

REVIEW

Maternal health outcomes for incarcerated women: A scoping review

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Abstract

Aims and objectives: To inform a systematic synthesis of what is known about the maternal health outcomes of incarcerated women, this scoping review uses a theoretical framework of intersectional feminism.

Background: Despite rising imprisonment of women, there is a lack of research, from a feminist perspective, on perinatal health outcomes among incarcerated women.

Design: Systematic scoping review using the Joanna Briggs Institute scoping review methodology.

Methods: In consultation with a medical research librarian, key databases and journals were searched for English and French-language articles published up to February 2018. Two authors independently screened titles and abstracts to identify articles for full-text review. Study quality was appraised using the McGill Mixed Methods Appraisal Tool. The study adheres to PRISMA-EQUATOR guidelines.

Results: Forty-five studies met the preset criteria and were reviewed in full text. In addition, 13 studies met consensus for inclusion. Method, setting, participants, sample, relevant outcomes and relevant findings were extracted from each study for synthesis. Included studies had varied methods and were published from 1989–2014. Participants included women imprisoned during the perinatal period up to six months postpartum. All studies were conducted in carceral contexts, with 12 based in the USA and one in Australia. Outcomes of interest included breastfeeding, operative deliveries, gestational complications, depression, stress, experiences, bonding and sterilisation.

Conclusion: The research on maternal health outcomes pertaining to incarcerated women is limited. There is a need for in-depth examination of breastfeeding with this population. Researchers need to examine the prevalence and impact of carceral force, such as shackling, solitary confinement, strip-searching and restraints in pregnancy. There is a need for research that asks what health outcomes matter to the women themselves.

Relevance to clinical practice: Providers must be conscious of intersecting layers of discrimination and trauma incarcerated women experience and its impact on maternal health in the perinatal period and advocate for women.

KEY WORDS

breastfeeding, childbirth experience, feminist research, nursing, patients' experience, perinatal care, prison nursing, reproductive health, women's health

1 | INTRODUCTION

Women's imprisonment is rising. Although the United States reports small decreases in overall imprisonment (Kaebel & Cowhig, 2018), the country incarcerates 30% of the world's population of female prisoners, at a rate of 133 per 100,000 population or at least eight times the rate of every other NATO country (Kajstura, 2018). The rate in the United Kingdom is 16 per 100,000 (Sturge, 2018). The number of women who are incarcerated in Australia increased by 53% in the past five years (Australian Bureau of Statistics, 2018). From 2005–2014, the number of women in federal prisons in Canada rose 66% (Office of the Correctional Investigator, 2014). Most of these prisoners are mothers. In 2007, the USA incarcerated 65,600 mothers, of 147,400 children (Glaze & Maruschak, 2008). In the United Kingdom, 66% of women prisoners are mothers (Epstein, 2014). The incarceration of women may present a significant risk to maternal health in pregnancy, labour and delivery, breastfeeding and postpartum recovery.

The United Nations Rules for the Treatment of Women Prisoners and Non-custodial Measures for Women Offenders ("the Bangkok Rules") specify the need to attend to "special problems women offenders encounter, such as pregnancy and child care" (United Nations Office on Drugs & Crime, 2010, p. 6). In this article, we review available research in English pertaining specifically to imprisoned women's health experiences during pregnancy, delivery and the first six months postpartum. The complex health and socio-economic characteristics of women prisoners suggest greater risk of pregnancy and delivery complications, challenges with breastfeeding and peripartum depression. The context of imprisonment, including restraints, isolation and shackling, may further impact women's experience. While neonatal infant outcomes are important, this review is unique in its centring of the experience of the women. .

2 | AIMS AND OBJECTIVES

The aim of this scoping review is to centre women in a synthesis of existing research on maternal health outcomes of incarcerated women. The research on the incarcerated women in the perinatal period is focused on nonmaternal outcomes, such as birthweight; nonhealth outcomes, such as recidivism; and risk factors that do not emerge from the perinatal experience specifically, such as substance use. By centring the question of this review on women, we call for greater attention to women's health and to how women would define meaningful, healthful outcomes. This review is based in a compassionate philosophy that considers incarcerated women worthy of healthful pregnancies, safe births, information, choice, breastfeeding and parenting experiences.

What does this paper contribute to the wider global clinical community

- This study synthesises the state of knowledge pertaining to maternal health outcomes as experienced by women who are incarcerated during the perinatal period.
- This synthesis concludes there is a need for research examining the breastfeeding prevalence, intention, initiation, duration, experience and exclusivity among incarcerated women, for research that centres women's definitions of their health and for examination of the impact of coercion and restraint in carceral contexts on maternal health.
- This synthesis finds there is a lack of research that considers the intersecting aspects of identity that affect maternal health in relation to incarceration, such as racism and poverty.

3 | BACKGROUND**3.1 | Rationale for review centring women's experiences**

Women prisoners experience complex health histories, including disproportionate exposure to violence and sexual abuse, poverty and development of mental illness and substance use disorders. In the United Kingdom, 53% of women prisoners report being victimised sexually, emotionally or physically as a child (Bulman, 2017). Although systematic review of the evidence has found methodological problems with and variations in prevalence counts, the rate of mental illness among prisoners in the USA is decidedly higher than the general population (Prins, 2014). In Canada, 63% of women in federal facilities are prescribed psychotropic medications (Kouyoumdjian, Schuler, Matheson, & Hwang, 2016). In Australia, one in four prisoners take a medication for mental health (Australia Institute for Health and Welfare, 2016).

The experience of incarceration itself can be triggering and harmful to women's mental health (Mollard & Brage Hudson, 2016). The confining experience of incarceration may cause women to experience increased anxiety and depression (Ferszt, Miller, Hickey, Maull, & Crisp, 2015). Studies have found one in five imprisoned people in Canada attempt suicide (Kouyoumdjian et al., 2016). The rate of self-inflicted death is 58.6 times higher in United Kingdom prisons than in the general population (Prison Reform Trust, 2018).

