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Follow-up to the implementation at the national, regional, and international levels of all commitments, as reflected in the Ministerial Declaration of 2019, to address and counter the world drug problem**Review of interventions to treat drug use disorders among girls and women in the criminal justice system in low- and middle-income countries****

This Discussion Paper was prepared by UNODC following a meeting of the UNODC - WHO Informal Scientific Network (ISN) that happened during the 65th session of the Commission on Narcotic Drugs held in 2022 and focused on “Substance Use Prevention and Substance Use Disorder Treatment and Care for Girls and Women”. The ISN developed recommendations that were presented at the session, including a recommendation to “Invest in research to increase our understanding of the risk and protective factors associated with substance use in girls and women, and the most effective prevention and treatment strategies in different socioeconomic contexts.” This Discussion Paper provides the results of a systematic review of the scientific evidence on the factors that influence drug use and drug use disorders in women and young girls living in low- and-middle income countries (LMIC) and who have had contact with the criminal justice system, as well as on interventions targeting drug use and related harms in this group.

This Discussion Paper is therefore in line with CND Resolution 55/5 that calls for promoting “Strategies and measures addressing specific needs of women in the context of comprehensive and integrated drug demand reduction programmes and strategies”, as well as CND Resolution 59/5 that encourages Member States to “take into consideration the specific needs and circumstances of women subject to arrest, detention, prosecution, trial or the implementation of a sentence for drug-related offences when developing gender-specific measures as an integral part of their policies on crime prevention and criminal justice” (Operative Paragraph 4). This Discussion Paper will be made available as a Conference Room Paper to the Commission for its consideration at its sixty-sixth session.

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** This document has not been edited.





Discussion paper

Pre-publication draft

Review of interventions to treat drug use disorders among girls and women in the criminal justice system in low- and middle-income countries

March 2023

Disclaimer

This document has not been formally edited.

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This Discussion Paper was prepared by UNODC following a meeting of the UNODC-WHO Informal Scientific Network (ISN) that happened during the 65th session of the Commission on Narcotic Drugs held in 2022 and focussed on “Substance Use Prevention and Substance Use Disorder Treatment and Care for Girls and Women”. The ISN developed recommendations that were presented at the session, and therefore UNODC would like to acknowledge the ISN members that contributed to the 2022 ISN statement (in alphabetical order): Elizabeth Adjei-Acquah, Mustafa Al-Absi, Suzan Ben-Ezra, Jorgen Gustav Bramness, Stefan Brené, Evgeny Bryun, Mohamed Chakali, Carlos Fabian Damin, Gabriele Fischer, Evgeny Kruptisky, Rakesh Lal, Claudio Leonardi, Zhimin Liu, Icro Maremmani, Susan Maua, Marie Therese Matar, María Elena Medina-Mora, Isidore Obot, Krzysztof Ostaszewski, Telmo Mota Ronzani, Michael Schaub, Orlando Scoppetta, Valentin Skryabin, Marta Torrens, Jallal Toufiq, Graça Vilar, Jorge A. Villatoro Velazquez, Nora Volkow, Konstantin Vyshinskiy, Min Zhao, and Sonya Toteva Zhenkova. The following expert also made a substantive contribution in the editing of the 2022 ISN statement: Jennifer Hobin.

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List of Abbreviations

AUDIT	Alcohol Use Disorders Identification Test
CBT	Cognitive Behavioural Therapy
CND	Commission on Narcotic Drugs
DAST	Drug Abuse Screening Test
HCV	Hepatitis C Virus
HIV	Human Immunodeficiency Virus
IDU	Injecting Drug Use
ISN	UNODC-WHO Informal Scientific Network
LILAC	Latin American and Caribbean Health Sciences Literature
LMIC	Low- and-middle-income countries
MI	Motivational Interviewing
MMT	Methadone Maintenance Treatment
OAT	Opioid Agonist Treatment
PTSD	Post-Traumatic Stress Disorder
PRISMA	Preferred Reporting Items for Systematic Reviews
RCT	Randomized Controlled Trials
SAST	Sexual Addiction Screening Test
STI	Sexually Transmitted Disease
UNODC	United Nations Office on Drugs and Crime

EXECUTIVE SUMMARY

Aims

This report sought to examine the factors that influence drug use and drug use disorders in women and young girls living in low- and-middle income countries (LMIC) and who have had contact with the criminal justice system. Additionally, it sought to evaluate the available evidence of interventions targeting drug use and related harms in this group.

Results

A review of the available evidence found:

- There is very limited research examining factors influencing drug use and interventions in women and young girls in contact with the criminal justice system. The majority of this limited research that has been identified in this review has been conducted in the United States and Canada.
- The majority of the studies in LMIC on factors that influence drug use among women and girls that have been identified in this review were conducted in Brazil.
- The most common type of drugs reported were cannabis, cocaine/crack, heroin, methamphetamine, and psychotropics.
- Factors that influence drug use included a history of drug use, family history of drug use, criminal justice history, violence, and trauma.
- There is no evidence about interventions in LMIC that specifically cater to women and young girls, or that use all-female cohorts.
- Evidence of research in LMIC that include female cohorts was found by this review only in China and Thailand, with sample percentages ranging from 3.2% to 23% and concerning psychosocial interventions. The studies indicated limited evidence of effectiveness in reducing drug use and recidivism.

Recommendations

- The lack of studies generally examining factors that influence drug use and interventions for women and young girls in LMIC who use drugs represents an important gap in the literature. It indicates a need for evidence-based interventions that target drug use and their evaluation in these populations.
- There is a need for both government approaches and inter-agency cooperation within the criminal justice system to ensure that the factors that lead to drug use among women and girls are addressed and responses documented and evaluated.

- Development of programs that specifically target women and the traumatic experiences influencing their drug use is recommended.

BACKGROUND

Some studies have shown that women offenders are likely to have a history of drug use [1]. There is an association between drug use and criminal offending [2]. Evidence shows that drug and alcohol problems are common among women in contact with the criminal justice system, but this evidence is mostly from high-income countries [3]. Several risk factors that influence drug use among women include mental illness, having family or parental problems, trauma, violence, a lack of social supports, and associations with a drug user [4-6]. There are significant gaps in knowledge concerning women who use drugs from LMIC who have been in contact with the criminal justice system.

In the context of the Commission on Narcotic Drugs (CND) 2022, the UNODC-WHO Informal Scientific Network (ISN) conducted a meeting to share scientific evidence on “Substance Use Prevention and Substance Use Disorder Treatment and Care for Girls and Women”, and to develop recommendations to be presented at CND Plenary to international policymakers [7]. These recommendations are of relevance for UN Member States in their efforts to develop, maintain and improve accessible, evidence-based services for the treatment of drug use disorders, with a specific focus on women and girls.

