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# Birth Positions: Is There a Connection Between Acutal Nursing Experience and Evidence-Based Research?

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BIRTHING POSITIONS: IS THERE A CONNECTION BETWEEN ACTUAL  
NURSING EXPERIENCE AND EVIDENCE-BASED RESEARCH?


Thesis submitted in partial fulfillment of Honors

By

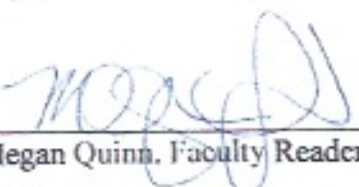
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### Abstract

The objectives of this study were to determine whether there was an association between clinical nursing knowledge of four birthing positions and current evidence-based research of those same positions and also to identify possible areas where nursing knowledge of those birthing positions was inadequate. This pilot study used convenience sampling to survey registered nurses (RNs) and licensed practical nurses (LPNs) on labor and delivery units. The survey was distributed to three hospitals in the southeastern United States, and twenty-four RNs and LPNs participated. Participants' knowledge did not reflect current clinical evidence in two key areas, (1) the best position to minimize blood loss and (2) the best position to decrease the likelihood anal sphincter tears. Respectively, only 13% and 27.3% of participants selected the correct position. Continuing education for maternity nurses regarding current evidence-based practice concerning various birthing positions remains a need, and incorporating this could include more frequent opportunities for education classes and unit inservices. Results from this study should not be generalized, and more research is needed in this area to validate these findings.

*Keywords:* birthing positions, nursing knowledge

Birthing Positions: Is There a Connection Between Actual Nursing Experience and  
Evidence-Based Research?

**Introduction**

Caring for childbearing families involves many different considerations, and one of those considerations is which birthing position the patient will assume. Birthing positions can greatly impact the family's delivery experience, and each position has both advantages and disadvantages. According to current research, no birthing position has been shown to have a clear advantage over the other positions. Recent studies from the Cochrane Collaboration (2012, 2013) have concluded that women should be allowed to make their own choices concerning which position they might prefer.

Physicians, nurses, midwives, and families all have individual preferences and beliefs about the best way to facilitate a safe birth. In order for each family to receive the best possible care, health care professionals (HCP) must be knowledgeable about current research regarding various birthing positions. This knowledge enables HCP to assist families in making the most educated decision. Unfortunately, very little research concerning nursing knowledge of birthing positions has been published. This study will assess nursing knowledge of current research on birthing positions in order to evaluate how or if this research is being implemented in the clinical setting. If nurses are not up-to-date with this research, they will be unable to use evidence-based practice to effectively communicate to mothers and families about their birthing options. A lack of knowledge in this area could negatively impact families' birthing experiences and outcomes.

**Literature Review.**

When discussing birthing positions, epidural anesthesia is a key topic to include since it impacts the positions available to women in labor and delivery. Epidural anesthesia is becoming

increasingly more popular in western cultures and around the world. It is a local anesthetic that is injected into an area outside of the spinal cord called the epidural space; it blocks nerve impulses and decreases a woman's sensation to the lower half of her body. Epidural anesthesia provides effective pain relief for many women, but it does have some risks. Gupta, Hofmeyr, and Shehmar (2012) reported that epidural use might interfere with oxytocin release, prolong labor, increase the risk of delivery via vacuum or forceps, and increase the risk of mal-position of the fetal head. A prolonged labor may increase the risk for fetal respiratory difficulties and postpartum hemorrhage. Delivery via vacuum or forceps has been associated with uterine prolapse, urinary incontinence, and painful sexual intercourse. Epidural anesthesia can also limit the positions available to women during labor since it restricts lower-body movement. Despite this knowledge of epidural anesthesia, current research has been unable to provide sufficient data regarding the effect of positioning on women with epidural anesthesia.