Incarceration as a mother may be particularly difficult. Separation from children can cause incarcerated

mothers to experience distress and anxiety (Shamai & Kochal, 2008). Chambers (2009) recount newly postpartum incarcerated mothers' feelings of loneliness, depression and pain from the separation from their infants experienced after birth. Fear of losing custody of their children is described as an "extreme concern" among incarcerated mothers (Luke, 2002, p. 934). Care for their children during incarceration is a significant preoccupation (Luke, 2002). Incarcerated women's own experiences of abuse and the foster care system during their childhoods place them at high risk of experiencing attachment disorders (Baradon, Fonagy, Bland, Lénárd, & Sleed, 2008).

Keeping the mother and child together and facilitating breastfeeding may have uniquely positive effects for incarcerated women in relation to these health histories. Breastfeeding is a protective factor against the development of peripartum depression (Watkins, Meltzer-Brody, Zolnoun, & Stuebe, 2011), to which women with a history of mental illness are predisposed (Räsänen et al., 2014). Incarcerated mothers express lower suicide risk than incarcerated women without children, pointing to the potential mental health benefit to supporting mothers' parent role and contact with children (Krüger, Priebe, Fritsch, & Mundt, 2017). "Maternal therapy," whereby infants room-in with their mothers and practice skin-to-skin contact, enhances recovery from neonatal abstinence syndrome (NAS) (Bagley, Wachman, Holland, & Brogley, 2014), a neonatal complication to which the infants of women with substance use disorder are predisposed.

Indigenous women and women of colour are significantly over-represented in the carceral system. In the last ten years, the population of incarcerated Indigenous women in federal prison in Canada has increased by 42.9% and 37% of federally incarcerated women are Indigenous (Public Safety Canada, 2017, p.63). Twenty-eight per cent of prisoners in Australia identify as Aboriginal (Australian Bureau of Statistics, 2018). In the USA, 38% of prisoners are Black (Federal Bureau of Prisons, 2019).

Ours is not the first review article to address maternal outcomes among incarcerated women; it is however unique in its women-centred approach. Bard, Knight, and Plugge (2016) conducted a rigorous and important systematic review of 18 studies in this research area. However, their inclusion and exclusion criteria differ from our approach. The outcomes of interest in their review are not restricted to women-centred health outcomes in the perinatal period and include infant outcomes, health services use, recidivism, child custody and HIV status. They also include studies conducted outside of the carceral setting and nonresearch. Foley and Papadopoulos (2013) conducted a review of the perinatal mental health needs of Black and minority ethnic women. They did not include a critical appraisal of included studies (Shaw, Downe, & Kingdon, 2015) aimed to synthesise research about the experiences and outcomes for pregnant incarcerated women and their infants. The timeframe for their search is limited to 1992–2012, and they use only two search terms, "mother" AND "prison." Of the seven studies they include, one examines satisfaction with a doula programme, three examine infant outcomes (birthweight),

and one is not specific to the perinatal period. Mukherjee, Pierre-Victor, Bahelah, and Madhivanan (2014) sought to conduct a systematic review of the prevalence and correlates of mental health issues among pregnant prisoners. However, none of the studies they include examine health *outcomes*, but rather focus on risk factors.

3.2 | Theoretical framework

This review uses intersectional feminist theory as a guiding framework (Crenshaw, 1989). Intersectional feminist theory moves beyond gender-based analysis to examine the overlapping layers of identities and discrimination, such as racism, ableism, homophobia, cissexism and class privilege, that impact social and economic experiences. Intersectional feminist theory presents not only an analytical tool for conducting research but aims to create solutions for advancing health equity.

Gender, race and class are key considerations in this research as maternal health, breastfeeding and newborn care are experiences that disproportionately affect women and carceral experiences are demonstrably raced and classed. There are interactions between the social and economic determinants of health, the health determinants of criminalisation and the relationships between health status and health futures. For example, breastfeeding success influences mothers' peripartum mental health (Figueiredo, Canario, & Field, 2014) and breastfeeding has long-term impacts on women's risks of developing chronic illness and noncommunicable disease (Dieterich, Felice, O'Sullivan, & Rasmussen, 2013). Breastfeeding is a rare topic in the carceral health research literature (Paynter & Snelgrove-Clarke, 2017). Intersectional feminism centres women's experiences and considers women experts of their own experience. Incarceration compounds gender-based, race-based and class-based discrimination that marginalises the voices of women who experience criminalisation.

4 | DESIGN

This paper uses the systematic scoping review methods of the Joanna Briggs Institute (JBI). All authors are JBI-trained. Scoping reviews intend to synthesise the types of research and findings in an area using a systematic approach. They "have great utility for synthesizing research evidence and are often used to map existing literature in a given field in terms of its nature, features, and volume" (Peters et al., 2015, p. 141). A scoping review is appropriate for the topic of an intersectional feminist examination of the maternal health of incarcerated women as this perspective has not been comprehensively reviewed (Peters et al., 2015). This systematic scoping review followed the JBI method and began with the development of a protocol followed by an extensive search of the literature that was both rigorous and replicable through the following defining points of the study's design (Peters et al., 2015).

5 | METHODS

5.1 | Scoping review research question

The purpose of this review was to address the following research question: What is the state of knowledge pertaining to maternal health outcomes for incarcerated women?