Among the recommendations by the ISN 2022 meeting, pertinent to this review is the interest to increase our understanding of the risk and protective factors associated with drug use in girls and women and the most effective prevention and treatment strategies in different socioeconomic contexts. The context in which this review was examined was drug use among girls and women in contact with the criminal justice system in LMIC. This systematic review had two aims:

1. What factors influence drug use among girls and women in contact with the criminal justice system in LMIC?
2. What treatment interventions are effective for drug use disorders among women and girls who are incarcerated or who have been released from incarceration in LMIC?

METHODS

This review is reported in accordance with Preferred Reporting Items for Systematic Reviews (PRISMA) reporting guidelines [8]. The methods have been structured according to the review questions which was conducted separately.

Review Question 1

1. What factors influence drug use among girls and women in contact with the criminal justice system in LMIC?

Search strategy

The database searches were conducted in PubMed, Embase, JSTOR, Cochrane, Web of Science, Latin American and Caribbean Health Sciences Literature (LILACS) and EBSCO Criminal Justice in October 2022. The searches identified publications that reported any drug disorder(s) among girls and women in contact with the criminal justice system. Drug use disorders in this context relates to non-medical use of internationally controlled substances. In contact with the criminal justice system relates to initial law enforcement contact (police contacts), through legal proceedings (pre-trial detention) to prison settings including forensic hospitals. The search string was made up of each key term and for search term “drugs” was first searched individually before being combined using the term OR (See Table 1). The same was done for all the terms. Following this, the three search strings were added together using AND - (drug use search terms) AND (criminal justice system search terms) AND (girls and women search terms) using a title or abstract search and database-specific searchers (PubMed: Medical Subject Heading [MeSH] term). The search was limited to human studies. We restricted our results to studies published from 1980 to current. There were no language restrictions. Publications not in English were translated to English by use of Google Translate to assess for study eligibility. The detailed search strategy for one of the databases is in Appendix 1.

Table 1: Systematic review search terms for review question 1

Search group 1	Search group 2	Search group 3
(((((("drug use disorder [Text Word]) OR ("drug use disorder"[MeSH Terms])) OR ("drug abuse"[MeSH Terms])) OR ("drug abuse"[Text Word])) OR ("drug misuse"[Text Word])) OR ("drug misuse"[MeSH Terms])) OR ("drug dependenc*"[MeSH Terms])) OR ("drug dependenc*"[Text Word])	"criminal justice system"[Text Word] OR (("criminal law"[MeSH Terms] OR ("Criminal"[All Fields] AND "law"[All Fields]) OR "criminal law"[All Fields] OR ("Criminal"[All Fields] AND "justice"[All Fields]) OR "criminal justice"[All Fields]) AND "drug delivery systems"[MeSH Terms]) OR "detention"[Text Word] OR "police contact*"[Text Word] OR "prison*"[MeSH Terms] OR "prison*"[Text Word] OR "forensic hospital*"[Text Word] OR "juvenile justice"[Text Word] OR "court*"[Text Word] OR "court*"[MeSH Terms] OR "pre-trial"[Text Word] OR "arrest*"[MeSH Terms] OR "arrest*"[Text Word] OR "post-trial"[Text Word] OR "offender"[Text Word] OR "criminals"[MeSH Terms] OR "post-release"[Text Word] OR "release*"[Text Word] OR "leaving prison"[Text Word] OR "leaving jail"[Text Word] OR "previously incarcerated"[Text Word] OR "parole*"[Text Word] OR "probation"[Text Word] OR "crime"[MeSH Terms])	((women) OR (girl*))

Study Selection

The literature search identified articles from seven databases. Duplicates were removed from EndNote to facilitate the screening of titles. After removing duplicates, the articles were exported to Covidence [9], a web-based systematic review management tool. All articles were screened based on the eligibility criteria. After the exclusion of irrelevant articles based on title and abstract, 57 articles were fully assessed (See Figure 1). The majority of the articles were written in English. Articles written in Russian, Portuguese, and Farsi were translated and included.

Inclusion and exclusion criteria

Studies were included if the sample was focused on girls and women in LMIC, in contact with the criminal justice system, and who have had a previous or current diagnosis of a drug use disorder. We included all studies including review papers. The World Bank definition of a LMIC was used to determine countries to include and exclude. Studies were excluded if participants were only males, from high income country, were not in contact with the criminal justice, who have had a previous or current diagnosis of alcohol use disorder. Screening at the abstract and full-text stages was undertaken independently by four researchers. We excluded commentaries,

editorials, studies with no data, and conference abstracts. Discrepancies were resolved by discussion and clarification of the inclusion and exclusion criteria.

Data Extraction

A self-developed data extraction sheet was used to extract relevant information from each study. For each of the included studies, we extracted the study characteristics and settings (e.g., type of study, age range, country, total number of drug abusing women, criminal justice setting) and measurements and type of drug (e.g., route of administration). We also extracted the statistically significant factors. Data were extracted in Microsoft Excel.

