
ARTICLE

Chronic Pain Management in Pregnancy: A Review of the Literature

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ABSTRACT

Objective: This review summarizes current literature and explores issues involved in the management of pregnant women with chronic pain conditions.

Methods: Articles in this review were selected through searches of Scopus, Cumulative Index of Nursing and Allied Health Literature (CINAHL), Cochrane Library, and MEDLINE databases. “Grey” literature such as cross-references from identified articles, clinical recommendations, professional consensus, bibliographies from review articles, and book chapters were also examined for appropriate material.

Results: The search yielded 18,401 results in total; however, the majority related to management of labour pain, physiological pain in pregnancy, chronic pain in the nonpregnant population, and opioid maintenance in pregnancy for substance-dependent women. These results were therefore excluded. Sixteen relevant articles were included. A lack of high-quality research in the area, a potential for increased maternal and fetal complications, and the need for multidisciplinary input were identified as issues.

Discussion: This is one of the first literature reviews to assess the management of women with chronic pain conditions who become pregnant. Poorly managed chronic pain can have adverse effects on the mother and lead to premature induction of labour and birth of the infant. Despite the apparent risks, there remains an absence of research in this field.

Conclusion: It is imperative that research and clinical education are continued in this field. This will enable health care clinicians to provide women with appropriate, evidence-based options for their prenatal care, as well as effective, ongoing management of chronic pain conditions during pregnancy.

KEYWORDS

women, chronic pain, pregnancy

This article has been peer reviewed.

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Prise en charge de la douleur chronique pendant la grossesse : Revue de la littérature

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RÉSUMÉ

Objectif : Cette analyse résume la littérature actuelle et explore les facteurs mis en cause dans la prise en charge des femmes enceintes qui connaissent des douleurs chroniques.

Méthodes : Les articles utilisés dans le cadre de cette analyse sont issus de recherches menées dans les bases de données SCOPUS, CINAHL, Cochrane Library et Medline. La littérature grise (p. ex. références croisées issues des articles identifiés, recommandations cliniques, consensus professionnel, bibliographies issues des articles de synthèse et chapitres de livres) a également été analysée afin d'y identifier le matériel pertinent.

Résultats : Au total, nos recherches ont mené à l'identification de 18 401 articles; toutefois, la majorité de ces articles traitaient de la prise en charge des douleurs du travail, de la douleur physiologique pendant la grossesse, de la douleur chronique au sein de la population des femmes n'étant pas enceintes et du traitement d'entretien aux opioïdes administré pendant la grossesse aux femmes qui présentent une dépendance à des substances psychoactives. Ces résultats ont donc été exclus. Seize articles pertinents ont été admis à l'étude. L'absence de recherches de grande qualité dans le domaine, la présence potentielle de complications maternelles et fœtales accrues, et la nécessité d'un apport multidisciplinaire ont été identifiées à titre de facteurs à prendre en considération.

Discussion : Il s'agit de l'une des premières revues de la littérature à évaluer la prise en charge des femmes connaissant des douleurs chroniques qui deviennent enceintes. Lorsqu'elle ne fait pas l'objet d'une prise en charge efficace, la douleur chronique peut exercer des effets indésirables sur la mère et mener au déclenchement prématuré du travail et à l'accouchement préterme de l'enfant. Malgré les risques manifestes, les recherches se font rares dans ce domaine.

Conclusion : Il est impératif que la recherche et l'enseignement clinique se poursuivent dans ce domaine. Cela permettra aux fournisseurs de soins de santé d'offrir aux femmes des options factuelles adéquates pour leurs soins prénataux, ainsi qu'une prise en charge continue et efficace de la douleur chronique pendant la grossesse.

