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The Impact of Labor Positioning on Birthing Outcomes

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ABSTRACT

Background: For many years it has been a typical standard of practice for women to labor and deliver in supine or lithotomy positioning. However, there were mixed opinions on whether these were the safest and most effective positions for labor and delivery. **Purpose:** The purpose of this study was to review the current literature discussing positioning during labor and the effects of maternal positions on maternal and fetal outcomes. **Method:** This was a review of the literature. Three databases were searched using key terms and 15 studies were used. The population, intervention, comparison, outcome, and timeframe (PICOT) question for this study was: What are the effects of alternative positioning on maternal and fetal outcomes during labor and delivery, compared to the standard supine or lithotomy positioning? **Findings:** The overall findings were that there is either insufficient or indifferent evidence indicating whether alternative positioning directly affects specific maternal and fetal outcomes. **Conclusion:** However, it was further concluded that education, autonomy, and birthing experience satisfaction were of high priority and were directly correlated with positioning.

INTRODUCTION

Many factors can impact one's birthing experience, especially during the specific laboring and delivery process. A few of these factors include the environment, people present, body positioning, laboring elements, and the mental/emotional state of the expectant. These factors may influence the outcomes for both the mother and the baby [1]. For many years it has been standard for birthing mothers to deliver in the supine or lithotomy position (see Figure 1). However, this positioning can be associated with increased pain during contractions. This has been a preferable position for doctors as it provides the physicians with easier access to the mother and the fetus [2]. The purpose of this study was to review the available literature regarding how maternal positioning affects maternal and fetal outcomes during labor and delivery.

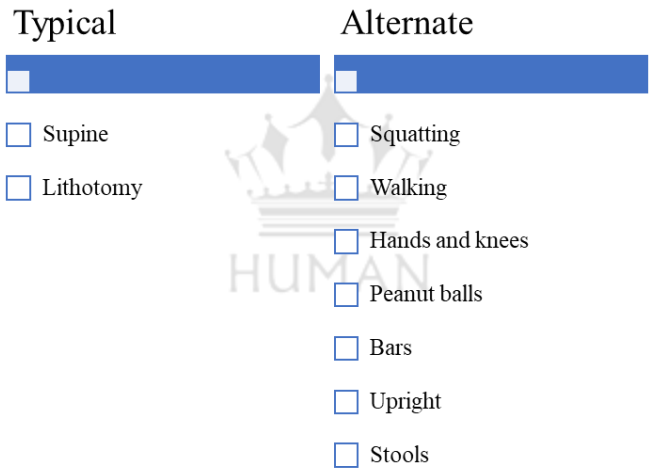

Figure No. 1: Typical and Alternate Labor Process

Professionals at the Office on Women's Health claimed that changing positions during labor and delivery can help promote relaxation and pain management [3]. Modrzejewska et al. [4] depicted the evolution of maternal birthing positions in which numerous ancient paintings depict women in various positions during labor and delivery. It is further highlighted that during most birthing experiences, women are often highly encouraged to assume a supine or lithotomy position and that these positions are often linked to negative maternal and fetal outcomes [4]. The PICOT question for this study was: What are the effects of alternative positioning on maternal and fetal outcomes during labor and delivery, compared to the standard supine or lithotomy positioning?

METHOD

This review of the literature was first constructed by reviewing 3 databases using key terms and phrases. The key terms and phrases used include labor positions, alternate positions in labor, and labor and delivery positioning. Alternative labor positioning was determined to encompass any type of positioning during the laboring process that was not supine or lithotomy. This included squatting, upright positioning, hands and knees, walking, and the use of various positioning instruments like peanut balls, bars, and stools. The databases accessed included Cochrane Library, Cumulated Index in Nursing and Allied Health Literature (CINHAL), and Medline Plus (see Figure 2). Between the 3 databases, a total of 2,716 studies were initially found. However, 2,701 studies did not fit within the inclusion criteria.