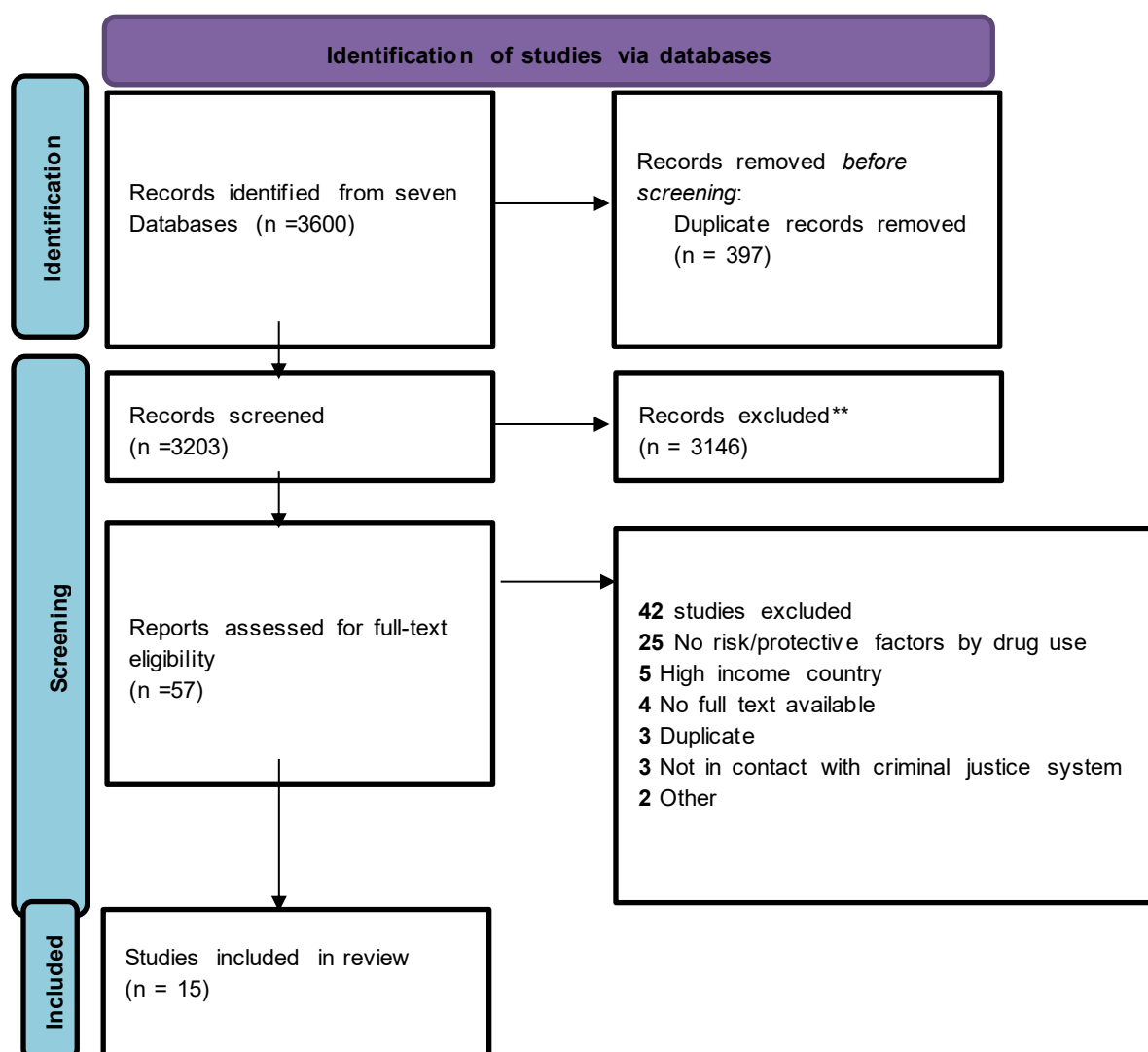


Figure 1: PRISMA flowchart for included studies

Review Question 2

1. What treatment interventions are effective for drug use disorders among women and girls who are incarcerated or who have been released from incarceration in LMIC?

Search strategy

To address question two, we utilised data from a global systematic review that we began in 2020. We conducted systematic searches in September 2020 of peer-reviewed databases (Medline, Embase and PsycInfo and Web of Science), using comprehensive search terms, including exploded MeSH terms and keywords for prison and other carceral settings; drug use and related harms; and interventions which target these outcomes (See Table 2). We did not limit our search by language. Literature published from 1980 onwards was included. Any systematic reviews with potentially relevant sources that were identified were hand-searched for relevant papers or reports. The search resulted in 33,577 papers once duplicates had been removed and 131 studies included for extraction once papers had been screened at full text. Then any papers including women or young girls in LMIC were included, resulting in three papers. Please see Figure 2 below for PRISMA diagram of the review.

Inclusion and exclusion criteria

Types of participants

For the purposes of this report, studies were considered eligible if they were conducted 1) in LMIC countries with female cohorts, among people who 2) use drugs and who 3) were currently or recently incarcerated (within 12 months of release). Studies of people in closed psychiatric settings or studies with sample sizes of less than 40 were excluded.

Types of interventions

We considered studies that examined any intervention provided to people during incarceration or post-release (within 12 months of release). Psychosocial interventions were only included when their intended outcomes were related to drug use. General re-entry interventions and psychosocial interventions where the intended outcome was not related to drug use or related behaviours, or harms were excluded.

Types of comparisons

Eligible studies had a comparator, and for the purpose of this review, we considered any type of comparator, including placebo, waitlist controls, other interventions and before and after comparisons. Studies that only compared completers with non-completers and those with no comparators were excluded.

Types of study designs

Randomised controlled trials (RCTs), non-RCTs, quasi-experimental studies, before and after studies, prospective and retrospective cohort studies, case control studies, analytical cross-sectional studies and observational studies were eligible for inclusion.

Commentaries, editorials, review papers, case studies, studies with no data presented, conference abstracts and studies published before 1980 were excluded.

Types of outcomes

The outcomes of interest were: Injecting drug use; patterns of drug use: opioid use and stimulant use; injecting risk (receptive needle sharing, re-use of own needle; distributive needle sharing, sharing of other injecting equipment); sexual behaviour (e.g. condom use, frequency of sexual activity, and other sexual risk behaviours); uptake of HIV and HCV testing; HIV and HCV incidence; HIV and HCV treatment uptake; non-fatal overdose; fatal overdose; non-suicidal self-harm and suicidal behaviour; suicide; overall mortality; re-offending and reincarceration, in prison and post-release.

Table 2: Systematic review search terms for review question 2

AND	AND	OR	
Search group 1	Search group 2	Search group 3	Limits
Prison (Prison/ OR prison*.ti,ab)	Drug dependence treatment (drug dependence treatment/ OR (drug AND (depend* OR abus* OR us*) AND (treat* OR therap*)).ti,ab)	Treatment outcome (treatment outcome/ OR program effectiveness/ OR ((treatment OR program) AND (outcome* OR effective*)).ti,ab)	1980 +
Jails ((jail* OR gaol* OR incarceration*.ti,ab)	Drug withdrawal management (drug withdrawal/ OR (drug withdraw* AND (maintain* OR maintenance OR manage*)).ti,ab)	Outcome assessment (outcome assessment/ OR (outcome* assess*).ti,ab)	
Detention (detention.ti,ab)	Opiate substitution treatment (opiate substitution treatment/ OR ((opiate OR opiate) AND (substitut* OR maintain* OR mainten*) AND (treatment OR therapy)).ti,ab)	Harm reduction (harm reduction/ OR (harm reduc*).ti,ab)	
Compulsory drug treatment centres (compulsory AND (drug OR treat* OR rehab*)).ti,ab)	Medications for OUD (methadone/ OR buprenorphine/ OR ((medication* adj3 (OUD OR ((opiate OR opioid OR heroin) AND (dependen* OR addict*)))) OR medication-assisted treatment OR LAAM).ti,ab)	Intermethod comparison (intermethod comparison/ OR (intermethod compar*).ti,ab)	
Closed settings ((closed OR custodial) AND setting*).ti,ab)	Opioid agonist treatment (opiate agonist/ OR ((opiate OR opiate) AND agonist treatment).ti,ab)	Comparative effectiveness (comparative effectiveness/ OR ((treatment OR intervention OR therapy) AND (compar* effect*).ti,ab)	
Prisoners (Prisoners/)	OAT (OAT OR OST OR MMT OR BMT OR MAT).ti,ab)	Injecting drug use ((inject* OR intravenous) AND drug us*).ti,ab)	
Criminals (criminal*.ti,ab)	Naloxone provision (naloxone/ OR (naloxone AND (provision OR program*)).ti,ab)	Patterns of drug use ((drug OR opioid OR opiate OR heroin OR stimulant) AND us* AND (pattern OR frequency)).ti,ab)	
Offenders (offend* OR inmate* OR felon OR recidivism OR re-offend* OR reoffend* OR 'community corrections' OR imprison* OR ex-prisoner* OR ex-convict OR ex-offender*).ti,ab)	drug overdose education (drug overdose AND educat*).ti,ab)	Patterns of opioid use	

