

Rapid Synthesis

Examining the Effects of Prenatal Education

27 September 2019



HEALTH FORUM

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**Rapid Synthesis:
Examining the Effects of Prenatal Education
30-day response**

27 September 2019

McMaster Health Forum

The McMaster Health Forum's goal is to generate action on the pressing health-system issues of our time, based on the best available research evidence and systematically elicited citizen values and stakeholder insights. We aim to strengthen health systems – locally, nationally, and internationally – and get the right programs, services and drugs to the people who need them.

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Timeline

Rapid syntheses can be requested in a three-, 10-, 30-, 60- or 90-business-day timeframe. This synthesis was prepared over a 30-business-day timeframe. An overview of what can be provided and what cannot be provided in each of the different timelines is provided on the McMaster Health Forum's Rapid Response program webpage (www.mcmasterforum.org/find-evidence/rapid-response).

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Conflict of interest

The authors declare that they have no professional or commercial interests relevant to the rapid synthesis. The funder played no role in the identification, selection, assessment, synthesis or presentation of the research evidence profiled in the rapid synthesis.

Merit review

The rapid synthesis was reviewed by a small number of policymakers, stakeholders and researchers in order to ensure its scientific rigour and system relevance.

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KEY MESSAGES

Questions

- For which populations is prenatal education most effective for improving maternal, infant and dyad (e.g., mother and child) outcomes?
- What delivery methods are most acceptable and effective?
- What are optimal ways to provide culturally safe prenatal education?

Why the issue is important

- Prenatal education programs provide an opportunity to engage all expecting mothers in British Columbia and to equip them with common knowledge and basic skills to support their adjustment to parenthood, however, prenatal education is currently delivered across the province with different curricula, different formats, and with varying levels of connection to public health.
- The Public Health Services branch of the British Columbia Ministry of Health is in the midst of revising their guiding document on perinatal and family health services, providing an opportunity to reconsider the content and delivery methods of the universal perinatal education program.
- Given this, the aim of this rapid response was to examine what is known about prenatal education in the literature and for whom and how it can be delivered to improve maternal, infant and dyad outcomes.

What we found

- We identified 35 systematic reviews that related to the three questions.
- For the first question, we identified 10 systematic reviews which found prenatal education on pelvic-floor training, nutrition and physical activity, and identifying true labour all had positive effects for women with low-risk pregnancies, while mixed effects were found for additional prenatal education on breastfeeding.
- An additional seven systematic reviews examined outcomes for particular populations of women with high-risk pregnancy and found positive effects from interventions provided to adolescents, women with mental health challenges and substance use, women with intellectual disabilities, and women with sexually transmitted diseases that can be passed to a child.
- For the second question, we identified 14 systematic reviews, seven of which compared in-person group prenatal education to in-person individual prenatal education and generally found no significant difference in outcomes for preterm birth, low birthweight or perinatal mortality.
- Another four systematic reviews examined the delivery of prenatal education using technology and found that these services had no significant improvement in outcomes among women with standard pregnancies, but may be effective for delivering specialized interventions for those with high-risk pregnancies.
- Finally, for the third question, we identified three systematic reviews that addressed providing culturally appropriate prenatal education, of which one identified four themes that immigrant women felt should be prioritized in the delivery of their prenatal care: 1) retaining their physical and sociocultural normality; 2) protecting both the mother and child during pregnancy; 3) having a safe childbirth; and 4) attaining positive motherhood.
- One systematic review conducted in the U.S. found that group prenatal care led to significant reductions in preterm birth, improved breastfeeding initiative and satisfaction with care among African-American and Latina women who have historically experienced disproportionately poor outcomes as compared to other population groups in the U.S., while the final review on Inuit prenatal services found no relevant studies.
- We did not find synthesized literature that addressed the impact of prenatal education on social connectedness or support, nor were we able to identify findings on the effectiveness of different providers delivering prenatal care.

QUESTIONS

- For which populations is prenatal education most effective for improving maternal, infant and dyad (e.g., mother and child) outcomes?
- What delivery methods are most acceptable and effective?
- What are optimal ways to provide culturally safe prenatal education?

WHY THE ISSUE IS IMPORTANT

Prenatal education has expanded significantly over the past two decades, from its initial conception as an opportunity to teach pain management in labour and preparation for birth in the hospital environment to including broader public-health principles of preparing women and their families for pregnancy, labour and birth, care of the newborn and the adjustments to life as a family.(1) It also provides an opportunity to assist women in detecting warning signs in pregnancy, build confidence in self-care, and can act as an opportunity for early intervention in high-risk pregnancies.(1)

Across Canada, prenatal education programs are commonly provided by public-health departments, hospitals, midwives, and private and community agencies.(1) Currently, public health, perinatal, child and family health services in British Columbia provide a range of perinatal, child and family health services that range from prenatal, postpartum and family health (between 8 weeks and 2 years). A basic package of services includes standardized pregnancy screening, health promotion and education, and access to select interventions when needed. Those who identify as vulnerable are offered an enhanced service which includes nursing assessment, health promotion and education, and more intensive follow-up as needed (e.g., referral to specialists). Many prenatal services in the province are directed at women experiencing vulnerabilities, and universal prenatal education provides an opportunity to address all expecting mothers in British Columbia and to equip them with common knowledge and a basic skill set to support their adjustment to parenthood. However, prenatal education is currently delivered across the province with different curricula, different formats, and with varying levels of connection to public health.

The Public Health Services Branch of the BC Ministry of Health is in the midst of revising its guiding document on perinatal, child and family public health services entitled *Health Start Initiative: Provincial Perinatal, Child and Family Public Health Services*, providing an opportunity to reconsider the content and delivery methods of prenatal education programs. Given this, the aim of this rapid response is to examine what is known about prenatal education in the literature and for whom and how it can be delivered to improve maternal, infant and dyad (e.g., mother and child) outcomes.

Box 1: Background to the rapid synthesis

This rapid synthesis mobilizes both global and local research evidence about a question submitted to the McMaster Health Forum's Rapid Response program. Whenever possible, the rapid synthesis summarizes research evidence drawn from systematic reviews of the research literature and occasionally from single research studies. A systematic review is a summary of studies addressing a clearly formulated question that uses systematic and explicit methods to identify, select and appraise research studies, and to synthesize data from the included studies. The rapid synthesis does not contain recommendations, which would have required the authors to make judgments based on their personal values and preferences.