5.2 | Data sources and search strategy

Support of an experienced JBI-trained medical research librarian was used to develop and implement our search strategy using MeSH and key terms (e.g., *incarcera**, *breast**) to investigate the current state of knowledge of the maternal health outcomes of pregnant and incarcerated women. The developed search strategy was used to search the published literature available in CINAHL. It was then translated with help of the medical research librarian to search two additional electronic databases: PubMed and PsycINFO. These databases were searched in February of 2018 with no date limitations. Additionally, we supplemented this search by hand-searching the literature that was published between March of 2013–March of 2018 in three key journals: *The American Journal of Maternal Child Nursing*, *The Journal of Obstetrical, Gynecologic and Neonatal Nursing* and *The Journal of Forensic Psychiatry and Psychology*. These journals were chosen to capture international study in these areas and to cover the range of physical and mental health outcomes associated with the perinatal period for women. The reference lists of key articles were also scanned for pertinent articles. To search for relevant but unpublished literature, we searched ProQuest Dissertation and examined the first 100 hits of Google Scholar using the terms *pregnant** OR *perinat** OR *prenatal** OR *postpartum* OR *birth** OR *breastfe** OR *lactat** OR “*peri nat**” OR “*post partum*” OR “*breastfe**” AND *carceral* OR *penal* OR *custody** OR *jail* OR *prison** OR *incarcerat** OR *penitentiari** OR *detention* OR *inmate** OR *offender**. Please see Appendix 1. The review adheres to the PRISMA-EQUATOR checklist for systematic reviews. Please see Supplementary File 1.

5.3 | Eligibility criteria

5.3.1 | Study design

We included empirical studies (qualitative, quantitative and mixed-methods) in this review. Studies had to have been published in English or French, with no predefined date range.

5.3.2 | Population

The population of interest included women or transgender individuals who were incarcerated at any point during the perinatal period, which for the purpose of this review was defined as pregnancy, labour, delivery and the postpartum period, defined as the six months post birth (Romano, Cacciatore, Giordano, & Rosa, 2010).

5.3.3 | Concepts

The concepts of interest for this scoping review are studies that investigated the perinatal (the period before, during and six months after birth) health outcomes in our participant population. They include but are not limited to breastfeeding, postpartum depression, gestational complications (e.g., gestational diabetes and gestational hypertension) and operative deliveries.

5.3.4 | Context

This scoping review concerned studies that have been conducted within carceral facilities, including jails, prisons, detention centres, police lock-up, immigration detention and juvenile detention.

5.3.5 | Exclusion criteria

We excluded nonresearch, case studies and review articles. We excluded studies that examined infant outcomes and nonhealth outcomes, such as recidivism. Studies that examined nonoutcomes or outcomes nonspecific to the perinatal period, such as substance use, risk factors and access to services, were not included.

5.4 | Study selection

Following the search, we collated and uploaded all identified citations into RefWorks. We removed and deleted duplicates. We used a two-step screening process to determine citation eligibility based on the review's inclusion and exclusion criteria. Two independent reviewers screened titles and abstracts. In the second phase of the process, these reviewers then screened the full text of the selected studies from phase one. We excluded full-text studies that did not meet the inclusion criteria. We resolved disagreements through consensus discussions.

5.5 | Data collection and synthesis

The reviewers developed a data extraction form in Microsoft Excel to extract key characteristics of the studies, which included title, author(s), year of publication, country of publication, purpose, design, population, sample size, relevant outcomes and relevant findings. We extracted data from papers included in the review using McGill Mixed Methods Appraisal Tool (MMAT) (Pluye et al., 2011) by two independent reviewers. This tool can be used to appraise research of qualitative, quantitative and mixed-method designs (Pluye et al., 2011). The data extracted included specific details pertaining to the populations, study methods and outcomes of significance to the review's question and objectives. We resolved any disagreements between the reviewers through discussion, with a third reviewer available who was not needed. We used an excel spreadsheet table to organise data and expedite the mapping of major themes.

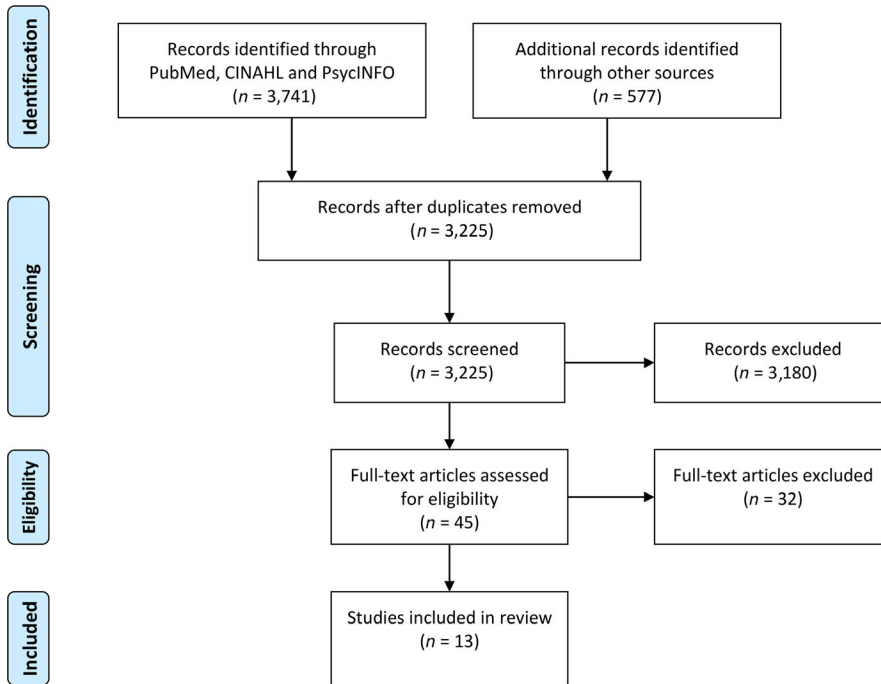


FIGURE 1 PRISMA diagram [Colour figure can be viewed at wileyonlinelibrary.com]

5.6 | Data items

Maternal health outcomes include breastfeeding, operative deliveries, gestational complications, depression and anxiety, stress, maternal experiences, bonding and attachment and sterilisation.

5.7 | Critical appraisal

Overall quality scores of 0, 0.25 (*), 0.5 (**), 0.75 (***) or 1.0 (****) were assigned to the individual research studies based on the quality criterion of the MMAT (Pluye et al., 2011).