AND	AND	OR	
Search group 1	Search group 2	Search group 3	Limits
Criminal-justice-involved individuals ((criminal justice involved) adj2 individual*).ti,ab	Needle and syringe programmes (needle syringe program* OR NSP).ti,ab	Patterns of stimulant use	
Post-release (post-release OR release* OR re-integrat* OR re-entry OR reintegrat* OR "leaving custody" OR "leaving prison" OR "leaving jail" OR "leaving gaol" OR "previously incarcerated" OR parole* OR probation).ti,ab	Condom provision (condom AND (provision OR program*).ti,ab	Injecting risk (inject* AND risk).ti,ab	
	Psychosocial interventions (psychosocial care/ OR (CBT OR (cognitive OR behavioral AND (therap* OR treatment)) OR contingency management OR motivational interview* OR relapse prevent* OR counselling).ti,ab)	needle sharing ((needle OR syringe) AND shar*).ti,ab	
	PrEP (Pre-exposure prophylaxis/ OR (PrEP).ti,ab)	sharing of injecting equipment (inject* equipment* AND shar*).ti,ab	
	HIV testing/treatment (Human immunodeficiency virus/ OR Human immunodeficiency virus infection/ OR (HIV AND (test* OR treat*).ti,ab)	Condom use (condom us*).ti,ab	
	HCV testing/treatment (Hepatitis C/ OR Hepatitis C virus/ OR ((HCV OR hepatitis C) AND (test* OR treat*).ti,ab)	sexual activity (sexual behavior/ OR (sex* act*).ti,ab)	
	Suicide prevention ((suicide/ AND prevention/ OR (suicide prevent*).ti,ab)	Uptake of HIV testing (Human immunodeficiency virus/ OR Human immunodeficiency virus infection/ OR (HIV AND ((test* AND uptake) OR incidence)).ti,ab)	
	STI programmes (STI AND (program* OR treat* OR test* OR diagnos*).ti,ab	Uptake of HCV testing (Hepatitis C/ OR Hepatitis C virus/ OR ((HCV OR hepatitis C) AND ((test* AND uptake) OR incidence)).ti,ab)	
	General terms (intervention* OR program*).ti,ab	HIV incidence	
		HCV incidence	
		Non-fatal overdose (drug overdose/ OR (drug intoxication).ti,ab)	
		Fatal overdose	
		Suicide attempts (suicide/ OR suicide.ti,ab)	
		suicide	
		mortality (mortality/ OR death/ OR (mortal* OR death* OR die*).ti,ab)	

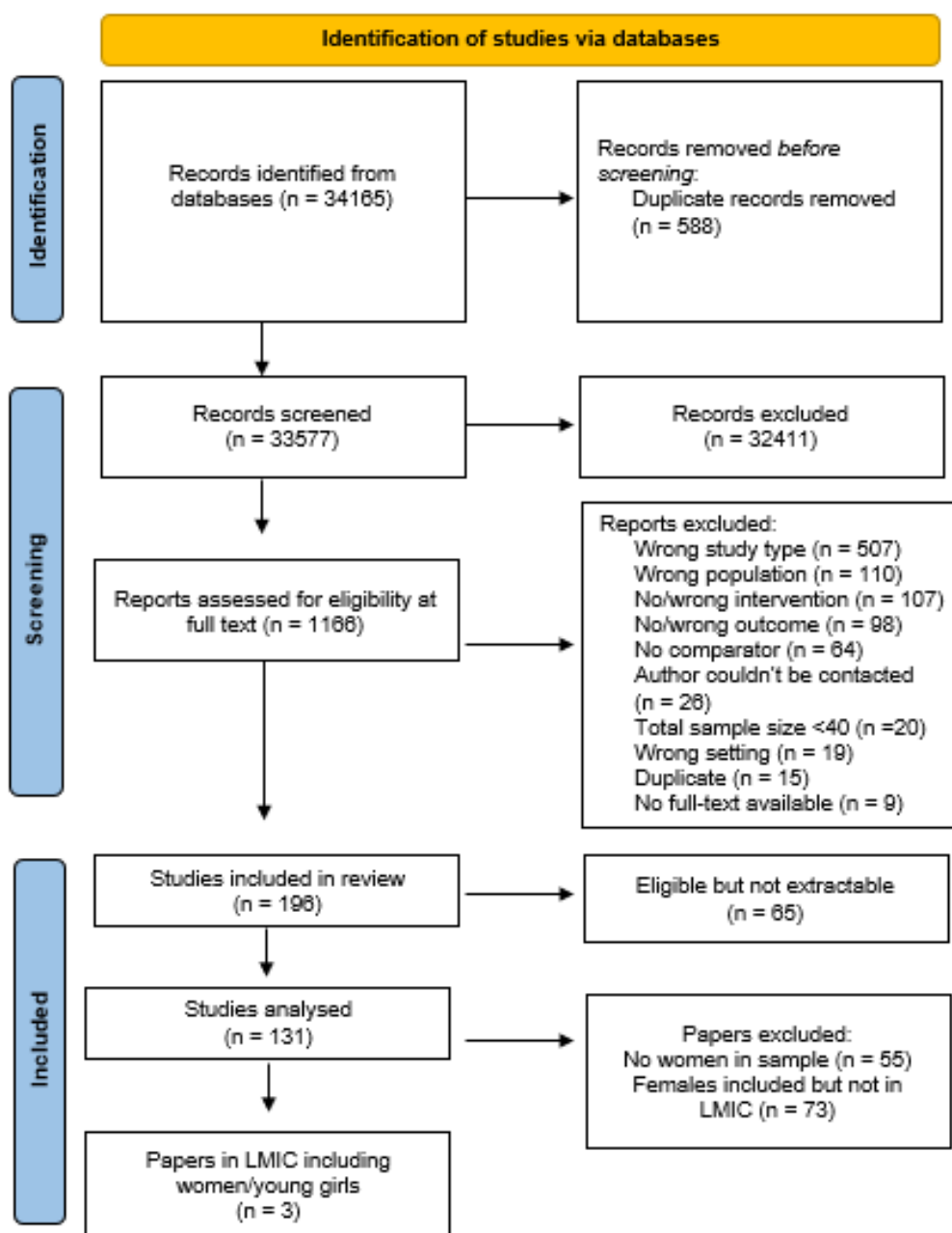


Figure 2: PRISMA flowchart of original systematic review and search process for locating papers in LMIC including girls and women

Study screening and selection

In the original review, two reviewers independently examined titles and abstracts using the web-based systematic review program Covidence. The full text of relevant articles was obtained and assessed for inclusion by two independent researchers. Disagreement between reviewers was resolved via discussion, and in cases where consensus was not reached, a third reviewer was consulted.

