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Prenatal Mindfulness Education and Childbirth Outcomes

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Abstract

Introduction: Mindfulness-based childbirth education focuses on supporting normal physiologic labor and birth. This article presents the findings of an integrative review examining the relationship between prenatal mindfulness education and childbirth outcomes through the theoretical framework lens of the Roy Adaptation Model.

Methods: A literature review of PubMed and CINAHL was completed to identify original studies. The database search included articles published between 2011 and 2022. Article inclusion criteria specified original research, randomized controlled trials, qualitative studies, and pilot randomized controlled studies. Article exclusion criteria specified integrative reviews, systematic reviews, other non-experimental studies, and non-English language reports. Studies pertaining specifically to perinatal or postpartum mental health were excluded from review. A hand search of all applicable reviews was conducted along with a hand search of relevant journals published between 2011 to 2022.

Results: The search resulted in 36 articles after removal of duplicates. After a review of abstracts and full-texts, seven articles met the criteria for inclusion. An additional three articles were included from citation hand search. Findings from these ten articles indicated a correlation between prenatal mindfulness education and improved childbirth outcomes or satisfaction. Participants endorsed higher childbirth self-efficacy, decreased opioid analgesia use, higher sense of control, and decreased levels of fear, anxiety, or distress.

Discussion: Using the Roy Adaptation Model to examine the effects of prenatal mindfulness and childbirth outcomes highlights the many ways in which mindfulness-based childbirth education can impact birth outcomes and satisfaction. A lack of research pertaining to mindfulness and its

relationship to childbirth should be addressed. Nurse-midwives should encourage patients desiring an unmedicated or physiologic birth to pursue prenatal mindfulness education.

Keywords: mindfulness, childbirth, antenatal, prenatal, birth outcome, satisfaction

Prenatal Mindfulness Education and Childbirth Outcomes

Introduction

Pregnancy and childbirth are often considered a joyous time for women, but it can also bring about feelings of fear or anxiety. Childbirth satisfaction is impacted by the woman's perception of pain, dignity, and birthing environment (Jafari et al., 2017). Midwives play an important role in maintaining the physiologic process of childbirth and by ensuring patients have a positive birth outcome, both physically and psychologically. The basis of midwifery care is to provide holistic and therapeutic care, which includes promoting physiologic childbirth. In the United States, pregnancy is often treated as a medical condition. There are circumstances in which medical intervention is necessary during the labor and birth process. However, women who desire a physiologic birth with as few interventions as possible could benefit from mindfulness-based childbirth education (MBCE) in an effort to feel empowered and in control of their childbirth experiences

The American College of Nurse-Midwives (ACNM) (2012), along with the Midwives Alliance of North America (MANA), and the National Association of Certified Professional Midwives (NACPM), created a joint position statement in support of normal physiologic childbirth. The goal of their statement was to promote safe and healthy physiologic childbirth by avoiding unnecessary interventions. The ACNM, MANA, and NACPM (2012) stated that normal physiologic childbirth "includes biological and physiological conditions that promote effective labor" and avoids "any situation in which the mother feels threatened or unsupported" (p. 530).

According to Dhillon et al. (2017), mindfulness training can teach women to cope with the fear and pain associated with childbirth, thus supporting a more physiologic process. Also,

according to Dhillon et al. (2017), the practice of mindfulness improves emotional wellbeing and balance. Women can benefit from prenatal mindfulness training during pregnancy, labor, and postpartum. There is evidence to suggest that it is associated with improved childbirth satisfaction and empowerment (Dhillon et al., 2017). This integrative review focuses on mindfulness practices and its effect on childbirth outcomes. The following research question guided the review: What impact does prenatal mindfulness education have on childbirth outcomes? The synthesis of these findings will provide midwives and obstetrical providers with insights to how mindfulness can impact pregnancy outcomes.

