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# The Impact of the Spinning Babies Method on Labor Duration and Delivery Outcome

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Abstract

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MSN, Walden University, 2015

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## Abstract

Proper maternal positioning has been studied for many years and identified as a critical factor in reducing the risk of labor dystocia and Cesarean births. The Spinning Babies method is a nonpharmacological technique that helps to support a physiological delivery by assisting women with position changes throughout labor. However, there was no literature on the difference between the duration of labor or Cesarean section rates when utilizing the Spinning Babies exercises. This quantitative comparative study examined whether the Spinning Babies method was associated with the duration of the first and second stages of labor and the delivery outcome in low-risk nulliparous women. Rogers' diffusion of innovation theory and Reva Rubin's social support theory were used to understand the Spinning Babies method's influence on labor duration and the delivery outcome in low-risk nulliparous women. Electronic medical records (EMRs) of 400 women who used the Spinning Babies method were compared to the EMRs of 858 women who did not use the Spinning Babies method to examine whether the Spinning Babies method was associated with the duration of labor and delivery outcome. It was found that the conventional way of laboring had a shorter duration of labor in the first and second stages of labor. However, 84% of women who used the Spinning Babies method delivered vaginally while 16% delivered by Cesarean section, compared to a vaginal delivery rate of 77% and a rate of 23% for women who did not use the Spinning Babies Method. The Spinning Babies method could help increase momentum for social change as nurses enhance their practice to include physiological birth concepts and principles to help promote vaginal birth and reduce first-birth Cesarean sections.

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# Chapter 1: Introduction to the Study

Cesarean section deliveries are the leading surgical procedure in the United States, affecting one in every three women who give birth (Hicklin et al., 2019). In 2017, the United States Cesarean section rate was 32%, 17% higher than recommended (Centers for Disease Control and Prevention [CDC], 2019). Primary Cesarean section in low-risk women accounts for 60% of all Cesarean deliveries in the United States and 90% for a failed vaginal birth after a Cesarean section (VBAC; Montoya-Williams et al., 2017). The high rate of Cesarean births emphasizes the need to investigate interventions that reduce Cesarean deliveries among all women, especially among the low-risk population (Montoya-Williams et al., 2017). The Spinning Babies method is a nonpharmacological technique that is simple and safe for all antepartum nurses to support a physiological birth (Tully, 2020). The Spinning Babies method is an approach in which the delivery nurse assists the patient in many position changes throughout their labor based on where the baby is positioned in relation to the mother's pelvis (Tully, 2020). This current study is significant because it fills a gap in understanding if the Spinning Babies' exercises influence the duration of labor and the delivery outcome in low-risk nulliparous women. The potential positive social change is intended to support The California Maternal Quality Care Collaborative in promoting vaginal birth and reducing first-birth cesareans with evidence-based practices (California Maternal Quality Care Collaborative [CMQCC], n.d.).

Chapter 1 will include a persuasive illustration regarding the difference between the Spinning Babies method for maternal positioning, the duration of the first and second

stages of labor, and the delivery outcome. The research study and hypotheses have been designed to investigate whether there is a difference in the Spinning Babies method and the duration of the first and second stages of labor and delivery outcome. The nature of the study will outline the research study design, methodology, participants, and data collection method. The key terms in the study will be clearly defined in definitions, and factors that will potentially influence the study will be discussed under assumptions. It is vital to include limitations that may impede the internal and external validity of the research, the study's significance and the study's scope, which will consist of purpose, population, duration of the study, theories, and where the research was conducted. Chapter 1 will end by summarizing the key points with supporting data to help transition to Chapter 2.

## Background

Proper maternal positioning is critical for promoting safe vaginal birth and reducing the primary Cesarean section (Huang et al., 2019). Examination of the literature offers evidence that supports maternal position changes throughout labor for a nulliparous and a multigravida. Tussey et al. (2015) noted that maternal position changes effectively increased maternal and fetal circulation and improved uterine contraction quality. According to Agosta (2017), therapeutic techniques in maternal positioning play a vital role in facilitating fetal rotation and descent. Garpiel (2018) indicated that nurses could significantly improve birth outcomes and reduce maternal and fetal morbidity and mortality by promoting maternal positioning. Despite the abundance of information on several therapeutic techniques used in maternal positioning, there is limited evidence in

the literature identifying an effective maternal position that will assist in fetal rotation and descent to reduce the rate of Cesareans births significantly (Barasinski et al., 2018). The therapeutic techniques used in maternal positioning include the peanut ball, the birthing ball, and the Spinning Babies exercises. Alvarado and Outland (2020) evaluated the peanut ball and found the techniques helpful in reducing the duration of the second stage of labor and the Cesarean section rate. Farrag and Omar (2018) revealed that the birthing ball positively impacts maternal labor progress and fetal head descent. Although there is much literature on the effectiveness of maternal positioning throughout labor, there is limited literature on positioning using the Spinning Babies method, as this relatively new technique has yet to be formally researched. However, Cypher (2016) recommends using the Spinning Babies exercises to correct suspected malposition and potentially reduce primary Cesarean delivery rates.

**Gap in Knowledge**

Several studies have investigated the differences between the duration of labor and the delivery outcome when using the peanut ball and the birthing ball. Tussey et al. (2015) found that women who used the peanut ball in the first and second stages of labor had significantly shorter labor times and fewer Cesarean births than women who did not use the peanut ball. Farrag and Omar (2018) found that women who utilized the birthing ball had a significantly shorter duration of the first and second stages of labor, needed less augmentation, and had a higher rate of vaginal deliveries. However, there is no literature on the differences between (a) the duration of labor and (b) the Cesarean section rate when utilizing the Spinning Babies exercises, which was the focus of the current

study. Many organizations recommend using the Spinning Babies exercises for maternal positioning. However, there is no documented evidence of the effectiveness of utilizing the Spinning Babies method and duration of labor or Cesarean section rate. Therefore, the study's findings contribute to the body of knowledge related to the Spinning Babies method and its effect on both duration of labor and the Cesarean section rate.

## Problem Statement

Proper maternal positioning has been studied for many years and has been identified as a critical factor in reducing the risk of labor dystocia and Cesarean births (Alvarado & Outland, 2020). The Primary Cesarean section in low-risk women accounts for 60% of all Cesarean deliveries in the United States and 90% for a failed vaginal birth after a Cesarean section (VBAC; Montoya-Williams et al., 2017). The high rate of Cesarean births and associated complications emphasizes the need to investigate interventions that reduce Cesarean deliveries among all women, especially among the low-risk population (Montoya-Williams et al., 2017). The Spinning Babies method is a new intervention to assist in maternal positioning and has received positive testimonies of its effectiveness in reducing the duration of labor and the Cesarean section rate (Tully, 2020). However, no current research could be located that validates claims of success. Therefore, it is not known if the Spinning Babies method reduces the duration of labor or the rate of Cesarean sections. This research aimed to investigate the influence of the Spinning Babies method on the duration of labor and the Cesarean section rate in low-risk nulliparous women.

The World Health Organization (WHO) indicated that many women wish for natural birth without medical interventions and that childbirth is a normal physiological process that can be accomplished without complications (WHO, 2022). The American College of Obstetricians and Gynecologists (ACOG) recommends that nurses support patients in labor by using minimal medical interventions to help women in labor and to improve their chances of a positive birth outcome and improved patient satisfaction (ACOG, 2019). The National Partnership for Maternal Safety recommends frequent position changes for the woman to promote optimal rotation and descent of the fetal head (Lagrew et al., 2018). The Association of Women's Health, Obstetric, and Neonatal Nurses (AWHONN) recommend physiologic births. The AWHONN indicated that nurses are the primary source of support for women in labor, and their knowledge and experience are vital in promoting a physiological birth for the health of the woman and the infant (AWHONN, 2019). Cypher (2016) recommends using the Spinning Babies exercises to correct suspected malposition and potentially reduce primary Cesarean delivery rates. The Spinning Babies method promotes a physiologic birth by using exercises that encourage rotation and descent of the fetus in the pelvis and is widely used by labor and delivery units throughout the country (Tully, 2020). Nonpharmacological interventions such as the Spinning Babies method are critical to the obstetric community. There is potential to reduce labor duration and the Cesarean section rate to 10-15%, which is the recommended goal subscribed to by the WHO ("Who Statement on Caesarean Section Rates," 2015). The Spinning Babies method could potentially meet the goals of the WHO by reducing the rate of Cesarean births for low-risk nulliparous to 10-

15% and, in turn, reduce maternal and fetal morbidity and mortality ("Who Statement on Caesarean Section Rates," 2015).

Research has shown that the birthing ball and the peanut ball have been practical tools in reducing the duration of labor and the rate of Cesarean births. Alvarado and Outland (2020) report that the peanut ball helped reduce the duration of the second stage of labor with a potential decrease in the Cesarean section rate. Farrag and Omar (2018) revealed that the birthing ball positively impacts maternal labor progress and fetal head descent. However, research has shown that there has not been a statistically significant change in the Cesarean section rate, and the Cesarean birth rate remains at an all-time high of 32.3% in the United States (Marshall et al., 2014). The Spinning Babies method is unlike other nonpharmacological methods currently utilized in obstetric units across the United States. The Spinning Babies method focuses on the physiology of birth and the innate human ability of the woman and the fetus (Tully, 2020). The concepts and principles are based on body balancing and more intelligent birth positioning to improve labor progression (Tully, 2020). With the Spinning Babies method, fetal position matters and dictates the positions used in the exercises (Tully, 2020).

Although the Spinning Babies method is new to the obstetric community, it has received many acclimations about its effectiveness in reducing the duration of labor and significantly reducing the rate of Cesarean births (Tully, 2020). However, there needs to be more evidence in the scientific literature to support the claim. Therefore, the study attempted to fill the gap in knowledge and understanding of the Spinning Babies method on the duration of labor and the Cesarean section rate. The study evaluated the

differences between the Spinning Babies method on the duration of labor and the Cesarean section rate. The study is significant as the Spinning Babies method could affect the duration of labor and the rate of Cesarean sections. The Spinning Babies method could help increase momentum for social change as nurses enhance their practice to include the concepts and principles of physiological birth to help improve birth outcomes and could significantly improve birth outcomes (Tully, 2020).

## Purpose of the Study

This quantitative study aimed to examine whether the Spinning Babies method, a nonpharmacologic intervention used with maternal position changes in labor, is associated with the duration of the first and second stages of labor and with the delivery outcome in low-risk nulliparous women. Recent literature focuses on the birthing ball and the peanut ball as useful birthing tools to reduce labor duration and promote safe vaginal birth. However, growing interests have centered on the Spinning Babies method as an effective nonpharmacologic alternative to assisting women in positions for optimal fetal rotation and descent (Tully, 2020). As most of the testimonies from nurses have been positive, it is also essential to provide evidence of the effect of Spinning Babies exercises on the duration of labor and Cesarean section rate. The variables studied are the Spinning Babies method (independent variable) and the dependent variables of the duration of the first and second stages of labor and the delivery outcome. The study was designed to determine if the Spinning Babies method affects the duration of the first and second stages of labor and the delivery outcome in low-risk nulliparous women.

## Research Questions and Hypotheses

### Research Questions and Null and Alternative Hypothesis

This quantitative comparative study aimed to examine whether the Spinning Babies method, a nonpharmacologic intervention used with maternal position changes in labor, shortens the duration of labor and reduces the rate of Cesarean births. More specifically, the research questions were intended to determine if there was a difference in duration of labor and delivery outcome between low-risk nulliparous women treated with the Spinning Babies method compared to women who did not use the Spinning Babies method.

#### *Research Question 1*

Was there a significant difference in the duration of the first stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not utilize the Spinning Babies method?

$H_0$1: There was no significant difference in the duration of the first stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method.

$H_1$1: There was a significant difference in the duration of the first stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method.

For Research Question 1 (RQ1), the independent variable is the Spinning Babies method measured in a nominal, dichotomous level of measurement with the use of the Spinning Babies method or no use of the Spinning Babies method used during labor. The

dependent or outcome variable for RQ1 is the duration of the first stage of labor measured as minutes for the duration of labor, a ratio level of measurement.

***Research Question 2***

Was there a significant difference in the duration of the second stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not utilize the Spinning Babies method?

$H_0$2: There was no significant difference in the duration of the second stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method.

$H_1$2: There was a significant difference in the duration of the second stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method.

For Research Question 2 (RQ2), the independent variable is the use of the Spinning Babies method measured in a nominal, dichotomous level of measurement with the use of the Spinning Babies method or no use of the Spinning Babies method used during labor. The dependent or outcome variable for RQ2 is the duration of the second stage of labor measured as minutes for the duration of labor, a ratio level of measurement.

***Research Question 3***

Was there a significant difference in the delivery outcome of low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method?

$H_0$3: There is no significant difference in the delivery outcome of low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method.

$H_1$3: There is a significant difference in the delivery outcome among low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method.

