

This is the peer reviewed version of the following article: Megregian M, Emeis C, Nieuwenhuijze M. The impact of shared decision making in perinatal care, a scoping review. Journal of Midwifery and Women's Health 2020;10.1111/jmwh.13128, which has been published in final form at <https://doi.org/10.1111/jmwh.13128>. This article may be used for non-commercial purposes in accordance with Wiley Terms and Conditions for Self-Archiving.

The Impact of Shared Decision-Making in Perinatal Care: A Scoping Review

Michele Megregian¹, CNM, MSN,  Cathy Emeis¹, CNM, PhD, Marianne Nieuwenhuijze², PhD, MPH, RM

¹ School of Nursing, Oregon Health and Science University, Portland, Oregon

² Research Centre for Midwifery Science, Academie Verloskunde Maastricht, Zuyd University, Maastricht, The Netherlands

Introduction: Shared decision-making is considered to be a key aspect of woman-centered care and a strategy to improve communication, respect, and satisfaction. This scoping review identified studies that used a shared decision-making support strategy as the primary intervention in the context of perinatal care.

Methods: A literature search of PubMed, CINAHL, Cochrane Library, PsycINFO, and SCOPUS databases was completed for English-language studies conducted from January 2000 through November 2019 that examined the impact of a shared decision-making support strategy on a perinatal decision (such as choice of mode of birth after prior cesarean birth). Studies that only examined the use of a decision aid were excluded. Nine studies met inclusion criteria and were examined for the nature of the shared decision-making intervention as well as outcome measures such as decisional evaluation, including decisional conflict, decisional regret, and certainty.

Results: The 9 included studies were heterogeneous with regard to shared decision-making interventions and measured outcomes and were performed in different countries and in a variety of perinatal situations, such as women facing the choice of mode of birth after prior cesarean birth. The impact of a shared decision-making intervention on women's perception of shared decision-making and on their experiences of the decision-making process were mixed. There may be a decrease in decisional conflict and regret related to feeling informed, but no change in decisional certainty.

Discussion: Despite the call to increase the use of shared decision-making in perinatal care, there are few studies that have examined the effects of a shared decision-making support strategy. Further studies that include antepartum and intrapartum settings, which include common perinatal decisions such as induction of labor, are needed. In addition, clear guidance and strategies for successfully integrating shared decision-making and practice recommendations would help women and health care providers navigate these complex decisions.

Keywords: shared decision-making, pregnancy, decision support techniques, patient-centered communication

Introduction

Patient-centered care is an approach to health care that uses a holistic framework to address a person's health and well-being and has been linked to improved patient satisfaction, provider-patient communication, and health outcomes.¹ Although variation in how patient-centered care is defined and measured remains a potential barrier to effective implementation, patient-centered care highlights the importance of effective provider-patient communication as well as the pursuit of harmony between an individual's values and the proposed health intervention.^{2,3} Shared decision-making is a key aspect of patient-centered care and a strategy to improve communication, respect, and satisfaction.⁴

Shared decision-making is a collaborative process in which a health care provider and patient engage with one another to make health care decisions, using respectful communication and basing their decisions on the best available evidence and the patient's preferences, values, and goals.⁵ The shared decision-making process attempts to balance the principles of beneficence and autonomy through the clear and thorough exchange of information and the exploration and clarification of the patient's values and their understanding of risk.⁶ Effective and respectful communication has been linked to women's satisfaction with their perinatal care and experience of childbirth.^{3,7} Recent articles describing the mistreatment of women in childbirth as a global phenomenon emphasize the need for improved understanding of the dynamic process of shared decision-making, communication, risk perception, and informed consent.^{8,9} In addition, lack of shared decision-making has also been linked to health care disparities in the United States.¹⁰ For example, Attanasio et al examined women's perceptions of shared decision-making regarding obstetric procedures during labor in a cohort of women who gave birth in Pennsylvania (N 3006). This study found that women who were from racial or ethnic minority groups, who were less educated, or who lacked private insurance reported lower levels of shared decision-making.¹⁰

Consistent implementation of and engagement in the shared decision-making process in perinatal care has been identified as critical to improved perinatal outcomes and is considered an essential component to high-quality perinatal care.^{11,12} Shared decision-making has been included in policy initiatives that aim to promote a meaningful partnership with women, to promote physiologic birth, and to reduce primary cesarean births.^{13,14} Perinatal guidelines and studies, including randomized controlled trials, now call upon intrapartum care providers to integrate research findings into a shared decision-making framework when discussing such decisions as induction of labor,¹⁵ birth options in the setting of late-preterm preeclampsia,¹⁶ and unknown group B streptococcus colonization status.¹⁷ Systematic reviews have examined the effect of decision aids alone on outcomes such as treatment adherence and decision evaluation.¹⁸ However, a shared decision-making process is, or should be, more than just the provision of a decision aid. Despite current encouragement to adopt shared decision-making, there is limited evidence regarding the effect of shared decision-making on treatment adherence, clinical outcomes, or the experience of decision-making for both women and health care providers in the perinatal context. The aim of this scoping review was to examine the range of current research in perinatal care on the potential impact of shared decision-making, to summarize the findings when a shared decision-making support strategy is implemented, and to identify gaps in the research.¹⁹

Quick Points

- Implementation of a shared decision-making strategy may decrease women's perceptions of decisional conflict. The communication of accurate, evidence-based information has the potential to decrease decisional conflict.
- Shared decision-making strategies may have less of an impact on women's feelings of certainty in their decision.
- Midwives have an opportunity to contribute to further research on the impact of a shared decision-making strategy and to the integration of shared decision-making and evidence-based clinical guidelines.

