women in the sample reported high levels of violence and marginalization, including homelessness and engagement in sex work.

Jacobsen et al. (2023)	This study sought to determine the prevalence and correlates of lifetime incarceration among three specific, understudied subgroups in Canada: trans men, non-binary people, and Two-Spirit people.	Incarceration was not significantly associated with anxiety and suicide ideation.	NR	NR	Our overall finding of the higher lifetime prevalence of incarceration among trans, non-binary, and Two-Spirit populations supports arguments that incarceration is an important social determinant of health issue for sexual and gender minority people in Canada.
Jaffer et al. (2016)	We sought to review and evaluate the adequacy of care for transgender people in the New York City jail system.	NR	60% of respondents had previously filled in a medical care complaint, with nearly 70% of these complaints pertaining to the inability of patients to receive hormone replacement therapy. Approximately 30% of respondents indicated that their complaints had not been resolved.	All patients emphasized the need for transgender housing, with 96% indicating that housing criteria should be based on self-identity. Currently: housing according to their genitals or sex assigned at birth regardless of their gender expression.	Results from the survey showed that the primary complaint of transgender inmates was their inability to obtain hormone therapy. Furthermore, survey results revealed the need for clinical staff to receive transgender healthcare training.

Jenness and Gerlinger (2020)	This article draws on original qualitative and quantitative data to examine sexual victimization in the lives of transgender women incarcerated in prisons for men.	NR	NR	58% housed in a special unit; 42% housed in a men's section.	The data demonstrate the prominence of intimate partner violence in prison, complicate the distinction between consent and unwanted sexual experiences in the lives of transgender women in prisons for men, and shine a light on the workings of gender in a total institution that privileges heteronormativity at the expense of the safety of transgender women in prisons for men. This study underlines how housing decisions must be made on a case-by-case basis, with the person's own sense of where they would be safest 'given serious consideration'.
Reisner et al. (2014)	The goal of the current study was to explore experiences of victimization and mistreatment of transgender women while in jail or prison, including victimization perpetrated by inmates and by officers/staff and denial of healthcare while incarcerated. Finally, we examined whether experiences of victimization in jail/prison and denial of healthcare were each associated with health disparities among transgender women with a history of incarceration.	Compared to their counterparts who had not been institutionalized, transgender women with a history of jail/prison were disproportionately burdened by negative health indicators, including substance use to cope and suicide attempts.	During incarceration 65.4% could get hormone replacement therapy and 32.4% could access sex reassignment surgery.	NR	These findings demonstrate disproportionate rates of incarceration among transgender women, especially among women of colour. Transgender women experienced higher rates of victimization and mistreatment while incarcerated. The intersecting forces of racism and transphobia produce multiple layers of marginalization among transgender women of colour, which may ultimately result in a disproportionate burden of social, mental, and physical health disparities.

Rogers et al. (2023)	To examine the distribution of self-reported mental health conditions and clinical contact among incarcerated transgender individuals compared to cisgender women and men.	Results show that transgender inmates have disproportionate mental health symptoms and conditions in the past 30 days when compared to cisgender men and women. Furthermore, there were no statistically significant differences in alcohol or substance abuse in the past year before admission.	NR	NR	Incarcerated transgender individuals have poorer mental health, are more likely to be diagnosed with mental health disorders during their lifetime, and are more likely to receive treatment for mental health conditions compared to cisgender inmates.
Rosentel et al. (2021)	To explore the relationship between anti-trans experiences in school and adverse criminal-legal system outcomes among a sample of 138 Black/African American transgender women.	NR	34.2% denied access to hormone replacement therapy during incarceration; 19.2% denied medical care.	NR	Anti-trans school climate and institutional discrimination may contribute to the adverse criminal-legal system outcomes for Black/African American transgender women.
Sevelius et al. (2023)	The primary aims of this study were to conduct a systematic adaptation of an evidence-based linkage-to-care intervention for incarcerated trans women who are preparing to return to the community and evaluate the feasibility and acceptability of the adapted	86% had a mental health diagnosis (most common were depression, PTSD, and anxiety); 50% suicidal ideation/attempt.	NR	Participants were housed in a 12-bed male facility; but for the intervention moved to transspecific unit (re-entry pod).	Results indicate that the supportive intervention is feasible and acceptable and holds promise in improving the health of transgender women re-entering the community after a period of incarceration.

	intervention in the San Francisco County Jail.				
Sexton et al. (2010)	To examine the demographic characteristics and the health profile of transgender inmates in California prisons for men.	Transgender inmates were more often classified as Correctional Clinical Case Management System or Enhanced Outpatient due to severe mental illness.	NR	100% in a prison for men.	Transgender inmates are marginalized in ways that are not comparable to other prison populations. Most significantly, transgender inmates are far worse in terms of their mental health, participation in sex work, homelessness, and history of sexual victimization.
White Hughto et al. (2019)	The present study analysed data from a prospective cohort of young transgender women to: (i) characterize their incarceration histories; (ii) identify risk factors for incarceration over time; and (iii) examine whether past incarceration predicts current mental health symptoms and substance use over time, controlling for baseline mental health and substance	Incarceration did not predict anxiety symptoms, depressive symptoms, and binge drinking over time.	NR	Same sample as Hereth et al. (2021).	The results document school dropout, sex work, homelessness, and prior incarceration as key drivers of recent incarceration and show that recent incarceration predicted physical manifestations of poor mental health and illicit drug use prospectively even after controlling for baseline mental health and substance dependence diagnoses.