Theoretical Framework

The Roy Adaptation Model (RAM) was used to answer the research question (Tulman & Fawcett, 2003). The RAM defines the patient as an adaptive system that is subjected to constantly changing stimuli within their environment. These stimuli, in turn, relate to the adaptation response of the individual, which is based on their coping mechanisms. These responses manifest in different ways, including physiological, self-conceptual, role functioning, and interdependence. These response modes can be classified as being effective or ineffective adaptive responses to stimuli. From a midwifery perspective, the nurse's role is to help manage the environmental stimuli by altering the environment to meet the patient's needs (Tulman & Fawcett, 2003). The RAM relates to mindfulness-based prenatal education because it allows the woman to cope with the changing stimuli during labor and childbirth. The findings from this integrative review are categorized based on the adaptation responses described by the RAM: physiological, self-conceptual, role functioning, and interdependence (see Table 1).

Methods

The framework for this integrative review was guided by the search methodology from Whittemore and Knafl (2005). Their systematic process for formulating an integrative review provided an outline for formulating the research question and conducting the literature search. This methodology allowed for a transparent and replicable search of the literature. It also allowed for the inclusion of a combination of methodologies from a variety of research study designs. A reference librarian was consulted to identify relevant key search terms for conducting the literature search. The search of literature, review of articles, and extraction of data were conducted entirely by the author.

The database searches were conducted in January of 2022, using Boolean operators AND/OR with the following search terms: *mindfulness, antenatal, prenatal, childbirth, birth, outcome, satisfaction, efficacy*. Due to the limited studies regarding mindfulness and childbirth outcomes, this search was expanded from the years 2016 to 2022 to include articles published after 2011. This search strategy was implemented with the following two databases: CINAHL (n = 83) and PubMed (n = 205). The search results were uploaded into Covidence version 2.0 (Veritas Health Innovation). This initial search yielded 288 articles, reduced to 205 after duplicates were removed.

Inclusion criteria during screening were as follows: original research, randomized controlled trials, qualitative studies, and pilot randomized controlled studies. Exclusion criteria included integrative reviews, systematic reviews, other non-experimental studies, and non-English language reports. Studies that focused on perinatal or postpartum mental health outcomes were also excluded. A hand search of all applicable reviews was utilized using the same inclusion and exclusion criteria and resulted in three additional articles. A hand search of

the following journals from 2011 to 2022 did not contribute additional articles: *Journal of Midwifery and Women's Health, American Journal of Obstetrics and Gynecology,* and *Obstetrics and Gynecology*.

Two hundred and five articles were accepted for abstract or full-text review. After an initial screening of the literature, 169 articles were removed, leaving 36. The abstract and full-text review resulted in seven articles that met the inclusion criterion. Three articles were included from citation handsearching, resulting in a total of 10 articles that met the final inclusion criterion. The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) methodology was utilized for recording the results. The PRISMA flow diagram and synopsis of search strategy is depicted in Figure 1. A literature review matrix was created to summarize the findings of the ten publications (see Table 2).

Results

The articles were published between 2012 and 2022. The 10 studies together provide the perspective of over 2,000 childbearing women. Although the design of the studies varied, six of the studies were randomized controlled trials (Duncan et al., 2017; Sbrilli et al., 2020; Veringa-Skiba et al., 2021; Veringa-Skiba et al., 2022; Werner et al., 2013; Zarenejad et al., 2020). Other study designs included a single-arm pilot study with qualitative design (Byrne et al., 2014), descriptive qualitative method (Fisher et al., 2012), longitudinal prospective cohort study (Hulsbosch et al., 2021), and qualitative study (Whitburn et al., 2014). Studies were conducted to examine the outcomes of MBCE in relation to childbirth. Outcomes measured included fear of childbirth (Byrne et al., 2014; Duncan et al., 2017; Veringa-Skiba et al., 2021), ability to cope with childbirth pain (Duncan et al., 2017; Whitburn et al., 2014), and childbirth satisfaction (Fisher et al., 2012; Hulsbosch et al., 2021; Werner et al., 2013). Other studies focused on

childbirth outcomes (Veringa-Skiba et al., 2021; Veringa-Skiba et al., 2022) and feelings of stress or anxiety (Byrne et al., 2014; Sbrilli et al, 2020; Zarenejad et al., 2020).