Rapid syntheses can be requested in a three-, 10-, 30-, 60- or 90-business-day timeframe. An overview of what can be provided and what cannot be provided in each of these timelines is provided on the McMaster Health Forum's Rapid Response program webpage (www.mcmasterforum.org/find-evidence/rapid-response)

This rapid synthesis was prepared over a 30-business-day timeframe and involved four steps:

- 1) submission of a question from a policymaker or stakeholder (in this case, the Government of British Columbia);
- 2) identifying, selecting, appraising and synthesizing relevant research evidence about the question;
- 3) drafting the rapid synthesis in such a way as to present concisely and in accessible language the research evidence; and
- 4) finalizing the rapid synthesis based on the input of at least two merit reviewers.

WHAT WE FOUND

Question 1: For which populations is prenatal education most effective for improving maternal, infant and dyad outcomes?

We identified 22 systematic reviews that related to the effectiveness of prenatal education interventions for a range of sub-populations of women, including those experiencing low- and high-risk pregnancies. The literature focused on the effectiveness of high-risk pregnancies for several specific populations of women, including adolescents, and those with mental health and addiction issues, diabetes, intellectual disabilities, who are low-income and at risk of low-birthweight babies, and women who have sexually transmitted infections that may be passed onto their child.

Though unrelated to the effectiveness of interventions, one recent medium-quality review found that women reported using the internet to search for information about pregnancy, but only approximately 30% of these women reported speaking to a health professional about the information they sought.(2) The most searched topics include (in order of frequency): stages of birth; fetal development; nutrition in pregnancy; pregnancy complication; and antenatal care. These findings may point to subjects that could be targeted for prenatal education.(2)

Detailed findings on each of these reviews summarized in the narrative below are provided in Table 1 with further information available in Appendix A.

Effectiveness of prenatal education for women with low-risk pregnancies

Ten systematic reviews addressed interventions for women with low-risk pregnancies. Of these, four addressed maternal physical health outcomes. One older medium-quality systematic review found that pelvic-floor training before and after birth helped to reduce incontinence,(3) while the other three systematic reviews addressed dietary and physical activity interventions, finding that they significantly decreased gestational weight gain among women with normal body mass indexes.(4-6)

One older medium-quality review addressed maternal mental health outcomes and found that prenatal education was effective for improving the interaction between mother and baby and also improved maternal role attainment, self-confidence and self-esteem.(7)

Five systematic reviews addressed birth and parenting outcomes. One older low-quality review found that prenatal education helped mothers to identify true labour and reduced emergency-department admissions.(8) In this review, education focused on active identification of labour and self-diagnosing onset of labour. Mixed effects were found among three reviews that focused on breastfeeding education, with two reviews finding that it increased the uptake of breastfeeding in the short term, while another found no difference between mothers attending additional education on breastfeeding and those receiving a standard package of prenatal care.(9-11) One of the reviews found that involving fathers in breastfeeding classes had a positive effect on

Box 2: Identification, selection and synthesis of research evidence

We identified research evidence (systematic reviews and primary studies) by searching (in July 2019) Health Systems Evidence (www.healthsystemsevidence.org) and PubMed. In Health Systems Evidence, we used the information or education provision filter under consumer targeted strategy as well as maternal and child health under diseases. We combined these filters with a key word search for antenatal OR prenatal. In Health Evidence, we used filters under intervention/strategy for education/awareness and skill development/training, as well as filters under topic area for reproductive health and health families. These filters were combined with key words: prenatal OR antenatal.

The results from the searches were assessed by one reviewer for inclusion. A document was included if it fit within the scope of the questions posed for the rapid synthesis.

For each systematic review we included in the synthesis, we documented the focus of the review, key findings, last year the literature was searched (as an indicator of how recently it was conducted), methodological quality using the AMSTAR quality appraisal tool (see the Appendix for more detail), and the proportion of the included studies that were conducted in Canada. For primary research (if included), we documented the focus of the study, methods used, a description of the sample, the jurisdiction(s) studied, key features of the intervention, and key findings. We then used this extracted information to develop a synthesis of the key findings from the included reviews and primary studies.

women initiating breastfeeding.(11) This is consistent with another recent high-quality review which found that male participation in prenatal education had positive results on maternal- and infant-health outcomes.(12)

Effectiveness of prenatal education for women with high-risk pregnancies

Seven systematic reviews examined the effects of prenatal education for women who are vulnerable for or are already considered to have high-risk pregnancies. Sub-populations examined in the reviews include adolescents, those with mental health and addiction issues or intellectual disabilities, and those who are low-income and at risk of low-birthweight babies, as well as those with diabetes, and women who have sexually transmitted infections that may be passed onto their child. The reviews did not include findings related to the effects of prenatal education on preferred childbirth delivery method.

Mixed effects were found for low-birthweight and preterm-birth outcomes in three studies included in a recent medium-quality review on the effects of group prenatal care for adolescents.(13) Adolescents attending prenatal education classes were found to have increased compliance with appointments, increased adherence to recommendations and a reduction in depressive symptoms.(13)

No significant effect was found in one recent medium-quality review examining group prenatal care for those with diabetes.(13)

Inconclusive findings were reported in one older high-quality review for educational interventions directed at women with substance-use issues.(14) However, one medium-quality review found that providing a one-stop shop offering addiction treatment, maternal mental health services, trauma treatment, parenting education, life-skills training and nutrition education improved outcomes related to substance use and maternal mental health.(15) One recent high-quality review and one older high-quality review found that prenatal education and health-promotion messages reduced alcohol use and increased smoking cessation during pregnancy, however neither review found an association between the interventions and maternal, birth, or child-health outcomes.(16)

One recent high-quality review found that home-based education and training programs for pregnant women with intellectual disabilities improved their childcare skills and ability to identify dangers for their infants.(17)

One recent high-quality review found that providing women at risk of delivering low-birthweight babies with additional supports resulted in a significant reduction in caesarean sections and hospital admissions.(18) Types of additional support included one-on-one emotional support (e.g., counselling, acting as a confidante, helping to reduce stress and anxiety), instrumental support (e.g., home visits, telephone calls, home or transport help), or informational supports (e.g., appropriate use of social services, advice and health education).(18) Similarly, one recent high-quality review found that providing women who are living in low-income settings with group prenatal education reduced stressors and anxiety around pregnancy.(13)

Finally, one older medium-quality review found antenatal education programs provided in the first 27 weeks of pregnancy reduced the transmission of syphilis from mother to child.(19) The review included studies that examined women being tested or treated for syphilis before the third trimester and compared outcomes among this group to those studies that focused on women being tested or treated during the third trimester.(19) Screening and treatment earlier in the pregnancy were found to have an impact in general on the risk of all adverse outcomes for congenital syphilis.(19) Note that our searches identified a number of reviews related to prenatal education in the context of preventing mother-to-child transmission of HIV, but all were focused on low- and middle-income settings. Given that the focus of this review was on high-income country settings, we did not include these reviews.