	dependence diagnoses.				
White Hughto et al. (2022)	The present study aimed to examine: (1) the lifetime incarceration experiences of transgender people; (2) identify classes of victimization experienced throughout the life course and during incarceration; (3) examine the association of demographic and mental health factors and lifetime victimization; and (4) identify subgroups at elevated risk for victimization during incarceration.	NR	Information collected only for the six transgender people incarcerated in the past 12 months, of these: two (33.3%) were receiving hormone replacement therapy prior to incarceration; during incarceration none (0%) tried to get hormones.	Information collected only for the six transgender people incarcerated in the past 12 months, of these: four (66.7%) in men's unit; one (16.7%) in solitary room in men's unit; one (16.7%) in special LGBT's unit.	The present study shows that transgender people with marginalized identities and/or engaging in stigmatized or illicit behaviours are more likely to report being victimized while incarcerated. These findings underscore the need for multilevel interventions to prevent both victimization and incarceration of transgender people and help those who have experienced victimization to cope with its negative sequelae.
Abbreviations: GAT, gender affirming treatment; LGBT, lesbian, gay, bisexual, transgender; NR, information not reported; PTSD, posttraumatic stress disorder.					

GRADE of the evidence

A summary on the risk of bias in all 13 trials has been reported in [Supplementary Figures S1 and S2](#), along with an assessment of the quality of the evidence ([Supplementary Table S2](#)). In the GRADE system, the evidence from observational studies is initially set to low, there are then criteria that can be used either to downgrade or upgrade (see further information in the [Supplementary Appendix](#)). The quality of the evidence was rated very low for all the estimates, mainly due to the small number of studies included, the lack of a control group in all except four studies, and the cross-sectional study design.

Discussion

This systematic review aimed to investigate the condition of TGI, particularly focusing on their mental health, their access to GAT, and their placement within the CF in relation to their gender. To the best of our knowledge, this is the first meta-analysis on these topics and the largest systematic review on the conditions of TGI.

Although the evidence was limited by the heterogeneity of available studies, we found that TGI are at increased risk of mental illness, including depression, PTSD, and suicide attempt, and they may face challenges in accessing the GAT and receiving appropriate housing within the CFs. The findings of a higher risk of suicide attempts, PTSD, and discrimination for TGI confirm previous evidence from prospective cohort studies and systematic reviews conducted both in the community and within the CFs (Lader et al., 2003; Marchi, Arcolin, et al., 2022; Marchi, Magarini, et al., 2022; Marchi, Travascio, Uberti, De Micheli, Grenzi, et al., 2023; Marchi, Travascio, Uberti, De Micheli, Quartaroli, et al., 2023; Marchi et al., 2020; Warren et al., 2022). Minority groups, migrants, people with unsecure housing condition, or with problems related to addiction resulted at increased risk for traumatization in the community (Marchi, Magarini, et al., 2022; Schnyder et al., 2017; Vervliet et al., 2014) and poor mental health, including suicide during the detention (Borrill & Taylor, 2009; Dixon-Gordon et al., 2012; Lader et al., 2003; Marchi et al., 2020). At the same time, among the sexual and gender minority groups, transgender people reported the highest risk of poor mental health, including the risk of victimization, PTSD, and suicidal behaviors (Bridge et al., 2022; Marchi, Arcolin, et al., 2022; Marchi, Travascio, Uberti, De Micheli, Grenzi, et al., 2023; Marchi, Travascio, Uberti, De Micheli, Quartaroli, et al., 2023; Warren et al., 2022). Consequently, it is not surprising that our selected studies identified an additive effect of intersectional factors, such as belonging to minority ethnic groups, or engaging in sex work, or drug abuse, all leading to more severe mental health consequences (Reisner et al., 2014; Rosentel et al., 2021; Sexton et al., 2010; White Hughto et al., 2019). These intersectional vulnerabilities were also linked to an increased risk of

HIV and other sexually transmitted diseases, which are other relevant issues within the CFs (Brömdal et al., 2019).