MOTS CLÉS

Femmes, douleur chronique, grossesse

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INTRODUCTION

It is well known that for a majority of women, the physiological changes of pregnancy can be associated with increased pain and physical discomfort.¹ However, for women who have chronic pain conditions before becoming pregnant, these same physiological changes of a developing pregnancy may amplify the pain which is usually experienced from day to day.^{2,3} As a result, pregnancy can become a difficult and debilitating time of life for women who have a history of chronic pain.⁴

Both women and clinicians may be unsure of whether it is best to continue or to cease using medications. It is known that poorly managed severe chronic pain can have an adverse effect on physical and mental health⁵; however, the potential risks of medication use during pregnancy are also well established.⁵⁻⁷ This places pregnant women and their clinicians in a challenging situation. They are faced with a dilemma: reduce or stop medication, potentially increasing the level of any ongoing pain throughout the pregnancy, or continue the usual therapeutic doses of pain medications throughout pregnancy, potentially increasing the risk of adverse effects on the fetus.⁷

This literature review relates to the clinical and pharmacological management of women with chronic pain who become pregnant. While there has been much research on the management of pain that occurs as a result of pregnancy and many publications on the management of acute pain during labour and birth, there has been very little research on the management of women with chronic pain who become pregnant.⁷⁻¹¹ This review explores fundamental issues in the clinical management of pregnant women who have a history of chronic pain conditions. It summarizes the current literature on the management and pharmacological treatment of women with chronic pain who become pregnant, analyzes gaps in current research, and makes recommendations for further research in areas related to such women.

SEARCH STRATEGY AND STUDY SELECTION

Literature Search

The literature search was conducted in March 2013. The Scopus, Cumulative Index of Nursing and Allied Health Literature (CINAHL), Cochrane Library, and MEDLINE databases were searched by using combinations of the following terms for each of four categories:

- Chronic pain: chronic pain, persistent pain, ongoing pain

- Pharmacology: pain medi*, pain relief, analges*, acetaminophen, paracetamol, NSAID (nonsteroidal anti-inflammatory drug), aspirin, amitriptyline, duloxetine, gabapentin, fentanyl, morphine, oxycodone, tramadol, opioids, opiates, methadone, buprenorphine, codeine, diclofenac, ibuprofen
- Pregnancy: pregnan*, childbirth, lactation, postpartum, postnatal, birth, maternal, antenatal, prenatal, obstetric, perinatal
- Clinicians: clinician, health professional, multidisciplinary, interdisciplinary, interprofessional, doctor, specialist, nurse, midwife, physiotherapist, caregiver

“Grey” literature (e.g., cross-references, clinical guidelines or professional consensus conference proceedings, and bibliographies from review articles and book chapters) was also examined for appropriate material.