Table 1. Key findings from the included literature

Outcome of interest	Key findings
Maternal physical-health outcomes	<ul style="list-style-type: none"> • One older high-quality review found no studies to include that focused on the effectiveness of interventions aimed at overcoming obesity in pregnant women.(20) • One older medium-quality review found pelvic-floor training before and after birth decreased incontinence, however there was significant variation in how this training was provided.(3) • One recent medium-quality and one older high-quality review examining dietary and lifestyle interventions for pregnant women with a normal body mass index (BMI) (interventions included exercise programs, educational training via written or oral sessions, and video recordings) significantly reduced gestational weight gain.(4; 5) <ul style="list-style-type: none"> ○ The older high-quality review found that dietary counselling and education sessions were more effective than the physical activity or mixed interventions.(5) • One older medium-quality review, including studies from both high and low-income settings, found nutrition education and counselling reduced the risk of anemia, increased gestational weight gain, and increased birthweight.(6)
Maternal mental health outcomes	<ul style="list-style-type: none"> • One older medium-quality review found that providing a one-stop setting for integrated perinatal services for women with substance-use issues (e.g., addiction treatment, maternal and mental health services, trauma treatment, parenting education and counselling, life skills training, and nutrition services) improved outcomes related to substance use and maternal mental health.(15) • One older high-quality review was inconclusive as to whether educational interventions to reduce alcohol use during pregnancy are effective, noting that many of the included studies relied on self-assessed reporting, reducing the confidence that could be placed in their findings.(14) • One study included in an older high-quality review found that pre-pregnancy health messages delivered through motivational interviewing lowered rates of consumption of alcohol, but found no significant difference between intervention and control groups for gestational age, birthweight, and maternal and perinatal deaths.(16) <ul style="list-style-type: none"> ○ These findings rely on one study and more research is needed to determine conclusive findings. Further, the review did not discuss whether outcomes of the intervention were sustained over the medium- or long-term.(16) • One older high-quality review and one older low-quality review examined both preventive interventions (e.g., antenatal education programs, music therapy and mentoring) and treatments (i.e., counselling, independent support workbooks, relaxation) to reduce prenatal distress and postnatal depression and found that employing treatment rather than preventive interventions were more effective among high-risk women (e.g., those with a personal history of depression, marriage difficulties or childhood difficulties).(21; 22) • One older medium-quality review found that individual prenatal-education and counselling interventions are effective in improving the interaction between mothers and babies, including better responsiveness for infant cues and improved maternal role attainment, mothers' self-confidence, and self-esteem.(7) <ul style="list-style-type: none"> ○ These outcomes were found in low-risk mothers when the intervention was used during the early post-partum period, however outcomes were only measured during the early infancy stage (one day to three months) limiting the generalization to the medium- or long-term.(7)

	<ul style="list-style-type: none"> • One recent medium-quality systematic review found group prenatal care was associated with a reduction in depressive symptoms among pregnant adolescents.(13)
<p>Birthing and parenting outcomes</p>	<ul style="list-style-type: none"> • One recent high-quality review found that home-based individual training programs focused on teaching infant and childcare skills to parents with intellectual disabilities improved their level of care for newborns and enables them to more efficiently identify dangers and what precautions should be taken.(17) • One recent high-quality review found that providing women at risk of delivering low-birthweight babies with additional supports (e.g., emotional supports, instrumental supports, or informational support) resulted in a significant reduction in caesarean sections and hospital admissions.(18) <ul style="list-style-type: none"> ○ Interventions were provided through a range of methods including home visits, during regular antenatal clinic visits, by telephone, or a combination of all or some of these.(18) • One older low-quality review found prenatal education that helped mothers to identify true labour resulted in a substantial drop in false-labour admissions (from 31% to 14%).(8) <ul style="list-style-type: none"> ○ Topics introduced during these educational sessions included active-labour identification and self-diagnosing onset of labour.(8) • One recent high-quality review found interventions that promoted breastfeeding (e.g., home visits, video or phone calls, guides, pamphlets and practical classes) as part of prenatal education were nearly twice as effective when compared to no intervention in promoting breastfeeding from 0-6 months.(10) <ul style="list-style-type: none"> ○ However, a second review (older and high-quality) found that compared to the standard prenatal education that women received, providing additional breastfeeding education sessions did not result in additional uptake of breastfeeding or reducing infections and pain.(9) • One older medium-quality review found that prenatal breastfeeding education was more effective than usual care in increasing short-term breastfeeding, however was not as effective as peer support or peer counselling.(11) <ul style="list-style-type: none"> ○ The review also found that fathers attending breastfeeding classes had a positive effect on women initiating breastfeeding.(11) • One recent high-quality review found that educational training classes for both parents may improve male participation and lead to positive maternal- and infant-health outcomes, however heterogeneity in the included studies limited conclusions.(12) <ul style="list-style-type: none"> ○ Educational training classes focused on care and nutrition, family planning, childbirth, and potential complications during birth.(12)
<p>Newborn outcomes</p>	<ul style="list-style-type: none"> • One older medium-quality review found antenatal educational programs provided in the first 27 weeks of pregnancy reduced the prevalence rate and odds of transmitting syphilis compared to when provided after 27 weeks or not at all.(19) <ul style="list-style-type: none"> ○ The same review found that women who sought antenatal care early were 2.24 times more likely to have a healthy infant than those who sought it later in their pregnancy.(19) • One recent high-quality review included two studies which found prenatal educational materials and meetings had positive effects on both mother and newborn.(23)

Question 2: What delivery methods are most acceptable and effective?

One recent medium-quality review produced an evidence map on prenatal education that found the most frequent modes of delivery include peer-support groups, telephone support, home visits, or a combination of these approaches.(24)

Seven systematic reviews compared in-person group prenatal education to in-person individual prenatal education and generally found no significant difference in outcomes for pre-term birth, low birthweight or perinatal mortality.(13; 25-30) One older medium-quality review found that pre-birth components of the education curriculum were more likely to be delivered in group format, whereas the reverse was true for interventions with an after-birth component, which tended to be delivered one-on-one.(30) The same review found that interventions held in a group format had larger effect sizes (as compared with one-on-one interventions) on parental health-promotion behaviours, but weaker effects on social development of the child.(30) Both services were well received by women, however one older high-quality review found somewhat higher rates of satisfaction from group care, but the results were barely detectable as statistically significant.(27) The review noted that the enhanced satisfaction stemmed from the additional support provided by peers being viewed as beneficial by expecting mothers.(27) The review did not provide additional details on what aspects contributed to the satisfaction ratings. Most studies reported group care to include eight to 12 other women and none of the reviews compared outcomes based on the type of provider. Despite the comparison of group-based or individually provided care, it should be noted that the two are not always interchangeable, with group-based care often centring on pregnancy, while individually provided care typically has a longer timeline after delivery, making it more suited to high-risk pregnancies.