Data Extraction

Data were extracted by one researcher and double-checked by a second researcher, with discrepancies resolved through discussion and consultation with a third person. Data extracted from each reference included demographic details, interventions, and comparisons.

Where data was not reported in full or when we required a subset of the sample, for example stratified data for people who use drugs or people recently released from prison, we contacted authors for additional information. The dataset was then searched to locate papers with all female cohorts, as well as papers that were not completely female cohorts, but included females in their sample.

RESULTS

Review Question 1

Study characteristics

Of the 3600 articles identified from the database search, a total of 3203 articles were screened after removing duplicates. Fifty-seven articles were fully assessed and 15 studies from 6 different countries were included in the review (Table 3). Most of the studies were conducted in Brazil (46%, n=7), followed by Peru (20%, n=3), Iran (13%, n=2) Malaysia (7%, n=1), Kyrgyzstan (7%, n=1) and South Africa (7%, n=1). A summary of included studies is presented in Table 3. Thirteen of the studies used a cross-sectional method, which is analysing data from a population at a specific time [4, 10-21], one study used a qualitative approach [22] and the another used a randomised control trial [23].

The most common type of drugs reported were cannabis (n=7 studies), cocaine/crack (n= 6 studies), heroin (n=3 studies), methamphetamine (n= 2 studies) psychotropics (n= 1 study), and other drugs such as opium, sedatives, tranquilizers, ecstasy, and inhalants. The majority of examined studies reported drug use before prison (n=8 studies), followed by drug use during prison (n=6 studies), then lifetime prevalence (n=4 studies). Other periods for which prevalence was reported included 30 days prior to imprisonment (n=1 study). See Table 3.

Prevalence of drug use by country

Brazil

As stated earlier, the majority of the studies identified were conducted in Brazil. All the studies used a cross-sectional method with a total of 1,212 women participating in the study with majority aged 30 years and above. All the studies also reported low education achievement for the women. All the studies from Brazil included in the review were conducted in prison including

a rehabilitation centre for women. Of all the studies in Brazil, only one study reported the route of administration of the drug; 10.2% of women injected drugs before prison (none reported to have injected drugs in prison) and more than half of the women were convicted because of drug trafficking, 33.3% of which reported shared needle/syringe use [14]. Tranquilizers were the commonest drug used among women and the studies found that women with a history of drug use before prison were more likely to be social excluded [14].

Regarding the type of drug reported, cannabis and crack/cocaine were commonly reported to be the drug of choice in prison. Cannabis (41.7%) was frequently consumed among those who presented with post-traumatic stress disorder (PTSD) (57.4%) than those who did not present with PTSD (37.5%) [11]. Cocaine/crack (27.6%) was also reported to be consumed by women prior to incarceration while living with drug-using parents. As reported by de Carvalho, Valente [14], majority were in prison for drug trafficking. Similarly, Dos Santos, Quintana [4] found that cocaine (17.6%) was used more, followed by cannabis (8%) and sedatives (3.9%). Prevalence of drug use by women was 25.2% and comorbidity with other disorders was higher among women.

There was a positive association between income, clinical/infectious disease, other health problems, recidivism, drug-related crimes, violent crimes, disciplinary problems in prison, criminal record as an adolescent and drug and alcohol abuse dependency [4]. The limitation of this study is that alcohol and drug dependence was not separated for the female population due to small sample size hence it is difficult to identify which specific risk factors were related specifically to drug use among women. Baltieri [10] found that of the women sampled, 11% reported non-medical use of internationally/nationally controlled drugs in prison. Risk factors associated with drug use in prison included younger age, history of childhood sexual abuse, having committed robbery, earlier onset of criminal activities, higher scores on sexual impulsiveness, drug-related problems before incarceration and having same-sex relationships inside prison.

For Reed, Raj [12], cocaine/crack was the least drug of choice by women. 40% of women reported current non-medical use of internationally/nationally controlled drugs in prison. It was also reported that sexual violence and physical violence like life threats (e.g., Someone using a knife/firearm against them) was significantly more likely among those reporting non-medical use of internationally/nationally controlled drugs compared to those who did not. Similarly, Oliveira, Ferreira [13] reported association between drug use and violence. The types of drugs used were marijuana, cocaine/crack, amphetamines/ecstasy, inhalants, hypnotic/sedative. Women reporting cocaine and/or crack use, amphetamines or ecstasy use, inhalant use, or

hypnotic/sedative use reported experiencing some type of violence compared to those who did not use these types of drugs but used tobacco products or alcohol. Giordani [15] identified reasons associated with drug use to include family conflict, peer influence, influence of sexual partners, sex worker, material difficulties, personal conflict.

Peru

The three included studies used cross-sectional methodology and qualitative research in prison with a sample of 465 women. Marijuana and cocaine/crack were the most consumed drugs in these studies. Other drugs consumed included medication (not reported whether prescribed or not) for treatment of depression and sleep disorders. All three studies reported drug use among women before prison, with one study reporting use both before incarceration and when incarcerated.

Before imprisonment, of the 66 women reporting drug use, 68% had a drug use disorder and while in prison, 9.6% reported drug use [20]. Engaging in sex work was associated with drug use. Other factors identified to be strongly associated with drug use were having a family member who used drugs (59.8%), history of previous imprisonment (59.1%), unemployment (48.4%), relationships at school with classmates who had problems with the law (46.9%), family history of imprisonment (38.4%), and history of running away from home before age 15 (35.9%) [21]. The only qualitative study found that women were forced to smoke cocaine by their husbands who also physically abused and threatened to leave if they did not smoke. In addition, they were forced to engage in drug trade [22].

Iran

One study identified from Iran reported the type of drug used by the women which were opium, heroin, and cannabis [17]. Drug use was associated with marital status and was more common in divorced women.

Cannabis use was associated with age, most of which were 20.1-30 years and associated with cannabis use among family members [17]. Raeisei, Sarani [16] also reported that drug use was associated with women who were aged 13–27-year-old, have 1-5 persons in their family using before they became addicted, having a spouse who is addicted, unemployed, and those who indicated their cause of addiction was due to mental disorders.