Methods

A scoping review is a rigorous method used to evaluate the extent of the evidence about a particular subject.²⁰ Whereas a systematic review seeks to synthesize the evidence to answer a specific clinical question, the breadth of a scoping review allows an examination of the range of evidence and identification of research gaps.²⁰ In addition, a scoping review offers the opportunity to determine if a full systematic review would be appropriate.^{19,21} For this scoping review, a literature search procedure was performed, and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for scoping reviews were addressed.^{20,22} Search terms were formulated based on the Population Intervention Comparison Outcome framework.²¹ The literature search was conducted between September and November 2019 using the databases PubMed, SCOPUS, Cochrane Library, PsycINFO, and CINAHL. Search terms included *maternity care*, *pregnancy*, *shared decision-making*, and *informed choice* in combination. The final search was limited to articles published between January 2000 and November 2019, as a preliminary search demonstrated that there were few studies published on this topic prior to 2000.

Inclusion criteria included articles presenting outcomes of original quantitative, qualitative, and mixed methods studies reporting on the use of shared decision-making strategies as an intervention for either women and/or maternity care providers. Exclusion criteria comprised studies published in a non-English language, studies published prior to 2000, studies that evaluated a decision aid alone, and studies that described preferences or experiences of shared decision-making but did not include shared decision-making as the primary intervention (Table 1). Review articles, opinion pieces, protocol descriptions, and quality improvement process articles were excluded, although their reference lists were reviewed for additional potential studies.

Table 1. Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
English language	Non-English language
Quantitative, mixed methods, or qualitative research	Reviews, opinions, quality improvement protocols or process descriptions, research protocols
Shared decision-making intervention	Evaluation of decision aid as the sole aim of the study
Published after 1999	Examination of women's or health care providers' preferences when shared decision-making was not the intervention
Clinical context includes any aspect of perinatal or maternity care, including antepartum, intrapartum, postpartum	Published prior to 2000
	Clinical context is outside maternity care, including other aspects of reproductive health care such as breast cancer

The literature search and description of studies is presented in Figure 1. After duplicates were removed, 609 publications were evaluated. Titles and abstracts were screened for inclusion. If inclusion criteria were met, then the full text was retrieved and reviewed. A data abstraction form was developed specifically for this review, including author name, title, date of publication, journal, location of study, study design, and specific type of shared decision-making intervention. Information on study results and the measurement tools used by the study researchers were also recorded. Extracted data were entered into a spreadsheet for organization. Studies were organized into 3 primary categories that represent the potential influence of shared decision-making on women's experiences of decision-making, perinatal outcomes, and health care providers. As the aim of this review was to describe the scope of this topic in the literature, the methodological quality of the individual studies was not a focus of the review, and a pooled analysis was not performed.