Four systematic reviews examined the delivery of prenatal education using technology (e.g., apps, text messages, telephone and web-based interventions) and found that these services showed no significant improvement outcomes among women with low-risk pregnancies, but may be effective for delivering specialized interventions (e.g., tailored health messages, internet-delivered cognitive behavioural therapy and mindfulness techniques) for those with high-risk pregnancies.(31-34) In addition, one recent medium-quality review found that employing technology can be helpful in encouraging attendance at prenatal education sessions, for example by sending reminders via text message or to provide additional information to complement material from in-person sessions.(34)

One recent high-quality review examined how to expand prenatal services (including education), grouping the interventions into either community-based (i.e., media campaigns, education, financial incentives for taking part) or health-system based (i.e., home visits for pregnant women or providing equipment to clinics).(23) The review found that both approaches were beneficial and had an equal effect on expanding prenatal services.(23)

One recent high-quality review found the use of incentives such as cash, gift cards and gifts for the newborn encouraged continued attendance in prenatal visits, but had no effect on initiation of prenatal visits.(35) However, it should be noted that two of the five studies involved low-income populations where monetary incentives may be of more significance than in other areas.(35)

Table 2. Key findings from the literature on what methods are most acceptable and effective for the delivery of prenatal education

Method of delivery	Key findings
In person	<ul style="list-style-type: none"> • One recent high-quality review and four older reviews (two high quality and two medium quality) found no difference in the number of preterm births, low-weight births, or in perinatal mortality between education provided individually or in a group (eight to 12 women).(25-29) <ul style="list-style-type: none"> ○ However, the older high-quality review found that women had higher levels of satisfaction with group care, reporting that they received additional support from the participants.(27) ○ Education focused on infant care, nutrition, parenting techniques and exercises.(26) • One recent medium-quality review found that the added social support of peers provided in group therapy was viewed as a significant advantage by women classified as being high risk, particularly because of the additional time provided and the open question-and-answer time for the group.(13) • One older medium-quality review examined the effects of parental education in the prenatal and postnatal periods on parenting skills and found that these interventions are most effective when provided earlier and frequently, particularly within the first three to six months.(30) <ul style="list-style-type: none"> ○ In addition, the review found that one-on-one sessions were generally more effective than group settings, however group settings may be best for dispelling common misconceptions about pregnancy.(30) ○ Parental-education approaches in the review covered parenting skills, parental stress, health-promoting parental behaviours, child development, parental psychological health, and couple adjustment.(30)
Virtual or telephone	<ul style="list-style-type: none"> • One older medium-quality review found that text messaging with pregnant women may be an effective intervention to help limit smoking, control diabetes, increase medication adherence, and promote weight loss.(32) <ul style="list-style-type: none"> ○ Heterogeneity in the included studies reduced the ability to draw firm conclusions, however the review suggested the need to continuously vary the content and timing of text messages, include motivational messages, and avoid overly educational messages.(32) • One recent medium-quality systematic review found computer or web-based interventions (e.g., internet-delivered cognitive behavioural therapy, mindfulness principles, and stress management techniques) for mental health concerns during the prenatal period were effective in helping women to cope with depression and complicated grief, but had no effect on anxiety levels.(31) • One recent high-quality review found no significant outcomes from the use of a mobile-app intervention at the beginning of pregnancy to influence healthy maternal behaviours.(33) • One recent medium-quality review found mobile health (mHealth) interventions were effective at improving attendance for antenatal and postnatal care when used to remind them of upcoming sessions.(34)

Question 3: What are optimal ways to provide culturally safe prenatal education?

Finally, three systematic reviews examined providing culturally safe prenatal education.

One recent medium-quality review found that women who had immigrated from various countries all valued having a safe and positive pregnancy. In particular, these women prioritized four themes for prenatal services: 1) retaining their physical and socio-cultural normality; 2) protecting both the mother and child during pregnancy; 3) having a safe childbirth; and 4) attaining positive motherhood.⁽³⁶⁾ These themes can be used to develop prenatal-care guidelines and to inform healthcare professionals providing this education about the themes that matter to expecting mothers. Furthermore, the review found strong evidence that prenatal services for women from different cultural backgrounds can be improved by focusing on local practices, providing emotional support, and delivering timely information about the pregnancy and the health system.⁽³⁶⁾

One recent medium-quality review conducted in the U.S. found that group prenatal care led to significant reductions in preterm birth, improved breastfeeding initiative and satisfaction with care among African-American and Latina women who have historically experienced disproportionately poor outcomes as compared to other population groups in the U.S.⁽¹³⁾ For these populations, group-based education was found to be more effective than individually provided services.⁽¹³⁾

Finally, one recently published low-quality review examined literature and policies related to prenatal services for Inuit residents of Nunavut. Unfortunately, the review was unable to identify any studies that met the criteria to be included in the review.⁽³⁷⁾

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APPENDICES

The following tables provide detailed information about the systematic reviews and primary studies identified in the rapid synthesis. The ensuing information was extracted from the following sources:

- systematic reviews - the focus of the review, key findings, last year the literature was searched, and the proportion of studies conducted in Canada; and
- primary studies (in this case, economic evaluations and costing studies) - the focus of the study, methods used, study sample, jurisdiction studied, key features of the intervention and the study findings (based on the outcomes reported in the study).

For the appendix table providing details about the systematic reviews, the fourth column presents a rating of the overall quality of each review. The quality of each review has been assessed using AMSTAR (A MeaSurement Tool to Assess Reviews), which rates overall quality on a scale of 0 to 11, where 11/11 represents a review of the highest quality. It is important to note that the AMSTAR tool was developed to assess reviews focused on clinical interventions, so not all criteria apply to systematic reviews pertaining to delivery, financial or governance arrangements within health systems. Where the denominator is not 11, an aspect of the tool was considered not relevant by the raters. In comparing ratings, it is therefore important to keep both parts of the score (i.e., the numerator and denominator) in mind. For example, a review that scores 8/8 is generally of comparable quality to a review scoring 11/11; both ratings are considered “high scores.” A high score signals that readers of the review can have a high level of confidence in its findings. A low score, on the other hand, does not mean that the review should be discarded, merely that less confidence can be placed in its findings and that the review needs to be examined closely to identify its limitations. (Lewin S, Oxman AD, Lavis JN, Fretheim A. SUPPORT Tools for evidence-informed health Policymaking (STP): 8. Deciding how much confidence to place in a systematic review. *Health Research Policy and Systems* 2009; 7 (Suppl1):S8).