Kyrgyzstan

One study was included from Kyrgyzstan and of the 938 offenders in the study sample, 368 (13 %) were women. The results were not separated for gender but combined. Regardless, heroin was the most commonly used drug [18]. Results showed that the characteristics of current and past injecting drug users were more likely to have: a criminal justice history, committed homicide or property-related crime, elevated anxiety levels, physical health problems, sexually

transmitted infection, HIV positive, HCV positive, used drugs 30 days prior and within prison, accessed methadone maintenance treatment and needle-syringe program.

South Africa

One study was included from South Africa which was an all-women study with 720 participants. Women with a history of incarceration were more likely to report to have used methamphetamine or Mandrax (methaqualone tablets that are crushed and smoked) in the past 30 days than those without a history of incarceration [23]. It was found that in the last 30 days, the drugs that were used were cannabis (80.9%), Tik - methamphetamine (76.9%), Heroin 7.6%, Mandrax - methaqualone (37.1%). They also found that women with a history of incarceration were more likely to report using drugs in response to pain or distress (arguments, sadness, stress, feeling “you are letting yourself down,” anger, physical pain, or trouble sleeping), but were not more likely to report using drugs for recreational purpose. Women who had been previously incarcerated were also more likely to use drugs in response to urges or drinking/using other substances than were women with no incarceration history. Women who had ever been incarcerated had worse physical health, mental health, and sexually transmitted infection indicators and were more likely to report use of drugs and to have been victims of physical and sexual assault than women who had never been incarcerated.

Malaysia

In Malaysia, the study identified was conducted at a rehabilitation centre [19]. This study focused more on identifying protective factors among women offenders at a rehabilitation centre. Resilience and religion were deemed as a protective factor against negative behaviours including drug use.

Table 3: Summary table of study characteristics and factors associated with drug use

Author	Country	Type of study	Drug use time period	Number of women/girls	Age range Mean*	Type of drug	Factors associated with drug use
Baltieri [10]	Brazil	Cross-sectional	Use in prison	315	31.64*	Not reported	Age, history of sexual abuse in childhood, type of crime = robbery, age of beginning criminal activity, Alcohol Use Disorders Identification Test (AUDIT), Drug Abuse Screening Test (DAST), Sexual Addiction Screening Test (SAST), Alcohol use in prison, same-sex relationships inside prison
Quitete, Paulino [11]	Brazil	Cross-sectional	Use in prison	140 included in total study, 61 reported illegal drug consumption	31.5*	Cannabis (41.7%), cocaine/crack (27.6%)	Illegal drug consumption was more frequent among those who presented with PTSD (57.4%) than amongst those who did not present with PTSD (37.5%).
Reed, Raj [12]	Brazil	Cross-sectional	Use in prison	377 total population - 40% reported drug use in prison = 150 women	In total population, 70% were younger than 34, 30% were 35 and older	Marijuana (32%), psychotropics (21%), crack (15%), and cocaine (5%)	Physical violence, sexual violence, and experiencing life threats.
Dos Santos, Quintana [4]	Brazil	Cross-sectional	Lifetime	155 women who use drugs, 96 women who use alcohol	In total population, 74% were younger than 37, 26% were 37 and older	Cocaine (17.6%), Cannabis (8%), Sedatives (3.9%)	** alcohol and drug dependency not split out in female population due to small sample size ** There was a positive association between income, clinical/infectious disease, other health problems, recidivism, drug-related crimes, violent crimes, disciplinary problems in prison, criminal record as adolescent and alcohol and drug use disorders
Oliveira, Ferreira [13]	Brazil	Cross-sectional	Pre-imprisonment	51	In total population, 41% were younger than 29, 50% were 30 and older	Marijuana, cocaine/crack, amphetamines/ecstasy, inhalants, hypnotic/sedative	Association between drug use and reports of violence
de Carvalho, Valente [14]	Brazil	Cross-sectional	Pre and during imprisonment	125	In total female pop, 31-35 years old, 33*	Alcohol highest before imprisonment, tranquilizers the highest amongst women during prison	Having a history of drug use before prison

Author	Country	Type of study	Drug use time period	Number of women/girls	Age range Mean*	Type of drug	Factors associated with drug use
Giordani [15]	Brazil	Cross-sectional	Pre-imprisonment	49 (total population)	Not reported	Not reported	Family conflict, peer influence, influence of sexual partners, sex worker, material difficulties, personal conflict
Raeisei, Sarani [16]	Iran	Cross-sectional	Use in prison	35	13-57	Not reported	Most likely to be aged 13–27-year-old, have 1-5 persons in their family before they became addicted, more likely than men to be illiterate, most likely to have only completed elementary school, to have a spouse who is addicted, to be unemployed, to indicate their cause of addiction to be mental disorders
Ataei, Khorvash [17]	Iran	Cross-sectional	Not noted, assumed pre-imprisonment	163	34*	Opium (30), Heroin (13), Cannabis (8)	Divorced, alcohol use, consumption of marijuana, alcohol and drugs amongst family members
Azbel, Wegman [18]	Kyrgyzstan	Cross-sectional	lifetime, 30 days before incarceration, during incarceration	** Male and female**26 past IDU, 68 Current IDU (5% and 6% female respectively)	38* past IDU. 37* current IDU	Heroin most commonly used	Characteristics of current and past injecting drug users (IDU) - more likely to: have a criminal justice history, offence type (homicide, property-related crime), elevated anxiety levels, physical health, STI positive, HIV positive, HCV positive, drug use 30 days prior and within prison, accessed methadone maintenance treatment and needle syringe program. Correlates of current within-prison IDU: HCV infection and drug use in 30 days prior
Ibrahim, Nen [19]	Malaysia	Cross-sectional	Lifetime	120	Not reported	Not reported	Religion deemed as a protective factor against negative behaviours including drug abuse
[20]	Peru	Cross-sectional	Both pre and during imprisonment	66 (reported drug use pre-incarceration) and 24 (reported drug use in prison)	Not reported by drug use (18-70 in total sample)	In prison drug use: Marijuana (58.3%), Cocaine (50%), Pills for treatment of depression/sleep disorders (20.8%)	Engagement in sex work

Author	Country	Type of study	Drug use time period	Number of women/girls	Age range Mean*	Type of drug	Factors associated with drug use
[21]	Peru	Cross-sectional	Pre-imprisonment	374	34.5*	'Most consumed substance is paste/cocaine or crack in women' - no statistic noted	Relationships at school with classmates who had problems with the law, alcohol consumption, family member who consumed drugs, history of previous imprisonment, aged 30-49 compared to women 60+
[22]	Peru	Qualitative	Pre-imprisonment	1	50	Cocaine	Family pressure and physical abuse
Johnson, Camey [23]	South Africa	RCT	Lifetime	720 (includes alcohol use)	23.8*	Last 30 days: Cannabis (80.9%), Tik - methamphetamine (76.9%), Heroin 7.6%, Mandrax - methaqualone (37.1%)	Physical abuse by anyone, abuse by current partner, victim of violent crime (ever and last 6 months), Forced to participate in sexual acts against your will, verbally or physically aggressive during a disagreement in the last 3 months, did you push/grab/shove/hit main sexual partner in last 30 days

Review Question 2

Evidence for interventions for women and young girls who use drugs in LMIC

The systematic review found no evidence of drug use interventions in LMIC that catered specifically to young women and girls. Searching the dataset revealed 21 papers with all female cohorts, 19 of which were in the United States and the remaining two in Canada. There were 55 papers that were not solely female cohorts but included females in their sample. The majority of these papers (N = 52) were also based in non-LMIC countries, and 56% of studies were made up of 27% or less women participants. See Appendix 2 for an overview of papers in non-LMIC countries with all-female cohorts.