Inclusion and Exclusion Criteria

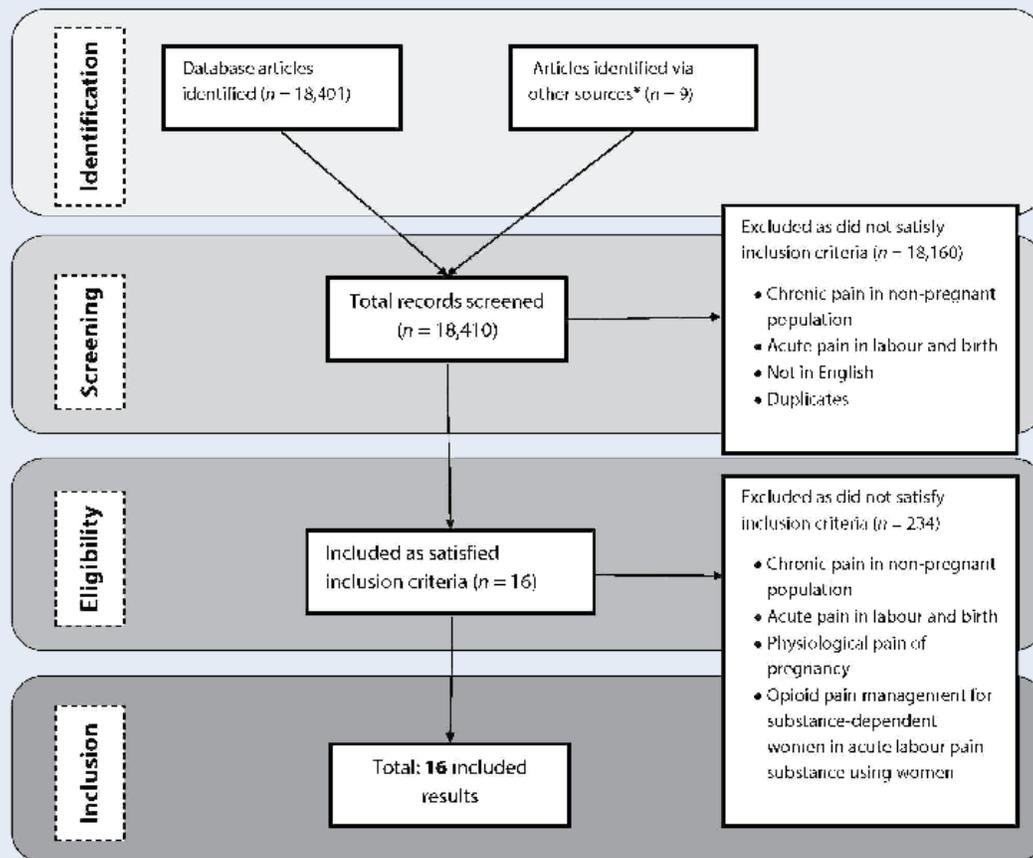
Articles about human studies that pertained to the management of chronic pain during pregnancy were included. The initial search included all published articles regardless of the year of publication. Subsequently, publications from the previous 10 years were prioritized to ensure clinical relevance.

Articles were excluded if they related to chronic pain management in the nonpregnant population, physiological pain as a result of pregnancy, substance use in pregnant women, or management of acute pain during labour and birth. Papers published in languages other than English were excluded.

RESULTS

The search yielded 18,401 articles. The flow chart in Figure 1 shows the number of prospective articles identified through the initial database search, along with articles from other sources. However, the majority of these articles deal with the management of labour pain, physiological pain resulting from a developing pregnancy, chronic pain in the nonpregnant and general population, and opioid maintenance for substance-dependent women in acute labour pain. These articles were therefore excluded as being irrelevant to the clinical management of pregnant women with a history of chronic pain preceding pregnancy. This left 16 articles whose contents were relevant to this review: four previously published literature reviews, three clinical recommendations, three case studies, two retrospective

Figure 1. Literature review screening process.



* Other sources include hand-searched reference lists of articles from the database search (n = 5) and sources found through searches of government and health organization publications (n = 4).

database reviews, three professional-opinion articles based on clinical experience, and one research proposal poster (Table 1).^{3-5,7-9,12-21} Several studies indicated that very little research on the clinical and pharmacological management of women with chronic pain who become pregnant is currently available.^{3,7,8,13} The literature review articles cited a lack of discussion of the issue in current textbooks, a lack of high-quality research, and a need for further studies.^{8,12,14,15}

The clinical recommendations identified a need for increased awareness of the use of medications (including those used to treat chronic pain) before and during pregnancy. Also seen as necessary were (1) multidisciplinary input in the management of women with chronic pain who become pregnant and (2) evidence-based recommendations for the management of women with chronic pain during

pregnancy.^{7,16,17}

The need for multidisciplinary care for women with chronic pain who become pregnant was indicated in two of the three case study articles as well.^{4,19} Also highly recommended were (1) close monitoring of the pregnancy and (2) good communication both with patients and with health professionals who are involved in the care of these women.^{4,18-19}

Optimized pain management before pregnancy was highlighted as an important aspect of successful management.⁵ All professional-opinion articles maintained that commonly prescribed pain medications appear to be relatively safe to use during pregnancy, although the articles also acknowledged potential risks to the fetus.^{5,9,13}