Six of the studies included only nulliparous women (Byrne et al., 2014; Duncan et al., 2017; Fisher et al., 2012; Sbrilli et al., 2020; Werner et al., 2013; Zarenejad et al., 2020). Other studies included a combination of both nulliparous and multiparous women (Hulsbosch et al., 2021; Veringa-Skiba et al., 2021; Veringa-Skiba et al., 2022). One study included primiparous and multiparous women during the postpartum period (Whitburn et al., 2014). Participant gestational age at the beginning of the studies was primarily in the second trimester of pregnancy (Byrne et al., 2014; Fisher et al., 2012; Hulsbosch et al., 2021; Veringa-Skiba et al., 2022; Zarenejad et al., 2020). Two of the studies included pregnant women in the third trimester of pregnancy (Duncan et al., 2017; Sbrilli et al., 2020). Two studies did not indicate the gestational age of the participants (Veringa-Skiba et al., 2022; Werner et al., 2013). One study included postpartum participants (Whitburn et al., 2014).

Data extracted from the studies were organized by the theoretical framework of the RAM (Tulman & Fawcett, 2003). The RAM adaptations of physiological, self-conceptual, role-functioning, and interdependence were considered in the context of childbirth and labor. Table 1 summarizes how these adaptations relate to MBCE and childbirth.

Physiological Adaptation

Factors of physiological adaptation affecting MBCE outcomes during labor included physical symptoms, intrapartum complications, and delivery type.

Physical Symptoms During Labor

The practice of mindfulness allows the individual to remain mindful of physical sensations they experience during labor and focus on being in the moment. The randomized

controlled trial by Duncan et al. (2017) found that the use of mindfulness during labor may decrease the use of opioid analgesia, however, the results were not statistically significant. Duncan et al. (2017) did not find evidence to support that mindfulness practice decreased perceived labor pain or epidural analgesia use. The descriptive qualitative method study by Fisher et al. (2012) determined that MBCE techniques allowed women to remain calm and alleviate pain during contractions. Veringa-Skiba et al. (2021) found MBCE to be associated with a decrease in catastrophizing labor pain and an increased acceptance of labor pain. MBCE participants were 36% less likely to undergo epidural analgesia and two times more likely to have an unmedicated childbirth. The qualitative study by Whitburn et al. (2014) suggested that the state of mind during labor may play a role in the cognitive processes that impact pain perception.

Intrapartum Complications

The focus of MBCE includes teaching participants how to cope and adapt to their surroundings. An increase in mindful awareness was found to be a strong mechanism of change for participants to adjust to challenges faced during childbirth (Veringa-Skiba et al., 2022). Although intrapartum complications cannot always be avoided, participants of MBCE were found to undergo less obstetric interventions (Veringa-Skiba et al., 2021; Veringa-Skiba et al., 2022).

Delivery Type

The goal of MBCE is not explicitly for the individual to have a physiologica childbirth experience. The randomized controlled study by Veringa-Skiba et al. (2021) found that MBCE was found to decrease participant preference for non-urgent obstetrical interventions and self-

requested cesarean birth. It was determined that MBCE participants were 51% less likely to undergo a self-requested cesarean birth. Another randomized controlled study found that the amount of time the participant spent practicing meditation was correlated with an increased desire for physiologic childbirth (Veringa-Skiba et al., 2022). The study also found that MBCE was correlated with a decrease in obstetrical intervention.

Self-Conceptual Adaptation

Factors of self-conceptual adaptation included preparation for labor, fear of childbirth, sense of control, and childbirth satisfaction.