The lithotomy position is a supine position in which the patient's legs are held in stirrups. Along with epidural use, it is being used more commonly now than ever before. Bayes, White, and Osbourne (2011) found that an increasing number of low-risk women in Australia were giving birth in the lithotomy position, and many of them without documented reasons. Those with documentation, however, were all in preparation for an instrumental birth via vacuum or forceps. In the United States, the lithotomy position is the primary position used by physicians and nurses in a hospitalized setting, and it does have some notable advantages. Advantages of the lithotomy position include an enhanced ability to maintain asepsis, assess the fetal heart rate (FHR), and perform an episiotomy and repair. There are also many possible disadvantages; these include decreased blood pressure, difficulty breathing for the mother due to pressure on the

diaphragm, an increased risk for aspiration, higher risk of laceration, and interference with uterine contractions (London et al., 2012).

Meyvis, Van Rompaey, Goormans, Truijen, Lambers, Mestdagh, and Mistiaen (2012) compared results of women with epidurals who assumed either a side-lying or lithotomy position in order to investigate the effects of positioning on perineal damage. They found that almost 50% of women who delivered in the side-lying position had an intact perineum, compared to only one-third of women delivering in the lithotomy position. That study determined that the side-lying position offered some protection against perineal trauma when compared with the lithotomy position as the rate of instrumental delivery, episiotomy, and the need for suturing occurred less frequently. Advantages of the side-lying position include uncompromised venous return, increased perineal relaxation and decreased need for episiotomy, and potential prevention of rapid descent. One disadvantage is that it might be difficult for the mother to see the birth due to positioning (London et al., 2012).

Both lithotomy and squatting positions have been associated with an increased risk for anal sphincter tears (AST). In a study from 2007, the lithotomy position held the highest proportion of AST at 6.9%, followed by squatting at 6.4%. This was even after controlling for instrumental deliveries and infants who were large for gestational age (Gottvall, Allebeck, & Ekus, 2007). Advantages of the squatting position include the following: it increases the size of the pelvic outlet, allows gravity to aid in descent and expulsion, and may shorten the second stage of labor. However, it may also be difficult for the woman to maintain balance while squatting (London et al., 2012).

Kemp, Kingswood, Kibuka, and Thornton (2013) reported on the effect of labor positioning in women without epidural anesthesia. This study detailed both advantages and

disadvantages of various positions women assume during labor. They found that women who assume an upright position—as opposed to a supine<sup>1</sup> position—during labor showed a significant reduction in the number of assisted deliveries and episiotomies, a non-specific decrease in duration of labor, fewer abnormal fetal heart rate (FHR) patterns, and an increase in second-degree perineal tearing. Women delivering in an upright position had an increase in estimated blood loss in excess of 500 milliliters; however, the methods used to estimate blood loss varied and should be interpreted with some reservation (Kemp et al, 2013). Another study measured blood loss from 1646 women who had vaginal deliveries and found that an increased risk of blood loss greater than 500 mL was associated with sitting and semi-sitting positions when combined with perineal damage. Average blood loss from the lithotomy position was significantly less than that from upright positions, which included sitting and squatting (A de Jonge, MTh van Diem, PLH Schecpers, KM van der Pal-de Bruin, ALM Lagro-Janssen, 2007).

Kemp et al (2013) also compared certain upright positions with supine positions to determine more specific variations between the positions. When comparing the use of a squatting stool to a supine position, they found fewer episiotomies and fewer abnormal fetal heart rates, but no significant difference in duration of labor, second-degree tearing, blood loss, assisted delivery rates, NICU admission, or perinatal death. Comparing a birth cushion to a supine position revealed a significantly shorter second stage of labor, fewer assisted deliveries, fewer instances of second-degree tearing, similar episiotomy rates, and no significant difference in blood loss. The use of a birth chair as opposed to a supine position showed a decrease in the number of episiotomies and an increase in the rate of perineal tearing, but there was no significant difference in blood loss or duration of labor. Advantages of a sitting position include