Critically, this review suggests that the access to the GAT and the placement within the CF can significantly impact on TGI mental health. In this regard, we found that TGI reported limited access to the GAT, with estimates of denial of hormone replacing treatment around 20% in the CFs (Jaffer et al., 2016; Rosentel et al., 2021). These findings align with a previous systematic review of CF policies in the US, showing that only some CFs allow the GAT continuation and initiation for their TGI (Brown & McDuffie, 2009). Furthermore, the lack of adequate transgender-related healthcare services was associated with an increased risk of suicide attempts (Drakeford, 2018). Concerning the placement of TGI within CFs, we found that the housing conditions are generally based on sex assigned at birth rather than gender identity. This practice challenges the recognition of TGI's gender identity, eroding personal dignity and increasing marginalization and isolation. In addition, there are reports of increased risk of interpersonal violence, harassment, and sexual victimization towards female-to-male TGI housed in men's sections, perpetrated by both fellow inmates and CF staff (Drakeford, 2018; Hereth et al., 2021; Jenness & Gerlinger, 2020; Reisner et al., 2014; Sexton et al., 2010; White Hughto et al., 2022). These experiences linked to housing can have a profound impact on mental wellbeing, as many studies provided evidence of an association between interpersonal violence, victimization, and mistreatments within the CF and poor mental health during detention.

According to these findings, it is evident that multiple barriers, including structural stigma, heteronormative culture, and a lack of training among the CF staff members, contribute to the reported threats to TGI's mental health and gender identity recognition within the CF. Urgent attention is needed to fill in this significant gap in the healthcare of TGI. Comprehensive training to improve the clinical attitudes and cultural competence of CF staff in addressing TGI healthcare needs is imperative (White Hughto et al., 2017). Additionally, a thorough revision of the policies regulating the placement of TGI within CFs is necessary, with a focus on enhancing their safety and supporting their gender affirmation. For instance, implementing a case-by-case housing policy that considers gender identity and preference, conducting regular reassessments of housing circumstances and potential related risk, and establishing same-cell or same-unit accommodations for transgender incarcerated individuals may all be important steps promoting TGI inclusion (Brömdal et al., 2019). Furthermore, CF policies should try to facilitate future research on the TGI population, working to overcome bureaucratic barriers in conducting health research in prisons, and to increase data transparency within correctional institutions. Collaborative engagement with transgender activist communities can facilitate access to these hard-to-reach groups, allowing the co-production, design, and delivery of projects or interventions tailored to the specific needs of TGI (Van Hout et al., 2020). These changes would significantly improve the well-being of TGI by reducing vulnerability, establishing transparent policies throughout the CF settings, and encouraging rehabilitation.

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Limitations

This systematic review has several limitations. First, the small number of studies included in the quantitative synthesis, reflecting in the estimation of rather imprecise or inconsistent effect sizes, as shown by large confidence intervals or confidence intervals crossing the line of no-effect. Nevertheless, it is important to acknowledge that investigating these complex settings and populations may be challenging, and this may reflect the small number of studies available. Second, the number of studies included in the meta-analysis was less than ten, falling short of the threshold required for robust testing of publication bias (Sterne et al., 2011). Third, many included studies were cross-sectional. This study design is limited in the capability to capture potential variations over time in the mental condition of TGI, their access to the GAT, or their placement within the CF. For instance, placements might have been revised during the period of detention, and there may be critical timeframes for assessing mental health conditions. Fourth, only a few studies included a control group, limiting the interpretation of our findings. In fact, without appropriate control groups, it remains unclear whether the mental health and access to healthcare services of TGI are distinct from those of other inmates within CFs. Also, the crime TGIs were sentenced for could have influenced, for instance, decisions on their placement. This information was reported only by four studies, wherein the percentage of TGI imprisoned for violent crimes (e.g. against the person) ranged from 23–64% and the remaining TGI were sentenced for nonviolent crimes, such as prostitution or drugs. These gaps in knowledge underscore the importance of future research exploring these aspects in a broader context. Fifth, the predominant focus of the studies included in this review was on male-to-female TGI. There are limited data that could be used to validate these findings for other sexual and gender minority groups, such as female-to-male or intersex people, calling for a more precise and inclusive data collection in future research. Finally, it should be noted that all studies were conducted in North America. This geographical limitation could potentially restrict the applicability of our findings to regions with distinct cultural norms, values, and expectations concerning gender identity and expression, or with different penitentiary organizations and policies. For example, countries like Italy and the UK have implemented progressive changes to enhance access to the GAT for TGI, while Australia and the UK have adopted more promising housing allocation strategies for transgender individuals in prison (Van Hout et al., 2020). More widespread replication is necessary to generalize our findings.

Conclusions

This systematic review highlights the critical role of incarceration as a social determinant of health for TGI. TGI showed an increased risk of depression, PTSD, and suicide attempts, highlighting the need for tailored therapeutic interventions. Limited access to the GAT and housing based on sex assigned at birth, rather than gender identity, further compounded these

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challenges. Urgent reforms, specific staff training, and inclusive policies are essential to safeguard the well-being and rights of TGI within the correctional settings.

Disclosure statement

The authors report there are no competing interests to declare.

Statement of ethics

This systematic review is exempt from ethics approval because we are collecting and synthesizing data from previous studies in which ethical approval has already been obtained by the trial investigators in their respective local sites.

Data availability statement

The datasets generated and analyzed during the current study are available from the corresponding author on reasonable request.

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