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Original Research

The Effect of Squat Movement on the Length of the First Stage in Multigravida

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Abstract
Prolonged first-stage labor increases risks for both mother and baby. Squat movement is a simple method that may accelerate cervical dilation by increasing pressure on the birth canal, but evidence in multigravida mothers remains limited. Objective: To analyze the effect of squat movement on the duration of the first stage of labor in multigravida mothers at Morotai Island Regency Hospital. This study used a pre-experimental one-group pretest–posttest design ith 16 respondents selected through purposive sampling. Squat movement as applied during the active phase, ith The duration of labor progression after implementation of squat movement as observed and analyzed. Data ere analyzed using the Wilcoxon test (α = 0.05). The analysis sho ed a significant effect (p = 0.000), indicating a shorter duration of the first stage after intervention. Squat movement effectively accelerates the first stage of labor in multigravida mothers and can be used as a non-pharmacological method to support labor. Future studies should include larger samples and consider factors such as maternal age, body mass index, and obstetric history. Mid ives should educate pregnant women on squat movement as part of labor preparation.

1. Introduction

Labor is a complex physiological process influenced by the interaction of maternal, fetal, and environmental factors, as well as clinical management during childbirth. The progression of labor depends on the coordinated activity of uterine contractions, cervical readiness, fetal position, and maternal psychological state. According to World Health Organization, optimizing physiological labor while minimizing unnecessary interventions improves both maternal and neonatal outcomes (WHO, 2020). The first stage of labor, defined as the period from the onset of regular uterine contractions to full cervical dilation (10 cm), is a critical phase that determines the overall course of delivery. Effective cervical dilation results from adequate uterine contractions combined with mechanical pressure from the presenting fetal part. In multigravida mothers, this stage typically progresses faster than in primigravida due to prior cervical remodeling and increased tissue compliance (Cunningham et al., 2021). However, despite this physiological advantage, prolonged labor can still occur due to modifiable factors such as limited maternal mobility, suboptimal fetal positioning, maternal anxiety, and excessive medical intervention (Simkin et al., 2022).

One of the key modifiable factors influencing labor progression is maternal position and mobility. Non- pharmacological interventions that promote active maternal participation during labor have gained increasing attention because they are safe, low-cost, and effective. Upright positions and movement during labor enhance the efficiency of uterine contractions and facilitate fetal descent through gravitational forces. Among these interventions, the squat movement—repetitive transitions between squatting and standing positions—has been proposed as a practical technique to accelerate cervical dilation. This movement increases intra-abdominal pressure and widens the pelvic outlet,

thereby facilitating fetal descent and enhancing the pressure of the fetal head on the cervix, which stimulates faster dilation (Johnson & Taylor, 2019; Smith et al., 2020).

From a physiological perspective, squatting optimizes the alignment between the uterus, cervix, and pelvic axis. This alignment reduces resistance during fetal descent and supports more effective uterine contractions. In addition,

Squatting increases pelvic diameters, particularly the anteroposterior diameter, which can improve the passage of the fetus through the birth canal (Gupta et al., 2021). Improved blood circulation to the pelvic region during movement also enhances oxygen delivery to uterine muscles, reducing fatigue and improving contraction quality. Furthermore, active movement can decrease maternal discomfort and anxiety, both of which are known to inhibit oxytocin release and slow labor progression (Simkin et al., 2022). These mechanisms explain why mobilization, including squatting, contributes to a shorter and more efficient first stage of labor.

Evidence supports the role of maternal mobility in improving labor outcomes. A systematic review by Lawrence et al. (2019) found that women who remained upright and mobile during labor experienced shorter first-stage durations and were less likely to require interventions such as labor augmentation with oxytocin or cesarean delivery. Similarly, Gupta et al. (2021) reported that upright positions, including squatting, were associated with improved labor efficiency and maternal comfort. However, most existing studies group various upright positions together, such as walking, sitting, or kneeling, without isolating the specific effect of repeated squat movements. This creates a gap in the literature regarding the direct impact of structured squat exercises on labor progression, particularly among multigravida mothers.