6 | RESULTS

6.1 | Data presentation

Our search in the published literature databases retrieved 3,741 hits. Searching additional sources, including hand-searching key journals, reviewing review articles, Google Scholar and ProQuest Dissertations, retrieved 577 articles. Removal of duplicates resulted in 3,225 articles for title and abstract review. We independently screened the articles to identify those eligible for full-text review. We included 45 articles for full-text review, of which 13 met our inclusion criteria (Figure 1). Reasons for exclusion of 32 articles include the following: outcome (9 studies); setting (2); population (4), not research (6), duplication (1), language (4); review (4); and lack of specification at outcome of maternal outcomes of interest (2).

6.2 | Study characteristics

The 13 studies were published between 1989–2014. Twelve were based in the United States and one in Australia. Study designs included

three qualitative studies, four cohort or survey studies, four case-control studies and two using mixed qualitative and quantitative methods. Sample sizes varied from 12, as in both the qualitative studies by Chambers (2009) and Wismont (2000),–over 40,000, as in the retrospective cohort study by Walker, Hilder, Levy, and Sullivan (2014). The relevant outcomes using the intersectional feminist lens and centring on the women's experiences included infant feeding method, method of delivery, gestational complications, peripartum depression, maternal stress, maternal experiences and sterilisation (Table 1).

6.3 | Breastfeeding

Only one study in the review mentioned breastfeeding. Although not a major theme that emerged in her qualitative inquiry, Chambers (2009) noted that among the 12 participants in her study, one breastfed and 11 used formula. As eligibility for this study included only prisoners who would be separated from their infants within the first few days postpartum, that one breastfeeding experience is notable in the literature but limited in terms of information it provides.

6.4 | Operative deliveries

Six studies examined vaginal versus Caesarean-section deliveries (Chambers, 2009; Cordero, Hines, Shibley, & Landon, 1992; Lin, 1997; Shelton & Gill, 1989; Terk, Martens, & Williamson, 1993; Walker et al., 2014). In a qualitative study of 12 prisoners' maternal health experiences, Chambers (2009) notes that four (33.3%) delivered by C-section and eight (66.6%) by vaginal delivery. In their cohort study of 233 prisoners, Cordero et al. (1992) found 29 (16%) prisoners delivered by C-section and 194 (84%) by vaginal delivery. Comparing 202 pregnant prisoners with 804 randomly selected

community-based controls matched for race and educational attainment, Lin (1997) did not find a significant difference in the C-section rates between groups. In their qualitative study of 26 prisoners in the third trimester, Shelton and Gill (1989) identified 11 (42%) women had caesarean deliveries, of which two were repeat C-sections. Terk et al. (1993) found no significant differences between the 76 members of the prisoner case group and 117 controls regarding rate of C-section (28% case, 27% controls). In their retrospective examination of 40,907 people, including 99 prisoners who gave birth while imprisoned (birthing prisoners), 203 people who were pregnant at some point during imprisonment (former pregnant prisoners), 1,238 people who had been imprisoned but not during pregnancy (prison controls) and 39,367 community controls, Walker et al. (2014) found the C-section rate for cases (prisoners who gave birth while imprisoned) (28%) comparable to community controls (26%). However, former pregnant prisoners were significantly less likely to have a C-section when compared to birthing prisoners (adjusted OR 0.38 (0.21–0.70)), and the prison controls were also significantly less likely to have a C-section when compared to birthing prisoners (adjusted OR 0.60 (0.38–0.96)).

6.5 | Gestational complications

Six studies examined gestational complications (Cordero et al., 1992; Egley, Miller, Granados, & Ingram-Fogel, 1992; Fogel, 1993; Lin, 1997; Shelton & Gill, 1989; Walker et al., 2014). In their cohort study, Cordero et al. (1992) found 64 (27%) prisoners experienced prenatal complications such as preterm labour, gestational diabetes and hypertension. Egley et al. (1992) found only one gestational complication to be statistically different between 69 prisoners who delivered at a hospital with 69 controls who delivered at the same medical centre. Premature rupture of the membranes was more commonly observed among the controls (Egley et al., 1992). Fogel (1993) found three (3.4%) of the 89 pregnant prisoners who participated in her survey experienced pregnancy-induced hypertension. Lin (1997) found a significantly higher rates (7%) of pregnancy-induced hypertension among the 202 pregnant prisoner participants compared to 804 controls, among whom 0.4% experienced pregnancy-induced hypertension (p -value < 0.001). Of the 26 participants in Shelton and Gill (1989)'s qualitative study, 20 were identified as having 72 different types of complications. Walker et al. (2014) found pregnant prisoners did not have significantly different outcomes with respect to early onset of labour compared with other similarly disadvantaged women.

6.6 | Stress

Two studies examined stress (Fogel & Belyea, 2001; Kaminer, 1992). Fogel and Belyea (2001) used the Perceived Stress Scale (PSS) (Cohen, Kamarak, & Mermelstein, 1983) and found high levels of current (in the past month) stress with the mean stress score of 27.2 out of a possible total of 40 ($SD = 9.35$). Kaminer (1992) administered the Life Events Stress Questionnaire (Norbeck, 1984) and found

significantly higher levels of life events stress among the 62 pregnant prisoners compared to the 70 participants in the control group.