Preparation for Labor

The focus of MBCE is preparing the mind for childbirth. The randomized controlled trial by Zarenejad et al. (2020) determined that mindfulness reduced anxiety of pregnant women. Mindfulness education programs were associated with a decreased level of distress (Sbrilli et al., 2020).

Fear of Childbirth

Fear of childbirth was a common theme addressed in the studies. MBCE was found to have a positive impact on participants with childbirth fear. Women endorsed feeling less fearful of childbirth after completing MBCE during pregnancy (Bryne et al., 2014, Duncan et al., 2017; Veringa-Skiba et al., 2021). One study aimed to determine the method in which MBCE was offered and if it resulted in a higher incidence of unmedicated childbirth in women who had previously reported a high fear of childbirth. MBCE was found to increase participant adaptation to challenges of childbirth for those with high levels of childbirth fear (Verina-Skiba et al., 2022).

Sense of Control

The single-arm pilot study by Byrne et al. (2014) found that MBCE participants endorsed higher childbirth self-efficacy. Fisher et al. (2012) determined that MBCE techniques allowed participants to gain a sense of control during childbirth. The randomized controlled trial by Zarenejad et al. (2020) did not find a correlation between mindfulness and self-efficacy in coping with childbirth.

Childbirth Satisfaction

MBCE and childbirth satisfaction was a common theme addressed in the studies. Bryne et al. (2014) found that participants endorsed more positive birth expectations after completing MBCE. Mindfulness practice during labor was found to improve childbirth satisfaction and positive perception of childbirth (Duncan et al., 2017; Hulsbosch et al., 2021; Werner et al., 2013).

Role Functioning Adaptation

The adaptation of role functioning included the functional status or abilities during labor. MBCE techniques were found to allow women to stay calm during labor (Fisher et al., 2012). The randomized controlled trial by Veringa-Skiba et al. (2022) determined MBCE to increase participant adaptation to the challenges faced during labor. Mindfulness education resulted in decreased levels of distress across the perinatal period, including postpartum (Sbrilli et al., 2020).

Interdependence Adaptation

Interdependence adaptation included the participant's sense of social support, integrity, respect, and value during labor. MBCE not only focuses on the woman, but it also includes techniques to improve partner support and communication. The randomized controlled study by Veringa-Skiba et al. (2021) included women with a high fear of childbirth and their partners, however the results did not include how partner involvement impacted outcomes. Fisher et al. (2012) found that MBCE has the potential to engage the support person in a meaningful way.

Discussion

This review examined prenatal mindfulness education and its effect on childbirth outcomes. In total, ten research studies were analyzed to identify trends and gaps in research and implications for clinical practice. The RAM was used as the guiding theoretical framework (Tulman & Fawcett, 2003). Findings of this review suggested that using an adaptational framework to examine mindfulness and childbirth outcomes highlights the ways in which prenatal mindfulness education can impact childbirth. The RAM theoretical framework includes the following: physiological, self-conceptual, role functioning, and interdependence adaptation (Tulman & Fawcett, 2003). These adaptations were considered when examining articles selected for literature review.

Synthesis of Findings

This integrative review was based on the following research question: What impact does prenatal mindfulness education have on childbirth outcomes? Common themes were identified through review of the literature. However, there is limited research surrounding the impact of prenatal mindfulness education on childbirth outcomes.

Physiological Adaptation

Research studies suggested that prenatal mindfulness education impacted physiological adaptation during childbirth. One study found that a MBCE approach provided women with the skills to remain calm during labor and relieve contraction pain (Fisher et al., 2012). Another study found a link between MBCE and acceptance of labor pain (Veringa-Skiba et al., 2021). The study also found that participants of MBCE were less likely to have a labor epidural and more likely to have unmedicated childbirth. However, another study found that the use of mindfulness was not associated with a decreased use of opioid analgesia, perceived pain, or epidural use (Duncan et al., 2017). A woman's state of mind during labor could potentially impact the way they perceive and process pain (Whitburn et al., 2014). The purpose of mindfulness training for labor is not to remove physical discomfort, but instead provide women with the tools needed to stay focused and accept the pain as a temporary sensation.