Both retrospective database studies identified maternal

Table 1. Summary of Included Articles

Author(s)/ Year	Purpose/Aim	Publication Type	Results	Conclusion
Babb, Koren, Einarson 2010 ⁵	To discuss acute and chronic pain management in pregnancy	Professional opinion	N/A	Regularly prescribed pain medications seem to be reasonably safe during pregnancy. No analgesic medications have been found to increase risks of major malformation, although caution should be used when prescribing them in late pregnancy.
Roche, Hughes 1999 ¹⁹	To discuss clinical management and rationale for treatment of pain in pregnancy	Case studies/ professional opinion	N/A	It is important that women with chronic pain in pregnancy receive high-quality, multidisciplinary care in order to avoid adverse events that could occur if health professionals make treatment decisions in isolation.
Sharpe, Kuschel 2004 ³	To assess the outcomes of infants born to mothers receiving methadone for ongoing pain in pregnancy	Retrospective database audit	Methadone used for treatment of maternal pain resulted in an 11% (n = 2) incidence of NAS. Morbidity related to slight prematurity was also seen within this group.	Infant morbidity seen in the pain group probably was related to slight prematurity, which may indicate a need to delay elective preterm birth even when poorly controlled pain is a factor. Information on the safety of medications used in the management of pain in pregnancy is scarce.
Chou et al. 2009 ⁸	To provide guidance on current gaps in the literature on chronic opioid therapy, including in pregnancy	Systematic literature review	Literature on use of opioids in pregnancy was focused on opioid maintenance and analgesia during labour.	No trials or controlled observational studies that evaluated appropriate strategies for using opioids to manage chronic pain in pregnant women were found.
Wong, Ordean, Kahan 2011 ¹⁵	To improve awareness and knowledge of substance use in pregnancy and to provide evidence-based recommendations	Literature review and clinical recommendations	Methadone maintenance should be the standard of care for any opioid-dependent woman during pregnancy. Other slow-release opioid preparations may be considered if methadone is not available.	Pregnant women with a history of chronic pain should be managed according to evidence-based guidelines. Women should be informed that neonates exposed to prescription opioids during pregnancy will be monitored for signs of withdrawal at birth.
Hadi et al. 2006 ²⁰	To determine the neonatal outcomes of women who had been taking medically prescribed opioids throughout their pregnancy	Retrospective review of cases	Five of 13 (38.5 %) neonates were diagnosed with NAS. Four babies had a 1-minute Apgar score of 5, and two babies had a 5-minute Apgar score of 5.	Further research is needed.
Wunsch, Stanard, Schnoll 2003 ¹²	Although there is much discussion in the literature of labour pain management, there is little addressing the use of pain medications throughout pregnancy.	Literature review	Literature review could find only a few case studies identifying medications used for pain in pregnancy.	Controlled studies are needed to expand knowledge in this clinical area.

N/A, not available; NAS, neonatal abstinence syndrome

Author(s)/Year	Purpose/Aim	Publication Type	Results	Conclusion
Rathmell, Viscomi, Ashburn 1997 ¹³	To discuss the potential toxic and teratogenic effects of medications used to treat pain.	Professional opinion	Current knowledge of the adverse effects of uncontrolled pain as well as the risks of administering medications during pregnancy is insufficient.	Pain is not uncommon during pregnancy. However, major textbooks on both pain management and obstetrics lack any concentrated discussion of the topic.
Bloor, Paech, Kaye 2012 ¹⁴	To review the use of tramadol from the preconception period through to breastfeeding	Systematic literature review	Women are advised to avoid tramadol during conception and the first trimester. Increased miscarriages associated with maternal doses taken during early pregnancy have been reported.	If long-term maternal tramadol has been used during pregnancy, there is a risk of NAS. No conclusions about subsequent neonatal outcome may be drawn from this study.
Cohen 2009 ¹⁸	To describe the case of a mother with chronic pain who was treated with a fentanyl 100 µg/h transdermal patch throughout pregnancy and the subsequent care of her infant	Case study	The fentanyl level in the mother's milk was 6.4 ng/mL. The infant's blood fentanyl level was undetectable.	Results show that for long-term pain relief, the fentanyl transdermal patch may be a suitable choice. Sufficient monitoring of the infant is required at birth, and the lowest effective dose should be used.
Kennedy 2011 ⁹	To help women and health professionals make informed decisions for treating or not treating pain during pregnancy and breastfeeding professionals make informed decisions for treating or not treating pain during pregnancy and breastfeeding.	Professional opinion		Results show that for long-term pain relief, the fentanyl transdermal patch may be a suitable choice. Sufficient monitoring of the infant is required at birth, and the lowest effective dose should be used.
Byrd et al. 2007 ⁴	To describe the obstetric management of a patient with an indwelling intrathecal opioid pump for pain management during pregnancy	Case study	Current data are limited, but these patients may be seen more regularly in obstetric clinics in the future.	With a multidisciplinary team approach, associated risks can be decreased and results improved for both mother and baby.
World Health Organisation (WHO) ¹⁶	To increase understanding of preconception care to prevent maternal and childhood mortality and morbidity	Clinical recommendations from an international meeting	N/A	Preconception care is important to the ongoing improvement of care for women and their infants from pregnancy through to childhood.