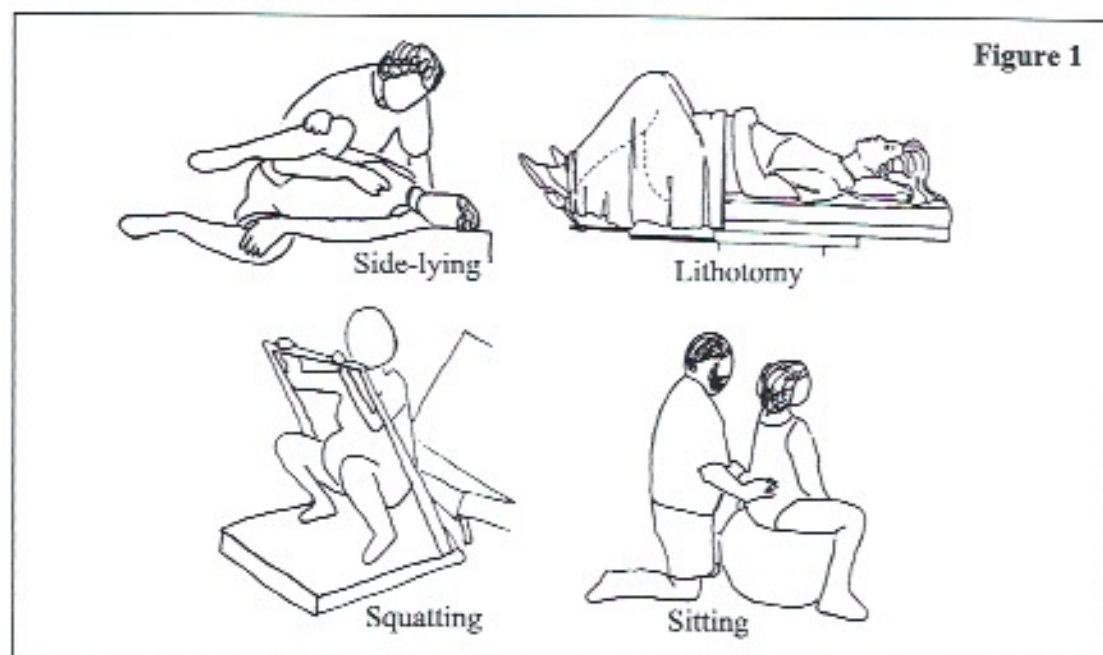
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<sup>1</sup> Supine: lying on the back with the face upward

the following: gravity aids descent and expulsion, does not compromise venous return from lower extremities, the mother can view the birth process and can change her leg position at will. One disadvantage with the use of a birthing stool may be difficulty in providing support for the woman's back during labor (London, Davidson, & Ladewig, 2012).

### Methods

Currently, literature is not clear or unified on which position is best for both the mother and the baby, and many articles recommend that the family choose which position is best for their situation. However, there is currently no research about labor and delivery nurses' knowledge of various birthing positions. To address this issue, a survey (Appendix A) was created to assess nurses' knowledge and opinions of four birthing positions. RNs and LPNs working on labor and delivery units were asked twelve questions based on current research of four birthing positions and two questions regarding the nurses' personal opinions. The four birthing positions included were side-lying, lithotomy, squatting, and sitting (Figure 1). Questions were developed based on results from recent research articles and current obstetric textbook content on birthing positions.





IRB approval was obtained from both ETSU IRB and the health system's IRB in which surveys were distributed. Surveys were then delivered to three hospitals in the southeastern United States and were made available to nurses on labor and delivery units for two weeks, where a convenience sample of nurses was obtained. A locked box was provided to each unit so participants could securely and anonymously deposit their forms. The survey itself contained no identifying information and was not linked to any specific nurse or facility. The purpose of the survey was to determine if the nurses were knowledgeable of current evidence-based research of various birthing positions.

### Results

Twenty-four RNs and LPNs responded to the survey, and of those that responded, 83.3% were RNs, 4.2% were LPNs, and 12.5% declined to reply. The majority of respondents were female at 83.3%, with 16.7% declining to reply. Most of the participants were older than 45 years old, and the majority of participants had greater than 20 years experience as a nurse, with 54.2% having more than twenty years experience. Likewise, the majority of participants also had greater than ten years experience as a *maternity* nurse, with 66.7% having more than ten years experience on labor and delivery units. The following tables detail the participants' ages and years of experience.