Although the theoretical and general empirical support for mobilization is strong, several maternal factors can influence the effectiveness of squat movements. Maternal age, body mass index (BMI), physical fitness, and pregnancy- related conditions such as hypertension or gestational diabetes may affect a mother's ability to perform and sustain squatting positions (Jones & Green, 2020). Additionally, maternal fatigue and pain tolerance can limit adherence to movement-based interventions during labor. Therefore, while squat movement has clear physiological benefits, its practical implementation must consider individual maternal conditions and clinical safety.

Local context also plays a significant role in labor management practices. Morotai Island Regency Hospital, as a regional healthcare facility, handles a wide range of childbirth cases, including multigravida mothers. Preliminary observations indicate that some labors still exceed expected durations despite previous childbirth experience. This suggests that non-physiological factors, such as limited maternal mobility, increased anxiety, or routine clinical interventions, may contribute to delayed labor progression. The Ministry of Health of the Republic of Indonesia emphasizes the importance of promoting physiological childbirth practices, including encouraging maternal movement, to reduce prolonged labor and intervention rates (Kemenkes RI, 2021). However, implementation of such practices often remains inconsistent across healthcare settings.

In many clinical environments, laboring women are still encouraged to remain in bed for continuous monitoring, which restricts mobility and may negatively affect labor progression. This approach contradicts current evidence-based recommendations that support freedom of movement during labor. Encouraging simple, structured movements such as squatting could serve as a practical intervention that midwives can easily integrate into routine care. Unlike pharmacological methods, squat movement does not require additional resources and carries minimal risk when properly supervised.

The purpose of this study is to analyze the effect of squat movement on the duration of the first stage of labor in multigravida mothers at Morotai Island Regency Hospital. This focus is important because multigravida mothers represent a group with inherently favorable labor characteristics, making it easier to detect the added benefit of specific interventions such as squat movement. By isolating this variable, the study aims to generate more precise evidence regarding its effectiveness.

The expected contribution of this research is both practical and scientific. For healthcare providers, particularly midwives, the findings can inform clinical practice by providing evidence-based guidance on the use of squat movement as part of labor management. Educating pregnant women about the benefits of mobility during labor can empower them to take an active role in the birthing process. For health systems, promoting non-pharmacological interventions aligns with global efforts to reduce unnecessary medical interventions and support natural childbirth. The World Health Organization recommends the use of non-invasive, woman-centered approaches to improve childbirth experiences and outcomes (WHO, 2020).

If this study demonstrates that squat movement significantly reduces the duration of the first stage of labor, it can be incorporated into standard operating procedures for normal delivery care. This would strengthen midwifery practices by integrating simple, evidence-based interventions that enhance labor efficiency while maintaining safety. Ultimately, improving labor management through such approaches contributes to better maternal satisfaction, reduced intervention rates, and improved neonatal outcomes.

In conclusion, labor progression is influenced by multiple interrelated factors, with maternal mobility emerging as a key modifiable determinant. Squat movement offers a physiologically sound and practical intervention to support cervical dilation and fetal descent. Despite strong theoretical support, specific evidence on its effectiveness in multigravida mothers remains limited, particularly in local contexts such as Morotai Island. This study addresses that

Gap by evaluating the direct impact of squat movement on the duration of the first stage of labor. The findings are expected to provide valuable evidence to enhance clinical practice and support safer, more efficient, and more natural childbirth processes..

2. Research Method

This study used a pre-experimental one-shot case study design. The study involved 16 multigravida mothers selected using purposive sampling at Morotai Island Regency Hospital. Respondents performed squat movements during the active phase of the first stage of labor under midwife supervision. The duration of the first stage of labor was then observed and categorized based on labor progression criteria. Data were analyzed using the Wilcoxon test with a significance level of 0.05.

3. Results and Discussion

3.1 Results

Table 1 Mother's Age

Information	Frequency	Percent
<21 year	3	18.8
>21 year	13	81.2
Total	16	100.0

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In table 1, the age of the mother, most of the 13 respondents (81.2%) were >21 years old and a small number of 3 respondents (18.8%) were <21 years old.