For Research Question 3 (RQ3), the independent variable is the same as for RQ1 and RQ2, the use of the Spinning Babies method measured in a nominal, dichotomous level of measurement with the use of the Spinning Babies method or no use of Spinning Babies method during labor and delivery. The dependent or outcome variable for RQ3 is the dichotomous variable of type of delivery, Cesarean or vaginal delivery.

Because the partner site has used the Spinning Babies method since 2021, there was sufficient deidentified data from the medical records of low-risk nulliparous women accessible through a password-protected SharePoint site. The variables were measured by obtaining deidentified data from the medical records of low-risk nulliparous women who arrived at triage in labor with a singleton pregnancy, term gestation, vertex presentation, who had no medical conditions and used the Spinning Babies method throughout the woman's labor. Labor progress was identified by referencing the Friedman curve. The deidentified data from the healthcare organization included women who utilized the Spinning Babies method, duration of labor, and delivery outcome, which was documented in the medical records by the primary nurse during each mother's labor and

retained in the records. The site administrator uploaded three years of deidentified data to an Excel spreadsheet on the Sharepoint site.

## Theoretical Framework for the Study

The theories used to ground the study are Rogers' diffusion of innovation theory and Reva Rubin's social support theory. Rogers's diffusion of innovation theory, the work of Everett Rogers, addresses the process of change with the initiation of new ideas. The diffusion of innovation concept is one of the oldest social science theories that originated in communication and explained how an idea starts and spreads throughout the culture over time (Rogers, 1983). The four components of the theory are innovation, communication, time, and the social system (Rogers, 1983). The Spinning Babies method is an innovation for the organization. The five characteristics linked to innovation adoption include knowledge, opinion, decision, implementation, and approval (Rogers, 1983). The second element is communication, which involves sharing innovation-related information to increase knowledge and understanding. According to Rogers (1983), communication is critical as the information presented to the adopter will enhance or improve the adoption rate of the innovation. The third element is the time it takes to adopt the new idea and the adoption rate.

Several adopters, including innovators, are excited about change and willing to take risks. The innovators are followed by early adopters, early majority, late adopters, and laggards (Rogers, 1983). The fourth element is the social system of individuals who share a common goal or objective. The study examined if there were differences between adopters and nonadopters of the Spinning Babies method and duration of labor, and rate

of Cesarean births. The theory presumes that the new idea will take time to initiate and will require acceptance from the target audience, who are intrapartum nurses. The theory categorizes five adopters, their acceptance rate to change, and their willingness to integrate the idea into their daily practices, which is crucial if the organization strives to reduce Cesarean births. Spinning Babies is a new concept that many organizations have adopted throughout the United States. The effectiveness in communicating the vision for change and improved knowledge of the new method will be vital in reducing the rate of Cesarean births at this organization. A more detailed explanation of Rogers' diffusion of innovation theory will be given in Chapter 2.

Reva Rubin's social support theory is not typically applied to intrapartum nursing care. Reva Rubin discussed women's experiences related to childbirth and maternal uniqueness in 1987 (Sleutel, 2003). Rubin's work primarily focuses on antepartum and postpartum periods. However, Rubin's framework also focuses on the support processes that can help improve birth outcomes. Rubin thought a great deal about the role of nurses in providing supportive care to women in labor and encourages the implementation of nursing interventions that help ease childbirth and improve birth outcomes. The most critical aspect of this theory is that it provides the foundation for a woman's transition into motherhood (Sleutel, 2003). Helping women assume various maternal positions in labor requires a relationship of trust between the patient and the nurse, an integral part of Rubin's framework. A trusting relationship will allow the patient to relax and enable the nurse to provide the care needed for the progression of labor. A relationship of trust between the patient and nurses gives the woman a sense of comfort, knowing the nurse is

knowledgeable in their role and provides compassionate care (Sleutel, 2003). Delivery outcomes are influenced by the support provided at the bedside. Rubin's framework helped guide the study as the framework emphasizes the need for the nurse to practice vigilance in assessing the fetus and the woman and providing continuous support at the bedside by assisting the woman in position changes that will help improve the progression of labor and supports physiological birth. A more detailed explanation of Reva Rubin's framework will be given in Chapter 2.

## Nature of the Study

The research design is a non-experimental comparative design to address this quantitative study's research questions. A comparative approach was used to establish the differences between the independent variable, the use of the Spinning Babies method during labor and delivery, and the dependent variables of the duration of labor and the delivery outcome (Curtis et al., 2016).

The independent variable for the study was the Spinning Babies Method, and the dependent variables were the duration of labor and the rate of Cesarean sections. Maternal positioning has been identified as a critical factor in reducing the duration of labor and the rate of Cesarean births (Alvarado & Outland, 2020). This study aimed to determine if the Spinning Babies Method is associated with the duration of labor and the rate of Cesarean deliveries. This comparative approach investigated a nonpharmacological intervention, Spinning Babies, which assists the woman in different position changes to reduce labor duration and possibly the rate of Cesarean births. A comparative design was used to investigate the differences between the Spinning Babies

method, duration of labor, and delivery outcome without manipulating any of the variables.

De-identified data were obtained from the medical records of low-risk nulliparous women who arrived at triage in labor to investigate this new phenomenon. The inclusion criteria included nulliparous women with a single gestation, vertex presentation, and a term pregnancy without medical complications. The study consisted of nulliparous women who used the Spinning Babies method throughout their labor and those who did not use the Spinning Babies method. De-identified data was provided by the healthcare organization, including whether the woman utilized the Spinning Babies method, race, maternal age, gestational age, labor duration, and delivery outcome documented in the primary nurse's medical records. The staff utilized the Friedman curve and the WHO Partograph, a labor progress and assessment tool, to assess labor progress and are essential tools when determining the duration of labor (Lavender & Bernitz, 2020). The Spinning Babies method was initiated at the research site in 2021. The primary nurse had begun documenting position changes, duration of labor, and delivery outcomes since the initiation of the Spinning Babies method. The data were provided as de-identified data in an Excel spreadsheet approved by the organization. IBM SPSS version 28 software was used to analyze these data statistically and to evaluate the impact the Spinning Babies method had on the duration of labor and delivery outcome (see Wagner, 2016).

## Definitions

### Independent Variable

*The Spinning Babies Method*: A nonpharmacological intervention that supports the rotation and descent of the fetus by positioning the woman in various positions based on the position of the fetus (Tully, 2020).

### Dependent Variables

*Duration of Labor*: The length of time the woman progresses through the first stage of labor, which is the onset of regular painful contractions, active labor, which is when the rate of cervical dilation accelerates and the second stage of labor, which is when the cervix is completely dilated and continues until the fetus is delivered (LeFevre et al., 2021)

*Cesarean section*: A surgical delivery by which the fetus is delivered through an incision in the woman's abdomen (Gams et al., 2019).

### Other Definitions

*Friedman Curve:* A graph representing labor progression. The cervical examination is recorded every hour throughout labor, showing rates of cervical dilation and fetal descent during active labor. A graphic illustration of the hours of labor charted against cervical dilation in centimeters form the Friedman curve and determines if labor is occurring at an optimal rate (Lavender & Bernitz, 2020).

*WHO Partograph*: A graphic illustration of labor with the intent to assess labor progress to enhance the management of labor (Lavender & Bernitz, 2020).

*Nulliparous:* A woman who has not given birth previously (Merriam-Webster, n.d.).

*Primigravid:* A woman in her first pregnancy (Merriam-Webster, n.d.).

*Low-risk Pregnancies:* There is no active complications and there are no maternal or fetal issues that positions the pregnancy at increased risk for complications (*Low-Risk Pregnancies*, 2021).

*Traditional method of laboring:* Walking, rocking in a chair, sitting on a birthing ball, side lying or laboring on back.

## Assumptions

The central assumption was that the Cesarean section rate would continue high due to a lack of maternal positioning and labor dystocia. Maternal positioning has been identified as a critical factor in reducing the duration of labor and the rate of Cesarean births (Alvarado & Outland, 2020). Research has shown that maternal position changes throughout labor effectively rotate the fetus, encourage fetal descent, and decrease the risk of labor dystocia (Huang et al., 2019). The second assumption was that nurses are educated on the various techniques of the Spinning Babies method and can instruct the women in position changes throughout labor. The labor and delivery nurses attended an 8-hour session to receive instruction on the Spinning Babies method. The 8-hour session is a course to improve the knowledge and understanding of nurses on how to instruct women on positions unique to the Spinning Babies method and the physiology behind the method (Tully, 2020). The third assumption was that nurses documented position changes, contraction patterns, and cervical examinations accurately and in real time.

According to Presley (2017), a challenge most nurses face is having to take the time to document in the electronic medical record and still maintain the personal touch and the need to communicate with their patients. Therefore, nurses are not always charting in real time and often save their charting until the end of the shift or leave the room and enter the information at a workstation at the nurses' station (Presley, 2017). If nurses are not documenting in real time, details of the care provided may be lost or not recorded as it occurred (Presley, 2017).

## Scope/Delimitations

Data were collected from the medical records of all low-risk nulliparous women with singleton pregnancies, term gestation, vertex presentations, and no medical conditions. Therefore, the charts of nulliparous women with multiple gestation, breech presentation, premature gestation, and who had preexisting diabetes, chronic hypertension, chronic respiratory disease, chronic heart disease, chronic renal disease, and chronic liver disease were not used in the study. The study was conducted at a large metropolitan hospital in the Northeast United States, and these data were gathered from 2020-2022.

Quantitative methodology was the best fit for the study. It was chosen to evaluate the differences between the Spinning Babies method, the independent variable, and the outcome variables: the duration of labor and the Cesarean section rate. The data from the study was entered into the SPSS software and analyzed to understand better and interpret the study results (see Creswell & Creswell, 2018). Comparative research was used

because the intention is to determine differences between variables (see Creswell & Creswell, 2018).

The study results could be transferable to other labor and delivery units throughout the United States and surrounding countries because of significant concerns about the high Cesarean section rate. The Healthy People 2020 target goal is to reduce the Cesarean section rate of low-risk nulliparous women to 23.9% (Nelson & Spong, 2021). However, the United States Cesarean section rate remained unchanged between 2016 and 2018 at 25.0% and 25.9%, respectively (Nelson & Spong, 2021). To reach the Healthy People 2020 goal, healthcare organizations have highlighted the importance of implementing processes to reduce Cesarean births, especially among low-risk nulliparous women (Nelson & Spong, 2021).

## Possible Deficiencies Associated with the Study

There are numerous deficiencies associated with the study. First, there are medical interventions that may interfere with maternal position changes, such as an epidural. The data collected from the chart included women who used the Spinning Babies method and, for comparison, those women who did not use the Spinning Babies method. De-identified data was provided from the medical records of those who used the Spinning Babies exercises throughout the labor process and those who could/or preferred not to use the Spinning Babies method. A second deficiency of the study was that the sample was limited to one geographical area and may not represent the population. A third deficiency was interpreting patient response to nurse interventions subject to alternate interpretations. A fourth deficiency was that the timeframe for sufficient data

might be affected. Some of these data may not be used, and some women may not have continued with the Spinning Babies method throughout labor. A fifth deficiency was using a convenience sample which opens up the possibility of selection bias, and the sample may not represent the target population (Berndt, 2020). Last, these data are only as good as the nurse documenting the data.

Often, nurses are involved in their patient's care and have a heavy load of patients for the day and find it difficult to take the time to document in real time. According to Presley (2017), a challenge most nurses face is having to take the time to document in the electronic medical record and still maintain the personal touch and the need to communicate with their patients. Therefore, nurses are not charting in real time and often save their charting until the end of the shift or leave the room and enter the information at a workstation at the nurses' station (Presley, 2017). If nurses are not documenting in real time, details of the care provided may be lost or not documented as it occurred (Presley, 2017).

According to Edmonds and Jones (2012), time was perceived as a commodity to be bought or bargained for on behalf of the patient. Nurses noted that they often find themselves negotiating for extra time for laboring down and assisting the patient in position changes to help with rotation and fetal descent, which is a normal part of labor progress (Edmonds & Jones, 2012). Nurses found that communicating with physicians and providing education on new practices helps alleviate barriers (Edmonds & Jones, 2012). An excellent nurse-physician relationship and the nurse's knowledge and expertise

in labor and delivery greatly influence the nurse's negotiation skills (Edmonds & Jones, 2012).

The study's strength is that all nurses on this unit had been provided the education and had attended the Spinning Babies 8-hour training session to improve their knowledge and understanding of the techniques used in the Spinning Babies method. Shared governance is practiced at this healthcare organization, and transformational leadership is prevalent among nursing leadership. As Spinning Babies has been implemented on the unit, the manager and the assistant nurse manager have supported the staff by ensuring all staff receives their educational dollars and allow them time off shift to attend the course. Additionally, the nurse manager and assistant nurse manager also participated in the class. They can provide hands-on support when there are questions about the different techniques used with the Spinning Babies method. Managers who practice transformational leadership empower nurses by providing quality support, providing information to the staff on new strategies that will improve patient outcomes, and providing resources to ensure goals are met (Boamah et al., 2018).