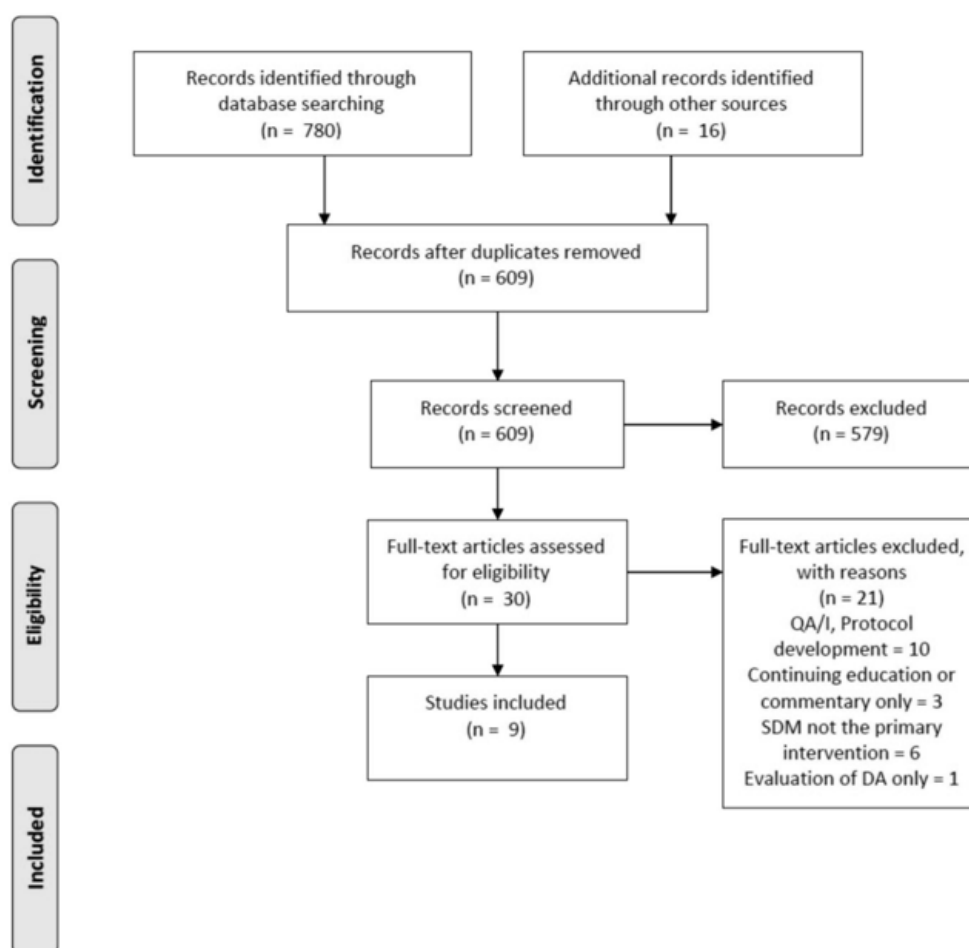


Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews Flow Chart

Abbreviations: DA, decision aid; QA/I, Quality Assurance/Improvement; SDM, shared decision-making.

Source: Liberati et al.²²

Results

Thirty full-text articles were reviewed, and ultimately 9 were included in the scoping review (Table 2).²³⁻³¹ Three were from the Netherlands,^{23,24,31} 2 from the United States,^{25,29} and the others were from Australia,²⁶ Canada,²⁷ Iran,²⁸ and Japan.³⁰ Three studies used a mixed methods design,^{23,25,30} 3 studies used a quasi-experimental design,²⁷⁻²⁹ and the others were an experimental design,²⁶ a randomized controlled trial,³¹ and a secondary analysis of the same randomized controlled trial.²⁴ Two of the studies evaluated shared decision-making regarding mode of birth after prior cesarean birth.^{26,30} Two studies used the same data set to evaluate couples' decision-making with respect to single embryo transfer (vs double embryo transfer) in the setting of in vitro fertilization.^{24,31} The remaining studies involved women and families faced with treatment decisions regarding severe pregnancy or postpartum complications,²³ care options for pregnant women with substance use disorder,²⁵ care options for women and families facing a potential birth complicated by extreme prematurity,²⁷ options regarding termination or continuation of pregnancy for women whose fetuses were affected by 13-thalassemia major,²⁸ and decisions regarding opioid prescriptions for women after cesarean birth.²⁹

Interventions included the use of the Three Questions Intervention²³ [(1) What are my options?, (2) What are the possible benefits and harms of those options?, and (3) How likely are each of those benefits and harm to happen to me?], an online survey that used different scenarios to gauge involvement in and encouragement of shared decision-making,²⁶ and multifaceted decision support strategies.^{24,27-31} Decision support strategies consisted of one-on-one decision coaching sessions with a health care provider or research team member who had prior training in decision support as well as a decision aid that was designed or adapted for the particular situation. Howard and Clark's study was the only one that focused on health care provider training in shared decision-making as the primary intervention.²⁵

Although the included studies shared a similar purpose (to evaluate the effectiveness of their specific shared decision-making strategy), the measured effects and outcomes varied. The studies examined 3 primary areas: first, the impact on women, including their perception of shared decision-making^{23,26,29} and their experience of making decisions in terms of decisional control, decisional conflict, and decisional regret;^{27,28,30,31} second, the impact on perinatal outcomes, such as mode of birth, continuation of pregnancy, or choices regarding embryo transfer during in vitro fertilization;^{28,30,31} and third, the impact on health care providers, including changes in clinical practice variation²⁴ and providers' satisfaction with the implementation of a shared decision-making strategy.^{25,27}

Table 2. Summary of 9 Articles Included in Scoping Review

Author, Date	Population and Setting	Study Aim	Study Design Evaluation Tool	Intervention Comparator	Key Outcomes
Baijens et al 2018 ²³ Netherlands	Pre-intervention group, n = 33 Intervention group, n = 29 4 interviews Health care providers not included	Evaluate the feasibility and effectiveness of the Three Questions Intervention in clinical inpatient setting	Mixed-methods quantitative pre- and post-survey, qualitative interviews SDM-Q-9 to measure perceived level of SDM, preferences about their involvement in decision-making and information provision	Intervention group given 3-questions card, encouraged to use the questions during ward rounds Pre-intervention group did not receive 3 questions during first 3 wk of study	Mean score of SDM-Q-9 not statistically significant between groups Majority in both groups preferred physician to make decision after explicitly considering the woman's preferences
Brabers et al 2016 ²⁴ Netherlands	5 hospitals 222 couples Intervention group, n = 113 Beginning of first IVF, excluded couples who only had one embryo available, those already pregnant, or who never started IVF Health care providers not included	Examine the hypothesis that SDM reduces variation in clinical practice, with an increase in single embryo transfer vs double embryo transfer	Secondary analysis of randomized controlled trial	Evidence-based DA, support of IVF nurse (decision coach) provided before the standard counseling session and IVF care Standard counseling and IVF care	Strategy to promote SDM reduced variation in single embryo transfer or double embryo transfer choice between hospitals but not within the same hospital

(Continued)