Coping and adapting to one's physical surroundings is a focus of MBCE. There was limited research data regarding the impact of mindfulness on complications during the intrapartum period. Two studies found that mindfulness allowed women to adjust to challenges faced during labor and undergo less obstetrical interventions (Veringa-Skiba et al., 2021; Veringa-Skiba et al., 2022). With regards to mode of delivery, MBCE was found to be associated with a decrease in maternal elective non-urgent obstetrical interventions and cesarean birth (Vergina-Skiba et al., 2021). The goal of MBCE is not for all participants to have a unmedicated or physiologic childbirth, however, the study by Veringa-Skiba et al. (2022) found a direct correlation between the quantity of time meditating and a desire for unmedicated childbirth.

Self-Conceptual Adaptation

Two studies found that mindfulness was associated with decreased anxiety and levels of distress (Zarenejad et al., 2020; Sbrilli et al., 2020). Childbirth fear was a common theme across studies included in this integrative review. Studies found that MBCE was associated with decreased fear of childbirth and increased adaptation to challenges of childbirth for women with high levels of childbirth fear (Bryne et al., 2014, Duncan et al., 2017; Veringa-Skiba et al., 2021; Veringa-Skiba et al., 2022). Participants of MBCE endorsed higher levels of childbirth self-efficacy and sense of control over their labor experience (Bryne et al., 2014; Fisher et al., 2012.) Of note, another study did not find a correlation between mindfulness training and sense of childbirth self-efficacy (Zarenejad et al., 2020). Studies suggested that mindfulness was associated with more positive expectations of childbirth and improved overall satisfaction of childbirth experiences (Bryne et al., 2014; Duncan et al., 2017; Hulsbosch et al., 2021; Werner et al., 2013).

Role Functioning Adaptation & Interdependence Adaptation

Techniques learned from MBCE allowed women to stay calm during labor and adapt to challenges faced during childbirth (Fisher et al., 2012; Veringa-Skiba et al., 2022). Mindfulness not only resulted in decreased levels of distress during the perinatal period (Sbrilli et al., 2020). It was found to also decrease levels of distress in the postpartum period. MBCE can include both women and their partners. One study found that mindfulness education allowed for support partners to be more actively engaged in childbirth in a meaningful way (Fisher et al., 2012).

It is difficult to generalize the findings of this integrative review due to the limited amount of current high-quality research studies. Based on the findings of the ten articles included for review, there is some data to suggest that MBCE can have a positive impact on childbirth

outcomes and satisfaction. Greater bodies of literature are not clear on their stance regarding the effectiveness of mindfulness prenatal education on childbirth outcomes.

Clinical Implications

Based on the findings of this integrative review, prenatal mindfulness education could have a progressive impact on childbirth outcomes and satisfaction. Mindfulness-based education classes should be routinely offered to women during the perinatal period to support increased self-efficacy and decrease anxiety. MBCE does not appear to have potential for adverse effects on women's health or outcomes of childbirth. Thus, it can be valued as a safe option for women and partners preparing for childbirth with a desire to incorporate mindfulness or meditation into their experience. By preparing the mind for labor, women can learn to accept the birth experience that they have, regardless of whether it is ultimately unmedicated.

Recommendations for Future Research

Due to the limited research surrounding MBCE and childbirth outcomes, further research is needed to generalize findings. This should include high-quality randomized controlled trials studying mindfulness education versus care as usual and its effect on childbirth outcomes. Future research studies must be completed with more diverse populations and larger sample sizes. This would help to strengthen the validity of findings and allow for generalization of results to the greater population.

Limitations

The primary limitation of this integrative review was the lack of sufficient high-quality research studies. Another limitation is that this review was conducted by a single researcher with periodic collaboration with experts. Review of literature conducted by a single researcher could impact the inclusion and exclusion criteria and analysis of studies. The Whittemore and Knafl

(2005) methodological framework was utilized when conducting the search, making for a more reliable integrative review. Finally, most data included from the studies included narrow sample sizes and lacked high-quality study design.