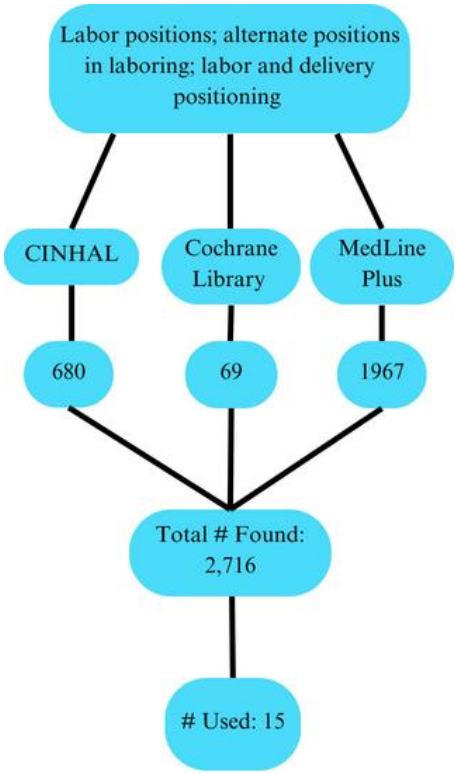

Figure No. 2: Database Search Findings

To be included, the study had to be available in English and published within the last three years (2020-2023). It also had to be available as a full text that was free and available for public access (see Figure 3). This set of criteria excluded 2,701 studies, which resulted in 15 studies being chosen for review.

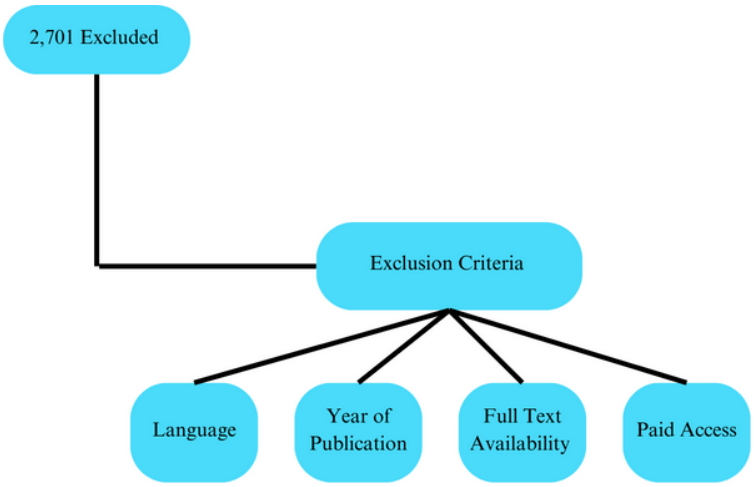

Figure No. 3: Inclusion and Exclusion Criteria

Once the studies were included, they were categorized by nursing level of evidence. Schmidt and Brown [5] detail the criteria used to define the level of evidence. Level I is determined to be the highest level of reliability and level VII is the lowest. Most of the studies used for review were of higher reliability (see Figure 4). The literature was reviewed, and five emerging themes were discovered. The themes were concepts that appeared among at least two or more of the selected studies.

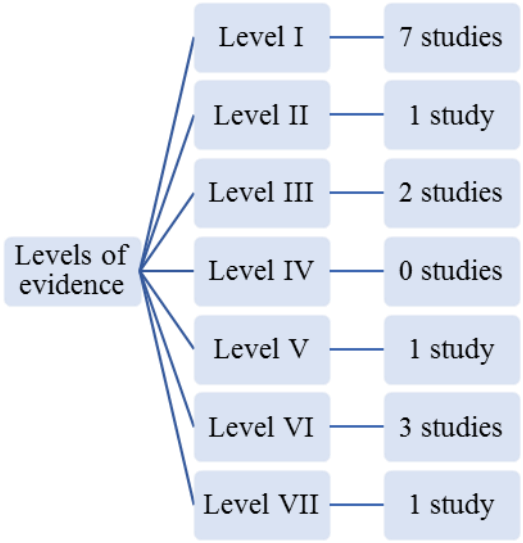

Figure No. 4: Hierarchy of Evidence for Studies of Labor Positioning

LITERATURE REVIEW

Among the studies, five overarching themes were presented. These themes included maternal complications, fetal complications, autonomy, education, and maternal satisfaction with the birthing experience. The summaries of the identified themes are detailed below.