Several biases could have influenced the study's outcome, such as selection bias, inclusion bias, and analysis bias. Smith and Noble (2014) discussed that research is successful when recruiting participants who meet the study's aim and represent the study population. The study included all nulliparous women who met the inclusion criteria. 10% more data was collected from the chart than the power analysis recommended to avoid the risk of a poor sample size. Analysis bias can occur if the researcher looks for

data that affirms their hypothesis. The study included data from all patients who participated in the study.

## Significance

This study is significant because labor dystocia is the most common contributing factor for a primary Cesarean birth in the United States (LeFevre et al., 2021). Because of the complications associated with labor dystocia, it is essential to recognize abnormal labor patterns and initiate appropriate interventions crucial in assisting with the fetus's rotation and descent (Guittier et al., 2016). Research has shown that maternal position changes throughout labor effectively rotate the fetus and encourage fetal descent (Huang et al., 2019). Providing continuous labor support and assisting in maternal positioning during labor can help prevent labor dystocia and the risk of maternal and neonatal morbidity (Huang et al., 2019). The current study is significant because it fills a gap in understanding by focusing specifically on the influence of the Spinning Babies exercises on the duration of labor and delivery outcome. The study results are significant to the obstetric community as the Spinning Babies method aligns with Lamaze's Healthy Birth Practice #2, approved by the WHO (Ondeck, 2019). The Healthy Birth Practice encourages mobility throughout labor by supporting the woman through frequent position changes to promote optimal rotation and descent of the fetus and reduce Cesarean births (Ondeck, 2019). Several studies have investigated the differences between the duration of labor and delivery outcome when using the peanut ball and the birthing ball. Tussey et al. (2015) found that women who used the peanut ball in the first and second stages of labor had significantly shorter labor times and fewer Cesarean births than women who did not

use the peanut ball. Alvarado and Outland (2020) found that women who labored with an epidural and those who did not were significantly more likely to deliver vaginally and had a shorter duration of labor. However, there is no literature on the differences between the duration of labor and delivery outcome when utilizing the Spinning Babies exercises, which was the focus of the study. With many organizations recommending using the Spinning Babies exercises without documented evidence of its effectiveness in the literature, this study is valuable. This study is significant because understanding the benefit of the Spinning Babies method may help decrease the Cesarean section rate in low-risk deliveries and promote positive delivery outcomes and, therefore, positive social change.

## Summary

The Spinning Babies Method is being used throughout the country, with testimonies of its effectiveness in reducing the duration of labor and the rate of Cesarean births (Tully, 2020). However, no current research could be located that validates claims of success. Therefore, it is not known if the Spinning Babies method reduces the duration of labor or the rate of Cesarean sections. This research aimed to investigate the influence of the Spinning Babies method on the duration of labor and the Cesarean section rate among low-risk nulliparous women.

The theories used to ground the study are Rogers' diffusion of innovation theory and Reva Rubin's framework. Rogers' diffusion of innovation theory was chosen because it addresses the change process with new ideas. The Spinning Babies method is a new concept many organizations have adopted throughout the United States. Rubin's theory

focuses on the support processes that can help improve birth outcomes (Sleutel, 2003). Rubin thought a great deal about the role of nurses in providing supportive care to women in labor. He encouraged the implementation of nursing interventions, such as the Spinning Babies method, that help ease childbirth and improve birth outcomes (Sleutel, 2003).

The research questions were intended to determine if there are differences between the use and nonuse of the Spinning Babies method and duration of labor among low-risk nulliparous women and if the Spinning Babies method influences the Cesarean section rate among low-risk nulliparous women. The research design was a non-experimental comparative design, and the purpose of the study was to describe the Spinning Babies Method's influence on the duration of labor and the rate of Cesarean deliveries. A comparative design was used to investigate the differences between the variables without manipulation from the researcher.

This study is significant because labor dystocia is the most common contributing factor for a primary Cesarean birth in the United States (LeFevre et al., 2021). Because of the complications associated with labor dystocia, it is essential to recognize abnormal labor patterns and initiate appropriate interventions crucial in assisting with the fetus's rotation and descent (Guittier et al., 2016). The current study is significant because it fills a gap in understanding by focusing specifically on the influence of the Spinning Babies exercises on the duration of labor and delivery outcome.

Chapter 2 focused on a literature review of what is known about the Spinning Babies Method and the existing knowledge gap. The literature review provides insight

into what other researchers have said about the Spinning Babies Method to validate the study's assumptions, improve original research questions, and recognize gaps in knowledge.

# Chapter 2: Literature Review

This study evaluated the differences between the Spinning Babies method, labor duration, and the Cesarean section rate. Primary Cesarean section in low-risk women accounts for 60% of all Cesarean deliveries in the United States and 90% of failed VBAC deliveries (Montoya-Williams et al., 2017). Labor dystocia is the most common contributing factor for a primary Cesarean delivery in the United States (LeFevre et al., 2021). Because of the complications associated with labor dystocia, it is essential to recognize abnormal labor patterns and initiate appropriate interventions crucial in assisting with the fetus's rotation and descent (Guittier et al., 2016). Proper maternal positioning has been studied for many years and has been a critical factor in reducing the risk of labor dystocia and Cesarean births (Alvarado & Outland, 2020). There is substantial research that focuses on the effectiveness of the peanut ball and the birthing ball in reducing the duration of labor and the Cesarean section rate. However, little research has discussed the effectiveness of the Spinning Babies method on the duration of labor and the Cesarean section rate.

The Spinning Babies method is a new intervention to assist in maternal positioning and has received positive testimonies of its effectiveness in reducing the duration of labor and the Cesarean section rate. However, a limited body of knowledge exists regarding the influence the Spinning Babies method has on the duration of labor and Cesarean section rate. It is unknown whether the Spinning Babies method reduces the duration of labor or the rate of Cesarean sections. Therefore, this quantitative comparative research study aimed to investigate the influence of the Spinning Babies

method on the duration of labor and the Cesarean section rate among low-risk nulliparous women.

**Synopsis of Current Literature**

This literature review aimed to summarize the importance of maternal positioning in reducing the risk of labor dystocia, the most common cause of Cesarean births (LeFevre et al., 2021). The literature review examined the effectiveness of various interventions in repositioning the woman throughout labor, including the peanut ball, birthing ball, and the Spinning Babies method. The peanut ball and the birthing ball had an abundance of literature on the effectiveness of the exercise methods in reducing the duration of labor but no significant results in lowering the Cesarean section rate to the recommended rate of 10-15% (Bell et al., 2017). The Spinning Babies method, a new intervention, has received many testimonies of its effectiveness in reducing the duration of labor and Cesarean section rate. However, there is no scientific research to confirm the claims. With many organizations recommending the Spinning Babies method, this study is significant because understanding the benefit of the Spinning Babies method may help decrease the Cesarean section rate in low-risk deliveries to the recommended rate of 10-15% ("Who Statement on Caesarean Section Rates," 2015).

Chapter Preview

Chapter 2 provides a detailed description of previous research that has been conducted on the problem. The chapter discusses specific databases and search engines utilized to obtain published works related to the problem within the last five years. The chapter review includes exact keywords and terms used to search for peer-reviewed

articles. As there is a limited body of knowledge on the problem, the chapter discusses the need for more research and the justification for the study. The concepts of the theoretical framework of Rogers' diffusion of innovation theory and Reva Rubin's social support theory are discussed, along with the significance of using the concepts in the study. The chapter summarizes what is known and not known related to the research topic and clearly states the gap in the knowledge of the Spinning Babies method.

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## Literature Search Strategy

### Library Databases and Search Engines

I used Walden University's library to conduct the majority of the literature review, which included PubMed, CINAHL, MEDLINE, ProQuest Nursing, Ovid, ProQuest Central, EBSCO, Science Direct and Allied Health databases. Additional

resources used to search for peer-reviewed articles included Google Scholar and the medical library at my healthcare organization. Other resources used in the literature review included government websites.

**Key Search Terms and Scope of Literature**

The literature review included peer-reviewed articles published within the last 5 years. The search started with the following keywords: *labor and delivery*, which yielded 29,015 articles; *vaginal birth* produced 10,524 pieces of literature; *vaginal deliveries* had 12,104 articles; *cesareans* yielded 35,708 articles, *Cesarean section* yielded 28.699, and *C-section* yielded 10,849. The review included articles related to the phase of care and included the following keywords: *intrapartum care*, 6,657; *intrapartum intervention*, 284; *intrapartum nurses*, 13; and *birth environment*, 1,192. The search continued by reviewing articles related to *the first stage of labor* 1,122 pieces, *the second stage of labor* produced 1,821 articles, *physiologic birth* yielded 533, *labor dystocia* 489, and *duration of labor* 2,139. It was essential to review articles related to the support of the nurse at the bedside and the management of labor. The keywords included *labor management* which yielded 5,832 articles, and *labor support* produced 2,501. The search continued by looking for articles related to the population under study. The search included *primigravid* 1,843, and *nulliparous women* yielded 828 articles. The importance of reviewing articles related to interventions used in maternal positioning had the following keywords: *maternal positioning*, which produced 20 articles. The keyword *Spinning Babies method* yielded 0 articles, *peanut ball* 13, *peanut ball in labor*, 6, *birthing ball*, 9, *birthing ball in labor*, 4. Last, the review included the theories adopted

for the study, which included Rogers' *diffusion of innovation theory* which produced 5, 453 articles and Reva Rubin's *social support theory,* which yielded four outdated articles. The literature search included Boolean operators OR and AND. The articles selected were chosen because the content was related to the topic under study, which included maternal positioning, Cesarean section rate, duration of labor, and articles associated explicitly with interventions that assist with maternal positioning, such as the peanut ball and the birthing ball. I also selected articles related to the theoretical framework for the study. The review included 152 articles, of which 73 were selected.

## Theoretical Framework

### Rogers's Diffusion of Innovation Theory

Rogers' diffusion of innovation theory is one of the oldest social science theories that began in communication to explain how an idea starts and spreads throughout the culture over time (Rogers, 1983). Roger's diffusion of innovation theory addresses the change process by introducing new ideas. Diffusion is a social practice that transpires among people to learn about innovation, such as a new evidence-based approach to improving health care (Dearing & Cox, 2017). The diffusion theory gives an acceptable explanation for why some new practices are accepted quickly and others with difficulty, regardless of the evidence of their possible benefits (Dearing & Cox, 2017). The four components of the theory are innovation, communication, time, and the social system (Rogers, 1983). Innovation is an organization's new idea or method, such as the Spinning Babies method. The five characteristics linked to innovation adoption include knowledge, opinion, decision, implementation, and approval (Rogers, 1983). The second element is

communication, which involves sharing innovation-related information to increase knowledge and understanding. According to Rogers (1983), communication is critical as the information presented to the adopter will enhance or improve the adoption rate of the innovation. The third element is the time it takes to adopt the new idea and the adoption rate. There are several categories of adopters, including innovators who are excited about change and willing to take risks. The innovators are followed by early adopters, early majority, late adopters, and laggards (Rogers, 1983). The fourth element is the social system of individuals who share a common goal or objective.

**Theoretical Propositions**

Rogers' theory proposes different explanations of who adopts innovations early and those who will adopt them late. The adoption rate could depend on individual characteristics, beliefs, skills, social context, elements of the innovation, or the diffusion system itself. The second proposition is that individuals go through phases of decision making which involve awareness, knowledge, influence, evaluation, application, and confirmation, and the understanding that there are different influences at different stages of that process (University of Pennsylvania Scholarly Commons, 2004).

**Previous Application of Theory**

A literature analysis on how the theory was applied in nursing was seen in a study investigating the adoption of evidence-based practice (EBP) for bedside nursing. The successful implementation of an EBP model requires support for the change and diffusion of an innovation. Rogers' theory explains how an evidence-based practice model becomes immersed within a particular setting (Friesen et al., 2017). The model involved

educating the nurses and providing skills and knowledge related to EBP. Rogers' theory established a foundation to test the EBP innovation across the organization. Classroom sessions were provided for the education program (intervention) and group sessions for the literature review, and rating of evidence was the main focus of the education provided. With the Spinning Babies method, nurses were provided nursing dollars to complete an 8-hour session to improve knowledge and skills to diffuse the innovation at the bedside.

**Rationale and Reason for the Choice of Theory**

Roger's Diffusion of Innovation Theory was selected as a foundation for the Spinning Babies method study. Many organizations have adopted the Spinning Babies method throughout the United States. The effectiveness in communicating the vision for change and improved knowledge of the new method will be vital in reducing Cesarean births at this organization. With implementing the Spinning Babies method, Rogers' theory guided the study in determining if there are differences between the Spinning Babies method and duration of labor among low-risk nulliparous women and if the Spinning Babies method has any influence on the Cesarean section rates among low-risk nulliparous women. The theory presumes that adopting and accepting the Spinning Babies method will take time to initiate and require approval from the intrapartum nurses. In the change process, the theory categorizes five adopters of the innovation, their acceptance rate, and their willingness to integrate the idea into their daily practices, which is crucial if the organization is striving to reduce Cesarean births.