Author, Date	Population and Setting	Study Aim	Study Design Evaluation Tool	Intervention Comparator	Key Outcomes
van Peperstraten et al 2010 ³¹ Netherlands	Couples with first IVF or first after previously successful IVF, aged < 40 y Intervention group, n = 152 Control group, n = 156 Health care providers not included	A multifaceted empowerment strategy would encourage the use of single embryo transfer and reduce the number of twin pregnancies in a cost-effective way	Randomized controlled trial 3 questionnaires (inclusion, after intervention but before treatment, 5 wk after embryo transfer), measuring decision-making outcomes and knowledge General self-efficacy scale; actual knowledge 11-item multiple choice test; decision evaluation scores (satisfaction or uncertainty, informed choice, decision control) 15-item questionnaire; state trait anxiety inventory; Beck depression inventory	Evidence-based DA, support of IVF nurse (decision coach), reimbursement for additional IVF if choosing single embryo transfer decreased chance of pregnancy, provided before the standard counseling session and IVF care Standard counseling and IVF care	Couples choosing single embryo transfer: intervention group = 43%, control group = 32%; the proportion of couples in intervention group who wanted to decide for themselves the number of embryos increased from 77% to 91%, remained 73% in control group Decision evaluation scale not significant in satisfaction or uncertainty or control, but intervention group reported a better-informed choice No difference in anxiety or depression
Howard and Clark 2017 ²⁵ United States	Prenatal health care providers, N = 45 Women not included	Training for providers on destigmatization of SUD in pregnancy, using SDM to increase screening for substance use and to provide information about treatment and resources			

(Continued)

Author, Date	Population and Setting	Study Aim	Study Design Evaluation Tool	Intervention Comparator	Key Outcomes
Miller and Holdaway 2019 ²⁶ Australia	Women aged 18 y, not currently pregnant; N = 669 Health care providers not included	Investigate how variations in risk communication (information selectivity, absolute vs relative risk, role in decision-making) influenced choice of mode of birth	2 × 2 × 2 experimental design; 8 experimental conditions; random allocation and blinded; online survey SDM measured via questions that assessed decisional certainty, perception of risk, perceived freedom to choose; perceived involvement in decision-making, encouragement to participate in decision-making by health care provider	Exposure to vignettes that manipulated decision-making conditions Preference for mode of birth assessed Selective vs nonselective information; absolute vs relative risk communication; compliance vs choice (role of decision-making) Choice created by emphasizing freedom to choose, control over the decision-making process, encouragement to participate	Decision-making role (choice vs compliance) did not predict childbirth preference

(Continued)

Author, Date	Population and Setting	Study Aim	Study Design Evaluation Tool	Intervention Comparator	Key Outcomes
Moore et al 2017 ²⁷ Canada	Parents facing potential birth at 23-24 wk gestational age, N = 15 Convenience sample 4 neonatologists trained as decision coaches through online course and workshop	Field-test decision coaching with DA developed by study team to determine effect on decisional conflict	Quantitative surveys of women and decision coaches Satisfaction with SDM rating tool; modified Genetic Counselling Satisfaction Scale; low literacy Decisional Conflict Scale; Choice Predisposition Scale; decision coaches filled a satisfaction questionnaire based on experience with DA and decisional coaching	Trained neonatologist provided decision coaching and DA Standard consultation with neonatologist who did not receive training as decision coach; no DA	89% would recommend decision coaching plus DA Total decisional conflict score decreased significantly Participants' choice predisposition carried through to actual choice
Moudi et al 2018 ²⁸ Iran	Fetus diagnosed with 13-TM Control group, n = 40 Intervention group, n = 40 Health care providers not included	Study the effect of SDM on decisional conflict scores immediately after consultation, determine the impact of SDM on decisional regret in first 3 mo after decision to terminate pregnancy	Quasi-experimental Decisional Conflict Scale; Decision Regret Scale	90-min counseling session based on SDM with study member trained in SDM Routine care (termination recommended, one-way flow of information)	Statistically significant lower scores of decisional conflict and decisional regret

(Continued)

Author, Date	Population and Setting	Study Aim	Study Design Evaluation Tool	Intervention Comparator	Key Outcomes
Prabhu et al 2017 ²⁹ United States	Women who had cesarean birth, N = 50 Health care providers not included	Assess the effect of interactive SDM session with 2 trained providers using a DA on a tablet helping women choose the number of 5-mg oxycodone tablets to be prescribed at discharge	Post-intervention questionnaire, health record review of prescription refill requests Review of health record for prescriptions; questionnaire measuring satisfaction with outpatient pain management	10-min SDM session with clinician who reviewed information verbally while the woman viewed tablet-based DA; women chose the number of tablets (0-40) of oxycodone Routine care	Fewer refill requests 90% of women reported being satisfied with outpatient pain management
Torigoe and Shorten 2018 ³⁰ Japan	Currently pregnant women eligible for VBAC, N = 33 Health care providers not included	Translate and culturally adapt a DA for use in Japan and integrate it into a decision coaching strategy for use with decisions about mode of birth	Mixed methods: quantitative measures for knowledge and decisional conflict; qualitative interviews and thematic analysis exploring women's experience of decision-making Decisional Conflict Scale, Japanese version; Knowledge Score; Birth Preference Scale	Birth choices DA plus decision guide for assessment and decision discussions (one-page interview guide) Routine care	Number of women with high decisional conflict scores decreased Knowledge scores increased overall Mean value for strength of woman's birth preference before and after intervention increased However, mean decision score remained high, and there was no significant change in feelings of certainty

Abbreviations: 13-TM, 13-thalassemia major; DA, decision aid; IVF, in vitro fertilization; SDM, shared decision-making; SDM-Q-9, 9-item Shared Decision-Making Questionnaire; SUD, substance use disorder; VBAC, vaginal birth after cesarean.

