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THE EFFECT OF PELVIC ROCKING EXERCISE WITH A GYM BALL ON REDUCING LABOR PAIN INTENSITY IN THE FIRST STAGE AT TPMB TELLY KUSNAETI, CILEUNGSI, BOGOR

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Abstract

Normal childbirth often induces stress and anxiety, especially in first-time mothers. To alleviate pain and facilitate fetal descent during labor, non-pharmacological methods such as pelvic rocking using a gym ball can be employed. This exercise involves moving the pelvis and waist in various directions to strengthen the abdominal, waist, and hip muscles. Using a gym ball enhances pelvic mobility and rotation while allowing exercises in sitting or upright positions, which may promote perineal relaxation and pain relief during labor. This study aimed to assess the impact of pelvic rocking exercises with a gym ball on labor pain intensity during the first stage at TPMB Tely Kusnaeti, Cileungsi, Bogor. A one-group quasi-experimental approach was utilized, involving 30 participants selected via purposive sampling. The research was conducted from August to September 2023. The hypothesis was tested using the Wilcoxon test, yielding a p-value of 0.000 ($p < 0.005$), indicating a significant effect following the pelvic rocking exercises. Consequently, the alternative hypothesis was accepted, and the null hypothesis was rejected, confirming the significant impact of pelvic rocking with a gym ball.

Keywords: *Childbirth, Pelvic Rocking, Gymball*

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1. Introducion

Normal labor is a significant event that most mothers experience, often accompanied by stress and anxiety, particularly for primiparous women. This heightened level of worry activates a physiological response in the brain, which can amplify the perception of pain during labor. Consequently, the combination of pain and stress can adversely impact both the mother and the fetus [1,2].

Research indicates that high self-efficacy, or the belief in one's ability to undergo labor successfully, significantly enhances maternal confidence, potentially leading to a smoother labor process. Several factors contribute to self-efficacy, including the experience of pain, fear, overall knowledge, comfort during labor, the presence of support, and the woman's parity status [3,4].

Low self-efficacy among mothers may result in diminished self-confidence, which can exacerbate complications during labor. Therefore, initiatives to enhance maternal self-efficacy are essential in preparing

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women for childbirth and instilling confidence [5,6]. Such efforts include pain management strategies, fostering maternal comfort, and adopting optimal positions during the first stage of labor [7].

Data from the World Health Organization (WHO) indicate that in 2017, prolonged labor was a direct contributing factor to various complications, resulting in 69,000 maternal deaths globally, representing 2.8% of all maternal mortality. The 2017 Indonesian Demographic and Health Survey, as noted by Astuti, reported that prolonged labor was the most frequently cited complication, accounting for 42.96% of cases, and ranked as the fifth-leading cause of maternal death in Indonesia. Additionally, the 2019 Indonesian Demographic Health Survey conducted by the Ministry of Health confirmed that prolonged labor, representing 42.96% of cases, was the primary cause of maternal and perinatal mortality, followed by hemorrhage (35.26%) and preeclampsia (16.44%). Findings indicated that pain experienced during the first stage of labor was often associated with prolonged labor, which heightened the risk of emergencies for both mothers and infants. Potential maternal complications included hemorrhage and shock, while neonatal complications could involve fetal distress, asphyxia, and caput succedaneum. This underscores the critical importance of skilled healthcare providers in managing labor, as the majority of complications arise during this time [8].

To mitigate pain and facilitate the descent of the fetus during labor, non-pharmacological methods are increasingly recognized as effective interventions. These methods alleviate labor pain and are non-invasive, straightforward, and devoid of harmful side effects [2,9]. Various complementary pain management techniques are available, including pelvic rocking exercises [10].