## Reva Rubin's Social Support Theory

Rubin's early work is commonly associated with pregnancy and maternal role attainment, focusing on the antepartum and postpartum periods (Sleutel, 2003). Today, Reva Rubin's Social Support theory focuses on intrapartum support, which involves providing comfort during labor and delivery, promoting a physiological birth, and enhancing the self-esteem and uniqueness of the individual (Sleutel, 2003). Rubin's Social Support Theory acknowledges nurses as skilled professionals working on behalf of the patient to provide supportive care to women in labor (Sleutel, 2003). When the patient accepts nursing care, the woman trusts the nurse's ability to perform their job well and to have expert knowledge of the labor and delivery process. Rubin describes nursing care as a gift that keeps giving throughout the labor and delivery process by showing the woman compassion, encouragement, and personalized care (Sletuel, 2003).

## Theoretical Propositions

The proposition is that women shall experience the birth of their child as a positive event and that the provider/nurse should eliminate harmful or ineffective practices (Thies-Lagergren & Johansson, 2019). Intrapartum support involves a caring attitude and presence at the bedside, physical support with managing the birthing environment, and various maternal positions (Thies-Lagergren & Johansson, 2019). The nurse should provide up-to-date information about the woman's progress and advice related to the routines on the unit and advocacy for the patient. Evidence suggests that delivery outcomes are influenced by the support provided at the bedside (Sleutel, 2003). In their supportive role, the nurse is vigilant in assessing the fetus and is diligent in

helping the woman change positions during labor and delivery, which will help reduce the risk of labor dystocia and support physiological birth.

**Literature Analysis of Theory**

Thies-Lagergren and Johansson (2019) utilized Reva Rubin's Social Support theory as a foundation for their study to evaluate the birth experience of couples and the quality of intrapartum care provided by the midwife. The study was a randomized control trial where healthy nulliparous women were randomly selected to give birth on a birth seat or any other position they preferred (Thies-Lagergren & Johansson, 2019). The study results showed the consistency in the couple's experience concerning their lack of control during labor and delivery and the midwife's significant role in improving the probability of a physiological birth through supportive care (Thies-Lagergren & Johansson, 2019).

**Rationale and Reason for the Choice of Theory**

Reva Rubin's Framework was selected because it focuses on intrapartum nursing care. Rubin focuses on the importance of hands-on care and notes that the main focus of the nurse is to provide direct supportive care to the woman to improve comfort and birth outcomes (Sleutel, 2003). Reva Rubin's Framework describes four maternal tasks to achieve maternal identity: ensuring safe passage for mother and child, accepting the child, binding-in stage, and giving oneself (Sleutel, 2003). The tasks are used during the labor and delivery and through to the postpartum phase. However, the maternal task most important for this study is ensuring the safe passage of the infant. Promoting a physiological birth is the focus of the Spinning Babies method, which involves hands-on care with the nurse assisting the woman in moving and placing themselves in positions

that will support the rotation and descent of the infant. The labor and delivery process are quite challenging for most women, and the nurse needs to provide reassurance, compassion, and consistent instructions to assist the woman through the labor and delivery process. Also, the nurse must gain the woman's trust so that the woman feels confident in the nurse's ability and will accept the nurse's assistance when guiding the woman through various positions to ensure the safe passage of the infant. The research questions challenge the theory as the questions sought to understand how effective supportive care is provided through the Spinning Babies method. How effective is the Spinning Babies method in shortening the duration of labor and improving the rate of Cesarean births?

## Literature Review Related to Key Variables

### Studies Related to Chosen Methodology and Scope of Study

Maternal positioning in labor is a significant factor in improving the probability of physiological birth (Ondeck, 2019). Ondeck (2019) updated a previous review of the Healthy Birth Practice #2: Walk, move around, and change positions throughout labor, published in 2014 by Lamaze International and found that the ideal way to give birth is through the support of physiologic childbearing. The author’s evidence-based review determined that mobility in labor effectively reduces pain and the rate of Cesarean deliveries and is not harmful in healthy women with normal labor. Huang and colleagues (2019) described the importance of proper maternal positions. Based on evidence-based research, the authors have found that maternal positioning is a valid non-medical intervention that aids in the progression of birth). Ondeck (2019) and Huang and

colleagues (2019) identified that many physiological mechanisms help labor progress, including positioning the woman in a position to utilize gravity. The results indicated that the nurse must have expert knowledge and skills related to proper maternal positioning to ensure the safety of the woman and fetus. As maternal positioning is the key to improving birth outcomes in several studies, this study aims to investigate the Spinning Babies method, which nurses highly recommend throughout the United States as an excellent intervention in reducing the duration of labor and the rate of Cesarean births. However, there is a lack of knowledge of the effectiveness of this method as there is no research to confirm if the testimonies are true.

**Approaching the Problem**

The WHO, ACOG, the National Partnership for Maternal Safety, and The Association of Women's Health, Obstetric, and Neonatal Nurses recommend following physiologic birth-provided guidelines to improve birth outcomes (Ondeck, 2019). The WHO has advised that healthcare organizations should not disregard the rapid increase in C-section deliveries as it carries short-term and long-term risks for mothers and babies (Yu et al., 2019). Therefore, efforts to reduce the Cesarean section rates must include non-clinical interventions to help support physiologic births. The Spinning Babies Method is a nonpharmacological approach that assists women in various maternal positions and could reduce Cesarean deliveries. However, there is no scientific data to confirm that the Spinning Babies Method influences the duration of labor and the rate of Cesarean births, resulting in a gap in knowledge of the effectiveness of this method which is the reason for conducting the study.

**Strengths and Weaknesses**

Researchers have found proper maternal positioning critical in reducing the risk of labor dystocia and Cesarean births (Alvarado & Outland, 2020). Recently, researchers have conducted studies on using the peanut ball and the birthing ball as a nonpharmacological tool to help reduce the length of labor and the Cesarean section rate (Alvarado & Outland, 2020). The evidence confirms that maternal position changes throughout labor affect the duration of labor and the delivery outcome (Alvarado & Outland, 2020). The strength of one of the studies is that before the implementation of the peanut ball, the nurses were educated regarding the management of labor through targeted education sessions to assist with the acceptance of therapeutic measures to help with frequent position changes (Agosta, 2017). Another study was strengthened by its focus on managing active labor and the need for patience when the nurses actively reposition patients for optimal rotation and descent of the fetus (Mercier & Kwan, 2018).

Agosta (2017) conducted a study involving implementing the peanut ball in a small community hospital where 89% of the women in labor received an epidural. In many cases, the peanut ball was initiated after the patient was relaxed and lying on their side (Agosta, 2017). A weakness in this study was that it was difficult to determine if the peanut ball contributed to the shortened labor duration or the epidural (Agosta, 2017). Mercier and Kwan (2018) used randomized selection to obtain participants. However, the study had a significant dropout rate before the start of the study. Additionally, many participants did not fully dilate after being in the active stage of labor, further affecting the study's sample size.

**Rationale for Selection of the Variables**

The high rate of Cesarean births emphasizes the need to investigate interventions that reduce Cesarean deliveries among all women, especially among the low-risk population (Montoya-Williams et al., 2017). Cypher (2016) recommends using the Spinning Babies exercises to correct suspected malposition and potentially reduce primary Cesarean delivery rates. The Spinning Babies method is a non-pharmacologic approach used by Labor and Delivery nurses throughout the United States and was selected as the independent variable for the study.

In the last several years, growing interests have centered on the Spinning Babies method as an effective non-pharmacologic alternative to assist women in labor into various maternal positions for optimal fetal rotation and descent (Tully, 2020). Most of the testimonies from nurses have been positive, indicating that the duration of labor shortens with this method and that the rate of Cesarean births has decreased significantly. Therefore, the duration of labor and rate of Cesarean deliveries were selected as the dependent variables.

**Review and Synthesis of Studies Related to the Research Questions**

This quantitative study aimed to examine whether the Spinning Babies method, a nonpharmacologic intervention used with maternal position changes in labor, is associated with the duration of labor and rate of Cesarean births. The research questions were intended to determine if there was a difference between the Spinning Babies method and duration of labor and Cesarean section rate in low-risk nulliparous women. The

variables studied were the Spinning Babies method (independent variable), duration of labor, and delivery outcome (dependent variables).

The research questions were:

***Research Question 1***

Was there a significant difference in the duration of the first stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not utilize the Spinning Babies method?

$H_0$1: There was no significant difference in the duration of the first stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method.

$H_1$1: There was a significant difference in the duration of the first stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method.

***Research Question 2***

Was there a significant difference in the duration of the second stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not utilize the Spinning Babies method?

$H_0$2: There was no significant difference in the duration of the second stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method.

$H_1$2: There was a significant difference in the duration of the second stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method.

***Research Question 3***

Was there a significant difference in the delivery outcome of low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method?

$H_0$3: There is no significant difference in the delivery outcome of low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method.

$H_1$3: There is a significant difference in the delivery outcome among low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method.

Examining the literature offers further evidence supporting maternal position changes throughout labor for a nulliparous and a multigravida. Tussey et al. (2015) noted that maternal position changes effectively increased maternal and fetal circulation, improved the quality of uterine contractions, decreased the duration of labor, and improved birth outcomes. According to Agosta (2017), therapeutic techniques in maternal positioning play a vital role in facilitating fetal rotation and descent. Garpiel (2018) indicated that nurses could significantly improve birth outcomes and reduce maternal and fetal morbidity and mortality by promoting maternal positioning. Despite the abundance of information on several therapeutic techniques used in maternal

positioning, there is limited evidence in the literature identifying the proper maternal position that will effectively assist in fetal rotation and descent to reduce the rate of Cesarean births significantly (Barasinski et al., 2018). The therapeutic techniques used in maternal positioning include the peanut ball, the birthing ball, and the Spinning Babies exercises. Alvarado and Outland (2020) evaluated the peanut ball and found the techniques helpful in reducing the duration of the second stage of labor and the Cesarean section rate. Farrag and Omar (2018) revealed that the birthing ball positively impacts maternal labor progress and fetal head descent. While many testimonies describe the positive outcomes for women who use the Spinning Babies techniques, it is unknown whether there is a decrease in the duration of the second stage of labor or a reduction in the Cesarean section rate using this method.

## Summary

### Summarize Major Themes in the Literature

The purpose of the literature review was to summarize the importance of maternal positioning in reducing the risk of labor dystocia, the most common cause of Cesarean births (LeFevre et al., 2021). The research studies reviewed to confirm that nonpharmacological tools/methods have been instrumental in shortening the duration of labor and reducing the rate of Cesarean deliveries. There is much literature on the peanut ball and the birthing ball having a significant impact on the duration of labor and the Cesarean section rate. However, based on the recommendation from the WHO, ACOG, the National Partnership for Maternal Safety, and The Association of Women's Health, Obstetric, and Neonatal Nurses, the Cesarean section rate should not exceed 10-15%

(Ondeck, 2019). The current rate of Cesarean births in the United States stands at 32%, indicating that much work is needed to achieve this goal (Ondeck, 2019).

**What Is Known and What Is Not Known**

The Spinning Babies Method is a nonpharmacological intervention implemented throughout the United States and has received high praise for its effectiveness in reducing the duration of labor and the rate of Cesarean births (Tully, 2020). Although many organizations recommend using the Spinning Babies exercises for maternal positioning, there is no documented evidence in the literature on the differences between the Spinning Babies method and duration of labor and Cesarean section rate. Thus a knowledge gap exists. The current study is significant because it will fill a gap in understanding the Spinning Babies' exercise influence on the duration of labor and delivery outcome in low-risk nulliparous women.

**How the Study Fills the Gap in the Literature and Extends Knowledge**

The gap in the literature was evident when searching the nursing databases and medical journals, as there needed to be literature on the influence the Spinning Babies method has on the duration of labor and the Cesarean section rate could be located. Extending the knowledge to the obstetric community is essential as the Spinning Babies method directly aligns with Lamaze's Healthy Birth Practice #2 where the goal is to support nonpharmacological interventions to support physiological birth (Ondeck, 2019). The Healthy Birth Practice encourages mobility throughout labor by supporting the woman through frequent position changes to promote optimal rotation and descent of the fetus and reduce Cesarean births (Ondeck, 2019).

**Connecting the Gap in the Literature to the Methodology**

The gap in knowledge related to the influence the Spinning Babies method has on the duration of labor and the Cesarean section rate was approached using a quantitative comparative design. The primary nurse documented the Spinning Babies exercises performed throughout labor in the medical record. These data were examined and interpreted using the IBM SPSS Statistics 28.