Impact of Shared Decision-Making: Women's Experiences

Perception of Shared Decision-Making

The one study that evaluated women's perceptions of shared decision-making did not show statistically significant results after a specific shared decision-making strategy was implemented.²³ Baijens et al introduced the Three Questions Intervention to women who were admitted to inpatient obstetric wards for pregnancy or postpartum complications.²³ Women were given cards with the 3 questions written down, and the women were asked to use the prompt to ask questions during ward rounds. The researchers used the 9-item Shared Decision-Making Questionnaire (SDM-Q-9) to evaluate the women's perceptions of shared decision-making during their interactions with their perinatal care providers. The SDM-Q-9 is a validated tool that has good acceptance, consistency, and reliability and asks 9 questions relevant to shared decision-making such as "My doctor made it clear that a decision needs to be made."³² Although the use of the 3 questions did stimulate women to seek more, and more specific, information, Baijens et al found that the SDM-Q-9 scores were not statistically different between the women in the intervention and control groups, indicating that perception of shared decision-making was unaffected by use of the 3-question strategy.

Decisional Evaluation

Four of the studies^{27,28,30,31} examined women's experiences of decision-making, including decisional conflict and decisional regret. Van Peperstraten et al evaluated what they termed a "multi-faceted empowerment strategy"³¹(p 2) based on decision coaching and a shared decision-making framework. They used multiple surveys that measured self-efficacy, knowledge, satisfaction or uncertainty of decision making, informed choice, decision control, anxiety, and depression.³¹ Scores of decision control (defined as feelings of regret, anxiety, and fright at making a decision) and satisfaction or uncertainty (defined as feeling satisfied or doubtful with the decision) showed no difference between couples who received the empowerment strategy and those who did not. Couples in the intervention group did report feeling more informed compared with the couples in the control group.

Moore et al,²⁷ Moudi et al,²⁸ and Torigoe and Shorten³⁰ used the validated Decision Conflict Scale³³ to explore perceptions of uncertainty about options, including feeling uninformed, uncertainty related to personal values, and feelings of lack of support in decision-making. In the survey by Moore et al of women at risk for extreme preterm birth, the women who received a decision coaching session with a neonatologist trained in decision coaching had decreased decisional conflict across all subdomains.²⁷ The greatest difference in decisional conflict scores occurred in the subdomain of feeling informed. The evaluation by Moudi et al of women whose fetuses were diagnosed with 13-thalassemia major and who received a decision coaching session showed statistically significantly lower mean decisional conflict scores compared with women who did not receive decisional coaching.²⁸ The largest difference was in the subdomain of feeling informed, similar to the findings by Moore et al. In addition, whereas women in the intervention group had lower decisional regret scores overall, there were a few women in the intervention group who expressed significant decisional regret and would not choose the same option (termination of pregnancy) again. Reasons for their regret included issues such as concerns for future fertility and adverse physical experiences but did not include lack of information or feeling uninformed. Torigoe and Shorten also used the Decision Conflict Scale to examine decision-making for women facing the choice of mode of birth after prior cesarean birth, with the intervention group participating in a shared decision-making support session.³⁰

In this study, there was a statistically significant decrease in overall decisional conflict scores after the shared decision-making session. As with the Moudi et al²⁷ and Moore et al studies,²⁸ the greatest decrease occurred in the subdomain of feeling informed. However, there was no significant change in the subdomain of feeling certainty, suggesting that feelings of doubt remained despite an increase in knowledge.

Impact of Shared Decision-Making: Outcomes

Perinatal Outcomes and Practice Variation

Six studies^{24,26,27,29-31} included discussion of the perinatal outcome related to the decision being made. Although most of the studies were not necessarily designed to measure change in a particular outcome, they showed minimal, if any, effect on actual perinatal outcomes. The studies by Miller and Holdaway and by Torigoe and Shorten looked at birth preference for mode of birth after prior cesarean birth.^{26,30} Although neither study looked directly at the number of women who, in the end, actually had a vaginal birth after cesarean (VBAC) or cesarean birth, the potential rates of VBAC or planned repeat cesarean birth were essentially unchanged. Miller et al used hypothetical scenarios to demonstrate that although women's preferences for mode of birth was influenced by risk perception (and therefore by health care providers' risk communication), the decision-making role assumed by the woman did not influence her choice of mode of birth.²⁶ Torigoe and Shorten showed that, although the strength of the woman's birth method preference increased after the shared decision-making intervention, there was minimal change in the number of women desiring VBAC versus planned cesarean birth.³⁰

Moore et al used the Choice Predisposition Scale to measure participants' propensity for a particular option before and after the shared decision-making intervention.²⁷ Choice predisposition represents a person's leaning toward selecting a particular option.³⁴ They also collected data on the actual choice made by the parents, either intensive care or palliative care for their preterm neonate. They showed that the option the couples were inclined to choose prior to the shared decision-making intervention carried through to the actual choice they made. The same number of parents who were predisposed to choose palliative care actually did so; there were no changes in this particular perinatal outcome.

