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Research Paper

## Substance use among pregnant women in NSW prisons

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## ABSTRACT

**Introduction and aims:** Little is published about pregnant women in custody. Existing data on the prevalence of substance use among incarcerated pregnant women or their needs are scant. This study sought to determine the prevalence and characteristics of women with substance use histories who present to prison pregnant in New South Wales (NSW), Australia.

**Design and methods:** A retrospective review of prison medical health records was completed for pregnant women entering New South Wales custodial settings between January 2020 and June 2021.

**Results:** We identified 158 prison receptions among 141 pregnant women (median age 28 years [IQR 25–33 years]), 42 % identified as Aboriginal or Torres Strait Islander. Eighty four percent of the women ( $n = 119$ ) reported recent use of one or more than one substance and 36 % had injected drugs. The most commonly used substances were (meth)amphetamine (60 %), cannabis (40 %) and opioids (28 %). We found discrepancies between drug problems self-reported at reception screening on entry to prison and self-reported drug use collected during the subsequent drug and alcohol specialist assessment while incarcerated. Most (88 %) women described their current pregnancy as unplanned and half (52 %) were unaware they were pregnant before incarceration.

**Conclusions:** These findings highlight the high prevalence of substance use in incarcerated pregnant women and that many women are unaware of their pregnancy prior to incarceration. Findings emphasize the importance of timely and appropriate drug and alcohol assessment and treatment to minimize harm for both the mother and foetus and also underscore the urgent need for enhanced access to contraception for these women.

## Introduction

Globally, women are the fastest growing cohort of the prison population. While women comprise only an estimated 6.9 % of the world prison population (Walmsley, 2017), women's incarceration rates have risen at double that of men's over the last two decades (Edwards et al., 2022; Walmsley, 2017). This trend is reflected in Australia, where the number of incarcerated women rose by 64 % from 2100 to 3500 between 2009 and 2019 (Australian Institute of Health & Welfare, 2020). In New South Wales (NSW), the number of incarcerated women increased by 33 % from 710 to 946 between 2013 and 2019 (Phelan, 2019), making up approximately 7 % of the state's total prison population (Australian Bureau of Statistics, 2022; Phelan, 2019).

Women in custody tend to have more problematic substance use histories and are more likely to have drug-related charges than their

male counterparts (Bartels et al., 2020). Illicit drug use has long been identified as a key contributor to women's interactions with the criminal justice system (Johnson, 2004). The 2015 NSW Inmate Health Survey found 56 % of the 373 incarcerated women reported being "drunk", "high" or "stoned" at the time of the crime that resulted in their incarceration (Justice Health & Forensic Mental Health Network, 2017). A recent review indicated that the prevalence of substance use among imprisoned pregnant women ranged from 30 % to 96 %, which is significantly higher than community samples of pregnant women with substance use (Smith et al., 2023) although, many of the studies included in the review tended to focus on opioid use only.

In Australia, approximately 5–10 % of women in prison are pregnant at any one time (Australian Institute of Health & Welfare, 2020). Incarcerated women tend to have a younger age of first pregnancy, a higher number of unplanned pregnancies, and more pregnancies than

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women in the general Australian population (Australian Institute of Health & Welfare, 2018; Butler et al., 2012). There is no routine reporting on incarcerated pregnant women, nor are their pregnancy outcomes routinely documented in Australian prison settings. The prevalence of substance use among pregnant women in the Australian prison setting is unknown, but it is likely that a significant number of incarcerated pregnant women use substances.

Many women in prison are socio-economically disadvantaged (Baker, 2019). These women often face difficulties prior to incarceration such as homelessness, poverty, unemployment, lower education levels than the general population, substance use, mental illness, domestic violence, emotional or sexual abuse (Baldwin et al., 2020), and inadequate health care service access and utilization, issues that continue post-release (Bloice et al., 2022).

Given the prevalent and intersecting issues of substance use, poverty and social disadvantage, incarcerated pregnant women with a history of substance use are at higher risk of unplanned pregnancy, inadequate prenatal care and poor pregnancy outcomes such as, miscarriage, pre-term delivery, spontaneous termination of pregnancy, low birth weight infants, and preeclampsia (Bard et al., 2016; Forray, 2016). Previous research suggests that pregnant women who receive timely and regular antenatal care during their incarceration have better pregnancy outcomes, such as higher birth weight and extended gestation periods (Baker, 2019). However, data on the prevalence of substance use among pregnant women and their needs in prison settings are lacking. By determining the prevalence and characteristics of women with substance use histories who present to prison pregnant in Australia, this study will enhance understanding of women's needs and inform efforts to address the issue.