6.7 | Depression and anxiety

As peripartum depression and anxiety are some of the most common complications of pregnancy, affecting approximately 15% of pregnant people (Robertson, Grace, Wallington, & Stewart, 2004), and incarceration is isolating and potentially triggering of mental illness (Mollard & Brage Hudson, 2016), peripartum depression and anxiety are key outcomes to examine in terms of incarcerated women's maternal health outcomes. Four studies in our review examined depression and/or anxiety, all using previously validated tools (Fogel, 1993; Fogel & Belyea, 2001; Hutchinson, Moore, Propper, & Mariaskin, 2008; Williams & Schulte-Day, 2006). The instruments used included the Center for Epidemiological Studies-Depression Scale (CES-DS), with possible scores from 0–60 (Fogel, 1993; Fogel & Belyea, 2001) and the Beck Depression Inventory (BDI-II) (Hutchinson et al., 2008; Williams & Schulte-Day, 2006). In a sample of 120 prisoners who had recently given birth, Williams and Schulte-Day (2006) found no participants to be clinically depressed using the BDI-II for measurement of depression. In a survey of 89 pregnant prisoners using the CES-DS, Fogel (1993) found a mean depression score of 27.26 ($SD = 10.98$) and 77% of participants reported depressive symptomatology above the level indicative of clinical depression. In a later survey of 63 pregnant prisoners using the CES-DS, Fogel and Belyea (2001) found a mean depression score was 24.14 ($SD = 12.55$) and 70% of participants reported depressive symptoms above the level indicative of clinical depression. Of the 25 pregnant and postpartum prisoners who participated in Hutchinson et al. (2008)'s mixed-methods study, the authors found, on average, participants experienced moderate depression. Themes of qualitative studies of the women's experiences were largely based in the area of depression, grief and not wanting to think about it or having to keep one's distance to preserve mental health.

6.8 | Experiences

Intersectional feminist frameworks centre women's experiences and explorations of power and oppression in those experiences. Three qualitative studies explored imprisoned women's experiences of health in the perinatal period (Chambers, 2009; Shelton & Gill, 1989; Wismont, 2000). Chambers (2009) interviewed 12 prisoners who were separated from their newborns within the first three days of the postpartum period. Themes in her study included feeling "a love connection" to the foetus; "everything was great until I birthed" (and infant was going to be removed); "feeling empty and missing a part of me"; and "I don't try to think too far in advance." Although Shelton and Gill (1989) interviewed 26 pregnant prisoners, they included narrative responses from only three, under the pseudonyms of Amy, Susan and Florence. Each of these participants expressed feelings of depression, anger and regret. For example, "If you think about it being a baby, it's depressing to

TABLE 1 Included studies and maternal health findings

Journal	Authors	Year	Setting	Purpose	Design	MMAT score
Policy, Politics, & Nursing Practice 10(3)	Chambers, A.N.	2009	USA	Examines the impact of the policy that separates mothers and babies immediately and during most of the postpartum period, by exploring the nature and meaning of the mother–infant bonding experience when the mothers know separation is coming	Qualitative	0.75
Journal of Perinatology 12(3)	Cordero, L., Hines, S., Shibley, K.A., Landon, M.B.	1992	USA	To determine whether adequacy of prenatal care received by high-risk prison population can impact perinatal outcome	Cohort Quantitative Descriptive	1
The Journal of Reproductive Medicine 37(2)	Egley, C.C., Miller, D.E., Granados, J.L., Ingram-Fogel, C.	1992	USA	To study prenatal and perinatal obstetric and medical problems in a cohort of pregnant prisoners during a 12-month period	Case–control Quantitative Descriptive	1
Journal of Obstetric, Gynecologic & Neonatal Nursing 22(1)	Fogel, C.I.	1993	USA	To document the risk factors and outcomes of pregnant women incarcerated in a maximum-security prison	Survey Quantitative Descriptive	1
MCN, The American Journal of Maternal/Child Nursing 26(1)	Fogel, C.I., Belyea, M.	2001	USA	To explore pregnant prisoners' experiences with childhood violence and substance abuse, their parenting attitudes and their psychological health	Survey (oral) Quantitative Descriptive	1
Psychology of Women Quarterly 32(4)	Hutchinson, K.C., Moore, G.A., Propper, C.B., Mariaskin, A.	2008	USA	To understand the psychological experience of pregnancy during incarceration	Mixed: Qualitative and Quantitative	0.25
Dissertation	Kaminer, A.D.	1992	USA	To identify relationships among stress from life events, social support and maternal–foetal attachment in incarcerated and nonincarcerated pregnant women.	Case–control Quantitative Descriptive	1

Population	Sample size	Maternal outcomes	Relevant findings
Prison hospital patients who were 1–3 days postpartum and separated from their infants	12	Perceptions of the nature and meaning of the mother–infant bonding experience when the mothers know separation is coming; type of delivery; type of feeding (breast or formula)	4 C-sections, 8 vaginal deliveries; 1 breastfed; 11 formula fed. Qualitative themes: “a love connection” to the foetus; “everything was great until I birthed” (and infant was going to be removed); “feeling empty and missing a part of me”; “I don't try to think too far in advance.”
Women who served time in a medium security prison and were pregnant from 1986–1990. All gave birth while imprisoned.	233	Gestational complications, operative deliveries.	64 (27%) experienced prenatal complications such as preterm labour, gestational diabetes and hypertension; 194 (84%) vaginal deliveries and 29 (16%) by C-sections.
Inmates who delivered at a medical centre were matched with noninmates by race, age, parity and date on which they entered prenatal care	138 (69 cases and 69 controls)	Antepartum hospitalisation, false labour, preterm labour and premature rupture of the membranes	No significant differences between populations except premature rupture of membranes: 2/69 prisoners versus 18/69 controls
Pregnant incarcerated women in their third trimester	89	Gestational complications; depression (Center for Epidemiological Studies-Depression Scale (CES-D)) and anxiety using the Spielberger State-Trait Anxiety Inventory Subscale for State Anxiety (STAI-S).	Prenatal complications: pregnancy-induced hypertension 3 (3.4%); anaemia 35 (39.3%); diabetes 3 (3.4%); psychiatric disorder 17 (19.3%), however, not clear if these conditions pre-dated pregnancy. Participants reported high levels of anxiety; mean anxiety score for the sample being 43.37 ($SD = 7.03$); high levels of depressive symptomatology; mean depression score was 27.26 ($SD = 10.98$). 77% reported depressive symptomatology above level indicative of clinical depression.
Pregnant incarcerated women in their third trimester 1993–1995; women with convictions of child abuse or neglect were excluded	63	Depressive symptoms and stress using Center for Epidemiological Studies-Depressions scale (CES-D); General Stress was operationalised by the Perceived Stress Scale (PSS)	High levels of depressive symptomatology with a mean depression score of 24.14 ($SD = 12.55$) for the sample. More than 70% of participants reported depressive symptoms above the level considered indicative of clinical depression. High levels of current (in the past month) stress with the mean stress score of 27.2 ($SD = 9.35$)
Incarcerated and pregnant or had given birth in last two months	25 (21 were pregnant at the time, and 4 had given birth within the past 2 months)	Psychological distress, bonding measured through Brief Symptom Inventory (BSI), Beck Depression Inventory (BDI-II), Parent Bonding Inventory (PBI).	Participants reported moderate depression. Depressive symptoms were positively correlated with themes of separation, attachment, visitation, jealousy towards interim caregivers and cognitive coping
Incarcerated pregnant women and nonincarcerated pregnant women	132 (70 imprisoned pregnant women and 62 pregnant women who were not imprisoned)	Maternal-Fetal Attachment Scale (Cranley, 1981); Life Events Stress Questionnaire (Norbeck, 1984); Personal Resource Questionnaire (Brandt and Weinart, 1981)	Significantly higher levels of life events stress and lower levels of social support in the incarcerated group. Levels of maternal-foetal attachment were similar in the incarcerated and nonincarcerated groups. Life events stress was not correlated with maternal-foetal attachment in either of the two subgroups.