All of the information provided in the appendix tables was taken into account by the authors in describing the findings in the rapid synthesis.

Appendix 1. Summary of findings from systematic reviews about populations for which prenatal education is effective

Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
Effectiveness of integrated programs (including prenatal education) on parenting outcomes for mothers with substance abuse issues (15)	<p>A systematic review of 31 studies examined the effectiveness of integrated programs (including prenatal education) on parenting outcomes for mothers with substance-abuse issues.</p> <p>Integrated services are services that are provided in a one-stop setting for mothers that include on-site pregnancy-, parenting-, or child-related services with addiction services. These places provide services related to addiction treatment, maternal and mental health services, trauma treatment, parenting education and counseling, life-skills training, prenatal education, medical and nutrition services, education and employment assistance, child care, children’s services, and aftercare.</p> <p>Concerning prenatal education, one systematic review found that prenatal care or child-care services were associated with improved outcomes when it comes to substance use, mental health, birth outcomes, employment and health.</p> <p>The main limitation of this review was the low quality of the included studies as there were very few studies that examined the parenting outcomes. In addition, the sample sizes were small and not all studies examined the same outcomes.</p>	2011	6/9 (AMSTAR rating from McMaster Health Forum)	Not reported
Examining the effectiveness of psychological and educational interventions to reduce alcohol consumption in women who are pregnant or planning pregnancy (14)	<p>A systematic review of four randomized controlled trial studies examining the effectiveness of psychological and educational interventions to reduce alcohol consumption in women who are pregnant or planning pregnancy.</p> <p>Alcohol consumption during pregnancy has proven to have negative effects on the health of the neonate. The psychological and/or educational interventions took place during pregnancy or 12 months before conception for women planning pregnancy. The outcome of interest was either complete abstinence or reduction in alcohol consumption.</p> <p>The review provided little evidence about the effects of educational and psychological interventions aiming to reduce alcohol consumption in pregnancy, and on the effect of such interventions on the health of women and babies.</p> <p>Alcohol consumption during pregnancy is an unacceptable habit in many cultures and since the method of data collection was all based on self-reporting, the authors concluded that this is a limitation affecting the reliability of the results.</p>	2007	9/10 (AMSTAR rating from McMaster Health Forum)	0/4
Examining effectiveness of parent-training interventions for parents with intellectual disabilities designed to support parenting (17)	<p>The systematic review examined the effectiveness of training interventions for parents with intellectual disabilities designed to support parenting.</p> <p>Children of parents with intellectual disabilities may be at increased risk of neglectful care, which could lead to multiple health, developmental and behavioural problems.</p> <p>The review included four randomized controlled trials, with one study in each of Canada, Australia, the Netherlands and the U.S. The studies included 192 parents.</p>	2017	9/10 (AMSTAR rating from McMaster Health Forum)	1/4

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	<p>The interventions included home-based individual training programs focusing on teaching infant and child-care skills, maternal-child interactions, maternal social skills, and how to manage home dangers and accidents. One study had a group intervention aimed at improving the parent-child interaction.</p> <p>There is evidence that parental education can improve the level of care provided by parents with intellectual disability. Parents could identify dangers and precautions more efficiently. However, the differences among the groups were low and the evidence was of low quality.</p> <p>The primary limitation was the low quality of the included studies as the GRADE quality assessment varied from very low to moderate across the studies.</p>			
Examining the effects of ‘additional social support’ programs for pregnant women at high risk of delivering premature or low-birthweight babies (18)	<p>This is the second update to a review originally published in 2003. It is comprised of 25 studies that aim to investigate the effects of implementing ‘additional social support’ programs for pregnant women who are at high risk of delivering premature or low-birthweight (less than 2,500g) babies. Among the support programs included in the studies from the review, 21 were offered by healthcare professionals, while the remaining four were administered by a trained layperson.</p> <p>There was a combination of support interventions offered among the targeted studies – with 10 involving emotional support (e.g., counselling to reduce anxiety); 22 studies centred around instrumental/tangible support (e.g., home visits); and nine studies pertaining to informational support (e.g., stress management). While the authors excluded studies that analyzed solely on education, it is important to note that health education was categorized under informational support.</p> <p>As compared with traditional routine care, the reviewers suggest that upon the addition of social-support programs, pregnant women may see a decrease in the number of: low-birthweight babies, preterm births, caesarean sections and hospital admissions. Of the four noted outcomes, a more significant change was reported in the latter two.</p>	2018	11/11 (AMSTAR rating from McMaster Health Forum)	0/25
Investigating the effects of prenatal education on childbirth and labour (8)	<p>This literature review examines the effects of prenatal education on childbirth. Of the 10 targeted articles included in the review, four studies included educational training that helps mothers identify true labour.</p> <p>A substantial drop was noted in the number of false-labour admissions. In one study, when participants attended more than five classes, only 14% of attendees were reportedly admitted due to false labour, as opposed to 31% of non-attendees.</p> <p>Recurring themes introduced during the various sessions included active labour identification and self-diagnosing onset of labour.</p> <p>Overall, the authors of this review suggest that attending antenatal education programs may: induce fewer false-labour admissions; increase partner involvement; and help reduce anxiety. In contrast, the authors have also noted that greater attendance in these sessions may increase the likelihood of labour induction and epidural use. Despite the conclusions that emerged from the data set, the authors stress the importance of continuing research in this area to better understand the role educational interventions can play in childbirth.</p>	2012	2/10 (AMSTAR rating from the McMaster Health Forum)	Not reported