Table 1. Summary of Included Articles continued...

Author(s)/ Year	Purpose/Aim	Publication Type	Results	Conclusion
American Pain Society 2009 ⁷	To evaluate evidence on the use of opioids in specific populations of adults with chronic noncancer pain	Clinical recommendations and systematic literature review	Most literature on pregnancy and opioids has focused on women on methadone maintenance programs or analgesia during labour, rather than chronic pain.	Clinicians should describe the risks of opioid use during pregnancy.; the benefits must outweigh the risks if opioids are used in pregnant women.
Paech 2010 ¹⁷	To provide examples of appropriate pharmacological management for women with pain during pregnancy	Clinical recommendations and professional opinion	N/A	Clinicians need to know which analgesics are considered safe in pregnancy and where to find information on drug safety during pregnancy and lactation. It is important to follow published recommendations and to coordinate with multidisciplinary teams involved in pain management.
Goodsell, Burns 2012 ²¹	To develop a comprehensive and consistent approach to the clinical care of women and children in pregnancy	Research proposal	N/A	Evidence-based research will provide directions for implementing gold-standard approaches to the screening, referral, and treatment of women using opioids during pregnancy.

N/A, not available; NAS, neonatal abstinence syndrome

and infant complications experienced during pregnancy. Sharpe and Kuschel reported 19 participants in the pain management group,³ whereas Hadi et al. looked at 13 cases.²⁰ In both studies, infants experienced withdrawal from medications their mothers had been taking for chronic pain during pregnancy.^{3,20} Hadi et al. reported that 38.5% (n = 5) of infants born to women taking medication for chronic pain during pregnancy experienced withdrawal.²⁰ Sharpe and Kuschel reported that 11% (n = 2) of infants in their study experienced withdrawal requiring pharmacological intervention.³ Sharpe and Kuschel also observed a significant increase in slight prematurity in infants born to women with chronic pain (47.3%, n = 9), compared to the control group (12.5%, n = 3).³ In their study, all women in the pain group were prescribed both paracetamol and amitriptyline. Fourteen (73.6%) were prescribed clonidine, 13 (68.4%) were prescribed mexiletine, five (26.3%) were prescribed diclofenac, and one woman was prescribed orphenadrine for pain management during pregnancy. Trials of oral and intravenously administered morphine were undertaken before methadone was prescribed for pain management.³ Medications that were prescribed in the study by Hadi et al. to women during pregnancy included oxycodone, codeine, fentanyl, dilaudid, meperidine, morphine, and methadone.²⁰

The research proposal indicated a need for future evidence-based clinical guidelines. This was seen as necessary to provide guidance in implementing gold-standard approaches to screening, referring, and treating women using prescription opioids for chronic pain who become pregnant.²¹

DISCUSSION

This is one of the first literature reviews to assess both the clinical and pharmacological management of women with chronic pain conditions who become pregnant. Sixteen relevant publications were found, three of which included nonspecific recommendations for the management of women with chronic pain who become pregnant. Overall, there were very few high-quality publications.