(Continues)

Journal	Authors	Year	Setting	Purpose	Design	MMAT score
Dissertation	Lin, C.H.	1997	USA	This study examined the patterns of care and outcomes for pregnant inmates and their infants in Texas state prisons between 1994–1996	Mixed: Case-control Quantitative Descriptive	1
Journal of Obstetric, Gynecologic & Neonatal Nursing 18(4)	Shelton, S.J., Gill, D.G.	1989	USA	To obtain detailed information on the ways in which women describe their feelings and perspectives on the circumstances of pregnancy in prison	Qualitative	0.25
The Journal of Maternal-Fetal Medicine 2(5)	Terk, J.V., Martens, M.G., Williamson, M.A.	1993	USA	To assess the effect of incarceration on pregnancy outcome	Case-control Quantitative Descriptive	1
BMC Pregnancy and Childbirth 14	Walker, J.R., Hilder, L., Levy, M.H., Sullivan, E.A.	2014	AUS	To investigate whether imprisoned pregnant women in New South Wales, Australia, have improved maternal and perinatal outcomes	Cohort Quantitative Descriptive	1
Journal of Correctional Health Care 12(2)	Williams, L., Schulte-Day, S.	2006	USA	To explore depression in pregnant incarcerated women	Mixed: Qualitative and Quantitative	0.45
Journal of Midwifery & Women's Health 45(4)	Wismont, J.M.	2000	USA	To describe the childbearing experience as reported by pregnant incarcerated women	Qualitative	0.75

the point where you wouldn't be able to do anything 'cause you know they're going to take it away from you when you have it. You can't get that attached to it before it's born; you got to kinda keep your distance." (p.304). Wismont (2000) summarised the themes in her study of 12 pregnant prisoners as apprehension, grief, subjugation and relatedness.

6.9 | Bonding and attachment

Both Hutchinson et al. (2008) and Kaminer (1992) examined bonding. Hutchinson et al. (2008) used an established tool, the Parent Bonding Inventory. The dominant themes included the following: fear of separation and lack of attachment (58%), plans for

reunification (71%), confidence in mothering ability (79%) and thinking of baby constantly (88%). Kaminer (1992) used an established tool, Maternal-Fetal Attachment Scale. Kaminer (1992) found levels of maternal-foetal attachment were not significantly different between the 70 pregnant prisoners and 62 pregnant women who were not imprisoned. These results suggest bonding and attachment are priority concerns among the imprisoned participants.

6.10 | Sterilisation

Although no studies examined coercive practices like shackling, Lin (1997) included data regarding sterilisation of prisoners after

Population	Sample size	Maternal outcomes	Relevant findings
Pregnant inmates who delivered in a 2-year period and a randomly sampled comparison cohort of 804 women from general Texas population, matched on race and educational levels	1,006 (20 pregnant inmates who delivered were interviewed; 202 pregnant women included in quantitative data set compared to 804 controls)	Gestational complications, operative deliveries, sterilisation	Pregnancy-induced hypertension: inmate = 7% (14); comparison = 0.4% (3) <i>p</i> -value < 0.001; 16% of inmates were sterilised (no data on control)
Pregnant inmates in their last trimester	26	Perceptions of circumstances of pregnancy in prison; prenatal complications	Pregnancy experience in prison perceived of as negative; all expressed anger, regret and depression. Of the 26 women, 20 were identified as having 72 complications during their childbearing cycles. Nine women had primary, and two women had repeat caesarean deliveries. Most frequent complications were infections of the reproductive tract.
Pregnant women imprisoned during their gestation were compared to a control group of nonincarcerated women	193 (76 inmates and 117 controls)	Operative or vaginal delivery	No significant differences between populations regarding rate of C-section (28% case, 27% controls)
(1) Imprisoned pregnant women aged 18–44 years who gave birth between 2000–2006 with women who were (2) imprisoned at a time other than pregnancy and (3) community controls	40,907 (birthing prisoners = 99; nonbirthing prisoners who were incarcerated at least 5 days of pregnancy = 203; prisoners who were incarcerated 5 days but not pregnant = 1,238; "community controls" = 39,367)	Premature onset of labour, method of birth	Pregnant prisoners did not have significantly better outcomes with respect to early onset of labour and method of birth compared with other similarly disadvantaged women (with a history of imprisonment but not imprisoned during pregnancy). No association between imprisonment during pregnancy and improved perinatal outcomes for imprisoned women.
Inmates who had recently given birth while incarcerated	120	Beck Depression Index	None of the participants found to be clinically depressed.
Incarcerated pregnant women	12	Perceptions of the childbearing experience in incarceration	Essential themes related to the experience of childbearing in prison include the following: apprehension, grief, subjugation and relatedness

delivery. Lin (1997) found 16% of the 202 pregnant prisoners in their case group were sterilised through bilateral tubal ligation. No data were available for the control group.