Conclusion

This integrative review explored the effect of prenatal mindfulness education and childbirth outcomes through the lens of an adaptational framework. Utilizing the RAM allowed for concise synthesis of results and the relationship to childbirth outcomes (Tulman & Fawcett, 2003). Common themes of the literature findings determined that MBCE allowed laboring women to adapt to their environment with physiological, self-conceptual, role functioning, and interdependence models of adaptation. Health care providers, including advanced practice nurses and certified nurse-midwives, can support and guide women toward positive and empowering birth experiences by advocating for mindfulness-based prenatal education.

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Figure 1 – PRISMA Flow Chart

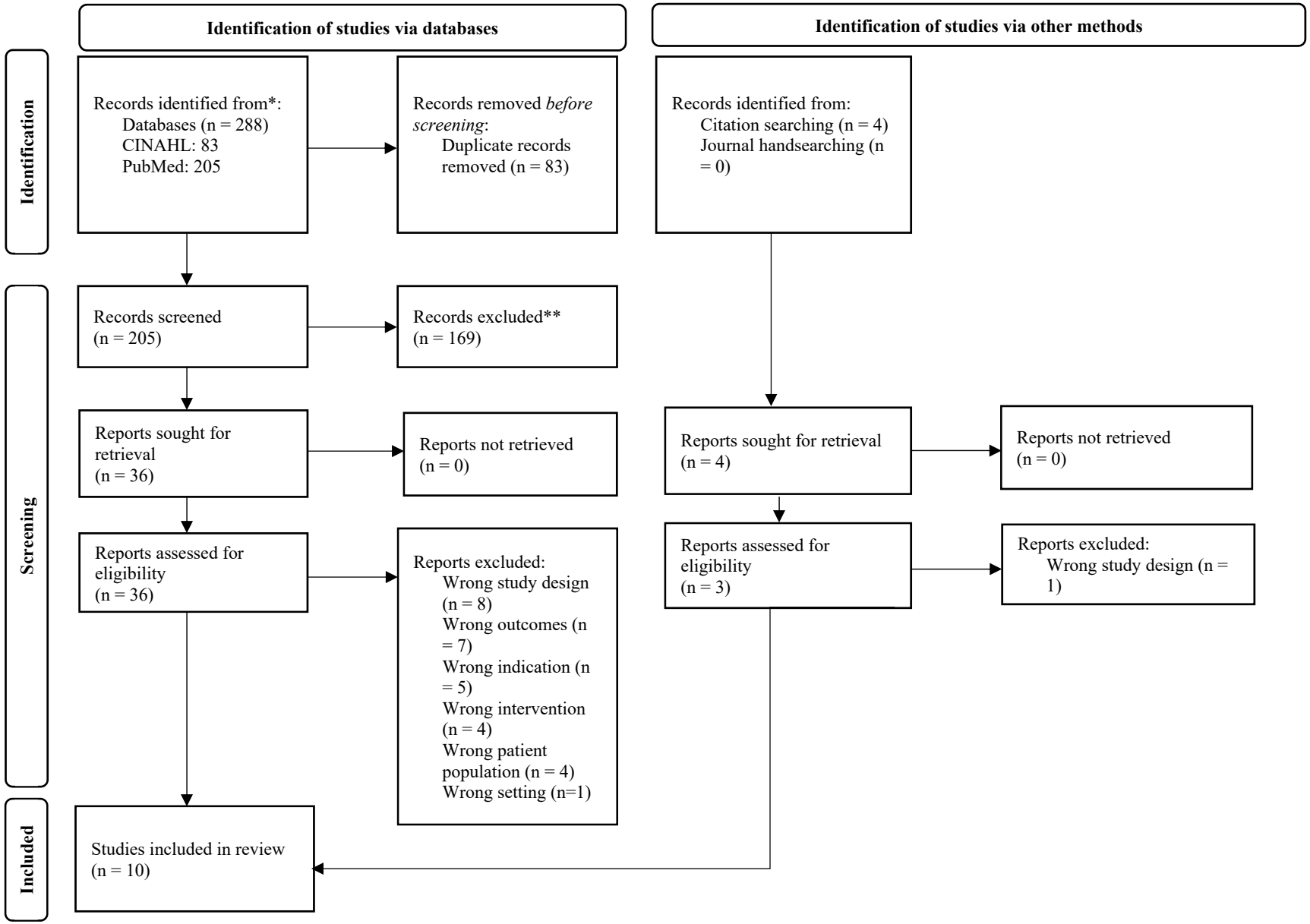

Table 1
Roy Adaptation Model (Tulman & Fawcett, 2003) and Prenatal Mindfulness Education

Adaptation	Adaptation Definition	Examples in Context
Physiological	Basic human needs or physical symptoms	Physical symptoms and physical energy during labor, delivery type, and intrapartum complications
Self-Conceptual	Coping, purpose, and psychosocial symptoms	Preparation for childbirth, fear of childbirth pain, sense of control with labor, satisfaction with childbirth
Role functioning	Functional status in society	Functional status or abilities during labor
Interdependence	Relationships and interactions with others; love, respect, and value	Sense of social support, integrity, respect, and value; support from significant other or family

Table 2

Literature Review Matrix

Author(s), Date	Study Aim	Design, Data Collection	Quality	Sample	Key Results	Strengths, Limitations
Byrne et al. (2014)	To determine if Mindfulness-Based Childbirth Education (MBCE) is effective in reducing birth fear, anxiety, and stress.	Single-arm pilot study; Qualitative design Pre-MBCE and post-MBCE questionnaires	Level: III Quality: Low	18 healthy nulliparous pregnant women between 18-28 weeks gestation	Participants endorsed higher self-efficacy, had more positive birth expectations, and were less fearful of childbirth after completing MBCE.	Large effect size of results Lack of control group Small sample size