**Table 1**

Age	20-24	25-34	35-44	45-54	55-64	No Response
% Participants	4.2%	12.5%	12.5%	25%	33%	12.5%

**Table 2**

Years Experience as A Nurse	Years of Experience	0-1	1-5	5-10	10-20	20+	No Response
	% Participants	4.2%	4.2%	4.2%	25%	54.2%	8.3%

Years Experience as A Maternity Nurse	Years of Experience	0-1	1-5	5-10	10-20	20+	No Response
	% Participants	4.2%	8.3%	8.3%	29.2%	37.5%	12.5%

### Survey Results

Five questions focused on the lithotomy position, and four of those five questions were answered with greater than 70% accuracy. Seventy-five percent of participants correctly recognized that the lithotomy position gave the mother the least control during delivery, and 79.2% correctly identified that advantages of the lithotomy position included enhanced asepsis and easier episiotomy or laceration repair. Likewise, 78.3% of participants correctly identified that disadvantages of the lithotomy position included decreased blood pressure, increased risk of aspiration, and uterine contraction interference. Only 27.3% of participants correctly responded that the lithotomy position has the lowest average amount of blood loss, and 45.5% incorrectly associated it with the squatting position.

The lithotomy position has the highest probability of an episiotomy or laceration, and 73.9% of participants correctly identified this; however, when the participants were separated by age, an analysis of variance revealed a significance of 0.025. The following list shows the percentages of participants divided by age group who correctly identified the lithotomy position as having the highest probability of an episiotomy or laceration: 83.3% of participants between 18 and 44 years old, 83.3% of participants between 45 and 54 years old, and 50% of participants

between 55 and 64 years old. More research is needed to determine the reason for this significance. No other significant results were discovered in this test, and no significant differences were discovered when the nurses were separated by years of experience as a nurse and by years of experience as a *maternity* nurse. Table 2 illustrates the survey questions with each applicable birthing position and the percentage of participants who answered each question correctly.

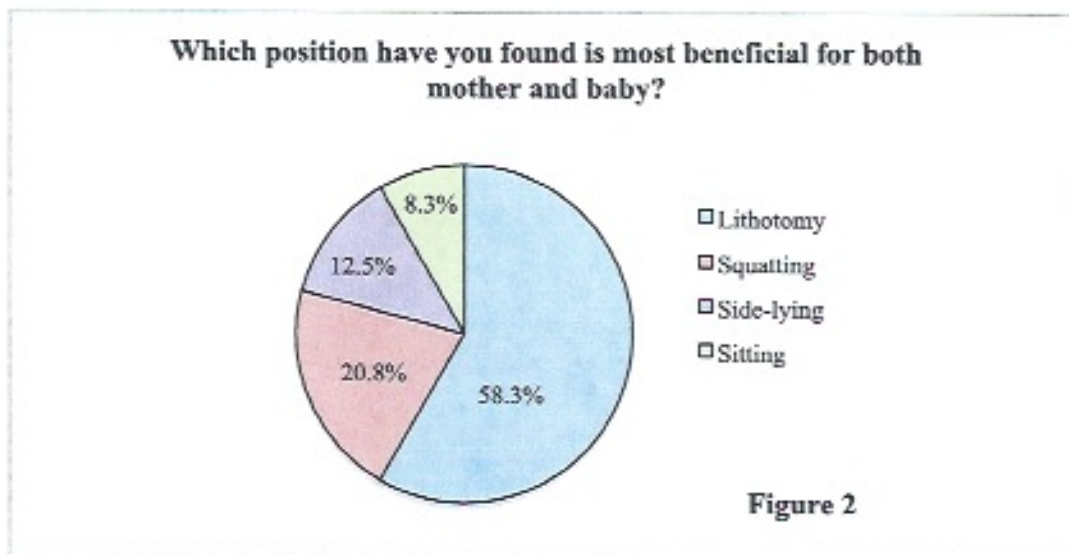
**Table 3**

Question #	1	2	3	4	5	6
Applicable Position	Side-lying	Lithotomy	Lithotomy	Squatting/ Sitting	Squatting/ Sitting	Lithotomy
% Correct	13%	27.3%	73.9%	83.3%	90.5%	75%
Question #	7	8	9	10	11	12
Applicable Position	Squatting	Sitting	Lithotomy	Lithotomy	Side-lying	Sitting
% Correct	75%	45.8%	79.2%	78.3%	4.3%	8.7%