Van Peperstraten et al and Brabers et al used the same data set to look at the outcome of single embryo transfer versus double embryo transfer for couples seeking in vitro fertilization.^{24,31} Both study teams hypothesized that the shared decision-making intervention would reduce the number of double embryo transfers. Van Peperstraten et al looked to the shared decision-making intervention to ultimately decrease the perinatal complications associated with double embryo transfers, and therefore with twin pregnancies. In this study, 43% of the intervention group chose single embryo transfer, compared with 32% in the control group, which was statistically significant, indicating that the shared decision-making strategy has a potential effect on this particular perinatal outcome.³¹ Brabers et al looked to the shared decision-making intervention to decrease health care provider practice variation. In contrast to the van Peperstraten et al study, Brabers et al found that the shared decision-making strategy did not have as great an effect on practice variation between hospitals.²⁴

Prabhu et al used a decision aid plus decision coaching to review what to expect with regard to pain after a cesarean birth, with the hope that women would choose the lesser amount of opioid and thereby reduce the amount of leftover oxycodone in their community. They demonstrated a statistically significant decrease in the number of oxycodone tablets chosen by women after the shared decision-making intervention while also maintaining a low refill request rate.²⁹

Impact of Shared Decision-Making: Health Care Providers

Two studies looked at the experience of the health care providers who participated in or facilitated the shared decision-making intervention.^{25,27} In Howard and Clark's study, perinatal care providers received a training on shared decision-making model for engaging with pregnant women with substance use disorder.²⁵ The number of participants who responded that they did use shared decision-making ("sometimes" or "yes") increased after training, although this was not statistically significant.²⁵ In the study by Moore et al, 4 neonatologists received training in decision coaching and developed a decision support tool and decision coach guide specifically for their study. The neonatologists completed a satisfaction questionnaire after each consultation (N = 11), and all recommended this shared decision-making intervention for any neonatologist who might be supporting women through decision-making in the setting of extreme prematurity.²⁷

Discussion

Despite the call to increase the use of shared decision-making in perinatal care, there are few studies designed to examine the potential or actual effects of a shared decision-making support strategy. Only 9 studies were identified that met the inclusion criteria for this study. These studies involved a diverse array of perinatal situations, examined different aspects shared decision-making, and explored different potential effects of shared decision-making on women, health care providers, and perinatal outcomes. Although they embodied the spirit of shared decision-making through their descriptions of women's empowerment through inclusion and support in decision-making, particularly through values clarification and information sharing, the studies were not specific in their definition(s) of shared decision-making. Different methodologies and tools were used to evaluate the perception of shared decision-making and decision-making experiences. In addition, the studies were performed across an international spectrum of health care systems. These heterogeneous elements contribute to the potential difficulty in performing a systematic review. Clarification regarding the goals of shared decision-making and better understanding of how to successfully implement shared decision-making are needed.

This scoping review identified a number of gaps in current research on shared decision-making in perinatal care. None of the studies took place during the intrapartum period. Facilitation of person-centered care via shared decision-making during labor is inherently challenging, as decisions may need to be made urgently and the experience of labor may pull a woman's focus away from personal interactions.³⁵ In addition, the shared decision-making process may need to be more flexible and the perinatal care providers more nimble in their assessments of the situation and the woman's ability to participate in the shared decision-making process during labor.³⁶ And yet labor is also a critically important time to ensure the inclusion of shared decision-making as part of a larger framework encompassing women's satisfaction with their birth experiences, respect for women in birth, and support of an overall culture of safety in perinatal care. Despite these challenges, further research is needed into how shared decision-making may be optimally operationalized in the intrapartum setting.

In addition, none of the studies identified involved common perinatal decision-making situations such as induction of labor or antenatal fetal surveillance for women aged older than 35 years. Studies, including Miller and Holdaway's study, clearly demonstrate the strong influence of the health care provider's method of information and risk communication on a woman's choice of mode of birth and women's reliance upon their providers for accurate, evidence-based information.^{11,26,37} Unfortunately, opportunities for implementing shared decision-making are often missed.^{4,38} A study that looked at interactions between perinatal care providers and women demonstrated that in the majority of decisions only one option was discussed, indicating that no choice was actually offered.³⁹ Research into the development of evidence-based shared decision-making strategies that work in conjunction with updated clinical guidelines, which include but are not limited to a decision aid alone, is critical for both providers and women as decisions in perinatal care increase in complexity and providers are implored to use such strategies.

In the studies included in this scoping review, shared decision-making appeared to have a positive effect on decisional conflict and decisional regret, but less so on decisional certainty. Decisional conflict represents a state of uncertainty regarding decision-making and may be exacerbated by feeling uninformed, feeling unclear about one's personal values, or feeling unsupported or pressured to make a choice. These cognitive factors are independent of the complexity or difficulty of the decision choice itself.³³ As seen in these studies, the communication of accurate, evidence-based information has the potential to significantly decrease decisional conflict. Studies examining women's satisfaction in birth consistently demonstrate the importance of the respectful communication of accurate, unbiased information.^{37,40,41} However, shared decision-making strategies may have less of an impact on the subdomain of certainty, a feeling of having made the right decision. These studies shed light on the complexity of the emotional experiences inherent in these decisions, which continues to evolve over time, as well as the inability to predict with absolute certainty a clinical outcome. Fundamentally, shared decision-making is a process, one that should be repeated and recycled as much or as often as women need, with the hope of minimizing the potential adverse effects of decisional conflict and regret. Research studies that use the same measures for evaluating women's experiences of decisional conflict, decisional regret, and certainty are needed. In particular, tools are needed that are validated for the use in perinatal care and that may be used across countries and in different health care systems.