6.11 | Quality of evidence

The MMAT scores varied from one star (*) to four (****), or from 25%–100% scores. We used MMAT types 1 (Qualitative), 4 (Descriptive quantitative) and 5 (Mixed methods). None of our included studies evaluated an intervention, and thus, we did not use MMAT 2 or 3. Of the three qualitative studies, two scored 75% and one scored 25%. None included a discussion of the researcher's role and influence,

and thus, none received perfect scores. Of the eight descriptive quantitative studies, all scored 100%. Of the two mixed-method studies (Hutchinson et al., 2008; Williams & Schulte-Day, 2006), both scored 25%.

7 | DISCUSSION

In this scoping review, we found 13 studies that included examination of maternal outcomes for incarcerated women specifically investigating maternal health and experiences. The research on the perinatal period for incarcerated women is dominated by concern

with infant outcomes, such as birthweight, health issues not specific to the perinatal period, such as substance use, and nonhealth outcomes, such as recidivism. Our review identifies gaps in research examination of maternal concerns, including patient satisfaction, an important and underappreciated maternal health outcome (Austin et al., 2014) and maternal mortality, which is rising overall and rising disproportionately among marginalised populations (Creanga et al., 2014).

Twelve of the 13 studies in this review were based in the United States (USA). The US imprisons one third of the world's female prisoners (Kajstura, 2018) and has one of the costliest health systems in the world (Squires & Anderson, 2015). US research findings may have limited applicability to contexts with less extensive incarceration and differently organised and administered health systems. Furthermore, socio-political experiences of racism, misogyny, poverty and other types of oppression are context-dependent (Collins & Bilge, 2016 see ref list). None of the studies included in our review examined intersections of health outcomes with race, class and other identities. There is a need for disaggregated data and qualitative inquiry that attends to intersecting racial, class, sexual orientation and other identities in maternal outcomes of incarcerated women. Racism, gender-based discrimination and class oppression contribute to overincarceration of marginalised groups such as Indigenous people and people of colour (Office of the Correctional Investigator, 2013) and likewise impacts maternal health outcomes (Jones et al., 2015 see ref list).

Among the included studies in this review, we found no examination of coercive carceral practices such as shackling, restraints and use of solitary confinement, and how these acts impact and are experienced by women in the perinatal period. Although the Bangkok Rules (2010) require accommodation of pregnancy and breastfeeding and guarantee protection of pregnant women from cruel and unusual punishment, including solitary confinement, no study considered adherence to these international requirements. As incarcerated women experience disproportionate rates of mental illness and histories of trauma, and coercive practices can retraumatise (Mollard & Brage Hudson, 2016), research examining maternal health outcomes of incarcerated women should critically examine the impact of coercive and punitive practices. Twenty-two US states have legislated protection for pregnant incarcerated women from shackling (Ferszt, Palmer, & McGrane, 2018); how, for example, has this practice affected maternal health?

Only one study, Lin (1997), examined sterilisation. It was not clear if the sterilisation procedures experienced by the pregnant prisoners were autonomously sought or involved coercion. Prisoners may be denied sterilisation requests. There is evidence prisoners do not have unfettered access to postpartum hormonal contraception. An Australian study found only two women prisoners out of 252 study participants were taking prescribed oral contraceptives (Sutherland, Carroll, Lennox, & Kinner, 2015). Postpartum contraception is an important variable in maternal health (Sridhar & Salcedo, 2017).

Mode of delivery (vaginal or C-section) was the most commonly measured outcome among the studies; this is a binary and likely

easily-measured outcome. However, we learn little about the experience for the incarcerated woman through this measure alone. In the USA, the general rate of C-section delivery is currently 31.9% of all births (Center for Disease Control & Prevention, 2016); for many of the studies, the rate was lower than this average. An intersectional feminist framework examines how social and political identities and contexts affect decision-making, including in relation to operative deliveries. Restriction of access to operative delivery is as concerning as potential overuse among prisoners. Future research must investigate: What are the reasons for the operative deliveries? Are they planned or emergent? What are the reasons for planned operative deliveries? For example, to coincide with prison staff availability and prisoner transportation scheduling and administration?

Breastfeeding was only measured in one study in this review (Chambers, 2009), likely because the physical situation of incarceration usually precludes contact with the infant to participate in a breastfeeding relationship. Less than a dozen jails and prisons in the USA are believed to have "Mother Child" programs, where infants can co-reside with their mothers inside the carceral facility (Craig, 2009), which would potentially facilitate breastfeeding. Breastfeeding among incarcerated women is poorly studied (Paynter & Snelgrove-Clarke, 2017). Examining perceptions among pregnant incarcerated women through qualitative interviews, Huang, Atlas, and Parvez (2012) found participants generally wanted to be able to breastfeed and felt it could help in the development of agency and self-esteem. Given the complex health histories of most incarcerated women, breastfeeding is an important possible source of women's health promotion, as it has been found to positively impact maternal health (Dieterich et al., 2013). For example, breastfeeding as a protective factor to prevent postpartum depression would be an important consideration for a population with high rates of mental illness, as is generally found among prisoners. Breastfeeding has significant impacts on women's physical and emotional health and its absence from research with incarcerated women in the perinatal period results in a noteworthy gap in understanding prisoner maternal health.