Upright positions have been associated with the least amount of narcotic and epidural use and 83.3% of participants correctly chose either squatting or sitting as having the least amount of narcotic use. Likewise, 90.5% of participants correctly chose either squatting or sitting as having the least amount of epidural use. Seventy-five percent of participants correctly identified that advantages of the squatting position include increased pelvic diameter and shortened delivery time, and 45.8% correctly identified that advantages of the sitting position include uncompromised venous return and the ability to change leg position at will. Only 8.7% of participants correctly identified that disadvantages of the sitting position include difficulty providing support for the woman's back, with 43.5% incorrectly attributing this to the lithotomy position and 30.4% incorrectly attributing it to the squatting position.

The side-lying position has been found to be least likely to have anal sphincter tears, but only 13% of participants responded accurately; 56.5% incorrectly attributed lower rates of anal sphincter tears to the squatting position. Also, only 4.3% correctly identified that disadvantages of the side-lying position include difficulty for the woman to see the birth. Again, 47.8% incorrectly chose the lithotomy position, and 34.8% incorrectly chose the squatting position.

When asked which position the participant has found to be most beneficial for both mother and baby, the majority responded with the lithotomy position at 58.3%, followed by squatting at 20.8%, side-lying at 12.5%, and sitting at 8.3% (Figure 2). Current research says that no one birthing position is best for every mother and baby, and this data supports that research as the participants have chosen various positions that they have found most beneficial.



Participants were also asked how receptive they felt their facility was towards patients who wished to use alternative birthing positions. Seventy-five percent answered with almost always, followed by 12.5% with every once in a while, 8.3% with sometimes, and 4.2% with rarely. Appendix B illustrates responses to each of the survey questions with percentages of participants who chose each birthing position.

### Discussion

Current evidence indicates that the lithotomy position is the most frequently used position for labor and delivery in the United States (Kemp et al., 2013), and may be primarily due to the use of epidural anesthesia and the convenience of the practitioner. However, current research indicates that this position presents the highest risk for episiotomy and anal sphincter tears. This research study showed a lack of current knowledge regarding these risk factors in practicing nurses.

Of the positions included in this study, it was anticipated that nurses would be most familiar with the lithotomy position as it is the primary position used in the United States, and results from the survey showed that participants were more knowledgeable in that position. The single lithotomy question participants answered poorly on concerned which position has the *lowest* amount of blood loss, and surprisingly, 45.5% answered squatting, which generally produces greater blood loss. Only 27.3% correctly responded with the lithotomy position. More than 45% of participants also incorrectly chose squatting as the answer to a question concerning which position was *least* likely to have anal sphincter tears. The squatting position is second only to the lithotomy position for the *highest* rates of anal sphincter tears (Gottvall, Allebeck, & Ekeus, 2007). Both of these responses raise concern, as knowledge of blood loss and anal sphincter tears are patient safety issues. Maternity nurses need to know which positions are more or less likely to cause these complications so that they can provide safe, quality care for these families.

Nearly 48% of participants incorrectly attributed a disadvantage of the side-lying position, which is difficulty for the woman to see the birth, to the lithotomy position. Likewise 43.5% of participants incorrectly attributed a disadvantage of the sitting position, which is

difficulty to provide support to the woman's back, to the lithotomy position. These errors could be attributed to the prevalent use of the lithotomy position and the rare occurrence of the use of other positions. Without experience with alternative birthing positions, nurses are not as familiar with information about these positions. They have answered less accurately and have attributed these disadvantages to the position they are more familiar with.