Chapter 3's methodology section described the process used to critically evaluate the differences between the Spinning Babies method, labor duration, and the Cesarean section rate. De-identified data were obtained from the medical records of low-risk nulliparous from the unit administrator. These data included race, maternal age, provider type, gestational age, labor duration, and delivery outcome, which the primary nurse documented in the medical records for one year before and after implementing the Spinning Babies method. These data were sent via an electronic format once a week and stored on a share point site on the site organization network. These data were accessible by inputting a password from the administrator on Labor and Delivery. The data analysis answered the research questions and improved knowledge related to the Spinning Babies method. The threats to validity could have affected the study results by any number of events outside the researcher's control that may have inhibited these data from the medical records from entering the study. Therefore, the internal threats to validity were minimized by obtaining records of all nulliparous women in labor to compare the results of those who used the Spinning Babies method and those who did not. For external

threats to the validity, Variables outside the study's control were minimized to ensure the results were transferable in other similar settings. Ethics remained a high priority throughout the study by maintaining confidentiality when viewing these data from the medical record.

# Chapter 3: Research Method

This quantitative study aimed to examine whether the Spinning Babies method exercises used with maternal position changes in labor are associated with the duration of labor and the rate of Cesarean births in low-risk nulliparous women. A nonpharmacological way to assist women in position changes throughout labor to help prevent labor dystocia is critical to the obstetric community. The Spinning Babies method has the potential to meet the goals of the WHO by reducing the rate of Cesarean births for low-risk nulliparous women to the recommended rate of 10-15% and, in turn, reduce maternal and fetal morbidity and mortality (Bell et al., 2017).

The research design was a nonexperimental comparative design to address the research questions. A comparative approach was selected to investigate and understand the conditions in a specific population in real time without manipulating any of the variables. The independent variable for the study was the use of the Spinning Babies Method, and the dependent variables were the duration of labor and the presence or absence of a Cesarean section for each birth. This research aimed to examine the relationship between the Spinning Babies method, labor duration, and the Cesarean section rate among low-risk nulliparous women.

## Preview of Chapter 3

Chapter 3 begins by defining the research design, why it is appropriate for the study, and the justification of its use. The chapter introduction discusses the technique used for the design, and the independent and dependent variables are described. In Chapter 3, The target population was identified, the sample size, where the participants

were located, and describe the criteria used to determine which medical records would be used in the study. The study identified and described the sampling technique most appropriate for the design and why the method was selected for the study, the data collection process, and the type of data collected. The collection method includes when and how often the data was collected and the method that would be used for gathering, recording, and managing the data. The procedures that would ensure the confidentiality of these data were identified. The appropriate processes to obtain approvals for the research study through the Institutional Review Boards are presented. In conclusion, the research design is summarized, which then transitions into the next chapter.

## Research Design and Rationale

### Independent and Dependent Variables

The independent variable in the study is the Spinning Babies method, a nonpharmacological approach in which the delivery nurse assists the patient in many position changes throughout their labor based on where the baby is positioned in the mother's pelvis (Tully, 2020). The study's dependent variables are the labor and delivery outcome duration. The influence of the Spinning Babies method on the duration of labor and the Cesarean section rate among low-risk nulliparous women was the aim of this investigation.

### Research Design and Connection to the Research Questions

The quantitative comparative design was used to gain insight into the differences between the use and nonuse of the Spinning Babies method and duration of labor and Cesarean section rate in low-risk nulliparous women. The quantitative comparative

design ensured that the data obtained from the medical records would help answer the research questions related to the investigation of whether the Spinning Babies method impacted the duration of labor or the Cesarean section rate. The Spinning Babies Method was selected to help improve the knowledge of this nonpharmacological intervention that could shorten the duration of labor and lower the rate of Cesarean births rate to 10-15%, which is the goal set by the WHO (2022). The information from this study may be helpful to other researchers conducting similar studies to understand better the efficacy of the Spinning Babies method regarding reducing the duration of labor and the rate of Cesarean sections in low-risk nulliparous women.

The purpose of the study was to answer three research questions:

***Research Question 1***

Was there a significant difference in the duration of the first stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not utilize the Spinning Babies method?

$H_0$1: There was no significant difference in the duration of the first stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method.

$H_1$1: There was a significant difference in the duration of the first stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method.

***Research Question 2***

Was there a significant difference in the duration of the second stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not utilize the Spinning Babies method?

$H_0$2: There was no significant difference in the duration of the second stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method.

$H_1$2: There was a significant difference in the duration of the second stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method.

***Research Question 3***

Was there a significant difference in the delivery outcome of low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method?

$H_0$3: There is no significant difference in the delivery outcome of low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method.

$H_1$3: There is a significant difference in the delivery outcome among low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method.

**Time and Resource Constraints with Design Choice**

The resource constraint involved the time it took for the administrator to upload these data to the SharePoint site for access. The administrator has other responsibilities and uploads these data outside their everyday responsibilities. The time restraints involved obtaining enough data from the medical records to ensure enough data was available to test the null hypothesis. The timeframe for a sufficient amount of data was at risk as some of the data was not used because some women did not continue with the Spinning Babies method throughout labor.

**Design Choice and Research Design to Advance Knowledge in Discipline**

The study utilized the quantitative method with a comparative design to investigate the differences between the use and nonuse of the Spinning Babies method with the duration of labor and delivery outcome in a specific population as it naturally occurs (Bloomfield & Fisher, 2019). This comparative approach revealed the strength of the differences in the duration of labor and delivery outcome with the use and nonuse of the Spinning Babies method (see Curtis et al., 2016). The study's results will generate new knowledge about the Spinning Babies method, as no previous research could be located. De-identified data from the medical records were evaluated to test the hypotheses. These data included race, age, provider type, maternal position changes, labor duration, and delivery outcome. A comparative design was employed to identify beneficial effects in the progression of labor and the reduction of Cesarean births when the Spinning Babies method was employed. The data documented in the medical records helped answer the research questions and test the hypotheses related to the Spinning

Babies Method's influence on the duration of labor and the Cesarean section rate. Study findings may add to the need for more knowledge about the Spinning Babies method. The data may also add to understanding interventions used to assist maternal positioning during labor.

## Methodology

### Target Population

The deidentified data from the medical records included data from low-risk nulliparous women triaged in labor with a singleton pregnancy, term gestation, vertex presentation, and no chronic medical conditions. This study does not involve human subject participation, as data is collected through reviews of medical records. Data from the charts of nulliparous women with multiple gestation, breech presentation, premature gestation, and who have pre-existing diabetes, chronic hypertension, chronic respiratory disease, chronic heart disease, chronic renal disease, and chronic liver disease will be excluded from the study. The data from the study was obtained from the medical records at a large metropolitan hospital in the Northeast US and included demographic data that will include parity, age, and race.

### Power Analysis to Determine Sample Size

To run an a priori statistical analysis, G*Power 3.1 statistical software was utilized to determine the sample size for the target population. The independent *t* test was used for RQ1 and RQ2, and the Chi Test was used for RQ3. The elements that determine the sample size include statistical power, alpha level, and effect size (Kang, 2021). Employing an acceptable value for power is essential to prevent a Type II error or a

rejection of the null hypothesis (Kang, 2021). The level of power was set at .80 for the study. The alpha level of .05 offered solid evidence against the null hypothesis, as there is a 5% probability that the null is correct, resulting in the rejection of the null hypothesis. The effect size is most effective at medium (0.15) and identifies the degree to which the null hypothesis is false (Kang, 2021). The number of tested predictors was one, and the total number of predictors was 2. The total sample size has been calculated to include 170 medical records of nulliparous women (Figure 1) for the independent *t* test and 145 for the Chi test (Figure 2).

**Figure 1**

*G*Power Analysis Plot for Independent* t *Test*

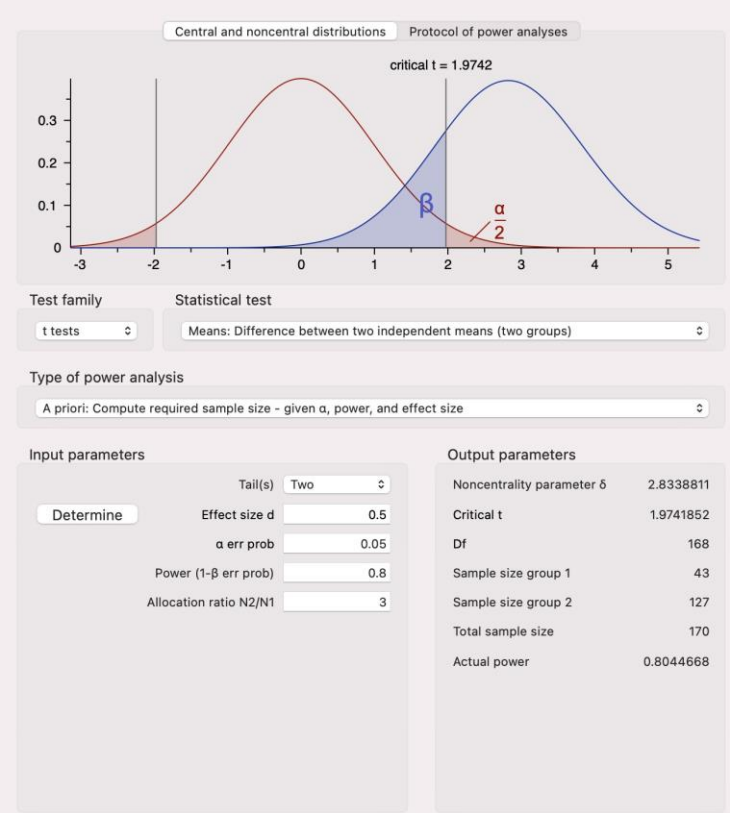
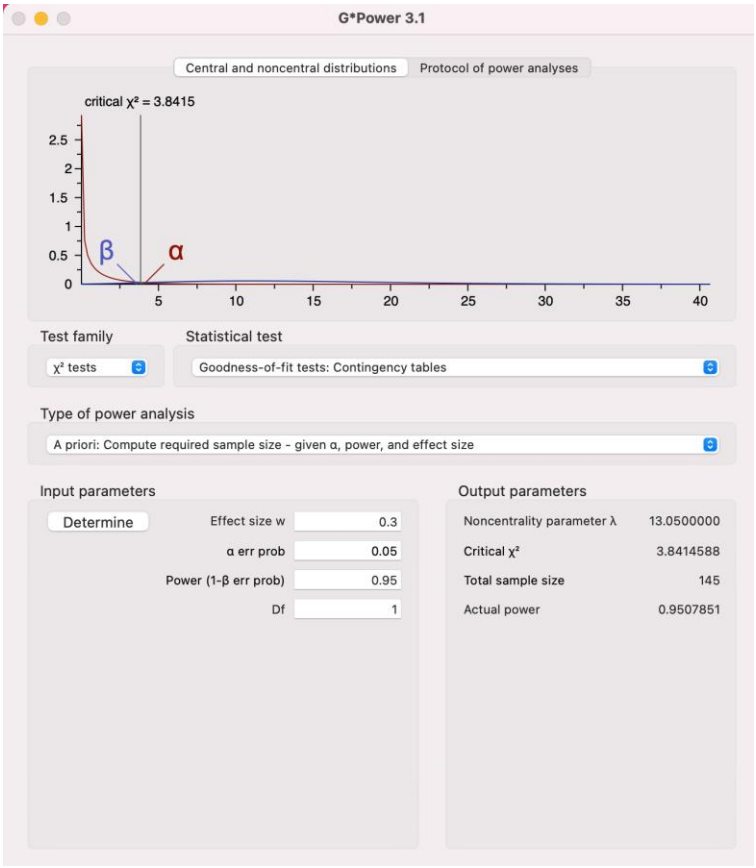


**Figure 2**

*G*Power Analysis Plot for Chi Test*




## Sampling and Sampling Procedures

A sampling method was used to select a subgroup of individuals from the larger population (Taherdoost, 2016). Two sampling methods could have been selected, probability sampling or non-probability sampling. Probability sampling techniques use randomization to ensure that the target population has an even opportunity of being selected. The probability techniques are simple random, stratified, systematic, cluster, and multi-stage (Taherdoost, 2016). A non-probability sampling method does not depend on randomization. However, it relies on the researcher's ability to select elements for a

sample, and individuals will not have an equal opportunity in the selection process (Taherdoost, 2016). There are five non-probability designs: convenience sampling, quota sampling, purposive sampling, network sampling, and theoretical sampling (Taherdoost, 2016).