Maternal Complications

One of the identified themes in the literature included maternal complications. Of the 15 studies reviewed, 11 discussed the effects of positioning on maternal complications. Of these studies, six were considered reliable (level I), one was considered moderately reliable (level III), and four were considered low reliability (levels V, VI, or VII). Findings for maternal complications included perineal trauma, duration of labor, need for instrumental assistance of delivery, postpartum hemorrhage (PPH), need for Cesarean section, and episiotomy (see Figure 5).

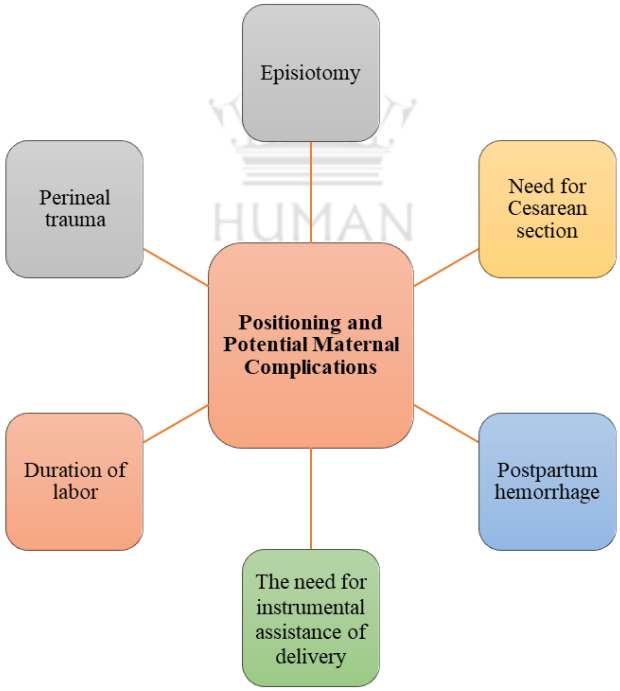

Figure No. 5: Positioning and Potential Maternal Complications

Eight of the 11 studies discussed perineal trauma. Two studies concluded that perineal trauma was increased with supine positioning or decreased with alternative positioning [2,6]. Zang et al. [7] found that alternative positioning increased the risk for perineal trauma. Huang et al. [8] argued that perineal trauma was decreased with lateral positioning. Four studies found that there was no significant evidence of positioning impacting perineal trauma [9-12].

Six of the 11 studies discussed the need for instrumental assistance for delivery. Three studies found that alternative positioning resulted in a lower frequency of instrumental birth [6,7,13]. The other three studies found that there was no sufficient evidence to indicate that positioning affects the frequency of instrumental births [9-11].

Six studies discussed the incidence of PPH. Zang et al. [7] found that alternative positioning resulted in an increased risk for PPH. The other five studies found that alternative positioning did not affect the risk for or occurrence of hemorrhaging [9-12,14].

Five studies evaluated the risk of needing a C-section. Two studies found that alternative positioning decreased the risk of requiring a C-section [11,13]. Two studies found that alternative positioning did not affect the risk of a C-section [9,15]. Dokmak et al. [10] argued that alternative positioning increased the risk of needing a C-section.

Ten studies evaluated the effect of positioning on the duration of labor. Irvin et al. [6] found that supine positioning increased the duration of labor. Along with that, four studies found that alternative positioning decreased the duration of labor [2,7,11,13]. Five studies found that positioning did not affect the duration of labor [9,10,12,14,15].

Four studies evaluated the need for episiotomy after delivery. Three studies found that alternative positioning decreased the risk of needing an episiotomy [6-8]. Barrowclough et al. [9] argued that there was no significant evidence to indicate that positioning affected the risk of needing an episiotomy.