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<p>Examining the effectiveness of interventions aimed at overcoming obesity in pregnant women (20)</p>	<p>The focus of this systematic review is to determine the effectiveness of interventions aimed at overcoming obesity in pregnant women.</p> <p>Currently, there are no studies that matched with the specific search criteria in this update. Thus, the overall findings of the review are inconclusive.</p> <p>The authors of the review call upon the designing of randomized trials and observational cohort studies to better understand the benefits and risks of weight loss in pregnant women.</p>	<p>2012</p>	<p>8/11 (AMSTAR rating from the McMaster Health Forum)</p>	<p>0/0</p>
<p>Evaluating the effects of prenatal education on decreasing maternal distress (21)</p>	<p>This is a combination of both a systematic review and meta-analysis. They are both aimed at examining the effects of using prenatal education to cope with maternal distress.</p> <p>It is important to note that in the review and analysis, the term ‘maternal distress’ has been coined to include psychological problems during the perinatal period, including depression, anxiety and stress.</p> <p>In the 10 targeted trials, there were six preventive and four treatment interventions reported. The preventive interventions remained consistent among the studies and included antenatal education programs, music therapy and mentoring. Whereas, with the treatment interventions (i.e., relaxation and independent support workbook), there exists significant heterogeneity among the studies.</p> <p>The findings of the review suggest that employing preventive interventions had little to no effect on decreasing maternal distress. However, a decrease in maternal distress can be noted when the treatment interventions have been implemented.</p>	<p>2011</p>	<p>9/11 (AMSTAR rating from the McMaster Health Forum)</p>	<p>0/10</p>
<p>Examining the role of pelvic-floor muscle training during and after pregnancy in preventing and treating urinary incontinence (3)</p>	<p>This systematic review includes 22 studies that examine the role of pelvic-floor muscle training (PFMT) during and after pregnancy in preventing and treating urinary incontinence (UI).</p> <p>The findings of the review have indicated pelvic-floor muscle training (when administered under supervision) to be effective in preventing and treating urinary incontinence. Noticeable decreases in the symptoms, frequency and percentage of pregnant women contracting UI were observed when these exercises were done.</p> <p>However, it is important to note that there was significant heterogeneity among the selected studies as it relates to the inclusion criteria, populations studied, and outcomes measured.</p> <p>The authors suggest adopting and implementing appropriate techniques for pelvic-floor muscle training in future exercise guidelines.</p>	<p>2012</p>	<p>6/10 (AMSTAR rating from the McMaster Health Forum)</p>	<p>Not reported</p>
<p>Providing an overview on the existing literature pertaining to community-based maternal health interventions in high-income countries (24)</p>	<p>This systematic map of research is produced in conjunction with the Multilateral Association for Studying health inequalities and enhancing north-south and south-south COoperaTion (MASCOT) and is aimed at providing an overview on the existing literature pertaining to community-based maternal health interventions in high-income countries. It is not intended to analyze the data, but rather highlight the available studies that exist from the given search criteria.</p> <p>It primarily categorizes its evidence under the following criteria: country focus; topic; and intervention type.</p>	<p>2013</p>	<p>4/10 (AMSTAR rating from McMaster Health Forum)</p>	<p>Not reported</p>

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	<p>In the 119 targeted studies, interventions pertaining to breastfeeding, postnatal depression, parental support, parenting and antenatal education were the most frequently analyzed.</p> <p>The majority of the interventions were delivered through peer support groups, telephone support, home visits, or by a combination of the three.</p> <p>In addition, 39 studies involved interventions among selected population groups (e.g. adolescents and ethnic minorities)</p> <p>The reviewers recommend building upon this systematic map and examining the effects of these interventions to allow policymakers to implement necessary changes in the future.</p>			
Determining the effects of dietary and lifestyle interventions for pregnant women with a normal body mass index (4)	<p>The review assessed a total of 12 studies in order to examine the effects of dietary and lifestyle interventions for pregnant women with a normal body mass index (BMI).</p> <p>Examples of the interventions offered include exercise programs, educational trainings via written or oral sessions, and video recordings.</p> <p>Of the 12 studies, nine involved in-person counselling with a healthcare professional.</p> <p>Four studies noted a significant decrease in the gestational weight gain of those who participated and were given the intervention.</p> <p>A few limitations were reported, including significant discrepancies between the interventions among the studies, and small sample sizes.</p>	2015	7/11 (AMSTAR rating from McMaster Health Forum)	Not reported
Evaluating the role educational interventions can play in the promotion of breastfeeding (10)	<p>This review is comprised of 11 studies and seeks to determine the impact educational interventions can have on the promotion of breastfeeding.</p> <p>The following are five key support systems in place for appropriately promoting breastfeeding: informative; emotional; face-to-face; instructional; and self-support.</p> <p>The educational interventions examined in the studies include but are not limited to: home visits; video or phone calls; guides; pamphlets; songs; text-messages; and practical classes.</p> <p>The findings of the review indicate that five of the 12 interventions were nearly twice as effective in promoting breastfeeding until the age of six months.</p> <p>While only informative support was included in each of the studies, the reviewers suggest developing new techniques that can ensure all five support systems are available.</p>	2014	9/11 (AMSTAR rating from McMaster Health Forum)	0/11

Table 2. Summary of findings from systematic reviews about delivery methods

Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
Examining the effectiveness of dietary and lifestyle interventions in pregnancy on maternal and fetal weight (5)	<p>A systematic review included 44 randomized controlled trials examining the effectiveness of dietary and lifestyle interventions in pregnancy on maternal and fetal weight.</p> <p>The interventions in some of the studies included counselling sessions and educational sessions highlighting the potential benefit of diet and physical activity.</p> <p>The main finding was that dietary and lifestyle interventions in pregnancy can reduce maternal gestational weight gain, with no risk to fetal health or gestational age, and improve outcomes for both mother and baby. The results from dietary intervention were better than the physical-activity intervention and the mixed intervention that combined the dietary with physical activity and education.</p>	2012	9/11 (AMSTAR rating from McMaster Health Forum)	Not reported
To assess the effectiveness of antenatal breastfeeding (BF) education for increasing BF initiation and duration (9)	<p>A systematic review of 24 studies (randomized controlled trials and cluster randomized trials) examined the effect of antenatal education on breastfeeding in increasing breastfeeding initiation and duration.</p> <p>The main finding was the lack of evidence of any effect of breastfeeding-education sessions on breastfeeding initiation or duration in high-income countries compared to the standard/routine antenatal care that women receive (which might include some kind of BF education, as was the case in 13 out of the 20 RCTs).</p> <p>Secondary outcomes that include breast infections or pain did not have any relevant differences among the compared groups.</p> <p>On the other hand, there is low-quality evidence that the concentrated antenatal educational materials and sessions could be of greater benefit in low-and middle-income countries.</p>	2011	9/9 (AMSTAR rating from McMaster Health Forum)	2/24
To assess the effectiveness of incentives as a tool to increase utilization of timely prenatal care among women (35)	<p>A systematic review of five RCTs examined the effects of incentives to increase women's utilization of prenatal care. The incentives examined included cash, gift cards, or gifts for the newborn.</p> <p>The recommended theme for prenatal care is for it to start early (before 16 weeks of gestational age) with a sufficient number of visits. The number of visits is determined by the doctor (typically every four weeks, until the seventh month of pregnancy, then it becomes every two weeks) to monitor various parameters.</p> <p>The authors found incentives to be more effective in making prenatal visits more frequent, but not for initiation. In other words, women receiving incentives and those who did not receive incentives had the same risk ratio of initiating a first prenatal-care visit.</p> <p>On the other hand, those who got the incentive were more likely to repeat the prenatal-care visit regularly and were also more likely to have a caesarean-section delivery.</p>	2015	10/11 (AMSTAR rating from McMaster Health Forum)	0/42