Questions about the side-lying position were answered incorrectly the majority of the time, indicating a lack of evidence-based knowledge. Only 13% correctly answered that the side-lying position is least likely to have AST, while 56.5% answered squatting, which has the second highest proportion of AST. Additionally, only 4.3% responded that it was difficult for the woman to see the birth in the side-lying position. These results were a little unexpected, as the side-lying position is available to women who have an epidural, while sitting and squatting positions are not. Questions about the sitting position were also answered inadequately with less than 46% accuracy. As mentioned above, participants did not show adequate knowledge about a disadvantage of the sitting position with only 8.7% correctly identifying that difficulty to provide support for the woman's back was a disadvantage of the sitting position. Many participants, 45.8%, were able to correctly identify advantages of the sitting position that include uncompromised venous return and the ability to change leg position at will.

Questions concerning upright versus supine positions were answered at greater than 80% accuracy. The squatting question was answered with seventy-five percent accuracy, but as mentioned above, a large percentage of participants incorrectly selected squatting as the answer for questions about other positions.

Experience did not affect how the nurses answered survey questions on birthing positions. The results revealed no significant difference in responses when the participants were

divided into groups based on years of experience both as a nurse and as a *maternity* nurse. It was hypothesized that nurses with more years of experience would have a greater knowledge based on experience. However, nurses with less experience have been in school more recently, and perhaps, in this instance, the more current knowledge gained from school was being utilized. This could explain why there were no significant differences in answers based on the nurses' experience.

Age did not affect the majority of the participants' answers. However, age did significantly influence the responses for the question that asked which position had the highest probability of episiotomy or laceration. We found that participants between the ages of 55 and 64 years old were more likely to answer incorrectly compared to those less than 54 years old. Logically, one would think that nurses' experience increase accuracy in response, but this was not the case. Reasons for this might include familiarity with current research, a change in information being taught in school, or lack of access to inservices or educational information. Also, older nurses may be less inclined to learn new material or change the ways they practice. More information is necessary to determine whether or not this was an isolated result and what possible causes might be.

Because of the prevalence of the use of the lithotomy position in the United States, it was expected that the majority of the nurses surveyed would indicate that it is the most beneficial position for both mother and baby. However, this was not the case. Only 58.3% of nurses responded that they believed the lithotomy position was most beneficial, and over 40% believed that alternative positions were best. This was an unexpected discovery, but one that does coincide with the literature. Current evidence-based research does not suggest that one position is best for all situations and that there is insufficient data to make conclusions about the effect of

positioning during labor (Kemp et al, 2013). In response to the question about the facility's receptiveness to alternative birthing positions, it should be noted that one participant included this statement, "You'd be surprised at the [patients] that refuse anything but that bed and those stirrups," indicating that education about different positions may need to be provided to patients prenatally.

Participants answered many of the survey questions of alternative positions incorrectly, and there appeared to be a large gap in the nurses' knowledge regarding both the side-lying and sitting positions. Participants were slightly more knowledgeable of the squatting position, but not as knowledgeable as with the lithotomy position. Most significantly, the lack of knowledge about the position that would minimize blood loss is concerning since blood loss can lead to higher morbidity and mortality for the mother. Secondly, this study showed that the practicing nurses were unaware of which labor and delivery position would decrease anal sphincter tears, another area that can create serious complications. If nurses are not up-to-date on current research, they will not be able to provide safe effective care and to educate the families about their birthing options. Gaps in knowledge discovered in this study indicate that further teaching and continuing education about alternative birthing positions should be provided to maternity nurses to increase their knowledge of evidence-based research to allow them to provide the safest birthing environment.

#### **Limitations.**

The biggest limitation to this study was that it was limited to three hospitals in one area in the Southeast U.S. Without further studies in different areas of the U.S. and multiple hospitals of varying sizes, results cannot be generalized. However, this study does provide information about areas of knowledge that need to be provided to practicing nurses. Another limitation of this



study is that it is a pilot study and has not been reproduced. There is currently no other research in the literature about this topic, so the implications of this study are limited. The survey method is also a limitation as a convenience sample was used to survey the nurses. Finally, the study's sample size is a limitation. Twenty-four nurses responded to the survey, which was a larger number than expected, but a smaller number than was desired for the data analysis.