Table 2 Mother's Occupation

Information	Frequency	Percent
housewives	12	75.0
self-employed	4	25.0
Total	16	100.0

In table 2, it was found that the majority of 12 respondents (75%) were housewives and a small proportion of 4 respondents (25%) were self-employed.

Table 3 Mother's Education

Information	Frequency	Percent
SMP	7	43.8
SMA	9	56.2
Total	16	100.0

Based on table 3 above, it was found that the majority of 9 respondents (56.2%) had a high school education and a small proportion of 7 respondents (43.8%) had a junior high school education.

Table 4 Before and After Treatment

Before		
Information	Frequency	Percent
experienced normal First Stage of Labor opening	16	100.0
After		
Information	Frequency	Percent
experienced fast First Stage of Labor opening	15	93.8
experienced normal First Stage of Labor opening	1	6.2
Total	16	100.0
Uji Wilcoxon		0.000

***Fast labor progression: cervical dilation >1 cm/hour in multigravida mothers.*
Normal labor progression: cervical dilation ≤1 cm/hour.

Based on table 4 above, from the Wilcoxon test above, it was obtained 0.000 < 0.05, the Effect of Squat Movement on the Length of First Stage of Labor in Multi Gravida in the Obstetrics Room at the Morotai Island District Hospital. Initial data obtained 16 respondents (100%) with normal First Stage of Labor opening, after the intervention was carried out, 15 respondents (93.8%) experienced fast First Stage of Labor opening and 1 respondent (6.2%) experienced normal First Stage of Labor opening.

3.2 Discussion

The results of this study demonstrate that squat movement has a statistically significant effect on the duration of the first stage of labor in multigravida mothers, with a p-value of 0.000 ($p < 0.05$). This finding confirms a meaningful difference between mothers who performed squat movements and those who did not. Of the 16 respondents, 15 (93.8%) experienced accelerated cervical dilation, while only 1 respondent (6.2%) experienced normal progression following the intervention. These results provide strong empirical support that structured squat movement can enhance the efficiency of labor, particularly in the first stage. This aligns with established evidence that active maternal participation during labor contributes to improved outcomes and shorter labor duration (Simkin et al., 2022).

The first stage of labor represents a critical phase characterized by progressive cervical dilation driven by coordinated uterine contractions. According to World Health Organization, optimal labor progression depends on maintaining physiological conditions that support uterine efficiency, maternal comfort, and fetal descent (WHO, 2020). In multigravida mothers, cervical dilation generally occurs more rapidly due to prior cervical remodeling and increased tissue elasticity (Cunningham et al., 2021). However, this natural advantage does not eliminate the risk of prolonged labor, particularly when modifiable factors such as maternal immobility, stress, or suboptimal positioning are present. This study clearly shows that introducing squat movement as an active intervention can further optimize this physiological process.

Squat movement involves repeated transitions between standing and deep squatting positions. This movement generates increased intra-abdominal pressure and promotes gravitational assistance, both of which enhance fetal descent. Mechanically, squatting widens the pelvic outlet and improves the alignment of the fetal head with the cervix, resulting in more effective pressure on the cervical tissue. This pressure stimulates faster effacement and dilation through a positive feedback mechanism involving uterine contractions (Johnson & Taylor, 2019; Smith et al., 2020). In

contrast, static positions such as lying supine reduce pelvic dimensions and limit gravitational support, often leading to less efficient labor progression.

Physiologically, upright and active positions—including squatting—enhance uterine perfusion and oxygenation of the myometrium. Improved blood flow supports stronger and more coordinated contractions, reducing uterine fatigue and increasing contraction effectiveness. Evidence shows that maternal mobility during labor significantly improves contraction patterns and shortens labor duration compared to immobility (Lawrence et al., 2019). Furthermore, squatting increases the anteroposterior diameter of the pelvis, facilitating smoother fetal passage through the birth canal (Gupta et al., 2021). These combined biomechanical and physiological effects explain the high proportion of respondents in this study who experienced accelerated cervical dilation.