Duncan et al. (2017)	To determine if a childbirth education program that teaches mindfulness skills helps women cope with childbirth pain and fear and decrease postpartum depression compared to standard childbirth education.	Randomized controlled trial Self-report assessments at three time points (third trimester, one week following intervention, and postpartum follow-up)	Level: I Quality: Good	30 nulliparous mothers in the late third trimester of pregnancy	Mindfulness-based training aimed to address fear and pain of childbirth improved childbirth satisfaction and prevention of symptoms associated with postpartum depression. Mindfulness coping during childbirth may decrease the use of opioid analgesia (not statistically significant results). There was no evidence to support that mindfulness decreased perceived labor pain or epidural use.	Larger scale randomized controlled trial in needed High rate of epidural use limited the value of pain reports

Fisher et al. (2012)	To determine if MBCE promotes maternal satisfaction with childbirth and enhances their ability to feel involved in their labor.	Descriptive qualitative method Interviews of patient and birth support partners	Level: III Quality: Low	12 nulliparous women between 18-28 weeks gestation along with 7 birth support partners	MBCE techniques allowed women to stay calm, relieve pain during contractions, and gain a sense of being in control during childbirth. MBCE has the potential to engage the support person in a meaningful way.	Results from a pilot study Small sample size Homogenous population of participants
Hulsbosch et al. (2021)	To determine the association between mindfulness training and perceived childbirth experience.	Longitudinal prospective cohort study Self-reported questionnaires: Three Facet Mindfulness Questionnaire-Short Form at 22 weeks gestation; Childbirth Perception Scale and Edinburgh Postnatal Depression scale between 7-21 days postpartum	Level: III Quality: Low	486 nulliparous and multiparous women at 22 weeks gestation and between 7 and 21 days postpartum	Women that participated in mindfulness training demonstrated a more positive perception of childbirth.	Future research is needed due to the lack of studies and data pertaining to mindfulness and pregnancy outcomes.
Sbrilli et al. (2020)	To determine if mindfulness-based	Randomized controlled trial	Level: I	30 nulliparous women in the third	Mindfulness education programs resulted in	Small sample size