Fetal Complications

Another identified theme was fetal complications associated with maternal positioning during labor and delivery. Eight of the 15 studies revealed information concerning fetal complications.

Out of these eight studies, five were considered reliable (level I), one was considered moderately reliable (level III), and two were considered low reliability (levels VI and VII). The fetal complications discussed included the appearance, pulse, grimace, activity, and respiration (APGAR) scoring; fetal malposition; fetal heart rate and tone abnormalities; shoulder dystocia; and need for further hospitalization care (see Figure 6).

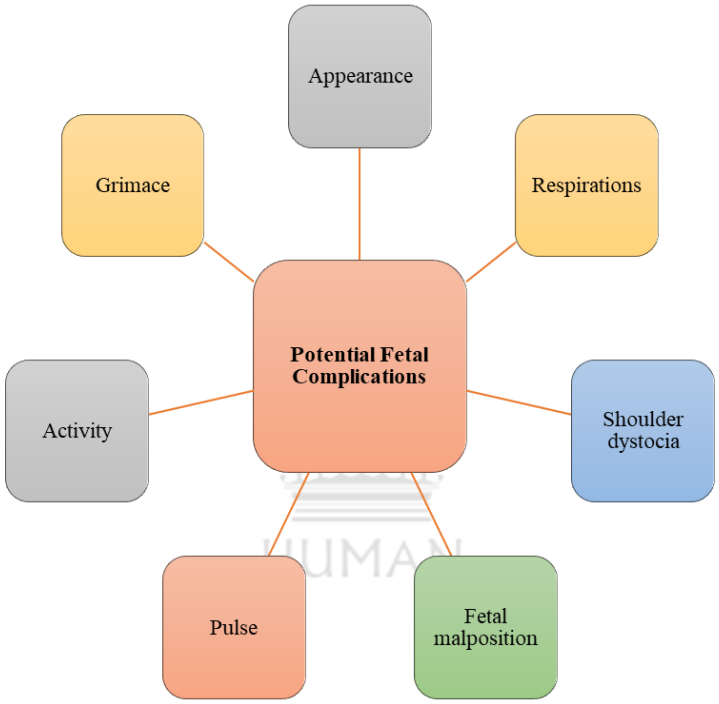

Figure No. 6: Positioning and Potential Fetal Complications

One fetal complication is low APGAR scoring, which is the fetal well-being check done at 1- and 5-minutes post birth. This complication was mentioned in five separate sources. Barrowclough et al. [9] concluded that there was insufficient evidence to determine if alternative positioning affected APGAR scores. While four other studies found that positioning of the mother offered no significant effect on APGAR scores [10,12,14,15].

Two of the eight studies discussed fetal positioning and the risk for fetal malposition based on how the mother was positioned during labor and delivery. Barrowclough et al. [9] found uncertain evidence as to how alternative maternal positioning affected the positioning of the

fetus. The second study mentioned a significant difference between alternate and supine positioning, favoring alternative positioning, specifically with fetal head descent [13].

Of the eight studies, two mentioned fetal heart abnormalities. Myers et al. [11] claimed that there was insufficient evidence to state any significance of maternal positioning on fetal heart tone tracing. Satone and Tayade [2] claimed that supine positions were linked to a greater number of fetal heart rate abnormalities than the alternative positions. Three of the eight studies referenced shoulder dystocia. These three studies all stated that there were no significant differences in the frequency of shoulder dystocia occurrence with or without alternative positioning [10,11,12].

Two of eight studies mentioned the possibility of needing further fetal care by admitting to the intensive care unit or use of resuscitation measures. Nikoukar et al. [12] concluded that there were no significant findings indicating that maternal positioning impacted the fetal outcomes studied. Barrowclough et al. [9] yielded uncertainty as to whether the use of alternative positioning had any significance on the need for further hospital interventions.