In addition to mechanical benefits, squat movement influences hormonal regulation during labor. Physical activity and upright positioning stimulate endogenous oxytocin release, a hormone essential for effective uterine contractions. Oxytocin enhances contraction strength, frequency, and coordination, thereby accelerating cervical dilation (Cunningham et al., 2021). Unlike pharmacological oxytocin, which carries risks such as uterine hyperstimulation, natural oxytocin release through movement provides a safer and more controlled mechanism for labor progression. This supports the growing emphasis on non-pharmacological interventions in obstetric care.

The findings of this study are consistent with broader literature demonstrating that active mobilization reduces the incidence of prolonged labor and obstetric interventions. Women who adopt upright or mobile positions during labor show lower rates of labor augmentation, instrumental delivery, and cesarean section (Lawrence et al., 2019). Similarly, Gupta et al. (2021) reported that upright positions, including squatting, are associated with shorter labor duration and improved maternal comfort. These findings reinforce the conclusion that squat movement is not an isolated technique but part of a broader evidence-based approach promoting physiological childbirth.

Despite the overwhelmingly positive outcomes, one respondent in this study did not experience accelerated cervical dilation. This variation highlights the influence of individual factors on labor progression. Maternal fatigue, anxiety, pain tolerance, and psychological readiness can significantly affect uterine activity and cervical response (Simkin et al., 2022). Stress and anxiety, for example, increase catecholamine levels, which inhibit oxytocin release and reduce contraction effectiveness. Therefore, even with optimal physical interventions, psychological factors can limit outcomes.

Maternal physical condition also plays a critical role. Factors such as high body mass index (BMI), reduced physical fitness, or underlying pregnancy complications may limit the effectiveness of squat movement. Women with higher BMI may experience difficulty maintaining squatting positions, reducing the intensity and consistency of the intervention (Jones & Green, 2020). Additionally, musculoskeletal discomfort or fatigue can reduce adherence to movement-based strategies during labor. These factors emphasize the need for individualized assessment before recommending squat movement as a standard intervention.

From a clinical perspective, squat movement offers several practical advantages. It is simple, cost-free, and does not require specialized equipment. Midwives can easily teach and supervise this movement during labor, making it highly applicable in both low-resource and high-resource settings. Integrating squat movement into routine labor management aligns with recommendations from the World Health Organization, which advocate for encouraging freedom of movement and upright positions during labor to improve outcomes and maternal satisfaction (WHO, 2020). In this context, squat movement serves as a structured and purposeful form of mobilization that can be standardized in clinical practice.

However, this study also has limitations that must be acknowledged. The small sample size (n = 16) limits the generalizability of the findings. External variables such as previous labor experiences, maternal fitness levels, and psychological conditions were not fully controlled, which may influence outcomes. Additionally, the study design does not allow for long-term evaluation of maternal or neonatal outcomes beyond the first stage of labor. Therefore, further research with larger sample sizes and more rigorous experimental designs is necessary to validate these findings and explore additional outcomes, such as pain perception, maternal satisfaction, and neonatal well-being.

Future studies should also examine the optimal frequency, duration, and timing of squat movements during labor to maximize effectiveness. Comparative studies between squat movement and other forms of mobilization, such as walking or birthing ball exercises, would provide more detailed guidance for clinical practice. Understanding how different maternal characteristics interact with these interventions will further support personalized obstetric care.

In conclusion, this study provides strong evidence that squat movement is an effective non-pharmacological intervention for accelerating the first stage of labor in multigravida mothers. The intervention works through combined mechanical, physiological, and hormonal mechanisms that enhance cervical dilation and fetal descent. While individual variability exists, the overall findings support the integration of squat movement into standard labor management practices. Midwives and healthcare providers should actively promote maternal mobility, including squat exercises, as part of evidence-based care. Strengthening education for pregnant women regarding the benefits of movement during labor will further enhance outcomes and contribute to safer, more efficient, and more positive childbirth experiences.