### Summary

According to current literature, the lithotomy position has the highest rate of anal sphincter tears at 6.9%, and second to lithotomy is the squatting position with a rate of 6.4% (Gottvall, Allebeck, & Ekeus, 2007). Another study has found that almost 50% of women who delivered in the side-lying position had an intact perineum, compared to only one-third who delivered in the lithotomy position. They determined that the side-lying position offered some protection compared with those delivering in the lithotomy position (Meyvis et al., 2012). Literature has also shown that, with perineal damage, the lithotomy position has lower average amounts of blood loss as compared to sitting or squatting positions. (A de Jonge et al., 2007). These were specific areas in which nursing knowledge was inadequate in this study. In both cases, at least 45% of participants incorrectly chose squatting as the answer to the questions concerning these topics. The maternity nurses surveyed were not knowledgeable in these areas.

Limitations included the small number of hospitals included in the study, a limited geographic area, the survey method, and the survey size. Also, it was a pilot study and has not been reproduced. Further research of maternity nurses' knowledge of various birthing positions is needed to validate these findings. Specifically, more research is needed to determine if maternity nurses in other areas of the country are also lacking in knowledge of anal sphincter tears and blood loss in relation to birthing positions. To increase the knowledge of the nurses

who participated in this study, it is recommended to return to the units that were surveyed and provide nurses with the correct answers so the participants can learn from the questions they missed. Additionally, it would be beneficial to provide scheduled continuing education classes to nurses on labor and delivery units to allow for more available education on various birthing positions. With all of the education that nurses provide to patients on a daily basis, nursing knowledge is an area of study that needs further research and evaluation.

## Appendix A

Circle the correct answer to each question. Do not include your name on the survey.

If you choose to participate, your employment will not be positively or negatively affected.  
If you choose not to participate, your employment will not be positively or negatively affected.

AGE: 20-24 25-34 35-44 45-54 55-64 65-74 75+

SEX: Male Female

LICENSE: RN LPN

Years experience as a nurse: 0-1 1-5 5-10 10-20 20+

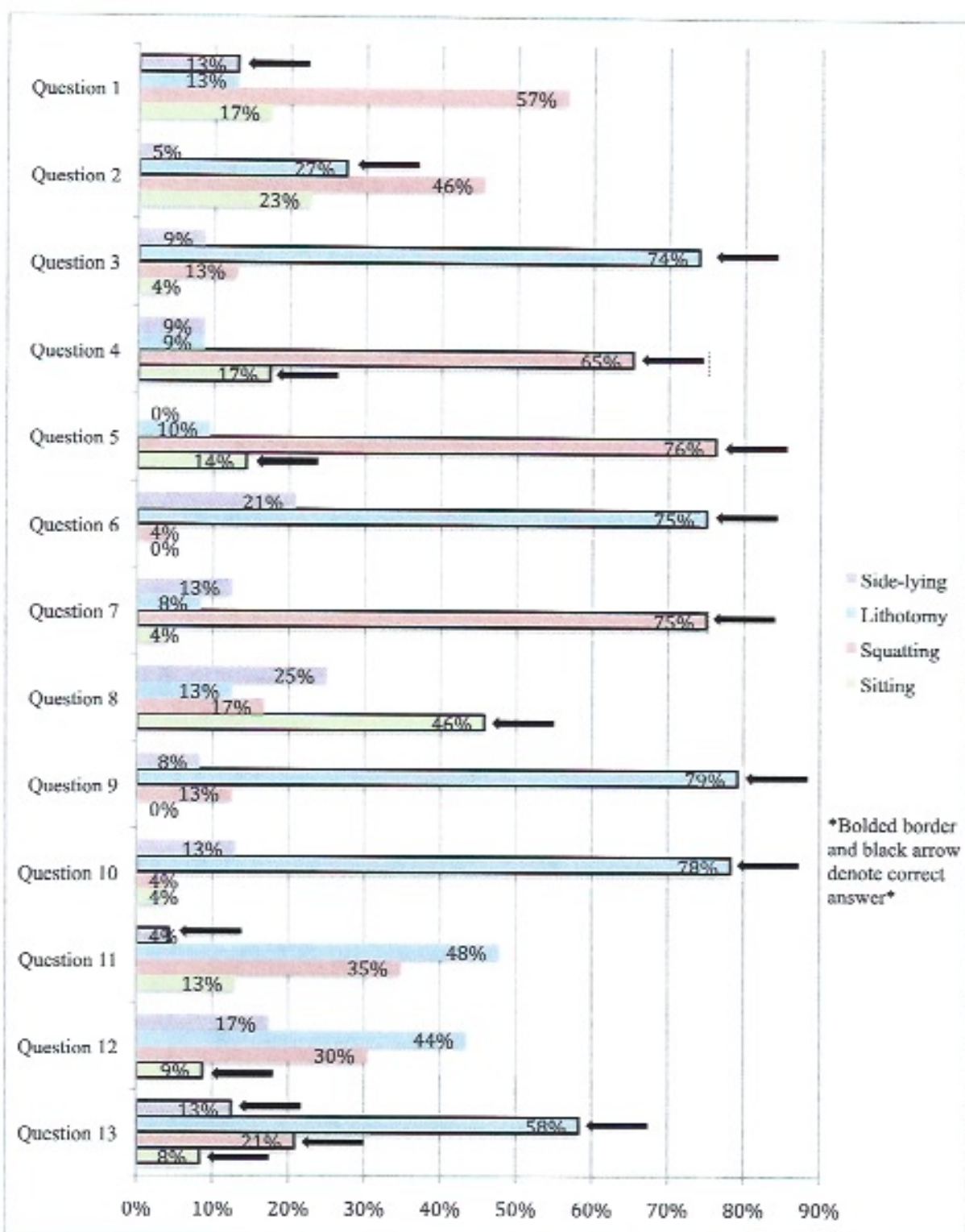
Years experience as a maternity nurse: 0-1 1-5 5-10 10-20 20+