A non-probability convenience sampling of data from the medical records was selected for the study and helped to examine the differences between the Spinning Babies method, duration of labor, and delivery outcome. The inclusion criteria included data from the medical records of nulliparous women with a single gestation, vertex presentation, and a term pregnancy without medical complications. Nulliparous women with multiple gestations, breech presentation, premature gestation, pre-existing diabetes, chronic hypertension, chronic respiratory disease, chronic heart disease, chronic renal disease, and chronic liver disease will be excluded from the study. The sampling frame consisted of data from the medical records of nulliparous women in labor. The advantage of using a non-probability sampling method is that it is the least time-consuming and most convenient (Berndt, 2020). The disadvantage of using a convenience sample is that there is a possibility of selection bias, and the sample may not represent the target population (Berndt, 2020).

**Procedures for Recruitment, Participation, and Data Collection**

Chart review serves as the primary source for data collection in this study. Deidentified data were collected from the medical records of nulliparous women in labor and evaluated to determine if there were differences between the Spinning Babies method, duration of labor, and delivery outcome. Deidentified data from the healthcare

organization included women who utilized the Spinning Babies method and women who did not use the method, labor duration, delivery outcome, race, maternal age of the woman, and provider type and gestational age. These data were recorded on an Excel spreadsheet and later transferred to the SPSS software.

**Operationalization of Each Variable**

The independent variable, The Spinning Babies method, was measured by a yes or no response, identifying whether the woman utilized the Spinning Babies method in labor. The dependent variable duration of labor will be measured in the actual minutes/hours of labor. The dependent variable, the delivery outcome, will be measured by coding for a vaginal or Cesarean delivery. The inclusion criteria will ensure that all participants are nulliparous women, which was verified when obtaining information from the medical records.

**Data Analysis Plan**

The IBM SPSS version 28 software was utilized to analyze data. Data for the study was shared with me through a SharePoint site. These data were exported to the SPSS software for analysis to examine the difference in duration of labor and the delivery outcome between women who used the Spinning Babies method and those women who did not use the Spinning Babies method. An independent *t* test was used for research questions 1 and 2. The Pearson Chi square test was used for research question 3 because the dependent variable was categorical with two levels (vaginal delivery vs. caesarian section delivery). The interpretation of the Chi square output is presented in the table in Chapter 4, with a discussion of the direction of the differences between the outcome

variables, the strength of the relationship, the level of statistical significance, and the variance shared among the variables.

**Threats to Validity**

The assumptions were examined for the Chi test due to a dichotomous dependent variable. The nurse collected and documented data in real time to ensure accuracy. Ensuring these data's reliability helped ensure accurate analysis and correct research results (Cole & Trinh, 2017). It is common to encounter missing data if the nurse fails to document events as they occur, which can considerably distort results and introduce biases. Therefore, all medical records with incomplete data were eliminated from the analysis.

**Ethical Procedures**

Data were not obtained until the appropriate approval from Walden's Institutional Review Board ( approval number 04-11-23-0302750) and the IRB of the partner organization were received. De-identified data helped to protect the identity of study participants. The unit administrator uploaded data to the Sharepoint site of all nulliparous patients who delivered at this organization and have met the criteria for the study to the share point site. The data consisted of the patient's age, race, provider type, duration of labor, delivery outcome, and whether the patient utilized the Spinning Babies method. These data could only be accessed with a password provided by the unit administrator. Privacy and confidentiality were maintained at all times when accessing personal data.

## Summary

Researchers have identified the importance of maternal positioning during labor to improve the probability of physiological birth. The quantitative comparative design for this study was used to gain insight into the differences between the Spinning Babies method and duration of labor and Cesarean section rate in low-risk nulliparous women. I chose to study the Spinning Babies Method to add to the knowledge base on the use of a nonpharmacological intervention that has the potential to shorten the duration of labor and lower the rate of Cesarean births. The current study is critical because it will fill a gap in understanding if the Spinning Babies' exercises influence the duration of labor and delivery outcome in low-risk nulliparous women.

The study population included low-risk nulliparous women who arrived at triage in labor with a singleton pregnancy, term gestation, vertex presentation, and no chronic medical conditions. The independent variable in the study is the Spinning Babies method, and the dependent variables are the duration of labor and Cesarean section rate. A non-probability convenience sampling was selected for the research and helped to examine the differences between the Spinning Babies method, duration of labor, and Cesarean section rate. The unit administrator provided deidentified data from one year before and one year after implementing the Spinning Babies method. These data were provided electronically once a week and stored on a password-secured Sharepoint site on the organization's network. The data for the study consists of data documented by the nurse at the bedside throughout labor and delivery, and the IBM SPSS version 28 software was used to analyze the data. Data were not obtained until the appropriate approval from

Walden's IRB and the IRB of the partner organization had been received. The study results will increase the obstetric community's knowledge of the Spinning Babies method, which aligns with Lamaze's Healthy Birth Practice #2, where the goal is to support nonpharmacological interventions to support physiological birth (Ondeck, 2019). Understanding the benefit of the Spinning Babies method may help decrease the Cesarean section rate in low-risk deliveries and promote positive delivery outcomes and, therefore, positive social change.

**Preview of Chapter 4**

In Chapter 4, at the completion of the study, data was captured, and the findings and analysis were presented to the target audience. Chapter 4 contains the facts gathered from the study and not opinions. The research's problem, purpose, and questions were restated. The organization of ideas must be logical and easy for the audience to follow. The data was presented in tables, charts, and figures that helped summarize and clearly explain the study's findings. The demographics were summarized ( maternal age, race, provider type, and gestational age) and presented in a table. The findings are organized based on the research questions. It is essential to ensure the tables are concise valid, and clear so the audience can understand the study results. Chapter 4 describes what the research revealed, to what extent the results support what is found in the literature, or how it differed.

# Chapter 4: Results

Proper maternal positioning has been studied for many years and has been identified as a critical factor in reducing the risk of labor dystocia and Cesarean births (Alvarado & Outland, 2020). Primary Cesarean section in low-risk women accounts for 60% of all Cesarean deliveries in the United States and 90% of failed VBAC (Montoya-Williams et al., 2017). The high rate of Cesarean births and associated complications emphasizes the need to investigate interventions that reduce Cesarean deliveries among all women, especially among the low-risk population (Montoya-Williams et al., 2017).

This study aimed to examine whether the Spinning Babies method, used with maternal position changes in labor, was associated with the duration of the first and second stages of labor and the delivery outcome in low-risk nulliparous women. The Spinning Babies method promotes a physiologic birth by using exercises that encourage rotation and descent of the fetus in the pelvis and is widely used by labor and delivery units throughout the country (Tully, 2020). Nonpharmacological interventions such as the Spinning Babies method are critical to the obstetric community. There is potential to reduce labor duration and the Cesarean section rate to 10-15%, which is the recommended goal subscribed to by the WHO ("Who Statement on Caesarean Section Rates," 2015).

The research questions were intended to determine if there was a difference in the duration of the first and second stages of labor and the delivery outcome between low-risk nulliparous women treated with the Spinning Babies method compared to low-risk

nulliparous women who did not use Spinning Babies. The research questions answered were the following:

***Research Question 1***

Was there a significant difference in the duration of the first stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not utilize the Spinning Babies method?

$H_0$1: There was no significant difference in the duration of the first stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method.

$H_1$1: There was a significant difference in the duration of the first stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method.

***Research Question 2***

Was there a significant difference in the duration of the second stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not utilize the Spinning Babies method?

$H_0$2: There was no significant difference in the duration of the second stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method.

$H_1$2: There was a significant difference in the duration of the second stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method.

***Research Question 3***

Was there a significant difference in the delivery outcome of low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method?

$H_0$3: There is no significant difference in the delivery outcome of low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method.

$H_1$3: There is a significant difference in the delivery outcome among low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method.

**Preview of Chapter 4**

Chapter 4 starts with the problem statement, the purpose of the study, and the research questions/hypothesis. These data are summarized in tables and charts. They explain the differences between the Spinning Babies method and the duration of labor and the delivery outcome between low-risk nulliparous women who utilized the Spinning Babies method and women who did not use the Spinning Babies method. The findings are organized based on the research questions after first summarizing the demographics (maternal age, race, provider type, and gestational age) and presenting them in tables. In Chapter 4, the findings reveal to what extent the results support what is found in the literature or how they differed.

**Data Collection**

The secondary data from the study were obtained from the medical records of all nulliparous women in labor who had a full term gestation, singleton pregnancy, and no medical diseases. The women with the following characteristics were excluded from the study: multiple gestations, breech presentation, premature gestation, and those with pre-existing diabetes, chronic hypertension, chronic respiratory disease, chronic heart disease, chronic renal disease, and chronic liver disease. The study was conducted at a large metropolitan hospital in the Northeast United States, and data were gathered from 2021-2022.

The primary nurse documented these data in the medical record. The unit administrator performed the initial chart review for 2021-2022. Data were uploaded to a SharePoint site after the removal of all identifiers. These data consisted of the duration of labor, delivery outcome, and whether the woman used the Spinning Babies method. Demographic data included maternal age, race, provider type, and gestational age. Data were gathered from the SharePoint site and manually entered into an Excel spreadsheet after reviewing it to ensure all records met the criteria. These data were coded and uploaded to the IBM SPSS version 28 software. Using G*Power, the minimum sample size required for the Chi test was 145 to attain a power of .95, an alpha of .05, and a medium effect size. The minimum sample size needed for the *t* test was 170 to attain a power of .80 with an alpha of 0.5 and a medium effect size. Therefore, the 416 patients who utilized the Spinning Babies method and the 1145 patients who had not used Spinning Babies was a large enough sample size to achieve adequate power.

**Demographic Characteristics**

This quantitative retrospective study included 1258 nulliparous women who delivered between April 2021-December 2022. The 400 women who utilized the Spinning Babies method were 302 White women, 10 Black women, 47 Asian women, and 41 other nationalities. Eight hundred fifty eight (858) women did not use the Spinning Babies method throughout their labor, which included 642 White women, 37 Black women, 84 Asian women, and 95 women of other nationalities. It is important to note that White women were found to have the highest rate of utilizing the Spinning Babies method at 75.5%, followed by Asian women at 11.8%. African American women had the lowest percentage of using the Spinning Babies method at 2.5% (Table 1).

**Table 1**

*Race*

| Race | Spinning Babies | Traditional Method | Total |
|---|---|---|---|
| White | 302 (75.5%) | 642 (74.8%) | 944 (75.0%) |
| Black | 10 (2.5%) | 37 (4.3%) | 47 (3.7%) |
| Asian | 47 (11.8%) | 84 (9.8%) | 131 (10.4%) |
| Other | 41 (10.3%) | 95 (11.1%) | 136 (10.8%) |
| Total | 400 (100.0%) | 858 (100.0%) | 1258 (100.0%) |

The maternal age of the participants in the study ranged from age 18-46 years. The highest percentage of women who utilized the Spinning Babies method were between 25 and 34 years old, at 79.8%. The highest percentage of women who used the

traditional way was also in the age range of 25-34 years at 76.5% (Table 2). Women aged 18-24 had a lower percentage of using the Spinning Babies method at 8.0% compared to women who did not use the Spinning Babies method at 11.5%.

**Table 2**

*Maternal Age*

| Maternal Age | Spinning Babies | Traditional Method | Total |
|---|---|---|---|
| 18-24 | 32 (8.0%) | 99 (11.5%) | 131 (10.4%) |
| 25-34 | 319 (79.8%) | 656 (76.5%) | 975 (77.5%) |
| 35-44 | 49 (12.3%) | 102 (11.9%) | 151 (12.0%) |
| 45-54 | 0 (0.0%) | 1 (0.1%) | 1 (0.1%) |
| Total | 400 (100.0%) | 858 (100.0%) | 1258 (100.0%) |

In the study, two providers who performed the deliveries were the Obstetrician and the Certified Nurse Midwife (CNM). The women who utilized the Spinning babies method had a higher percentage of using a Certified Nurse Midwife at 20.3 % compared to 17.0% for women who did not use the Spinning Babies method. Women who did not use the Spinning Babies method had a higher percentage of using an Obstetrician at 83.0% than women who used the Spinning Babies method at 79.8% (Table 3).

**Table 3**

*Provider Type*

| Provider Type | Spinning Babies | Traditional Method | Total |
|---|---|---|---|
| Obstetrician | 319 (79.8%) | 712 (83.0%) | 1031 (82.0%) |

| | | | |
|---|---|---|---|
| CNM | 81 (20.3%) | 146 (17.0%) | 227 (18.0%) |
| Total | 400 (100.0%) | 858 (100.0%) | 1258 (100.0%) |

The babies' gestational age in the study ranged from 38.0 weeks gestation to 42 weeks. Women whose gestational age ranged from 38.0-38.6 had the highest percentage when using the Traditonal method at 21.0%. Women whose gestational age ranged from 39.0-39.6 had the highest rate in the traditional group at 40.0% (Table 4). Women whose gestational age ranged from 40.0-40.6, 41.0-41.6, and 42.0-42.6 had the highest percentage of using the Spinning Babies method at 35.0%, 10.3% and 0.5%, respectively (Table 4).