Clinical Management

This literature review highlights the dearth of research or guidelines for clinically managing women who have chronic pain who become pregnant.⁷ The literature acknowledges that poorly managed chronic pain can have adverse effects on both mother and fetus. Prenatal depression and anxiety, along with immobility caused by pain, have the potential to increase extended bed rest,

which in turn increases the likelihood of conditions such as maternal deep vein thrombosis.^{3,22} Severe maternal chronic pain may also lead to the preterm induction of labour and the preterm birth of the infant.³ The literature indicates that despite these apparent risks, there is an absence of research in this field.⁸ This is a concern, as women with chronic pain conditions require assistance (from the clinicians providing their prenatal care) in making appropriate health decisions during their pregnancy. However, there is currently little information on which to base clinical management. Multiple sources acknowledged that access to multidisciplinary care was important in attaining optimal maternal and infant outcomes.^{4,19} Roche and Hughes even argue that without multidisciplinary input, attempting to manage the complex nature of cases involving women with chronic pain conditions increases the risk of adverse events during the pregnancy.¹⁹ This point is difficult to reliably dispute with so little high-quality research, but the fact that multidisciplinary care is often seen as crucial to the successful management of chronic pain in the general population lends weight to the argument.²³

Good communication and management plans for women with chronic pain conditions in pregnancy are seen as imperative to achieving positive outcomes.¹⁹ However, not all women with a history of chronic pain have access to a pain specialist as part of their pregnancy management. This is particularly true for women who live in regional or remote areas where access to any specialist treatment is especially inadequate.^{24,25} Likewise, options for prenatal care may also be limited. Many maternity hospitals do not have chronic pain services, and women in regional areas may not have access to complex-care prenatal clinics.²⁶

Pharmacological Management

Although many commonly prescribed analgesics have not been definitively established as teratogenic, many of these medications present a risk of infant withdrawal that can have serious effects if not treated.^{5,12,27} Infants who have been exposed to medications prescribed for the management of maternal chronic pain require close observation in the hospital special care nursery because of the risk of developing neonatal abstinence syndrome (NAS).^{15,18} Because treatment of NAS often occurs over many weeks in hospital, it can lead to long periods of maternal-infant separation even if the baby is born at term and would otherwise be discharged home.^{13,20} An alternative is for infants to be discharged home on morphine; infants withdrawing from pain medications may be appropriate

candidates for this form of management.²⁸ In many areas, however, the services needed for this ongoing treatment are neither accessible nor feasible.

CONCLUSION

On review of the literature, we concluded that very little research on the clinical or pharmacological management of women with chronic pain who become pregnant has been published. Although recognized as needing further attention, the deficit in high-quality clinical guidelines and research is considered to be an issue that contributes to the problem and one that the literature itself identifies.

While multidisciplinary care has an important role in effective chronic pain management in the general population, only a small group of the studies addressed the importance of multidisciplinary management for women with chronic pain conditions who become pregnant. Whereas pharmacological treatment options are available for those within the general population who have chronic pain, pregnant women present a unique challenge in treatment, as research is limited due to the risk of adverse effects.

It is imperative that research and clinical education be continued in this field to enable health clinicians to provide women with appropriate evidence-based options for their prenatal care, as well as effective ongoing management of chronic pain conditions during pregnancy. Midwives providing routine prenatal care for pregnant women with chronic pain are in a prime position to recognize the needs and challenges these women face. Midwives are also essential in advocating improved prenatal care and increased access to health services for these women. Greater awareness of the complexity of managing chronic pain conditions during pregnancy is necessary. It is important that clinicians work towards improving pregnancy outcomes for women of childbearing age who are living with chronic pain, as pregnant women with chronic pain are affected not only in a physical sense but also in all aspects of family life.

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