Education

Another theme that was found throughout the literature was that of education. Out of the 15 studies, six of them discussed education. Three of the six studies were reliable (level I or II), two were considered moderately reliable (level III), and one was of low reliability (level V).

Three of the six studies called for more education for healthcare providers on alternative laboring positions [13,16,17]. Four of the six indicated the need for more education provided to laboring women on the different positioning options [6,10,13,17]. For all six studies, education for either staff and/or laboring women yielded positive results in birthing satisfaction. Three studies directly correlated education with autonomy. The more education received the more the patient was able to express autonomy through laboring positions [13,16,17].

Autonomy

One of the identified themes stemming from the literature reviewed revolves around patient autonomy. Nine of the 15 studies mention patient autonomy regarding position changes. Of the nine studies reviewed, six were considered reliable (level I or II), two were considered

moderately reliable (level III), and one was rated at low reliability (level V). All nine of the studies called for the promotion of patient autonomy.

Four studies discuss the specific role of the healthcare provider in determining labor positions [6,15,17,18]. Two of the four studies state that healthcare providers exert the biggest influence over patient autonomy in positioning [17,18]. Verastegui-Martin et al. [15] determined that healthcare providers need to use their influence to encourage position changes and autonomy. Irvin et al. [6] argued that healthcare providers directly hinder the ability for patient autonomy and position changes.

The idea that the woman should be the driving force for decisions and choosing her positioning for whatever is most suitable for her is addressed in seven of the nine studies [6,9,10,13,15]. Of the seven studies, three of them identify a specific criterion for women-led positioning. This condition is one of safety. If the position is safe and depending on the mother's health status, the woman should do whatever feels the best for her [1,14,15].

Satisfaction with Birthing Experience

Another identified theme from the literature was the promotion of maternal satisfaction. Specifically, how maternal positioning affected the overall satisfaction with the birthing experience. Eight out of the 15 studies discussed maternal satisfaction in direct relation to what different styles of maternal positioning were used throughout their laboring and delivery experiences.

Four of the eight studies discussed pain about maternal positioning and how that affected maternal satisfaction. Mirazakhani et al. [14] found that there was no significant difference between maternal positioning and maternal satisfaction when specifically evaluating the effect of positioning on pain. However, three studies found that alternative positioning was useful as a pain relief measure that improved overall maternal satisfaction [2,13,15].

Two of the eight studies mentioned the promotion of maternal comfort, which directly correlated to the promotion of maternal satisfaction. Both studies concluded that alternative and free positioning for the mother resulted in increased comfort and a more positive overall birthing experience [2,19]. Three of the eight studies focused specifically on maternal satisfaction based

on the use of different positions. Barrowclough et al. [9] found that there was insufficient evidence to determine whether maternal positioning directly impacted maternal satisfaction rates. However, two studies found that there were higher levels of maternal satisfaction with the use of alternative positioning [11,16].

Summary

The themes that resulted from the review of the literature included maternal complications, fetal complications, autonomy, education, and satisfaction with the birthing experience (see Figure 7). The PICOT question used to evaluate the conclusions of the studies was: what are the effects of alternative positioning on maternal and fetal outcomes during the time of labor and delivery, compared to the standard supine or lithotomy positioning? Overall, it was determined that there was either insufficient evidence or that the evidence was uncertain as to whether alternative positioning affected the maternal and fetal outcome of complication occurrence. However, the studies collectively highlighted that education has the potential to impact autonomy which could further impact the patient's overall satisfaction with the birthing experience. It was concluded that it was important for education, autonomy, and satisfaction to be promoted positively to directly improve outcomes.

