

# Does position matter? A study of maternal outcomes in different birthing positions

Casey Ramey B.S., Courtney Royston B.S., & Sarath Thayil B.S.

Andrea Brooks, PhD, RN, PPCNP-BC, Shermel Edwards-Maddox, MSN, RN, CNE, RN-BC, Kelle Huong Phan, DNP, RN, NNP-BC

## PICOT Question

In laboring mothers (P), what is the effect of the upright birthing position (I) on maternal outcomes such as length of labor, pelvic outlet dimension, rate of assisted deliveries, rate of episiotomies (O) compared with lithotomy birthing position (C)?

## Literature Search

Databases:

- CINAHL, Pubmed, & Cochrane Library

Key terms:

- Birthing positions, Upright birthing positions, Maternal outcomes, Perineal trauma, Length of labor, lithotomy position

Studies populated:

- Total articles (n=558), Studies excluded based on exclusion criteria (n=440), Potential studies appropriate for review (n=118), Studies retained for review (n=21), Studies excluded based on quality evaluation (levels of evidence) rubric (n=7)

Exclusion criteria:

- Date before 2016, Cesarean section, Epidural use

Inclusion Criteria:

- Published between 2016-2021, Peer reviewed, Vaginal Birth

## Synthesis of Findings

- Birthing in non-supine positions such as squatting, on the hands & knees, standing, birth stool, birth cushion compared to the supine position has been shown to reduce the length of time by 4-6 minutes during the first and second stages of labor (Berta et al, 2019; Desseauve et al., 2016; Diorgu et al., 2016; Gupta et al., 2017; Mirzakhani et al., 2020; Zang et al., 2020).
- Birthing in the upright position has been shown to decrease the rate of assisted deliveries (RR 0.75, 95% CI 0.66 to 0.86, 6481 women) (Ayerle et al., 2018; Gupta et al., 2017; Zang et al., 2020).
- The squatting position is helpful for increasing the pelvic outlet dimension by 0.9 cm, and the gravitational force applied by the fetus on the pelvic floor increases by 18 Newtons (Berta et al, 2019; Zang et al., 2020).
- Upright positions have been shown to decrease the rate of episiotomies (average RR 0.75, 95% CI 0.61 to 0.92; 17 trials; 6148 women; random-effects;  $I^2 = 88\%$ ) and perineal trauma (RR 0.72, 95% CI 0.32 to 1.65; 6 trials; 1840 women) (Gupta et al., 2017; Zang et al., 2020).



Image retrieved from <https://www.mcsprogram.org/wp-content/uploads/2016/09/Overview-Alternative-Birth-Positions.pdf>

## Decision to Change Practice

- Mothers with low-risk pregnancies should be able to choose the position for their birth that is most comfortable to them and works well with the size and shape of the pelvis.
- Implement a training program to educate the nurses about advantages and disadvantages of alternate birthing positions.
- Nurses should provide education early in the labor process on safe and available labor positions to allow autonomy during the labor and delivery process.

## Evaluation

Six months after the implementation of education, a chart review will be performed on how the length of labor, pelvic outlet dimension, assisted deliveries, rate of episiotomies were impacted by the utilization of upright birthing positions.

## References

- Ayerle, G. M., Schäfers, R., Mattern, E., Striebach, S., Haastert, B., Vomhof, M., Icks, A., Ronniger, Y., & Seliger, G. (2018). Effects of the birthing room environment on vaginal births and client-centred outcomes for women at term planning a vaginal birth: BE-UP, a multicentre randomised controlled trial. *Trials*, 19(1), 641-641. <https://doi.org/10.1186/s13063-018-2979-7>
- Berta, M., Lindgren, H., Christensson, K., Mekonnen, S., & Adefris, M. (2019). Effect of maternal birth positions on duration of second stage of labor: Systematic review and meta-analysis. *BMC Pregnancy & Childbirth*, 19(1), N.PAG. <https://doi.org/10.1186/s12884-019-2620-0>
- Desseauve, D., Fradet, L., Lacouture, P., & Pierre, F. (2016). Position for labor and birth: State of knowledge and biomechanical perspectives. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 208, 46-54. <https://doi.org/10.1016/j.ejogrb.2016.11.006>
- Diorgu, F. C., Steen, M. P., Keeling, J. J., & Mason-Whitehead, E. (2016). Mothers and midwives perceptions of birthing position and perineal trauma: An exploratory study. *Women & Birth*, 29(6), 518-523. <https://doi.org/10.1016/j.wombi.2016.05.002>
- Gupta, J. K., Sood, A., Hofmeyr, G. J., & Vogel, J. P. (2017). Position in the second stage of labour for women without epidural anaesthesia. *Cochrane Database of Systematic Reviews*. <https://doi.org/10.1002/14651858.cd002006.pub4>
- Mirzakhani, K., Karimi, F. Z., Vatanchi, A. M., Zaidi, F. feroz, & Najmabadi, K. M. (2020). The effect of maternal position on maternal, fetal and neonatal outcomes: A systematic review. *Journal of Midwifery & Reproductive Health*, 8(1), 1988-2004. <https://doi.org/10.22038/jmrh.2019.38133.1423>
- Zang, Y., Lu, H., Zhang, H., Huang, J., Ren, L., & Li, C. (2020). Effects of upright positions during the second stage of labour for women without epidural analgesia: A meta-analysis. *Journal of Advanced Nursing*, 76(12), 3293-3306.

## Acknowledgements

We would like to thank The George Foundation, Fred & Mabel Foundation, and The Vivian L Smith Foundation for their generosity and continued support. Additionally, we would like to thank Professor Edwards-Maddox, Dr. Brooks, Dr. Phan, Dr. McManaman-Bridges, and Professor Quintana for sharing their time, passions, and knowledge with us as we continue our journey into nursing.