#### Research aims

The aim of this study was to describe the prevalence and characteristics of pregnant women in prison settings in NSW, Australia. Specifically, we (a) describe the sociodemographic characteristics of pregnant women, (b) examine the types of substances used by these women, and (c) obstetric characters of incarcerated pregnant women in NSW prison settings.

#### Methodology

##### Ethics approval

The study was approved by Justice Health Human Research Ethics Committees (Protocol JH File No G719/20), Corrective Services NSW Ethics Committee (21/1152556) and the Aboriginal Health and Medical Research Council (1803/21).

##### Study design

A retrospective review of prison medical health records was completed for pregnant women entering the NSW custodial setting between 1 January 2020 and 30 June 2021.

##### Setting and population

The study population was pregnant women aged 18-years or older who entered a NSW adult custodial setting during the study period. Pregnancy was defined as a positive beta human chorionic gonadotropin (BHCG) urine test, which was routinely conducted by a generalist nurse for all women upon admission to prison. Each pregnancy was considered a single episode during the 18-month observational period. For women who were reincarcerated during the same gestation, only one episode was recorded. We excluded the files of women who had a negative pregnancy test, those without any pregnancy test results, and those whose files lacked sufficient information to verify pregnancy status during the study period. The data were extracted from the Justice Health

Electronic Health System (JHeHS) record database and the Patient Administration System (PAS). Cases were identified by the data manager of Justice Health and Forensic Mental Health Network (JHFMHN) Drug and Alcohol Services.

#### Data extraction and categorization

All relevant components of the JheHS medical records were reviewed, including Reception Screening Assessment (RSA), drug and alcohol review form, e-progress notes, women's health assessment, physical and mental health assessment, and clinical correspondence. Where available, clinical notes from the Connections program were also extracted (a four-week post-release program that offers continuity of care for people with a substance use disorder by a team of JHFMHN-based clinical support workers). Data extraction was conducted manually and entered into a Research Electronic Data Capture (REDCap) database by the lead author (SK), an experienced drug and alcohol clinician working within the prison setting.

The data variables were categorized into three groups:

*Demographic characteristics:* age, Aboriginal status, country of birth, preferred language, education, income, housing, maternal status, length of imprisonment during pregnancy and reincarceration during study periods.

*Substance use history* is recorded at prison reception by a generalist nurse and subsequently where relevant, during a more detailed drug and alcohol clinical review completed by addiction specialists or nurse practitioners. At reception, self-reported substance use in the four weeks prior to incarceration is recorded in the medical files. Where self-reported substance use prior to incarceration is identified, women subsequently undergo a detailed drug and alcohol assessment where opioid agonist treatment (OAT) status, any withdrawal treatment required, and method of drug administration are also recorded. Data from both reception and specialist assessments data were collected for this study.

*Obstetric characteristics included:* pregnancy trimester, age at first pregnancy, number of current children, pregnancy intention, previous termination, and pregnancy outcomes while incarcerated.

#### Data analysis

Data were imported to IBM SPSS Version 26 for analysis. Given the limited sample size, descriptive statistics were conducted to summarize sociodemographic and substance use. Median and corresponding Interquartile range (IQR, 25–75th percentiles) were used as the continuous data was not normally distributed. Categorical variables were reported as frequency and percentages. To analyze discrepancies in self-reported substance use between reception (upon arrival) and the subsequent drug and alcohol specialist assessment, we applied the McNemar's exact test.

#### Results

During the study period 2546 women were incarcerated. Our file review identified 141 (5.5 %) women pregnant at the time of incarceration. Seventeen of these women (12 %) entered custody on two separate occasions during the same gestation period, resulting in 158 episodes of incarceration while pregnant. For these 17 women, only their initial episode of incarceration was included in this review to avoid misinterpretation. The Drug Court program, a court diversionary program for those with substance use disorders, imposed sanctions (returning to custody for short periods) on three women (2 %).