Pelvic rocking involves rhythmic movements of the pelvis and waist from front to back and side to side, designed to strengthen the abdominal, waist, and hip muscles [11]. Several studies have demonstrated the efficacy of various techniques in reducing labor pain. For instance, research has shown that birthing ball exercises effectively alleviate labor pain [5]. Other studies [5, 10, 11] reported that pelvic rocking may enhance the duration and frequency of uterine contractions and cervical dilation while facilitating the fetal head's descent during labor. Furthermore, pelvic rocking is a self-regulation strategy that promotes a positive childbirth experience.

This study aims to evaluate the effects of pelvic rocking exercises using a gym ball on the intensity of labor pain during the first stage of labor at T.K Cileungsi Bogor.

2. Method

This study employs a quantitative research design utilizing a quasi-experimental approach with a one-group pretest-posttest design to assess the impact of a specific treatment on study outcomes, employing a non-equivalent control group design [12].

The target population for this study comprises all mothers who gave birth between August and September 2023. A total sample of 30 participants was selected for the study. The sampling method was non-randomized (non-probability), specifically purposive sampling. The selection criteria for the sample were established based on predefined inclusion and exclusion criteria to ensure the appropriateness of participants for the research.

3. Results and Discussion

Table 1. Frequency Distribution of Respondents' Characteristics (Cervical Dilation)

Variabel	Mean	Std. Deviasi	Min-Maks	95%CI
ervical latation	5,03	1,47	2 – 8	2,48 – 5,58

Based on Table 1, the average cervical dilation during labor was found to be 5.03, with the lowest dilation recorded at 2 and the highest at 8.

Table 2. Pain Levels During Labor Before and After Pelvic Rocking Exercise

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Pain Complaint	Mean	SD	Min-Maks	Hasil *Paired Sampel T-Test*
Before Intervention	5	1,55	2- 9	t = 15,23 Pvalue = 0,0001
After Intervention	3,67	1,51	1 – 8	

Table 2 indicates that the average pain level during labor prior to the pelvic rocking intervention was 5.00, categorizing it as moderate pain with a standard deviation of 1.55. The minimum pain recorded before the intervention was 2, while the maximum was 9. The calculated 95% confidence interval for the average pain level prior to intervention ranges from 4.42 to 5.58. Following the intervention, the average pain level measured was 3.67, which falls into the mild pain category, with a standard deviation of 1.51. The minimum pain reported post-intervention was 1, and the maximum was 8. The results suggest that there is a 95% confidence that the average post-intervention pain level is within the range of 2.10 to 4.23.

Table 3. Normality Test of Labor Pain Data Distribution During the First Stage of Labor

Keluhan nyeri	Mean	Std. Deviauon	Min-Maks	95 % CI	Skewness	Std.Error
Nyeri sebelum perlakuan	5	1,55	2- 9	4,42 – 5,58	0,47	0,28
Nyeri sesudah perlakuan	3,67	1,51	1 – 8	3,10 – 4,23	0,54	0,27

The normality test results presented in Table 3, utilizing skewness and standard error measurements, yielded a ratio of 0.25/0.14 = 1.78 and 0.029/0.16 = 0.125. The findings indicate that both pre- and post-intervention pain levels are normally distributed, as the skewness results are ≤ 2, thus allowing for the application of a paired t-test.

Table 4. The Effect of Pelvic Rocking Exercises with Gymball on Reducing Labor Pain Intensity During the First Stage

Labor Pain	Mean	Std. Deviasi	Min-Maks	95%CI
Before Intervention	5	1,55	2- 9	4,42 – 5,58
After Intervention	3,67	1,51	1 – 8	3,10 – 4,23

Table 4 illustrates that the average labor pain prior to intervention was 5.00, categorized as moderate pain. After the implementation of pelvic rocking exercises with a gym ball, the average pain intensity decreased to 3.67, indicating mild pain. The reduction in pain intensity pre- and post-intervention was calculated to be 1.33. The results of the paired t-test yielded a P-value of 0.0001 (P<0.05), allowing us to conclude that pelvic rocking exercises with a gym ball significantly influenced the reduction of labor pain during the first stage.

