Pain in Maternity Mothers, can Birth Ball Reduce it?: A Literature Review

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ABSTRACT

Labor pain is physiological in the delivery process. Causes of labor pain are uterine muscle contractions, pelvic muscle base strain, episiotomies and psychological conditions. A Swedish study showed that 41% of participants reported labor pain as the worst experience they had as a result of labor pain impacting psychological trauma resulting in smooth subsequent labor. The results of the study in maternity mothers stated that 2,700 maternity mothers experienced mild pain 15%, 35% moderate pain, 30% severe pain and 20% accompanied by very severe pain. Efforts to relieve labor pain can be used by pharmacological and non-pharmacological methods. Birth Ball is one of the non-pharmacological methods used to reduce pain during labor. Method: review literature with a traditional literature review (narrative) and grouping similar extraction data according to the results measured to answer the purpose. Results: based on the results of reviews from 5 journals obtained p-value results of 0.000. Conclusion: Birth Therapy Ball Can reduce the intensity of pain in maternity mothers indicated by a value of P Value < 0.05.

Keywords: Birth Ball Therapy; Labor Pain

1. INTRODUCTION

Labor pain is physiological in the labor process with a different intensity of pain in each individual [1]. The cause of labor pain results from various factors such as uterine muscle contractions, pelvic floor strain, episiotomies and psychological conditions. Pain in labor occurs at the beginning of labor until complete opening and lasts 12-18 hours, continued when fetal discharge until placental discharge. The intensity of pain is highly individualized, influenced by perception, mental support, companion delivery, and pain management techniques [2].

According to Adams (2012), the negative impact of labor pain comes from changes in the mother's respiratory pattern and an increase in catecholamine-mediated stress response. Potential physiological effects of labor pain include: increased oxygen consumption, hyperventilation, hypocarbia, respiratory alkalosis and autonomic stimulation and release of catecholamine's resulting in increased stomach acid, lipolysis, increased peripheral blood vessel resistance, heart blood circulation, blood pressure, decreased placenta perfusion, and non-coordinated uterine activity. Severe impacts can lead to maternal metabolic acidemia, fetal acidosis, and dysfunctional childbirth [3].

Reaction to pain is a form of a person's response to pain, such as fear, anxiety, anxiety, crying and screaming. The effect of pain on the body will cause a physical response and behavioral response.

Data of primigravid maternity mothers in Indonesia, as many as 54% feel severe pain, as much as 46% experience moderate pain and mild pain. One of Murray's et.al studies in Windfall reported incidence of pain in 2,700 maternity mothers, 15% experienced mild pain, 35% with moderate pain, 30% with severe pain and 20% labor accompanied by severe pain [4].

Efforts to relieve labor pain can be by using pharmacological or non-pharmacological methods. Birth Ball is one of the non-pharmacological methods used to reduce pain during labor. In this case, the birth ball positions the mother's body optimally and pain reduction during uterine contractions gives rise to unusual movements. The underlying reason for this is that birth ball exercises can work effectively in labor. The use of a birth ball during labor prevents the mother in a supine position continuously.

2. METHOD

The method used is review literature with a traditional literature review (narrative) and grouping similar extraction data according to the results measured to answer the goal. The journal criteria reviewed were research articles with the subjects of maternity mothers and the use of therapy Birth Ball. The search for the article was done through google scholar with the keywords Therapy Birth Ball and Labor Pain. Based on keywords, 355 articles were obtained. Then screening with the criteria for inclusion in the period of publication in 2011-2021 obtained 136 articles. Screening with the criteria obtained 125 articles is not in accordance with the topic and has no association with a decrease in the intensity of labor pain. The remaining 11 articles then next done screening, viewed abstract, then read the article full text. The final result is 7 articles that will then be reviewed. The analysis method used to use the analysis of article content, then coding on the content of the reviewed article, after coding is then concise and compared between literature with each other.

3. RESULT AND DISCUSSION

Based on a review of articles conducted with the topic of Birth Ball therapy to reduce pain can be explained as follows: a) The design of the study used is quasi experiment with a pre post-test design approach, b) The study subjects are maternity mothers c) Sampling techniques used are purposive sampling, consecutive sampling, random sampling, accidental sampling, total, and sampling quota d) The number of samples used in the study varied between 20 to 203 maternity samples. As for the purpose of the research of each article there are 4 articles with the aim to find out the effect of birth ball on labor pain, the other 3 articles aim to find out and analyze the effectiveness of Birth Ball against the reduction of labor pain. The research location of the 6 articles reviewed is Indonesia, and 1 article from Hong Kong.