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Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
	<p>One of the main limitations of the review was generalizability as three out of the five studies were conducted in poor rural areas, where monetary incentives could be of more significance than other areas.</p> <p>The review did not provide any data on the health outcomes of the mothers or the neonates within the trials, but rather only on the frequency of the prenatal-care visits and the type of delivery. No data were found on whether these incentives would decrease the risk of preterm births or perinatal mortalities.</p>			
<p>To examine the effectiveness of the interventions initiated through primary care to promote and support breastfeeding (11)</p>	<p>A systematic review of 33 studies examined interventions promoting and supporting breastfeeding among women.</p> <p>The study examined several interventions including prenatal education, which was found more effective than usual care, but less effective than peer support or peer counselling. In fact, the study found that one of the main obstacles for the initiation and continuity of breastfeeding was lack of prenatal education.</p> <p>The intervention of prenatal breastfeeding education was found to be more effective in increasing short-term breastfeeding than usual care, and just as effective as combined interventions (prenatal, perinatal, and postnatal breastfeeding education). But the combined intervention was more effective in the long term. Thus, a combined intervention would prolong the breastfeeding duration.</p> <p>The study also found that fathers attending prenatal breastfeeding classes had a positive effect on women initiating breastfeeding.</p> <p>The study included trials from high-, middle- and low-income countries, which contributes to its high level of generalizability.</p>	<p>2011</p>	<p>9/9 (AMSTAR rating from McMaster Health Forum)</p>	<p>2/17</p>
<p>Examining the effectiveness of Nutrition Education and Counselling (NEC) on maternal, neonatal and infant health outcomes (6)</p>	<p>A systematic review of 34 studies, with 11 studies conducted in LMICs examined the effects of Nutrition Education and Counselling (NEC) on maternal-, neonatal- and infant-health outcomes.</p> <p>The interventions were divided into three categories: NEC exclusively, NEC combined with other health messages, and NEC combined with nutrition support.</p> <p>The study found that there is a positive effect for NEC on maternal health as it can reduce the risk of anemia, increase gestational weight gain, and increase birthweight.</p> <p>In general, the inclusion of nutrition support (e.g., food baskets or meals) in addition to the NEC was most effective in high-income countries in reducing the risk of anemia, and increasing gestational weight and birthweight.</p> <p>The review stated that the quality of the included studies was generally low.</p>	<p>2015</p>	<p>10/11 (AMSTAR rating from McMaster Health Forum)</p>	<p>0/5</p>
<p>Focus: examine the effectiveness of routine pre-pregnancy health</p>	<p>A systematic review of four trials including 2,300 women examined pre-pregnancy health messages to improve pregnancy outcomes for the mother and the neonate.</p>	<p>2009</p>	<p>10/11 (AMSTAR rating from)</p>	<p>0/4</p>

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Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
promotion for improving pregnancy outcomes (16)	<p>The behavioural changes for the mothers were significantly positive, which included lower rates of smoking and consumption of alcohol. Other outcomes, including gestational age, birthweight, and maternal and perinatal deaths, had no significant difference between the intervention and control groups.</p> <p>One study reported, paradoxically, more negative outcomes in the intervention group. The authors of this study that was conducted in Australia proposed the theory of linking the negative outcomes to pre-pregnancy health messages with stress, or that the mothers chose to deliver their babies preterm in fear of miscarriage.</p> <p>The authors of the review report the presence of risk of bias in the studies they included in the review, missing data, and low-quality evidence.</p>		McMaster Health Forum)	
To examine the effectiveness of mobile-app interventions during pregnancy on influencing healthy maternal behaviour and improving perinatal health outcomes (16; 33)	<p>A systematic review of four randomized controlled trials examined the effectiveness of mobile-app interventions during pregnancy on influencing healthy maternal behaviour and improving perinatal-health outcomes. The target population of these studies was women in the early stages of their pregnancy.</p> <p>The interventions were mobile applications designed specifically for these studies, not applications that are generally available for purchase on mobile-application stores, despite the presence of plenty of applications that serve the purpose of assisting mothers during pregnancies.</p> <p>All the reported outcomes of change in maternal behaviour (e.g., more exercise or a healthier lifestyle) were not statistically significant between the intervention and control groups.</p> <p>The authors recommended conducting follow-up qualitative research to examine the experiences of the mothers involved in these trials.</p>	2017	9/10 (AMSTAR rating from McMaster Health Forum)	0/4
Examining the effects of parenting education and parenting-focused interventions on new and expecting parents (30)	<p>A meta-analysis of 142 papers examined the effects of parental education in the prenatal and postnatal periods on parenting skills.</p> <p>The interventions in the review started six months before delivery and continued six months after birth. This is the period with major stress on the parents, and when problems concerning parenting usually begin to arise. The authors concluded that the earlier the intervention, the better the outcomes within the three-to-six-months period. More than this period would be favourable only within families with complex problems.</p> <p>The authors stated that more sessions of parental education are more effective up to a limit, and beyond that number more sessions would not be effective. In addition, one-on-one sessions have shown to be more effective than group sessions in most circumstances. Group sessions are favourable only in distributing general health-promotion messages.</p> <p>The outcomes that the review reports include parenting skills, child abuse/neglect, parental stress, health-promoting parental behaviour, child development, parental psychological health, and couple</p>	2009	5/11 (AMSTAR rating from McMaster Health Forum)	12/142