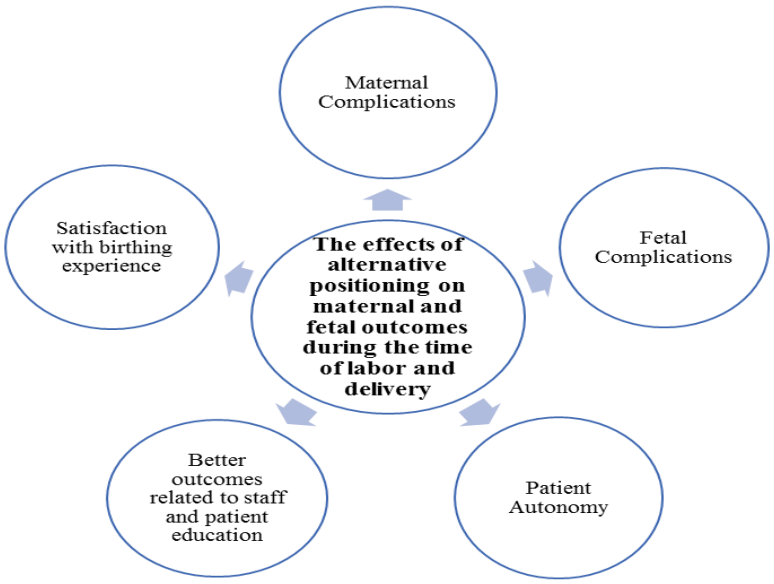

Figure No. 7: Emerging Themes for Maternal and Fetal Outcomes

DISCUSSION

When evaluating the data compiled about maternal complications, results varied. Due to the varying conclusions from sources of varying reliability, it was determined that there is insufficient evidence to indicate whether perineal trauma is affected by positioning [2,6-12]. Conclusions regarding the risk of needing instrumental delivery were also diverse. There may be a decreased risk for instrumental delivery with alternative positioning [6,7,13]. However, based on the reliability of the studies evaluated, it was determined that there was insufficient evidence to indicate whether the risk was truly affected [9-12]. The conclusions regarding the occurrence of PPH were only varied by one study indicating an increased risk with position changes [7]. Opposed to the other four studies indicating that positioning did not affect PPH rates [9-12,14]. It was determined that positioning likely had little to no effect on PPH.

The findings and reliability of findings regarding the need for C-section were extremely varied as well [9-11,13,15]. Thus, it was determined that there was insufficient evidence to indicate whether positioning affected the risk for a C-section. Due to the conflicting results, it was concluded that there was insufficient evidence to determine the effect of positioning on the duration of labor [2,6,7,9-15]. Again, for the risk for requiring episiotomy, the results were conflicting [6-9]. This resulted in the conclusion that there was insufficient evidence to suggest that alternative positioning affected the risk for episiotomy.

While most of the studies that discussed fetal complications were considered reliable, there was still variation in the reliability of sources. Evaluating the data collected regarding fetal complications yielded that results were varied. Regarding APGAR scores, most studies, and this review concluded that maternal positioning offered no significant impact on APGAR scores [9,10,12,14,15]. For the complication of fetal malposition, the studies discussing this complication resulted in various conclusions; one favored upright positioning while one claimed the evidence was uncertain [9,13]. However, one study found that the upright position shortened the duration of the third stage of labor compared to the recumbent position among parturient. Hence, providers can utilize the upright/vertical protocol during their practice to ensure better outcomes of the labor and minimize blood loss [20]. Based on these findings, it was determined

that the evidence provided was inconclusive as to whether maternal positioning offered an impact on fetal positioning during labor and delivery.

The complication of fetal heart abnormalities was discussed in two studies [2,11]. Due to the varied results between these studies, it was determined that the evidence was inconclusive as to whether maternal positioning offers an impact on fetal heart abnormalities during labor and delivery. The studies discussing shoulder dystocia yielded the same results that maternal positioning had no significant impact on the frequency of shoulder dystocia occurrence during labor and delivery [10-12]. The data regarding the need for further fetal in-patient care yielded varied results [9,12]. Based on these findings, it was determined that there was insufficient evidence to determine whether maternal positioning impacted the need for further hospital intervention of the fetus.