The median age of the 141 pregnant women was 28-years (IQR 25–33 years), and most women were Australian born (85 %, Table 1). Fifty women (36 %) had not completed Year 10, the required NSW minimum level of schooling, and over one-third (30 %) reported homelessness prior to incarceration. Two-thirds (67 %) relied on government benefits as their main source of income prior to incarceration. Ninety-seven women (69 %) reported having a regular sexual partner,

**Table 1**  
Sociodemographic characteristics,  $n = 141$ .

	$n =$ 141	%
<b>Median age, years (IQR)</b>	28	(IQR 25–33)
<b>Age</b>		
18–24	33	23
25–34	88	63
35+	20	14
<b>Aboriginal and Torres Strait Islander</b>		
No	81	57
Yes	59	42
Not recorded	1	1
<b>Country of Birth</b>		
Australia	120	85
Other <sup>b</sup>	18	13
Not recorded	3	2
<b>Preferred language</b>		
English	135	96
Other	4	3
Not stated/inadequately described	2	1
<b>Level of education</b>		
Left school before finishing year 10	50	36
Finished year 10 or higher	33	23
Not recorded	58	41
<b>Main source of income</b>		
Government benefit (e.g., unemployment) Pension (e.g., aged/disability)	95	67
Never worked before	8	6
Part-time/casual or other	9	6
Not recorded	29	21
<b>Housing</b>		
Housed	77	55
Homeless prior to incarceration	43	30
Not recorded /Not available	21	15
<b>Partner status</b>		
Partner currently in custody	33	23
Regular partner	65	46
Single	25	18
Not recorded /Not available	19	13
<b>Length of imprisonment during pregnancy</b>		
< Less than 1 week	31	22
>1 week to 6 weeks	43	31
>6 weeks - 3 month	34	24
>3 months +	33	23
<b>Re-incarcerated during study periods (<sup>a</sup><math>n = 17</math>)</b>		
<b>Being held for the first time in custody</b>		
Yes	47	33
No	94	67

Percentages rounded.

<sup>a</sup> The recurrence of incarceration during the same gestation within the study period.

<sup>b</sup> Other countries included New Zealand ( $n = 4$ ), Fiji ( $n = 2$ ), Cambodia ( $n = 1$ ), China ( $n = 1$ ), Thailand ( $n = 1$ ), Vietnam ( $n = 1$ ), Ethiopia ( $n = 1$ ), India ( $n = 1$ ), Ireland ( $n = 1$ ), Turkiye ( $n = 1$ ), Samoa ( $n = 1$ ), South Africa ( $n = 1$ ), Sudan ( $n = 1$ ) and unknown ( $n = 1$ ).

and 32 women (23 %) reported their partner was currently in custody. The files reviewed indicated almost one-third (33 %) of the sample had been incarcerated for the first time (Table 1). Most women ( $n = 108$ , 77 %) were serving sentences of less than three months. Of these 108 women, 17 (12 %) were detained for less than 48-hours and 74 women (53 %) spent less than six weeks in custody. During the study period, no woman was incarcerated for a third time.

*Substance used by pregnant women for four weeks prior to prior to custody.*

The most commonly used substances recorded in medical files were (meth)amphetamines (60 %), cannabis (40 %) and opioids (28 %, Table 2). Alcohol use was recorded in 18 % and benzodiazepines in 14 % of individual files. Use of gamma hydroxybutyrate (GHB) and other substances was reported by 10 % and 2 % individuals, respectively. Most women reported recent use of more than one substance (53 %) and

**Table 2**  
Substance used by pregnant women during four weeks prior to custody,  $n = 141$ .

	$n = 141$	%
<b>Current substance use<sup>a</sup></b>		
None	23	16
Alcohol	26	18
Opioids	40	28
(Meth)amphetamine	85	60
Cannabinoids	57	40
Benzodiazepines	20	14
GHB <sup>b</sup>	14	10
All other drugs	3	2
Not recorded	9	6
<b>Polysubstance use</b>		
None	23	16
Single	36	25
Two or more	83	53
Not recorded	9	6
<b>Method of use</b>		
Injects	51	36
Smoking	68	48
Ingesting	8	6
Not recorded	14	10
<b>Cigarette smoking</b>		
Yes	108	77
No	25	18
Not recorded	8	5

<sup>a</sup> Since approximately 60 % of participants reported polysubstance use, the percentage and frequency values recorded in the table may be exceeded 100 %.

<sup>b</sup> GHB stands for Gamma- Hydroxybutyrate.

almost 40 % had injected drugs.

#### Discrepancy in self-reporting of substance use

Discrepancies were noted between self-reported substance use recorded at reception upon entry to prison and during specialist drug and alcohol assessment, typically conducted up to 14 days following admission. In our review, 55 % of pregnant women reported substance use at reception, but 84 % subsequently reported substance use at the follow-up drug and alcohol specialist assessment (Table 3). This was most common among pregnant women who reported (meth)amphetamine use, with 32 % of women reporting methamphetamine use at reception, but later 63 % reported methamphetamine use at the specialist drug and alcohol assessment ( $p < 0.001$ ). Overall, we observed that the reported use of all substances by pregnant women changed significantly between assessment at reception and at the drug and alcohol specialist assessment (Table 3).