Based on the results of statistical testing using the Wilcoxon test, a p-value of 0.000 was obtained (p<0.005), indicating a significant effect of pelvic rocking exercises with a gym ball before and after the intervention. This outcome leads to the acceptance of the alternative hypothesis (Ha) and the rejection of the null hypothesis (Ho). This study was conducted as a quantitative research with a quasi-experimental design, specifically a post-test-only design. The sample consisted of 30 women in the first stage of labor. The statistical analysis confirmed that pelvic rocking exercises with a gym ball have a meaningful impact on labor outcomes.

The findings of this study align with previous research [1,10,11] titled "The Effectiveness of Pelvic Rocking Exercise on the Duration of Labor in Primiparous Women," which reported that respondents who performed pelvic rocking exercises had a relatively shorter duration of active labor compared to those who did not engage in such exercises. This study's findings are consistent with the theoretical framework that describes the active phase of labor as the period during which the greatest cervical dilation occurs, and the fetal presentation descends further into the pelvis [10,13]. Primiparous women

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typically experience a dilation rate of at least 1 cm/hour, whereas multiparous women experience a rate of approximately 1.5 cm/hour [5,6,14].

Furthermore, pelvic rocking exercises with a gym ball have been shown to enhance the progress of uterine contractions, resulting in a significant positive correlation among the study group regarding the increase in uterine contractions, greater contraction intensity, increased duration, and reduced interval between contractions [14-16]. Following the intervention, these exercises assist in facilitating the descent of the fetal head into the pelvic cavity. The efficiency of uterine contractions aids in cervical dilation and contributes to the successful completion of the first stage of labor.

Additionally, a study conducted by [13] investigated the impact of pelvic rocking on the duration of the active first stage of labor, revealing that among women in normal active labor who did not perform pelvic rocking exercises, a higher number experienced abnormal labor progress. The researchers' assumption is that pelvic rocking with a gym ball is effective for application during the first stage of labor, facilitating the labor process and reducing the intensity of pain experienced by laboring women.

4. Conclusion

The assessment of pain levels following the pelvic rocking exercises with the gymball revealed that 15 participants (50%) reported light pain (scale 1, corresponding to 1–3), 14 participants (46.7%) experienced moderate pain (scale 2, corresponding to 4–6), and 1 participant (3.3%) identified as experiencing severe pain (scale 3, corresponding to 7–10). These findings indicate a significant reduction in pain intensity after the intervention, with moderate pain levels decreasing to light pain and severe pain levels reducing to moderate pain. The data demonstrates an average decrease in pain intensity of 1.33, resulting in a categorization of pain at a low level following the pelvic rocking exercises with the gym ball.

It is anticipated that the implementation of pelvic rocking exercises using the gym ball will become a valued component of maternity care, contributing positively to the management of labor pain.

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6. References

[1] Mulyasari R, Putriastuti W. Asuhan Kevidanan Komprehensif Pada Ny. “H” G2P1A0 Dengan Intervensi Pelvic Rocking Pada Multigravida. Posiding Kebidanan Semin Nas “Bidan Tangguh Bidan Maju.” 2021;1(2):57–63.

[2] Fitria R, Wahyuny R. Efektivitas Pemberian Metode Birth Ball Terhadap Intensitas Nyeri Persalinan Kala I Fase Aktif Di Bpm Rokan Hulu. Matern Neonatal. 2021;03(03):210–20.

[3] Utami IP, Utami I. Pengaruh Pelvic Rocking Exercise Terhadap Tingkat Nyeri Primary Dysmenorhea Pada Siswi Smp Ma’Arif Gamping Yogyakarta. Intan Husada J Ilmu Keperawatan. 2019;7(2):1–10.

[4] Trisnadewi PNN, Kartika S. Literature Review Penggunaan Birth Ball Untuk Pengurangan Nyeri Persalinan Kala I. 2021;9(2):62–9. Available from: http://repository2.unw.ac.id/1960/

[5] Carolin BT, Julia Rifiana A, Komariah D. The Effect of The Use of Birthball on The Intensity of First Stage Active Phase Labor Pain. Heal Technol J. 2023;1(6):635–40.