Among the studies that examined depression and anxiety, there is a lack of preconception and pre-incarceration baseline measures. Because pre-existing depression is the most significant risk factor for development of peripartum depression (Robertson et al., 2004), and most incarcerated women experience histories of trauma (Tam & Derkzen, 2014), and are admitted to prison with mental illness diagnoses (Farrell MacDonald, Keown, Boudreau, Gobeil, & Wardrop, 2015), it is difficult to determine the impact of incarceration on maternal mental health without these baseline measures. Of the four studies in this review that examined depression, one found *none* of the participants to have results indicative of clinical depression. This is starkly contrasting with the general rates of depression found among prisoners. Abracen et al. (2014) found rates of diagnoses of depression among Canadian parolees to be 25.4%. It also contrasts with the dominant themes in the qualitative studies: depression, grief and apprehension about the future.

The two studies (Fogel & Belyea, 2001; Kaminer, 1992) that examined stress levels found high results. Fogel and Belyea (2001)

measured stress over the past month; how would that measurement change over the course of the perinatal period, for instance after birth and possible separation from the newborn? Kaminer (1992) compared the pregnant prisoner case group to pregnant nonprisoners. Imprisonment is stressful; how would their results compare to a nonpregnant prisoner control group?

The results of this review point to the need to centre women and apply an intersectional lens to future research, to examine how the perinatal period differs from other prison-based stressors on women's health, and how complex health and illness backgrounds experienced by prisoners may shift perinatally. In addition to the research that has focused on infant outcomes, there is a need for research that examines the impact of incarceration during the perinatal period on women's physical, mental and emotional health. Next steps must include research that highlights women's voices in describing their healthcare priorities, which this review suggests may be psychosocial outcomes such as being together and relief from stress.

There is a similar need to bring consciousness of prisoner health complexity and context-specific concerns to clinical practice when caring for incarcerated women in the perinatal period. Perinatal clinicians working in and outside of carceral contexts with incarcerated populations can ask how they can advance the health and well-being of incarcerated women by considering the complexity of their identities, health histories, experiences and structural constraints: what access to education is provided? How is support offered and by whom is it provided? How do these women define their hopes for labour and delivery? What are their breastfeeding goals? What are their fears? What services do they need and who will provide them? Healthcare providers must consider the gaps in evidence: A lack of evidence about shackling does not mean it does not happen and does not impact perinatal health. Healthcare providers must be aware of the risks of separation, lack of opportunity to breastfeed, implications for elevated risk of peripartum depression, and that this population may have additional risks for gestational complications and anticipate and create appropriate care plans.

Health policy-makers must be aware of the friction between corrections policies and optimal, evidence-based health policies. For example, it is a public health norm to describe "Breast is Best," yet correctional procedures causing mother-infant dyad separation compromise breastfeeding success. Family-centred care policies in hospitals are inadequate for women without access to their families; other procedures may need to be developed to create social support systems for this patient population. Healthcare providers must use their positions to protect women and infants from harm and promote health, including the health outcomes of bonding and attachment. The dignity and humanity of incarcerated women must be preserved and promoted in their perinatal health experience.

7.1 | Limitations

To examine a broad range of the published and unpublished literature concerning the maternal health outcomes of pregnant and

incarcerated women, the developed search strategy explored three research databases, a hand-search of the past five years in three key journals relevant to the research question, dissertations on ProQuest and the first 100 hits on Google Scholar. While the titles, abstracts and articles of the relevant hits were reviewed independently by two reviewers who consulted after every phase of the process, it is possible that relevant literature was not included. Included studies also needed to have focused on the perinatal health outcomes of the mother and studies that instead focused on the health of the child were not included. We acknowledge however that the health of the child can be influenced by the psychosocial and physical context in which the mother experiences pregnancy and birth and this limitation in our review limits the findings. Additionally, the review only included English and French-language studies, which narrowed the global investigation of relevant literature. This review used the MMAT (Pluye et al., 2011) to assess the quality of the included research studies. While the MMAT is designed to do so for a systematic mixed studies review, it was not developed to assess the quality of the author's reporting (Pluye et al., 2011). Within the studies themselves, there may be a host of methodological limitations associated with conducting research within the carceral settings. This review is limited by any publication bias and selective reporting within studies.

8 | CONCLUSION

This scoping review presents a unique synthesis of the research pertaining to maternal health outcomes among incarcerated populations by focusing on outcomes necessarily stemming from the perinatal state and on those outcomes that impact women. The scoping review finds few studies take this women-centred approach. Through various study designs, researchers have examined method of delivery, a limited number of gestational complications, depression, stress and experiences. There is little research examining breastfeeding, despite the prioritisation of this maternal health outcome in the broader research literature. There is a concerning lack of research of the impact of carceral practices on maternal health. An intersectional feminist approach (Crenshaw, 1989) would examine the intersecting and overlapping social determinants of mental health (World Health Organization, 2014), such as race, class and gender. There is a need for women's voices to inform our understanding of their maternal health outcomes.

9 | RELEVANCE TO CLINICAL PRACTICE

Clinicians caring for incarcerated women in the perinatal period must be aware that gaps in evidence affect the expectations, options and lived experiences of incarcerated women during the perinatal period. A lack of attention to breastfeeding for this population should not mean it is excluded from the perinatal education and care for this population, but rather speaks to an amplified need to provide support. Healthcare providers must be conscious

of intersecting layers of discrimination faced by this population. When patients from this population present with gestational complications, such as hypertension and diabetes, we must question how the context of incarceration contributes to negative health sequelae and make clinical recommendations that centre women's health. We must question birth and postpartum arrangements that fail to support women's health, and advocate for access to support people, to adequate time to labour and freedom of movement, and for skin-to-skin contact postpartum. An absence of research on strip-searching, shackling and segregation for this population does not mean incarcerated women do not face these conditions during incarceration. While promoting infant health, we must also centre women's perinatal experiences in our care to be healthful.

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CONFLICTS OF INTEREST

Martha Paynter is the volunteer President of the Board of Women's Wellness Within, a non-profit organisation supporting criminalised women in the perinatal period in Nova Scotia, Canada. For the remaining others, none were declared.

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SUPPORTING INFORMATION

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

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