#### Pregnancy intention and outcome in custody.

Half the files reviewed indicated women were unaware of their pregnancy prior to incarceration (53 %; Table 4). Most women (88 %) described their current pregnancy as unplanned (3 % planned, 10 % not

**Table 3**

Discrepancy in self-reporting of substance use between self-reported substance use at reception upon entry to prison and during specialist drug and alcohol assessment,  $n = 141$ .

	% at the reception	% at the drug and alcohol assessment	$P$ (McNamar's Exact)
Any substance use <sup>a</sup>	55	84	<0.001
Opioids	14	23	<0.001
(Meth) amphetamine	32	64	<0.001
Cannabinoids	25	48	<0.001
Benzodiazepines	6	16	<0.001
GHB	4	10	0.002
Alcohol	6	23	<0.001
All other drugs <sup>1</sup>	1	3	<0.001

<sup>a</sup> Substance use included any types of listed drugs reported by all participants.

**Table 4**  
Pregnancy intention and outcome in custody,  $n = 141$ .

	$n =$	%
	141	
<b>Pregnancy term</b>		
First	94	67
Second	29	21
>Third	16	11
Not recorded	2	1
<b>Antenatal care prior custody</b>		
No	112	81
Yes	26	18
Not recorded	3	2
<b>Planned pregnancy</b>		
Yes	4	3
Unplanned yet aware of pregnancy	49	35
Unplanned and identified when incarcerated	74	53
Not recorded	14	9
<b>Pregnancy outcomes while incarcerated/ under connections care</b>		
Delivery	18	13
Termination of pregnancy	14	10
Miscarriage	12	8
Delivered in community	4	3
Unknown- released while pregnant	93	66

recorded). Two-thirds (67 %) were in their first trimester. Fewer than one-in-five (18 %) women reported receiving antenatal care before entering custody. Two-thirds of women (66 %) were released whilst still pregnant and therefore their pregnancy outcome was unknown. Of the files with documented outcomes, 13 % had given birth during incarceration 10 % had a termination and 8 % had a miscarriage (Table 4).

## Discussion

This study presents valuable insights into the number and circumstances of pregnant women in NSW prison settings and, to our knowledge, is the first of its kind in Australia. Consistent with previous reports, we found pregnant women who enter prison are socio-economically disadvantaged (Abbott et al., 2017a, Abbott et al., 2017b; Bard et al., 2016; Stewart et al., 2021), have short periods of imprisonment (Baldry, 2010), and experience a high prevalence of substance use, including polysubstance use (Mukherjee et al., 2014; Sánchez et al., 2018; Smith et al., 2023). Our data revealed a high rate of unplanned pregnancy, with a considerable proportion of pregnant women unaware of their pregnancy until they entered custody, which aligns with US research (Clarke et al., 2006; LaRochelle et al., 2012; Sufrin et al., 2015; Clarke et al., 2006b).

We identified discrepancies between substance use history reported during initial health screening upon prison entry and subsequent reports to specialist drug and alcohol clinicians up to two weeks later. While the specific reasons for these inconsistencies are unclear, one possible explanation may be that women are more likely to discuss their substance use in a less chaotic environment during the later drug and alcohol assessment with a specialist, compared to the reception screening process. Previous research has highlighted multiple barriers to disclosing substance use among pregnant women, such as stigma, fear of punitive consequences (Stone, 2015), including losing child custody (Oni et al., 2021) and social desirability biases (Garg et al., 2016). These barriers may be exacerbated in a prison setting, where there is a lack of privacy, loss of autonomy (Capon et al., 2020) and concerns about of child custody following release from custody (Stone et al., 2017). Such barriers are likely to be exacerbated for First Nations women, who were overrepresented in this sample.