	childbirth education lowers distress across the perinatal period compared to treatment as usual.	Assessments of distress pre-intervention, post-intervention, and six weeks postpartum	Quality: Good	trimester of pregnancy	decreased levels of distress based on pre-intervention and 12-month postpartum assessments.	
Veringa-Skiba et al. (2021)	To determine if mindfulness-based childbirth and parenting (MBCP) decreases fear of childbirth and obstetric interventions and improves outcomes of newborns compared to enhanced care as usual (ECAU).	Randomized controlled trial W-DEQ-A one to two weeks pre-intervention, post-intervention, and two to four weeks postpartum	Level: I Quality: High	141 nulliparous and multiparous pregnant women with high fear of childbirth and partners	MBCP was found to significantly decrease fear of childbirth, catastrophizing labor pain, and preference for non-urgent obstetric interventions compared to ECAU. MBCP was shown to increase acceptance of labor pain compared to ECAU. MBCP subjects 36% less likely to undergo epidural anesthesia. MBCP subjects 51% less likely to undergo self-requested cesarean birth.	Further research is needed to determine if the results can have a wider application.

					MBCP subjects twice as likely to have unmedicated childbirth	
Veringa-Skiba (2022)	To determine the method of how MBCP increases natural childbirth in women with high fear of childbirth compared to ECAU.	Randomized controlled trial W-DEQ-A, DSM-5 Perinatal Anxiety Disorder-Labor (DSM-5 PAD-L), Catastrophizing Labor Pain (CLP) and Labor Pain Acceptance Questionnaire (LPAQ)	Level: I Quality: High	111 nulliparous and multiparous pregnant women with high fear of childbirth between 16-26 weeks gestation	Increase in mindful awareness found to be the strongest mechanism of change to adjust to childbirth challenges. The amount of time spent practicing meditation was correlated with an increased inclination for natural childbirth. MBCP increases adaptation to challenges faced with childbirth and less obstetric interventions for women with high fear of childbirth.	Randomized controlled trial with active control group Limited population diversity
Werner et al. (2013)	To explore whether a brief antenatal education course in self-hypnosis can improve childbirth experiences compared to relaxation and mindfulness	Randomized controlled single-blinded trial Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ) at 6 weeks postpartum	Level: I Quality: High	1,222 healthy nulliparous women	Based on the W-DEQ score, self-hypnosis group (42.9) was associated with a more positive birth experience compared to relaxation and meditation group (47.2) and treatment as usual group (47.5).	Generalizability of results limited to nulliparous women Participants more likely wanting natural childbirth compared to non-participants

	education courses and treatment as usual.				Hypnosis group was found to have a better childbirth experience in regard to mode of delivery and levels of fear.	
Whitburn et al. (2014)	To examine women's experience of labor pain in the scope of modern pain science.	Qualitative study Participant Interview	Level: III Quality: Low	19 primiparous and multiparous women in the first month postpartum	State of mind during labor may play a role in the cognitive and evaluative processes that impact pain experiences. Implications for practice: positive state of mind may improve women's experience of labor pain.	Small, exploratory study Subsequent research needed on the cognitive processes of laboring women
Zarenejad et al. (2020)	To determine the effect of mindfulness-based stress reduction (MBSR) on anxiety and coping with childbirth compared to routine care.	Randomized controlled trial Questionnaires: mindfulness, Pregnancy-Related Anxiety Questionnaire, and self-efficacy in coping with childbirth questionnaire	Level: I Quality: Good	70 nulliparous pregnant women at 24-26 weeks gestation	Mindfulness reduces anxiety of pregnant women. Mindfulness did not affect self-efficacy in coping with childbirth.	Inability to control other methods of stress reduction