This scoping review has some limitations. Despite the use of broad search terms, the inclusion criteria were narrowed to only allow studies that clearly used a shared decision-making strategy as the intervention, which may have excluded some relevant studies. In addition, if the abstract or title described only a decision aid as the intervention, then it was excluded, and the full text was not reviewed. This may have excluded relevant studies that used a multifaceted decision support strategy that was not clearly articulated. The exclusion of non-English-language studies may have caused some articles not to be included, particularly as at least one of the measurement tools used (SDM-Q-9) has been translated into and validated in multiple languages. Last, we were unable to identify studies that explicitly articulated or examined the involvement of midwives in the shared decision-making intervention strategy. This may have excluded relevant studies involving midwives or midwifery care.

Conclusion

Shared decision-making is process through which women and midwives exchange information, explore preferences, and make choices. It has great potential to assist health care providers and women to negotiate clinically and emotionally complex perinatal decisions. Implementation of a shared decision-making strategy may reduce decisional conflict and regret, although more studies are needed to better understand the impact of such strategies. In the studies included in this scoping review, the perception of feeling informed was the most studied outcome of shared decision-making interventions, highlighting the importance of sharing accurate, evidence-based information with women. However, the studies were limited and did not include common perinatal situations such as decisions regarding induction of labor, nor did the studies occur in the intrapartum setting. This highlights the need for more research on the development of clearly defined goals of shared decision-making interventions, including specific perinatal outcomes and impact on costs. In addition, more research is needed that examines and includes the use of tools and scales that have been validated for perinatal care settings. Clear guidance and strategies for successfully integrating shared decision-making and practice recommendations are needed.

Conflict of interest

The authors have no conflicts of interest to disclose.

References

1. Håkansson Eklund J, Holmström IK, Kumlin T, et al. "Same same or different?" A review of reviews of person-centered and patient-centered care. *Patient Educ Couns*. 2019;102(1):3-11.
2. Winn K, Ozanne E, Sepucha K. Measuring patient-centered care: an updated systematic review of how studies define and report concordance between patients' preferences and medical treatments. *Patient Educ Couns*. 2015;98(7):811-821.
3. Rowe RE, Garcia J, Macfarlane AJ, Davidson LL. Improving communication between health professionals and women in maternity care: a structured review. *Health Expect*. 2002;5(1):66-83.
4. Pollard S, Bansback N, Bryan S. Physician attitudes toward shared decision-making: a systematic review. *Patient Educ Couns*. 2015;98(9):1046-1057.
5. American College of Nurse-Midwives. Shared Decision-Making in Midwifery Care. Silver Spring MD; December 2016. Accessed February 15, 2020. <http://www.midwife.org/ACNM/files/ACNMLibraryData/UPLOADFILENAME/000000000305/Shared-Decision-Making-in-Midwifery-Care-10-13-17.pdf>
6. Elwyn G, Frosch D, Thomson R, et al. Shared decision-making: a model for clinical practice. *J Gen Intern Med*. 2012;27(10):1361-1367.
7. Declercq ER, Sakala C, Corry MP, Applebaum S, Herrlich A. Major survey findings of listening to Mothers III: Pregnancy and Birth: Report of the third national U.S. survey of women's childbearing experiences. *J Perinat Educ*. 2014;23(1):9-16.
8. Bohren MA, Vogel JP, Hunter EC, et al. The mistreatment of women during childbirth in health facilities globally: a mixed-methods systematic review. *PLoS Med*. 2015;12(6):e1001847.
9. Koblinsky M, Moyer CA, Calvert C, et al. Beyond too little, too late and too much, too soon: a pathway towards evidence-based, respectful maternity care worldwide. *Lancet*. 2016;388(10057):2307-2320.