[6] Fitria R, Wahyuny R. Intensitas nyeri persalinan birth ball. J Matern Neonatal. 2021;09(01):44–54.

[7] Mutoharoh S, Kusumastuti, Indriyani E. The Effectiveness of Birth Ball During Pregnancy in

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e-ISSN: 2549-5054

Length of Labor. In: Proceedings of the 1st International Conference on Community Health (ICCH 2019) [Internet]. Paris, France: Atlantis Press; 2020. Available from: https://www.atlantis-press.com/article/125933911

[8] Trisnadewi, P. N. N. and Kartika S. Literature Review Penggunaan Birth Ball Untuk Pengurangan Nyeri Persalinan Kala I. Univ Ngudi Waluyo [Internet]. 2021;62–9. Available from: http://repository2.unw.ac.id/1960/.

[9] Salamah U, Putri AA. The Relationship Of The Use Of Gym Ball To The Long Time Of Labor. J Kebidanan Malahayati. 2022;8(3):639–44.

[10] Yolanda Audina, Novalia Widiya Ningrum DPS. Efektifitas Pelvic Rocking Exercise Terhadap Pengurangan Intensitas Nyeri Dan Lama Waktu Persalinan Kala I : Literature Review. Proceeding Sari Mulia Univ Midwifery Natl Semin [Internet]. 2021;4(1). Available from: https://ocs.unism.ac.id/index.php/PROBID/article/view/900/340

[11] Wulandari RCL, Wahyuni S. Efektivitaspelvic Rocking Exercise Pada Ibu Bersalin Kala I Terhadap Kemajuan Dan Lama Persalinan. Intan Husada J Ilmu Keperawatan [Internet]. 2019 May 14;7(1):67–78. Available from: https://akperinsada.ac.id/e-jurnal/index.php/insada/article/view/139

[12] Mukhid A. Metodologi Penelitian Pendekatan Kuantitatif [Internet]. Vol. 7, Syria Studies. 2021. 208 p. Available from: https://www.researchgate.net/publication/269107473_What_is_governance/link/548173090cf22525dcb61443/download%0Ahttp://www.econ.upf.edu/~reynal/Civil wars_12December2010.pdf%0Ahttps://think-asia.org/handle/11540/8282%0Ahttps://www.jstor.org/stable/41857625

[13] Sirajul Muna SW. Pengaruh Gerakan Pelvic Rocking Dengan Birth Ball Terhadap Lama Persalinan Kala I Pada Ibu Inpartu di PMB Wilayah Kerja Puskesmas Baitussalam Kabupaten Aceh Besar. Jounal Heal Tecnol dan Med [Internet]. 2024;10(1). Available from: https://jurnal.uui.ac.id/index.php/JHTM/article/view/3777

[14] Zesika Intan Navelia, Fayta Nurul Hanifa, Dian Monalisa Rusliani, Novita Puspita Dewi FH. Pengaruh Penggunaan Bola Kacang terhadap Lamanya Kala I Persalinan: Tinjauan Sistematis. J Ilm Kebidanan. 2024;7(1).

[15] Grenvik JM, Coleman LA, Berghella V. Birthing balls to decrease labor pain and peanut balls to decrease length of labor: what is the evidence? Am J Obstet Gynecol [Internet]. 2023 May;228(5):S1270–3. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0002937823001151

[16] Anuhgera DE, Ritonga NJ, Sitorus R, Simarmata JM. Penerapan Birth Ball Dengan Teknik Pelvic Rocking Terhadap Lama Persalinan Pada Kala I Fase Aktif. J Keperawatan Dan Fisioter [Internet]. 2021 Oct 31;4(1):70–6. Available from: https://ejournal.medistra.ac.id/index.php/JKF/article/view/837