The three papers that were in LMIC were in China [24, 25] (n = 2) and Thailand [26] (n = 1) (See Table 4. One paper in China utilised a psychosocial intervention (Cognitive Behaviour Therapy and Motivational Interviewing (MI)) and the other used case management. The intervention in the paper in Thailand was a therapeutic community. The average percentage of females in the Chinese studies was 22.35%. The percentage of females in the Thailand-based study was 3.2%. All these studies were conducted with adult women. There were no studies in LMIC with young girls under the age of 18.

Table 4: Summary table of interventions in LMIC with women included in sample

Country	Author	% female in cohort	Study type	Intervention	Comparator	Outcomes	Findings
China	Hser et al.[24]	23	RCT	Peer-based support groups	TAU	Drug use (opiates), injecting drug use, injecting risk behaviours, condom use and sexual activity, recidivism, MMT participation and employment	No significant differences between groups in injecting drug use or sexual risk behaviours at follow-up. Lower recidivism rates, higher MMT rates and employment for case management group.
China	Zhong et al[25].	21.70	RCT	CBT and case management	TAU	Post-release heroin and methamphetamine use (12 mo) (self-report and urine test)	No significant differences in self-reported drug use or drug urine tests between the two groups at follow-up
Thailand	Pajumpa et al[26].	3.20	Cohort study	Therapeutic community	TAU	Criminal activity	People in treatment group significantly less likely to report criminal activity than control group

Demographic characteristics

The two studies in China captured a variety of background variables. Across both studies, the average participant was 39 years old, had 10 years of education and began using heroin at the age of 28 years. In the Hser study, participants had used heroin on average for 11 years, while in the Zhong study, they had used heroin for a mean of five years. Zhong et al. also asked participants about alcohol use, and found that on average, participants had used alcohol for seven years. Additionally, 21% had received drug-related counselling and/or HIV-related in the past year. In the study with imprisoned people in Thailand, the mean age was 31 years and 31% were married.

Outcome data

The two studies in China measured drug use, while the paper in Thailand measured criminal activity. Hser et al.[24] also measured recidivism, MMT participation, employment, drug use (including injecting drug use and associated risk behaviours), condom use and sexual activity. They found no differences in drug use or risk behaviours for participants in a peer-based support group compared to a group given standard care. They did, however, find that the intervention group had lower recidivism rates due to relapse, and higher rates of participation in MMT and employment post-release. Similarly, Zhong et al.[25] measured post-release heroin and methamphetamine use at 12-months and found no effect of the intervention (CBT and case management) on these outcomes.

Pajumpa et al.[26] found that participants of a therapeutic community intervention were significantly less likely to report criminal activity than a control group. It should be noted, however that all the females in Pajumpa et al. were in the control group. See Table 4 for an overview of these studies.

SUMMARY AND INTERPRETATION OF MAIN FINDINGS

This review examined the factors that influence drug use in women and young girls living in LMIC and who have had contact with the criminal justice system. It also evaluated the available evidence of interventions targeting drug use and related harms in this group. Overall, there were limited studies in LMIC that examined these two thematic areas.

A common theme was that the women reported in the studies had predominantly low education achievement. The majority had only completed primary school or had less than secondary education [11, 14, 15]. Although majority of the women offenders in the included studies were aged 30 years and above, quite a number were younger than 30 years. Based on the age range

it can be assumed that a proportion of these in reproductive age are also mothers which means an indirect impact on their children hence perpetuating the generational cycle of drug use, violence and incarceration among women and children [27, 28]. The results also showed an association between drug-use and the criminal record of the women. Most of the studies reported women having had previous incarcerations due to drug use [4, 18].

Previous studies have described women offenders to have been victims of childhood trauma, physical, psychological and sexual violence [29, 30]. The review also found high rates of victimization among women including sexual and physical violence which was associated with their drug use [4, 10]. Majority of the perpetrators were family members and partners [12, 20, 22]. Women used drugs as a form of coping with these experiences of abuse. The consistent finding of violence across the studies shows that regardless of women using drugs to cope, violence against women persists. Exposure to traumatic experiences in childhood have been linked to drug use comorbid with post-traumatic stress disorder [31, 32]. Childhood sexual abuse for instance have been found to be associated with women drug use to help block traumatic memories [33]. Similarly, drug use was high among women who presented with PTSD due to sexual abuse [11]. Interventions for drug use should consider an integrated approach to treatment to address both drug underlying trauma associated with drug use. \

Cannabis is the most used drug in the world [34]. It was observed that women offenders were using predominantly cannabis and cocaine both before incarceration and while in prison in the studies included. Majority of the included studies were from Brazil and Peru. The findings have been documented in other studies in high income countries [35-37]. Comparing the drug use pattern as found in the study to the World Drug Report, 29% of women in South America (Brazil and Peru) use cannabis, followed by 12% from Africa (South Africa) and 9% from Asia (Iran, Malaysia and Kyrgyzstan) [34]. Interestingly, drug trafficking and drug related crimes were the crime mostly committed by the women in the included studies [4, 11]. The finding is in line with the World Drug Report that while less women than men are incarcerated the proportion of women incarcerated for drug related offences is higher [34]. There is literature that suggests that people engage in drug trade for economic survival due to low paying jobs and in some instances being forced by their partners and family [37]. It is not surprising that being involved in the drug trade increases their risk of being victims of violence [22].

As described in the results, only one study examined protective factors against drug use [19] which is consistent with previous studies that have identified protective factors against drug use including high religiosity [38], educational achievement [39], and strong family bonds [40]. Family and marriage can have a double-edged role both being a protective and a risk factor to

drug use. Exposure to drug problems among family members increases the risk of drug use and offending among women [37]. In this review, Hernandez-Vasquez, Nunez [21] found that having a family member who used drugs was a significant factor for drug use by women in prison. Another study reported how the husband and his family compelled women to engage in drug use and drug trade [22]

Our review found that overall, not many intervention studies included women, and in the majority of those that did, women made up less than 30% of the sample. This is concerning given a recent systematic review of prisons across 10 countries found a higher prevalence of drug use disorders in women compared to men (51% vs 30%) [41], while other research suggests that although men may typically have higher rates of drug use disorders, women increase their drug use more rapidly than men, and experience more health and social harms [42]. The results of this review emphasise the importance of including women and young girls in interventions to reduce drug use and related harms, especially in correctional settings, and to evaluate these interventions in a gender-sensitive framework.