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Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
	<p>adjustment. All these outcomes have shown positive changes with the interventions, even though some changes in outcomes were not statistically significant.</p> <p>The authors state that parental education would not solve all parenting problems, but they add that it is a useful and an effective intervention to enhance parental skills, and these sessions should be accessible to all new and expecting parents.</p>			
<p>To examine the different effects of group antenatal care versus one-to-one care on outcomes for women and their babies (27)</p>	<p>This review included two randomized controlled trials examining the effects of group antenatal care versus conventional individual prenatal care on psychosocial, physiological, and birth outcomes for women and their babies.</p> <p>The main finding of this review is the absence of any statistically significant difference between the two interventions. Primary outcomes included incidence of preterm birth, mean gestational age, low birthweight, maternal and perinatal deaths, and breastfeeding initiation.</p> <p>In one study, women reported higher satisfaction with group care. The authors assume this was caused by the support women give each other in group care and the shared information among participants.</p> <p>The two studies were conducted in the U.S., limiting the generalizability of the review.</p>	<p>2017</p>	<p>9/10 (AMSTAR rating from McMaster Health Forum)</p>	<p>0/4</p>
<p>To review different interventions that help new mothers transition into their mothering roles (7)</p>	<p>An integrative review of 23 studies was conducted to examine different interventions that develop mothering skills for new mothers.</p> <p>The review suggested five main interventions for developing mothering skills: individual prenatal and postnatal education and support; group programs; mother-infant contact; nurse-conducted home visits; and multi-component programs.</p> <p>Prenatal education was most effective in improving the interaction between mothers and their babies. The improvement included better responsiveness to infant cues, contingent interaction, and maternal responsiveness to feeding distress.</p> <p>Individual prenatal education intervention improved maternal role attainment, mothers' self-confidence and self-esteem.</p> <p>Combined with other interventions, the authors conclude that prenatal and postpartum education are effective in helping new mothers to transition into the mothering role.</p>	<p>2009</p>	<p>5/11 (AMSTAR rating from McMaster Health Forum)</p>	<p>12/142</p>
<p>To examine the effectiveness of prenatal interventions for the reduction of maternal distress during pregnancy and for up to a year after delivery (21)</p>	<p>A systematic review of 10 randomized controlled trials examined different prenatal interventions (including prenatal education) on the reduction of maternal distress during and following pregnancies.</p> <p>The main focus was not prenatal education, but the authors discuss its effectiveness as one of the methods of prevention of maternal distress.</p> <p>The authors conclude that preventive measures (including prenatal education) do not help with maternal-distress reduction or prevention when provided to all pregnant women. On the other hand,</p>	<p>2017</p>	<p>9/10 (AMSTAR rating from McMaster Health Forum)</p>	<p>0/4</p>

Examining the Effects of Prenatal Education

Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
	treatment interventions (e.g., mindfulness, relaxation, acupuncture, etc.) were effective in reducing maternal distress for women who already suffer from distress or those who are predisposed to distress during pregnancies and after delivery.			
The primary objective of this review is to determine if providing group antenatal care is more effective than individual antenatal care (25)	<p>This systematic review consists of four studies all aimed towards understanding the effects of group antenatal care for both mothers and their infants on the following outcomes: psychosocial; physiological; labour; and birth.</p> <p>The reviewers have noted that there is no significant difference between the two groups when it comes to the number of preterm births, low-birthweight babies, or perinatal mortality. In addition, it is reported that the satisfaction levels were comparable in both the groups.</p> <p>The review suggests that group prenatal care is an appropriate and suitable form of antenatal care, but still needs to be researched further to fully understand its total benefits.</p> <p>It is important to recognize that while these findings have been reported, there remain a few limitations that must be noted: 1) significant heterogeneity among the studies; and 2) limited number of available studies, resulting in most of the analyses having to come from a single study.</p>	2014	9/11 (AMSTAR rating from McMaster Health Forum)	0/4
Examine the pregnancy outcomes and satisfaction levels for expecting mothers registered in group prenatal care (26)	<p>The primary focus of this systematic review is to examine the pregnancy outcomes and satisfaction levels for expecting mothers registered in group prenatal-care programs.</p> <p>Nine of the selected studies utilized the ‘Centering Pregnancy’ prenatal care program. This program is comprised of a support group of eight to 12 expectant mothers who attend various sessions together. Prominent themes during the classes include: infant care; nutrition; parenting techniques; and exercise.</p> <p>The findings of the review suggest that group prenatal care is comparable, if not more effective, than traditional antenatal care. In 11 of the 12 included studies, women participating in group antenatal care reported high satisfaction and observed: a decrease in the number of preterm births; enhanced prenatal education; and increased birthweight.</p> <p>In one study, it was noted that babies born with mothers registered in the group care weighed approximately 407.9g more than the newborns whose mothers were enrolled in individual antenatal care.</p> <p>Among the limited studies, the vast majority involved African-American women, thus the authors suggest continuing to research this field in order to fully understand the benefits prenatal care can offer various populations.</p>	2011	4/10 (AMSTAR rating from the McMaster Health Forum)	0/12
Examining the use of text messaging as it relates to maternal and infant health (32)	<p>This systematic review includes 48 articles that focus on examining the role of texting messaging in promoting maternal and infant health.</p> <p>Of the 48 included studies, three studies pertaining to implementing text-messaging for pregnancy-education programs were analyzed. In one of the studies, it was reported that scheduled reminders increased attendance for upcoming appointments.</p>	2012	7/10 (AMSTAR rating from McMaster Health Forum)	Not reported

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Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
	<p>The researchers suggest that while these interventions may be successful, there are still certain criteria to be followed, such as: continuously varying the content and delivery time; comprising the texts with motivational messages; and avoiding educational texts.</p> <p>Although there exists large heterogeneity among the limited studies included in the review, the reviewers noted that text messaging can serve as an effective tool for pregnant women to help limit smoking, control diabetes, increase medication adherence and promote weight loss.</p> <p>The authors recommend to continue investigating the study of text messaging as an appropriate intervention means for promoting both maternal and infant health.</p>			
<p>Assessing the efficacy and characteristics of available computer and web-based antenatal education interventions (31)</p>	<p>The main focus of this systematic review is to provide an overview on the available computer and web-based antenatal education interventions forms – with a primary emphasis on assessing the efficacy and characteristics of interventions regarding mental health issues during the perinatal period.</p> <p>In the 11 included studies, nine intervention techniques were reported – seven were web-based and the remaining two were computer-based. A variety of educational trainings were employed, including cognitive behavioural therapy, biofeedback, mindfulness principles and stress-management techniques.</p> <p>In addition, six of the studies also included the use of therapy sessions with a qualified professional via email, phone, or online.</p> <p>Overall, the findings of the review suggest that the use of computer or web-based interventions may be effective in dealing with maternal mental health issues – specifically depression and complicated grief. In contrast, the study of these interventions revealed no significant effect when treating anxiety.</p> <p>While the reviewers have reported several findings, they also acknowledge the existence of significant heterogeneity between the studies, which includes but is not limited to the intervention type, method and study design used. The authors urge continuing future research in order to overcome the gap in the available evidence base.</p>	<p>2014</p>	<p>6/9 (AMSTAR rating from McMaster Health Forum)</p>	<p>0/9</p>



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