**Table 4**

*Gestational Age*

| Gestational Age | Spinning Babies | Traditional Method | Total |
|---|---|---|---|
| 38.0-38.6 | 76 (19.0%) | 180 (21.0%) | 256 (20.3%) |
| 39.0-39.6 | 141 (35.3%) | 343 (40.0%) | 484 (38.5%) |
| 40.0-40.6 | 140 (35.0%) | 283 (33.0%) | 423 (33.6%) |
| 41.0-41.6 | 41 (10.3%) | 52 (6.1%) | 93 (7.4%) |
| 42.0-42.6 | 2 (0.5%) | 0 (0.0%) | 2 (0.2%) |
| Total | 400 (100.0%) | 858 (100.0%) | 1258 (100.0%) |

**Statistical Assumptions**

The study used two statistical tests: the Independent Samples *t* test and the Chi square test for independence. The independent samples *t* test assumes that the dependent variable is measured at the ratio level using a continuous scale, that data was obtained using a random sample from the study population, that the independent observations are maintained, and that the sample is normally distributed, sufficient sample size and equality of variance. The assumptions for the Chi square test for independence are that there is random sampling and independent observations, each person is counted once and is not listed in each group, and the lowest expected frequency in any cell should be five or more.

**Statistical Analysis Findings**

**RQ1**: Was there a significant difference in the duration of the first stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not utilize the Spinning Babies method?

The hypothesis from RQ1 stated that there was a significant difference in the duration of the first stage of labor between low-risk nulliparous women who used the Spinning Babies method and women who did not utilize the Spinning Babies method. An Independent Samples t-test was conducted to compare the duration of the first stage of labor between low-risk nulliparous women who used the Spinning Babies method and women who did not use the Spinning Babies method. The results showed that women who used the Spinning Babies method spent an average of 8 hours and 50 minutes in the first stage of labor ($M$ = 8.500, $SD$ = 5.0166). Women who did not use the Spinning

babies method spent an average of 8 hours in the first stage of labor (*M*=8.037, *SD* = 9.2861), a difference of 50 minutes (Table 5). The assumption for equal variances was not violated as $p = .410$.

**Table 5**

*Group Statistics*

| | Number of Participants | Mean | Standard Deviation |
|---|---|---|---|
| Spinning Babies Method | 315 | 8.500 | 5.0166 |
| Traditional Method | 620 | 8.037 | 9.2861 |

The *p* value under the two-sided column was .410, which indicates that there is not a statistically significant difference in the duration of the first stage of labor between nulliparous women who used the Spinning Babies method compared to nulliparous women who did not use the Spinning Babies method indicating the Null hypothesis could not be rejected (Table 6). The degree of the differences in the means (*M*D = .4625, 95% CI: -.6379-1.5630) was very small (.060).

**Table 6**

*Independent Samples Test*

| | *F* | Sig. | *t* | *df* | Two Sided *p* | Mean difference | 95% Confidence Interval |
|---|---|---|---|---|---|---|---|
| Equal Variances Assumed | 2.461 | .117 | .825 | 933 | .410 | .4625 | -.6379-1.5630 |

**RQ2**: Was there a significant difference in the duration of the second stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not utilize the Spinning Babies method?

The hypothesis from RQ2 stated that there was a significant difference in the duration of the second stage of labor between low-risk nulliparous women who used the Spinning Babies method compared to women who did not utilize the Spinning Babies method. An Independent Samples *t*-Test was conducted to compare the duration of the second stage of labor between low-risk nulliparous women who used the Spinning Babies method and women who used the traditional method of laboring. The results showed that women who used the Spinning Babies method spent an average of 2 hours and 23 minutes in the second stage of labor ($M$=2.227, $SD$=1.4516), and women who did not use the Spinning babies method spent an average of 2 hours in the second stage of labor ($M$=1.919, $SD$=1.4359); a statistically significant difference of 23 minutes $t$ (1012)= 3.207, $p$ = .001 (Table 7).

**Table 7**

*Group Statistics*

| | Number of Participants | Mean | Standard Deviation |
|---|---|---|---|
| Spinning Babies Method | 339 | 2.227 | .0788 |
| Traditional Method | 675 | 1.919 | .0553 |

The assumption for equal variances was not violated as the $p = .522$ (Table 8). The $p$ value under the two-sided column was .001, which concludes that there is a statistically significant difference in the duration of the second stage of labor between nulliparous women who used the Spinning Babies method compared to nulliparous women who did not use the Spinning Babies method. The degree of the differences in the means (MD = .3077, 95% CI: .1194-.4960) indicates a small effect size of 0.213. The null hypothesis was therefore rejected.

**Table 8**

*Independent Samples Test RQ2*

| | F | Sig. | t | df | Two Sided p | Mean difference | 95% Confidence Interval |
|---|---|---|---|---|---|---|---|
| Equal Variances Assumed | .410 | .522 | 3.207 | 1012 | .001 | .3077 | .1194-.4960 |

**RQ3**: Was there a significant difference in the delivery outcome of low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method?

The hypothesis for RQ3 was that there is a significant difference in the delivery outcome of low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method. A Chi-square test for independence was conducted to compare the delivery outcome of low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the

Spinning Babies method. The Chi Square test was required because the dependent variable was dichotomous. The results showed that out of 400 women who used the Spinning babies method, 84.0% delivered vaginally, and 16.0% delivered by Cesarean section (Table 9). Out of the 858 women who used the traditional way, 77.0% delivered vaginally, and 23.0% delivered by Cesarean section.

**Table 9**

*Crosstabulation*

| | Spinning Babies Method | Traditonal Method | Total |
|---|---|---|---|
| Vaginal Delivery | 335 (84.0%) | 659 (77.0%) | 994 (78.8%) |
| Cesarean Section | 65 (16.0%) | 199 (23.0%) | 264 (21.2%) |
| Total | 400 (100.0%) | 858 (100.0%) | 1258 (100.0%) |

The minimum expected cell count was not violated, as the results had five or more frequencies. The calculation involves a two-by-two table; therefore, the Continuity of Correction value (7.519) was used for this study. The Continuity of Correction showed a significant value of .006, concluding that there is a statistically significant difference in the delivery outcome of low-risk nulliparous women who used the Spinning Babies method compared to low-risk nulliparous women who used the traditional way of laboring $X^2$, (1,1258)= 7.519, $p$=.006.(Table 10). The Null hypothesis was rejected. The effect size was determined by the Phi value of .079, which indicates a moderate effect size (Table 11).

**Table 10**

*Chi-Square Tests*

| | Value | df | Asymptotic Significance | Exact Sig (2- sided) | Exact Sig (1-sdied) |
|---|---|---|---|---|---|
| Pearson Chi-Square | 7.932 | 1 | .005 | | |
| Continuity Correction | 7.519 | 1 | .006 | | |
| Likelihood Ratio | 8.212 | 1 | .004 | | |
| Fisher's Exact Test | | | | .005 | .003 |
| Linear-by-Linear Association | 7.926 | 1 | .005 | | |
| N of Valid Cases | 1258 | | | | |

**Table 11**

*Symmetric Measures*

| | Value | Approximate Significance |
|---|---|---|
| Phi | .079 | .005 |
| Cramer's V | .079 | .005 |
| N of Valid Cases | 1258 | |

## Summary

The study examined whether the Spinning Babies method, used with maternal position changes in labor, was associated with the duration of the first and second stages of labor and the delivery outcome in low-risk nulliparous women. The results from the independent samples t-test for research question one did not support the hypothesis that there is a significant difference in the first stage of labor duration between low-risk nulliparous women who used the Spinning Babies method compared to women who did not use the Spinning Babies method. The results showed that women who used the Spinning Babies method spent an average of 8 hours and 50 minutes in the first stage of labor compared to 8 hours for women who did not use the Spinning babies, a difference of 50 minutes. The results from the independent samples t-test for research question two were statistically significant as the women who did not use the Spinning babies method spent 23 minutes less in the second stage of labor than those who used the Spinning Babies method. The results from the Chi-Square test for research question three supported the hypothesis that there was a statistically significant difference in the delivery outcome of low-risk nulliparous women who used the Spinning Babies method

compared to women who did not use the Spinning Babies method. The results showed that 84% of women who used the Spinning Babies method delivered vaginally, and 16% delivered by Cesarean section, compared to a vaginal delivery rate of 77% and a rate of 23% for women who used the traditional method. To make a more conclusive statement about the differences between the duration of labor and delivery outcome of women who use the Spinning Babies method compared to women who did not use the Spinning Babies method, a more comprehensive investigation would be required.

Chapter 5 will provide a summary of the research and the key findings. The interpretation of the results will describe ways the findings help to extend knowledge in the discipline related to the Spinning Babies method. The findings will be interpreted in the context of the theoretical framework. The chapter will describe the recommendations for future research supported by the current study's strengths and limitations. The chapter will close with the present study's effects on social change, and suggestions for future research will also be addressed.

# Chapter 5: Discussion, Conclusions, and Recommendations

This study examined whether the Spinning Babies method, a nonpharmacologic intervention used with maternal position changes in labor, improved the duration of labor and rate of Cesarean births. More specifically, the research questions were intended to determine if there was a difference in the duration of labor and delivery outcome between low-risk nulliparous women who used the Spinning Babies method compared to traditional methods. Research has shown that the birthing ball and the peanut ball have been practical tools in reducing the duration of labor and the rate of Cesarean births (Alvarado & Outland, 2020; Farrag & Omar, 2018). However, no literature could be located that discussed the differences between the duration of labor and Cesarean section rate when utilizing the Spinning Babies exercises, which was the focus of the current study.

A quantitative comparative design was used to gain insight into the differences between the Spinning Babies method and duration of labor and Cesarean section rate in low-risk nulliparous women. The study was conducted at a large metropolitan hospital in the Northeast United States. These data were gathered from 2020-2022, one year before Spinning Babies began and one year into using the Spinning Babies method at the site. Deidentified data were obtained from the medical records of low-risk nulliparous women who arrived at triage in labor to investigate this new phenomenon, the Spinning Babies method. These data included race, maternal age, provider type, gestational age, labor duration, and delivery outcome, which the primary nurse had documented in the medical records. These data were sent via an electronic format once a week and stored on a share

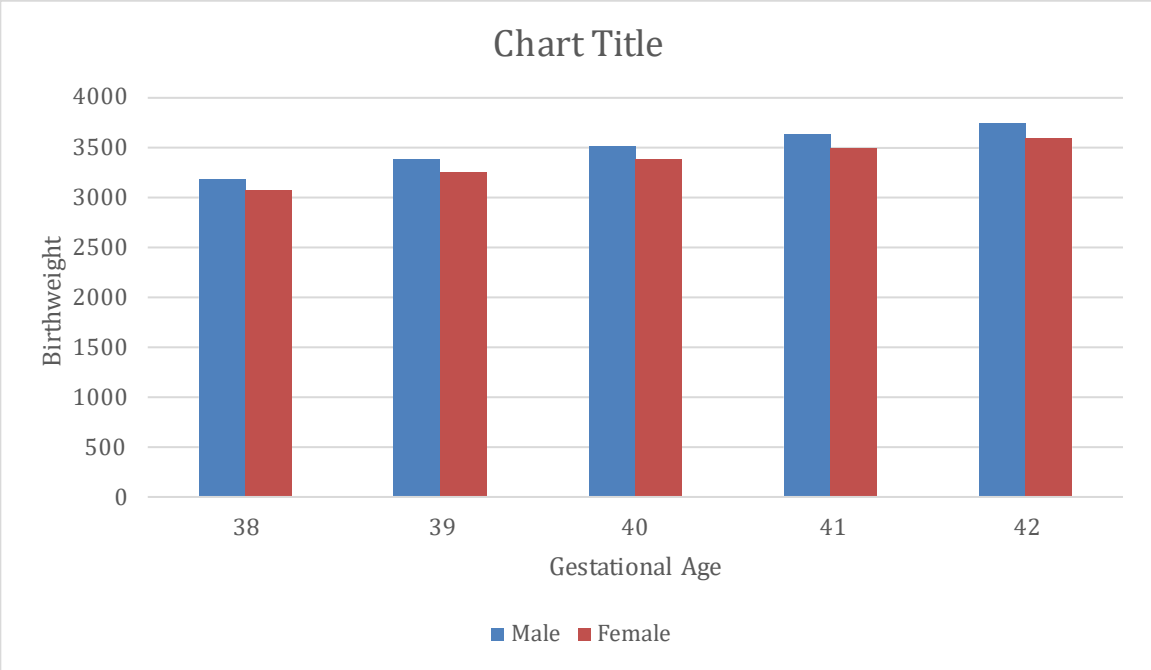
point site on the research site organization's network. These data were accessed by inputting a password assigned by the unit administrator.