10. Attanasio LB, Kozhimannil KB, Kjerulff KH. Factors influencing women's perceptions of shared decision-making during labor and delivery: results from a large-scale cohort study of first childbirth. *Patient Educ Couns*. 2018;101(6):1130-1136.
11. Moore JE. Women's voices in maternity care. *J Perinat Neonatal Nurs*. 2016;30(3):218-223.
12. Coates D, Thirukumar P, Spear V, Brown G, Henry A. What are women's mode of birth preferences and why? A systematic scoping review [published online October 10, 2019]. *Women Birth*. <https://doi.org/10.1016/j.wombi.2019.09.005>
13. Avery MD, Bell AD, Bingham D, et al. Blueprint for Advancing High-Value Maternity Care Through Physiologic Childbearing. Washington, DC: National Partnership for Women and Families; June 2018. Accessed February 15, 2020.
14. BirthTools website. Accessed February 15, 2020. <https://www.birthtools.org/Reducing-Primary-Cesareans-NEW>
15. Grobman WA, Rice MM, Reddy UM, et al. Labor induction versus expectant management in low-risk nulliparous women. *N Engl J Med*. 2018;379(6):513-523.
16. Chappell LC, Brocklehurst P, Green ME, et al. Planned early delivery or expectant management for late preterm pre-eclampsia (PHOENIX): a randomised controlled trial. *Lancet*. 2019;394(10204):P1181- P1190.
17. American College of Obstetricians and Gynecologists. Prevention of group B streptococcal early-onset disease in newborns: ACOG committee opinion, number 782. *Obstet Gynecol*. 2019;134(1):e19-e40.
18. Vlemmix F, Warendorf JK, Rosman AN, et al. Decision aids to improve informed decision-making in pregnancy care: a systematic review. *BJOG*. 2013;120(3):257-266.
19. Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *Int J Soc Res Methodol Theory Pract*. 2005;8(1): 19-32.
20. Peters MDJ, Godfrey CM, Khalil H, McInerney P, Parker D, Soares CB. Guidance for conducting systematic scoping reviews. *Int J Evid Based Healthc*. 2015;13(3):141-146.
21. Tricco AC, Lillie E, Zarin W, et al. PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. *Ann Intern Med*. 2018;169(7):467-473.
22. Liberati A, Altman DG, Tetzlaff J, et al. The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. *J Clin Epidemiol*. 2009;62(10):e1-e34.
23. Baijens SWE, Huppelschoten AG, Van Dillen J, Aarts JWM. Improving shared decision-making in a clinical obstetric ward by using the Three Questions Intervention, a pilot study. *BMC Pregnancy Childbirth*. 2018;18(1):283.
24. Brabers AEM, Van Dijk L, Groenewegen PP, Van Peperstraten AM, De Jong JD. Does a strategy to promote shared decision-making reduce medical practice variation in the choice of either single or double embryo transfer after in vitro fertilisation? A secondary analysis of a randomised controlled trial. *BMJ Open*. 2016;6(5): e010894.
25. Howard H, Clark K. Interprofessional-shared decision-making for pregnant women with opioid use: results from a provider training. *Curr Womens Health Rev*. 2017;13(2):121-129.
26. Miller YD, Holdaway W. How communication about risk and role affects women's decisions about birth after caesarean. *Patient Educ Couns*. 2019;102(1):68-76.
27. Moore GP, Lemyre B, Daboval T, et al. Field testing of decision coaching with a decision aid for parents facing extreme prematurity. *J Perinatol*. 2017;37(6):728-734.
28. Moudi Z, Phanodi Z, Ansari H, Zohour MM. Decisional conflict and regret: shared decision-making about pregnancy affected by 13-thalassemia major in Southeast of Iran. *J Hum Genet*. 2018;63(3):309-317.
29. Prabhu M, McQuaid-Hanson E, Hopp S, et al. A shared decision-making intervention to guide opioid prescribing after caesarean delivery. *Obstet Gynecol*. 2017;130(1):42-46.
30. Torigoe I, Shorten A. Using a pregnancy decision support program for women choosing birth after a previous caesarean in Japan: a mixed methods study. *Women Birth*. 2018;31(1):e9-e19.

31. Van Peperstraten A, Nelen W, Grol R, et al. The effect of a multifaceted empowerment strategy on decisionmaking about the number of embryos transferred in in vitro fertilisation: randomised controlled trial. *BMJ*. 2010;341(7775):712.
32. Kriston L, Scholl I, Hölzel L, Simon D, Loh A, Härter M. The 9-item Shared Decision-Making Questionnaire (SDM-Q-9). Development and psychometric properties in a primary care sample. *Patient Educ Couns*. 2010;80(1):94-99.
33. O'Connor AM. User Manual - Decisional Conflict Scale. Ottawa, Canada: Ottawa Hospital Research Institute; 1993; updated 2010. https://decisionaid.ohri.ca/docs/develop/User_Manuals/UM_Decisional_Conflict.pdf
34. O'Connor AM. User Manual - Measure of Decision/Choice Predisposition. Ottawa, Canada: Ottawa Hospital Research Institute; 1996; updated 2003. Accessed February 15, 2020. https://decisionaid.ohri.ca/docs/develop/User_Manuals/UM_ChoicePredisposition_Decision.pdf
35. Nieuwenhuijze MJ, Korstjens I, de Jonge A, de Vries R, Lagro-Janssen A. On speaking terms: a Delphi study on shared decision-making in maternity care. *BMC Pregnancy Childbirth*. 2014;14(1):1-11.
36. Nieuwenhuijze MJ, Low LK, Korstjens I, Lagro-Janssen T. The role of maternity care providers in promoting shared decision making regarding birthing positions during the second stage of labor. *J Midwifery Womens Health*. 2014;59(3):277-285.
37. Bringedal H, Aune I. Able to choose? Women's thoughts and experiences regarding informed choices during birth. *Midwifery*. 2019;77:23-129.
38. Declercq ER, Cheng ER, Sakala C. Does maternity care decision-making conform to shared decision-making standards for repeat cesarean and labor induction after suspected macrosomia? *Birth*. 2018;45(3):236-244.
39. Garrard F, Ridd M, Narayan H, Montgomery AA. Decisions, choice and shared decision-making in antenatal clinics: an observational study. *Patient Educ Couns*. 2015;98(9):1106-1111.
40. Lou S, Hvidman L, Uldbjerg N, et al. Women's experiences of postterm induction of labor: a systematic review of qualitative studies. *Birth*. 2019;46(3):400-410.
41. Mattison CA, Dion ML, Lavis JN, Hutton EK, Wilson MG. Midwifery and obstetrics: factors influencing mothers' satisfaction with the birth experience. *Birth*. 2018;45(3):322-327.