Please answer based on your experience:

- Which labor and delivery position is *least* likely to have anal sphincter tears?  
a. Side lying    b. Lithotomy    c. Squatting    d. Sitting
- Which position has the *lowest* amount of blood loss?  
a. Side lying    b. Lithotomy    c. Squatting    d. Sitting
- Which position has the *highest* probability of an episiotomy or laceration?  
a. Side lying    b. Lithotomy    c. Squatting    d. Sitting
- Which position is associated with the *least* amount of narcotic use?  
a. Side lying    b. Lithotomy    c. Squatting    d. Sitting
- Which position is associated with the *least* amount of epidural use?  
a. Side lying    b. Lithotomy    c. Squatting    d. Sitting
- Which position gives the mother the *least* control during delivery?  
a. Side lying    b. Lithotomy    c. Squatting    d. Sitting
- Which position is associated with the following advantages: increased pelvic diameter and shortened delivery time?  
a. Side lying    b. Lithotomy    c. Squatting    d. Sitting
- Which position is associated with the following advantages: uncompromised venous return and the ability to change leg position at will  
a. Side lying    b. Lithotomy    c. Squatting    d. Sitting
- Which position is associated with the following advantages: enhanced asepsis and easier episiotomy or laceration repair?  
a. Side lying    b. Lithotomy    c. Squatting    d. Sitting

- 2
10. Which position is associated with the following disadvantages: decreased blood pressure, increased risk of aspiration, and uterine contraction interference?
- a. Side lying      b. Lithotomy      c. Squatting      d. Sitting
11. Which position is associated with the following disadvantage: difficult for woman to see birth?
- a. Side lying      b. Lithotomy      c. Squatting      d. Sitting
12. Which position is associated with the following disadvantage: difficult to provide support for woman's back?
- a. Side lying      b. Lithotomy      c. Squatting      d. Sitting
13. Which position have you found is most beneficial for both mother and baby?
- a. Side lying      b. Lithotomy      c. Squatting      d. Sitting
14. In your opinion, how receptive is your facility towards patients who wish to use alternative birthing positions?
- a. Almost Always      b. Sometimes      c. Every Once In A While      d. Rarely      e. Never

Appendix B



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