4. Conclusion

Based on the results of the study, it can be concluded that the squat movement has a significant effect on the length of the first stage in multigravida mothers in the Obstetrics Room of the Morotai Island District Hospital, with a p- value = 0.000 ($p < 0.05$). Of the 16 respondents, 15 people (93.8%) experienced rapid opening of the first stage, while 1 person (6.2%) experienced normal opening of the first stage after the intervention was carried out. These results indicate that the squat movement can accelerate the cervical opening process and support a smoother delivery.

The squat movement has been shown to help increase intra-abdominal pressure, accelerate the descent of the fetal head, and stimulate cervical dilation more effectively. In addition, the squatting-standing position in this movement also supports increased blood flow to the pelvic area and the production of natural oxytocin, which plays a role in strengthening uterine contractions.

This study contributes to the world of obstetrics by offering an alternative non-pharmacological intervention that is effective in accelerating the first stage in multigravida mothers. Implementation of this method in health facilities is expected to help reduce the incidence of prolonged labor, reduce the risk of medical intervention, and improve the experience of giving birth to a more comfortable mother.

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References

Saminem. (2009). Senam Hamil dan Manfaatnya. Jakarta: EGC.

Manuaba, I. B. G. (2010). Ilmu Kebidanan, Penyakit Kandungan, dan Keluarga Berencana untuk Pendidikan Bidan. Jakarta: EGC.

Simkin, P., Hanson, L., & Ancheta, R. (2022). Labor Progress Handbook: Early Interventions to Prevent and Treat Dystocia. John Wiley & Sons.

Smith, J. P., Brown, H., & White, K. (2020). The Effect of Squatting Exercises on Labor Duration: A Systematic Review. Journal of Maternal Health Research, 14(2), 110-118.

Johnson, R., & Taylor, W. (2019). Skills for Midwifery Practice. Elsevier Health Sciences.

Gupta, J. K., Hofmeyr, G. J., Smyth, R. M. D., & Lumbiganon, P. (2021). Position in the Second Stage of Labor for Women Without Epidural Anesthesia. Cochrane Database of Systematic Reviews, 2, CD002006.

Lawrence, A., Lewis, L., Hofmeyr, G. J., & Styles, C. (2019). Maternal Positions and Mobility During First Stage Labor for Improving Birth Outcomes. Cochrane Database of Systematic Reviews, 3, CD003934.

World Health Organization (WHO). (2020). Care in Normal Birth: A Practical Guide.

Jones, L., & Green, J. (2020). The Effect of Upright Positions on the Duration of the First Stage of Labor: A Randomized Controlled Trial. Birth, 47(1), 45-52.

Cunningham, F. G., Leveno, K. J., Bloom, S. L., Spong, C. Y., Dashe, J. S., Hoffman, B. L., Casey, B. M., & Sheffield, J. S. (2021). Williams Obstetrics, 26e. McGraw-Hill Education.

Eka Triani Tandiono. (2018). Hubungan Senam Hamil dengan Lama Proses Persalinan Kala I & II di BPM Lilik Suryani, Bantul. Universitas 'Aisyiyah Yogyakarta. DIGILIB.UNISAYOGYA.AC.ID

Sari, D. K., & Wulandari, S. (2021). Pengaruh Posisi Jongkok terhadap Lama Persalinan Kala I pada Ibu Bersalin di Puskesmas X. Jurnal Kesehatan Ibu dan Anak, 12(1), 25-32.

Nurhayati, S., & Putri, A. R. (2020). Efektivitas Latihan Squat terhadap Proses Persalinan pada Ibu Primigravida. Jurnal Ilmu Kebidanan, 8(2), 45-51.

Rahmawati, I., & Lestari, P. (2019). Pengaruh Senam Hamil terhadap Lama Persalinan Kala I pada Ibu Hamil Trimester Ketiga. Jurnal Kesehatan Reproduksi, 6(3), 150-157.

Astuti, Y. D., & Handayani, S. (2022). Pengaruh Latihan Fisik terhadap Lama Persalinan Kala I pada Ibu Bersalin di Rumah Sakit Y. Jurnal Kebidanan dan Keperawatan, 10(1), 60-68.