The discrepancy in reporting is concerning because it may lead to delays in providing timely treatment for withdrawal management or OAT induction when necessary. This delayed initiation of withdrawal treatment, combined with the high number of unplanned pregnancies in

women who were unaware of their pregnancy before entering custody, could increase the risk of adverse effects on foetal development (Forray, 2016; Madgula et al., 2011; Huestis & Choo, 2002). Further, the long-term effects of in utero substance exposure (Huestis & Choo, 2002) may include developmental delays (Guille & Aujla, 2019), behavioral problems (Sithisarn et al., 2012), cognitive impairment with academic deficits (Shankaran et al., 2007), and increased susceptibility to substance use and criminal activity in later life (Oei, 2018). All of which further exacerbate disadvantage for these women, their children and communities. Interventions in the correctional system, however, will have limited impact on these issues, but our results highlight the urgent need for broader structural interventions to address key social determinants of health. Further, the delayed treatment of substance using pregnant women may lead to missed opportunities to establish continuity of post-release care (Abbott et al., 2017a, Abbott et al., 2017b; Baldry, 2010), especially those serving short sentences, as observed in our study. Therefore discrepancies in reporting warrant further exploration to support review of the current guidelines and develop effective interventions that can enhance pregnancy outcomes. The high number of women unaware of their pregnancy before entering custody, most of which were unplanned, highlights the significance of preventive reproductive health care needs, such as enhancing contraception access while in custody (Clarke et al., 2006; LaRochelle et al., 2012).

Our study found that the length of imprisonment for pregnant women was short with more than half the sample in custody less than 6-weeks. Thus, more than 60 % of pregnancy outcomes were unknown due to a brief custodial sentence. With a high 'flow through' population (Phelan, 2019), the large volume of these women entering and leaving after a short period in custody (Bronson & Sufrin, 2019), creates a high demand and narrow window of opportunity for access, assessment, diagnosis, and treatment (Besney et al., 2018). If a patient is released unexpectedly, the challenges of continuity-of-care and follow-up can be exacerbated (Bloice et al., 2022). Thus, there is a clear need to establish strong links to community-based Substance Use in Pregnancy and Parenting Service (SUPPS) programs during pre-release planning and the transition period post-release. In cases where pregnant women are released within 48-hours and therefore before being seen by a JHFMHN clinician or drug and alcohol specialist, the referral process could be adapted to ensure that all of those released from prison immediately engage with the community SUPPS healthcare providers to receive uninterrupted care upon release. For First Nations women, this already occurs as part of the release planning process, with pregnant Aboriginal women referred to Aboriginal Maternal Infant Health Services (AMIHS) and Aboriginal Community-Controlled Services when available.

Incarceration presents many barriers to the provision of healthcare but also opens opportunities to engage pregnant women who are often not accessing services in the community. The findings highlight the high treatment needs of incarcerated pregnant women, which can provide valuable insights for informing healthcare policy and service delivery. An integrated and culturally competent approach is needed to address these women's specific needs, considering their perspectives. Further, culturally competent healthcare services are essential for First Nations women and JHFMHN sponsors an Aboriginal specific service to assess and review Aboriginal pregnant women in custody, where practically possible. As part of discharge planning Aboriginal pregnant women are referred to AMIHS and any other service that addresses identified needs.

Our study has several limitations, including the relatively short observation period (1.5 years) limiting our ability to undertake trend analysis. The data represents NSW only, which may not be representative of other Australian jurisdictions, although does represent 30 % of the total Australian prison population (Australian Bureau of Statistic, 2023). Lastly, data was limited for 22 % of women who stayed in custody for less than one week or were released within 48-h without receiving appropriate medical attention, which could limit the extent of our findings to the broader incarcerated pregnant women in NSW.

## Conclusions

We identified a high prevalence of substance use, inconsistent disclosure of substance use, high prevalence of unplanned pregnancy, and short sentences among incarcerated pregnant women. Timely and appropriate substance and reproductive health care assessments on all incarcerated women are necessary to reduce potential negative outcomes. Our findings have also highlighted the importance of preventive reproductive health care needs, such as improving contraception access while in custody. Timely initiation of tailored healthcare assessment and enhancing the accessibility of treatment including contraceptives is crucial, especially within prison settings. Future research should explore ways to deliver evidence-based reproductive health care more effectively to incarcerated women in Australia by addressing the barriers that currently exist, including reviewing current policies.

## CRedit authorship contribution statement

**So Bi Kim:** Conceptualization, Methodology, Writing – original draft, Formal analysis, Visualization, Project administration. **Bethany White:** Conceptualization, Writing – review & editing, Supervision, Investigation. **Jillian Roberts:** Conceptualization, Writing – review & editing, Supervision. **Carolyn A. Day:** Conceptualization, Writing – review & editing, Supervision, Investigation.

## Declaration of Competing Interest

The authors declare no conflict of interest. The authors disclose that they have no actual or potential competing financial interests.

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