Review question two found even fewer studies specifically targeting drug use in women and young girls internationally, including both higher income countries and LMIC. Out of 131 papers, only 21 (16%) were examining studies in female-only cohorts, none of which were in LMIC. There are two important gaps to address here: firstly, that intervention research catered to women and young girls appears to be limited worldwide, and secondly, that very limited research has been conducted in LMIC. It is important to examine interventions specifically in women and young girls because some researchers believe there are distinct differences between females and males in the causes of substance use and delinquency, although there is little research testing theoretical models [43]. In addition, other research has found that one in three people with a substance use disorder is a woman, but only one in five people in treatment is a woman; data from World Drug Report also shows that only one in six people in treatment for drug use disorders are women which is suggestive of gender-specific treatment barriers [42, 44]. A recent systematic review examined the prevalence of severe mental illness and drug use disorders in incarcerated people in LMICs [45]. In women, they found 1-year prevalence of alcohol use ranging from 9.5 – 43.1% and other drug use ranging from 21.5 – 59.5%. In female samples, the pooled estimate of drug use disorders was 6.1 times higher than the general population. These findings reiterate the need for interventions targeting drug use for women and young girls in LMIC, which our review demonstrates is lacking.

The three studies in LMIC that did provide interventions to women were either psychosocial or case management based. These interventions have demonstrated limited evidence in their

effectiveness in reducing drug use and recidivism in the studies identified, with results indicating psychosocial interventions like CBT and MI are no better than treatment as usual or control groups (review in preparation). Two of the three studies were examining in-prison interventions for people who had a history of heroin and opiate use, which are significant risk factors for fatal and non-fatal overdose [46-48]. Opioid agonist therapy (OAT) has been shown to be effective in reducing pre- and post-release mortality, including all-cause mortality and drug-related deaths [49], as well as any drug use and injecting drug use (review in preparation). Psychosocial interventions, however, do not typically target mortality, and as such, there is no evidence of their impact on deaths. It is important that interventions implemented in prisons are evidence-based, and since the first four weeks after prison is a particularly risky period for deaths and other drug-related harms [50], OAT presents a critical opportunity for opioid use disorder to reduce these harms. It is important to note that for drug use disorders there is no one size fits all intervention. Medications are mainly available for the treatment of opioid use disorders and the treatment of a number of co-occurring disorders.

Limitations

A limitation of this review is that some of the studies did not report some variables that the review sought to examine. For instance, some studies did not report the type of drugs that was used by women and the age range of the women. Only one study reported the age range which included girls with the rest of the studies reporting for only women. Overall, the review identified there were limited studies in LMIC with a majority of the included studies from Brazil. Some studies included combined results for both males and females hence it was difficult to identify specific factors or interventions related to women. This shows there is a great need to understand the factors that affect the drug use of girls and women in LMIC and treatment interventions that will be effective to address drug use within this population.

Conclusions and policy implications

This study provides evidence of a public health problem for girls and women in contact with the criminal justice system. The results of this review have important implications for the development of policy and interventions for women and girls. There is a lack of studies in LMICs that examines specific factors that influence drug use among girls and women and how to respond effectively to reduce harms associated with drug use. The key to addressing this problem involves both public health approaches and inter-agency cooperation in developing comprehensive coordinated services that address traumatic history of violence, poverty, and mental health issues. There is also the need to increase evidence-based prevention effort to reduce drug use, drug use disorders and drug related harms as well as criminal justice contacts.

Based on studies included in this review, the majority of the crimes committed by women were drug offences and effective treatment for drug use disorders as well as alternatives to conviction or punishment in cases of minor nature offences may help to reduce criminal justice contacts and incarceration for a high proportion of women. Another important avenue is early intervention with high-risk families since most studies identified drug use within the family context [51]. These interventions may include prevention programs for children of parents using drugs, interventions for women using drugs and women with partners using drugs, Drug use disorder treatment programmes in the community need to become more widely available and cater for the needs of girls and women while reducing barriers to their accessibility [52, 53]. For those girls and women in contact with the criminal justice system, screening for drug use disorders should take place as soon as possible, including on their eligibility for alternatives to conviction or punishment, and gender-sensitive and trauma informed treatment for drug use disorders needs to be availed as needed and evaluated for effectiveness.

This study has synthesised and summarised available findings from studies in LMIC on drug use disorders among girls and women in the criminal justice system. The lack of studies on this topic requires further research to fully examine factors that influence drug use, and also build information for effective interventions for women with drug use disorders in contact with the criminal justice system in LMIC countries.

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Appendix 1: Summary table of interventions in non-LMIC with all-female cohorts

Country	Reference	Cohort	Socio-demographic information	Intervention
USA	Andersen et al.[54]	Adult women	Notes socio-economic status (shown as income in thousands)	Psychosocial
Canada	Farrell et al.[55]	Adult women	Notes socio-demographic information (shown as Aboriginal ancestry)	OAT
USA	Freudenberg et al. [56]	Adult women	Education level, ever accessed public assistance, employment history, homelessness	Case Management
USA	Hall et al. [57]	Adult women	Employment status and years of completed education	Psychosocial
USA	Mosher et al. [58]	Adult women		Therapeutic community
USA	Miller [59]	Adult women		Therapeutic community
USA	Messina et al. [60]	Adult women	Employment status and years of completed education	Modified therapeutic community
USA	Messina et al. [61]	Adult women	Employment status and years of completed education	Therapeutic community
Canada	Matheson et al. [62]	Adult women	Employment status and years of completed education	Continuity of care
USA	Staton et al. [63]	Adult women	Employment status	Psychosocial
USA	Scott et al. [64]	Adult women		Psychosocial
USA	Sacks et al. [65]	Adult women	Employment status and years of completed education	Therapeutic community
USA	Sacks et al. [66]	Adult women	Employment status and years of completed education	Therapeutic community
USA	Robertson et al. [67]	Girls (12-18)	Family structure (e.g., # of parents, foster home)	HIV education and counselling
USA	Robbins et al. [68]	Adult women	Years of completed education	Therapeutic community
USA	Wexler et al. [69]	Adult women	Years of completed education	Therapeutic community
USA	Vigilante et al. [70]	Adult women	Years of completed education	Discharge planning
USA	Kim et al. [71]	Adult women		Case management
USA	Prendergast et al. [72]	Adult women	Years of completed education	Modified therapeutic community
USA	Prendergast et al. [73]	Adult women	Years of completed education	Modified therapeutic community