The results showed that more education for both healthcare staff and laboring mothers was needed and that with more education positive outcomes and satisfaction increased [6,10,13,16,17]. Education and autonomy were linked in the results as education can influence position changes and therefore autonomy for the laboring mother [13,16,17]. For the results of autonomy, healthcare providers were determined to play a large role in the positions assumed by women in labor [6,15,17,18]. Further, this role has the potential to have a direct positive or negative influence on position change and autonomy [6,15]. Additionally, women should be in control and listen to their bodies' needs for positioning [6,9,10,13-15]. As for the effect of maternal positioning on overall patient satisfaction, there were only slight variations of evidence. Though the reliability of studies varied, it was determined that it is likely that alternative positioning had positive impacts on maternal satisfaction [2,9,11,13-16,19].

Strengths and Weaknesses

Strengths found within this review stem from the emerging results. This study reinforces the importance of patient autonomy and better education for medical personnel and laboring mothers. The results concluded that with improvements in education and autonomy, birthing satisfaction may be improved.

The weaknesses of this review arose primarily from the limitations of the study. Initially, there were very few studies that directly addressed and studied the effects of maternal positioning on maternal and fetal outcomes. Along with that, because there were strict criteria for study inclusion, the studies that were able to be reviewed were even more limited. Of the studies that were included for review, the conclusions of the findings were mixed. This resulted in several conclusions that there was insufficient evidence or no significant evidence to indicate whether alternative positioning had an impact on specific maternal or fetal outcomes.

Recommendations

Recommendations based on the results of this study moving forward include the need for deeper research into the potential for maternal and fetal harm directly related to maternal positioning. Since the results provided an unconcise view of the outcomes of alternative positioning during labor, more definitive research should be conducted (see Figure 8). However, the results of this study can be applied to clinical practice through the promotion of education, autonomy, and satisfaction. Healthcare providers should be actively seeking education opportunities and more institutions should provide lessons on the different laboring positions. More education for healthcare providers would allow for more mothers to have the ability to change positions in a safe and controlled environment. Policy changes could also be made to further this education at a more standardized level.

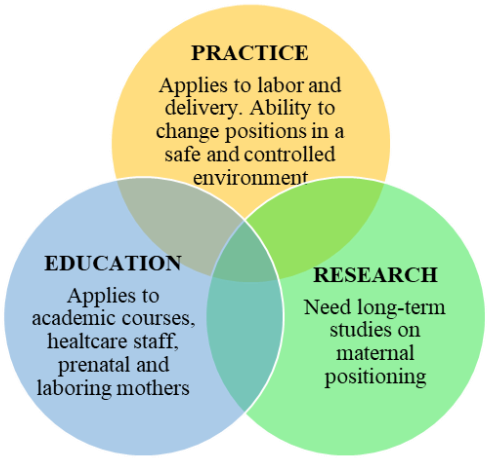

Figure No. 8: Application of Evidence-Based Practice for Labor Positioning on Birthing Outcomes

This education needs to extend to the women in labor and during the prenatal period so that they know what different options are available. This study indicated that through education, autonomy can be promoted. Further recommendations encourage the continuation of the push for autonomy. Through the promotion of education and autonomy, positive birthing experiences and patient satisfaction would be further promoted.

Conclusion

All in all, the review was limited by available research and the criteria necessary for inclusion. However, from the 15 studies that were selected the themes of maternal complications, fetal complications, education, autonomy, and satisfaction with the birthing experience were discovered. The themes of maternal and fetal complications encapsulated various specific complications. The general conclusion was that there was either insufficient evidence to determine the effects of positioning on maternal and fetal complications, or the evidence displayed was indifferent to one position over another. The themes of education, autonomy, and patient satisfaction were found to be linked to one another. It was determined that all of these are important factors for labor delivery and that the use of alternative positioning has the potential to positively promote maternal and fetal outcomes.

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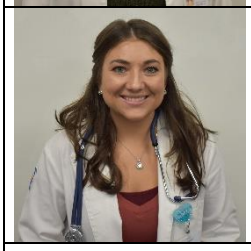	**Aubrey L. Bennett** *Bethel University School of Nursing, Mishawaka, Indiana, USA*
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