## Interpretation of Findings

The Spinning Babies method has received positive testimonies of its effectiveness in reducing the duration of the first and second stages of labor and the Cesarean section rate (Tully, 2020). The alternative hypothesis stated that there is a significant difference in the duration of the first and second stages of labor in women who used the Spinning Babies method compared to women who used the traditional way of laboring, which was supported by this study. Women who used the traditional method of laboring had a shorter duration in the first stage of labor by 50 minutes and 23 minutes in the second stage of labor, which was found to be statistically significant with very small and small effect sizes, respectively. It is important to note that women with a gestational age of 40 to 42 weeks had a higher percentage of using the Spinning Babies method (45%) than women who used the traditional method (39%). According to the US reference guide for singleton first-born males and females (Figure 3), the birth weight increases as the gestational age advances (Aris et al., 2019). According to Chen et al. (2018), increased birth weight increases the length of the active phase and the second stage among nulliparous women. Therefore, based on this research, the extended duration of the first and second stages of labor for women whose gestation was 40-42 weeks could have been due to a higher birthweight infant.

**Figure 3**

*Birthweight by Gestational Age*




Additionally, women aged 35-44 years had a higher percentage of using the Spinning Babies method (12.3%) compared to women who did not use the Spinning Babies method (11.9%). Women aged 18-24 years had a higher percentage of using conventional laboring (11.5%) than those who used the Spinning Babies method (8.0%). According to (Chen et al., 2018), older nulliparous women were more likely to experience a longer first stage than younger women, and the overall labor duration would be extended as maternal age increased. According to Prosser et, al., (2018), the likelihood of a physiological birth was reduced with advanced maternal age, higher gestational age, and induction of labor.

The alternative hypothesis for RQ3 stated that there is a significant difference in the delivery outcome among low-risk nulliparous women who used the Spinning Babies

method compared to women who did not use the Spinning Babies method, which was supported by this study. Women who used the Spinning Babies method had a higher percentage of delivering vaginally (84%) than women who did not use the Spinning Babies method (77%). The rate of Cesarean births for the women who used the Spinning Babies method was 16.0% compared to 23.0% for women who did not use the Spinning Babies method.

Despite the longer duration time spent in the first and second stages of labor, women who used the Spinning Babies method had a higher percentage of delivering vaginally which has the potential to reduce the Cesarean section rate to 10-15%, the recommended goal subscribed by the WHO ("Who Statement on Caesarean Section Rates," 2015). The goal of practitioners who utilize the Spinning Babies method is to promote a physiologic birth by using exercises that encourage rotation and descent of the fetus in the pelvis (Tully, 2020). Overall, since adopting the Spinning Babies method on the unit, the Cesarean section rate for nulliparous women, with a singleton pregnancy, vertex, and no medical diseases (preterm gestations and scheduled Cesarean sections not included) has decreased by 3.4%, which is significant progress toward reducing the Cesarean section rate at this organization (Table 12). Using the Spinning Babies method at the study site has the potential for positive social change that will support The California Maternal Quality Care Collaborative in promoting vaginal birth and reducing first-birth Cesareans (California Maternal Quality Care Collaborative [CMQCC], n.d.).

**Table 12**

*Cesarean Section Rate for Full-Term Nulliparous Women from 2020-2022*

| | 2020 | 2021 | 2022 |
|---|---|---|---|
| Vaginal Delivery | 74.6% | 75.3% | 78.0% |
| Cesarean Section | 25.4% | 24.7% | 22.0% |

## Theoretical Framework

Rogers's diffusion of innovation theory was a good fit for the study as it helped guide the staff through the process of change and the introduction of the Spinning Babies method, the independent variable. The diffusion theory gives an acceptable explanation for why some new practices are accepted quickly and others with difficulty, regardless of the evidence of their possible benefits (Dearing & Cox, 2017). The second element of the theory was instrumental in this study as that element involves communication and sharing information related to the Spinning Babies method. According to Rogers (1983), communication is critical as the information presented to the adopter will enhance or improve the adoption rate and increase the nurse's knowledge and understanding of the innovation. The nurses attended an 8-hour course with support from the nurse manager and assistant nurse manager. The managers also participated in the class to provide hands-on support for the staff when there were questions about the different techniques used with the Spinning Babies method. Managers empower nurses by providing quality support, information to the staff on new strategies that will improve patient outcomes, and resources to ensure goals are met (Boamah et al., 2018). The third element was also

valuable as it addresses the time it takes to adopt the Spinning Babies method and the adoption rate. The theory presumes that the new idea will take time to initiate and will require acceptance from the target audience, the intrapartum nurses. The Spinning Babies method was utilized on the unit starting on April 14th, 2021, and the usage of the Spinning Babies method was well documented in the chart and a testimony of its adoption.

Reva Rubin's Social Support theory was excellent for this study as Rubin's work primarily focuses on the support processes that can help improve birth outcomes. Rubin thought a great deal about the role of nurses in providing supportive care to women in labor and encourages the implementation of nursing interventions that help ease childbirth and improve birth outcomes (Sleutel, 2003). Nurses are the primary source of support for the woman in labor, and their knowledge and experience are vital in promoting a physiological birth for the health of the woman and the infant (Association of Women's Health, Obstetric, and Neonatal Nurses [AWHONN], 2019). The theory can be matched to the Spinning Babies method, the independent variable in the study. The Spinning Babies method was used to provide continuous support at the bedside by assisting the woman in position changes that helped improve the labor progression and supported an increase in physiological births and a decrease in the Cesarean section rate.

## Limitations

The study relied on the nurses charting position changes and the time the patient started the first and second stages of labor. The nurses were diligent in documenting position changes which were how the patients who used the Spinning Babies method and

those who did not were identified. However, the investigation found that the time for the first and second stages of labor was only sometimes entered in the chart. If the nurse did not document the start of the first and the second stage, the EHR did not compute the final times.

Failure to document the final times occurred more often for patients undergoing a Cesarean birth and rarely for a vaginal birth. Documenting in real time is very important as the timing of the first and second stages of labor was a variable in the study. So, if the nurse needed to document the time the first and second stages began, it may be challenging to remember precisely when the stages started. Not having that information affected the results when comparing the time the patient labored in the first and second stages when undergoing a Cesarean birth and was not available for comparison between groups for the final timing of the first and second stages of labor. Another limitation is that the documentation may not be accurate, especially if the nurses did not document in real time and had to recall when the patient started the first and second stages of labor.

## Recommendations

Although the Spinning Babies method had the longest time spent in the first and second stages of labor, the goal of decreasing the Cesarean section rate for full-term, nulliparous women was fulfilled. The Cesarean section rate for nulliparous, full-term singleton women at this organization was 25.4% in 2020, well above the 10-15% recommended goal subscribed by the WHO ("WHO Statement on Caesarean Section Rates," 2015). In this study, the Cesarean section rate decreased by 3.4% in two years and has confirmed that positioning women in various Spinning Babies positions throughout

labor positively affects the delivery outcome. The Labor and delivery unit where the research was conducted was just one of seven labor and delivery units within this organization located throughout Eastern Michigan.

The recommendation is for all sites at this organization to adopt this method for all laboring patients who are physically able to perform the various positions. The Spinning Babies method could potentially meet the goals of the WHO by reducing the rate of Cesarean births for low-risk nulliparous and, in turn, reducing maternal and fetal morbidity and mortality ("Who Statement on Caesarean Section Rates," 2015). It is recommended that further research be conducted to include nulliparous and multiparous women, as all women in labor are at risk of a Cesarean section birth, especially women attempting vaginal birth after a Cesarean section (VBAC). Additionally, information on the Spinning Babies method should be first introduced to the women during their prenatal care visits to allow them to read and learn about the various positions of the technique and the benefits of positioning and moving in labor before they arrive on the labor and delivery unit in labor.

## Implications For Social Change

The potential positive social change will be to support The California Maternal Quality Care Collaborative in promoting vaginal birth and reducing first-birth cesareans (California Maternal Quality Care Collaborative [CMQCC], n.d.). Primary Cesarean section in low-risk women accounts for 60% of all Cesarean deliveries in the United States and 90% of a failed vaginal birth after a Cesarean section (VBAC) (Montoya-Williams et al., 2017). The high rate of Cesarean births and associated complications

emphasizes the need to institute interventions such as the Spinning Babies method that reduce Cesarean deliveries among all women, especially among the low-risk population (Montoya-Williams et al., 2017). In this study, the Spinning Babies method was shown to be effective in reducing the Cesarean section rate of nulliparous women in labor who had a full-term gestation, singleton pregnancy, and no medical co-morbidities. Spinning Babies could positively affect all women outside of the study population.

Delayed pregnancy has become increasingly common in the past years, and there has been a substantial increase in the average maternal age of nulliparous women (Radon-Pokracka et al., 2019). According to Radon-Pokracka et al. (2019), advanced maternal age is a risk factor for delivery by Cesarean section. One of the reasons for the increase in the Cesarean section rate is fetal malposition. As this study has shown, the various positions used with the Spinning Babies method may be beneficial in correcting the positions of malpositioned babies and assist in the rotation and descent of the fetal head. Therefore, the recommendation is for obstetricians to provide educational pamphlets on the Spinning Babies Method in the Ob/GYN offices and prenatal clinics and to continue to provide education for the staff in the labor and delivery units throughout the United States.

Based on Reva Rubin's framework, having the support of the nurses and the significant other can help improve birth outcomes. Rubin found the role of the nurses critical in providing supportive care to women in labor. Reva encouraged the implementation of nursing interventions such as the Spinning Babies method that help ease childbirth and improve birth outcomes (Sleutel, 2003). Helping women assume

various maternal positions in labor requires a relationship of trust between the patient and the nurse, an integral part of Rubin's framework. A relationship of trust between the patient and nurses gives the woman a sense of comfort, knowing the nurse is knowledgeable in their role and compassionate in her care (Sleutel, 2003).

Based on Roger's theory, the first element is the Spinning Babies method which is an innovation for the organization. Roger's theory guided leadership in improving the staff's knowledge, opinion, decision, implementation, and approval of this idea (Rogers, 1983). The second element was fulfilled by communicating this change to the staff by sharing information about the innovation. The communication by leadership in offering information to the staff in the form of an 8-hour class was critical to the staff's buy-in to the Spinning Babies method, which was the second element in theory. Presenting the staff information about the Spinning Babies method improved the innovation's adoption rate and increased the nurse's knowledge and understanding. Managers empower the nurses by providing quality support on new strategies to improve patient outcomes and resources to meet their goals (Boamah et al., 2018). Nursing leadership provided educational dollars to allow staff to attend an 8-hour course on the Spinning Babies method, which assisted in the staff's adoption of the Spinning Babies method. The third element, time, was also valuable as it addresses the time it takes to adopt the Spinning Babies method and the adoption rate. As evident in these data from the medical records, the nurses documented position changes and showed that the method is being used. The Cesarean section rate shows evidence of the effectiveness of the Spinning Babies method, with a decrease in the Cesarean section rate by 3.5%.

The fourth element is the social system, a social environment where people belong and have a purpose. Within the labor and delivery unit at the research site, the staff engaged in joint problem-solving to achieve the common goal of decreasing the Cesarean section rate of all women in labor, especially women experiencing their first birth. The research was conducted on a labor and delivery unit with a culture of creativity and strong management dedicated to effecting evidence-based change (Lundblad, 2003).

## Conclusion

Cesarean section deliveries are the leading surgical procedure in the United States, affecting one in every three women who give birth (Hicklin et al., 2019). Primary Cesarean section in low-risk women accounts for 60% of all Cesarean deliveries in the United States and 90% of a failed vaginal birth after a Cesarean section (VBAC) (Montoya-Williams et al., 2017). The high rate of Cesarean births emphasizes the need to investigate interventions that reduce Cesarean deliveries among all women, especially among the low-risk population (Montoya-Williams et al., 2017). Research has shown that proper maternal positioning is critical for promoting safe vaginal birth and reducing the primary Cesarean section (Huang et al., 2019).

This quantitative before-after study found that the Spinning Babies method, a non-pharmacologic intervention used with maternal position changes in labor, is associated with a lower rate of Cesarean births in women compared to women who used the traditional way of laboring. The results also showed that women who did not use the Spinning Babies method had a shorter duration of the first and second stages of labor than those who used the Spinning Babies method. Not dismissing the importance of these

results, it is essential to know that many women who used the Spinning Babies method were of advanced maternal age and had an advanced gestation. According to Chen et al. (2018), older nulliparous women were more likely to experience a longer first stage than younger women and the overall labor duration would be extended as maternal age increased. According to Prosser et al. (2018), the likelihood of a physiological birth was reduced with advanced maternal age, higher gestational age, and induction of labor. Even though research indicated that women with a primary pregnancy who were advanced maternal age and advanced gestation had a higher percentage of delivering by Cesarean section, using the Spinning Babies method reduced the likelihood of surgical birth. Based on the study results, the Spinning Babies method, a nonpharmacological method of positioning women in labor, improves birth outcomes and reduces the Cesarean birth rate associated with an increased risk of infection, bleeding, and trauma to the abdomen or infant.

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