Table 1 Article Analysis Results

	Article 1	Article 2	Article 3	Article 4	Article 5	Article 6	Article 7
Researchers	Isye Fadmiyanor, Junaida Rahmi, Mila Putri Ayu	Rahmi Fitria, Romy Wahyuny	Triana Indrayani, Shintya Mayang Riyanti	Noviyanti, Nurdahliana, Fitri Munadya, Gustiana	Niluh Nita Silfia, Anna Veronica Pont, Sulasmi	Regina WC, Leung Jess FP Li, Mary KM Leung, Brigitte KY Fung, Lawrence CW Fung, SM Tai, C Sing, WC Leung	Nila Marwiyah, Lenny Stia Pusporini
Research Design	Quasi Experiment with pretest-posttest group design	Quasi experiment with pretest-posttest group design	One-shot case study design	Pre-experimental research with a Pre and Post-Test Control Group Design approach	Pre experiment with One Group Pretest-posttest.	Pre test and post test	Quasi Experiment
Research Subjects	Normal maternity mother	Maternity mother	Maternity mother	Maternity mother	Maternity mother	Maternity mother	Maternity mother
Research Sample	20 treatment groups.	31 maternity mother	17 maternity mothers	15 people	30 people.	203 people.	23 people.
Research objectives	To find out the effect of giving birth ball methods on the intensity of labor pain before and after being given treatment	To find out the effectiveness of the birth ball method which is one of the non-pharmacological methods against the reduction of labor pain when I active	To find out the effect of birthing ball use on the decrease in pain score in maternity mothers when I active phase in the maternity clinic Bekasi	Analyzing the effectiveness of birth ball exercises in maternity mothers when I against the decrease in labor pain in The Independent Practice of Midwives	To find out the influence of the implementation of pelvic rocking with birthing ball on the reduction of labor back pain when I at The Mamboro	To evaluate the effectiveness of birth ball in pain reduction in maternity mothers	To find out the effect of the Ball Pack Childbirth, Pelvic Rocking,and Endorphin Massage (B.P.P) to Labor Pain When I

	Article 1	Article 2	Article 3	Article 4	Article 5	Article 6	Article 7
		phase in BPM Rokan Hulu		(PMB) "EM" in Bada Aceh City	Health Center of Palu City.		
Country of Research location	Indonesian	Indonesian	Indonesian	Indonesian	Indonesian	Hongkong	Indonesian
Summary of Results/ Findings	a difference in the intensity of labor pain before and after being given the birth ball method when I active phase with p value (0.000<0.05).	the average labor pain in respondents before being given birth ball exercise was 0.259 times higher than after exercise with a p-value of 0.00.	significant difference in pain scores before and after birthing ball p value (0.001<0.05). The use of birthing ball during labor can reduce pain score in labor	Statistical tests conducted using the Wilcoxon T est obtained a value of p-value (0.001<0.05) so it can be concluded that there is a significant difference in the intensity of labor pain before and after birth ball exercise.	there is an effect of pelvic rocking with birthing ball on the reduction of labor low back pain during I.	There was a statistically significant decrease and at the level of pain before and after exercise p-value (0.001<0.05)	significant difference in labor pain between before and after intervention with a value of p<0.01
Data Analysis Techniques	T-test dependent	t-dependent test.	descriptive statistics and inferential statistics i.e. Wilcoxon-test	wilcoxon test analysis	Wilcoxon Rank Test.	Independent sample t-test	paired sample t-test test

Based on the results of a review of 7 articles obtained statistical test results with a p-value of < 0.05, so it can be concluded that Birth ball therapy can reduce the intensity of pain in maternity mothers, this is strengthened by research conducted by Maryani at RB Kasih Ibu Yogyakarta, about the influence of birthing ball. to the length of labor and the intensity of labor pain, which indicates a p- value of 0.019 which means there is a significant association between birthing ball therapy and decreased intensity of labor pain [5].

Table 2 Pre-Post Test values Each article

Journal	Pre-test Mean	Post-test Mean	P-value
1	6,05	4,95	0,000
2	5,16	3,13	0,000
3	6,50	0,00	0,001
4	2,6	1,7	0,001
5	6,6	5,9	0,033
6	5,3	4,3	0,001
7	6,57	6,13	0,001

Birth ball is one of the methods of using a rubber ball that contains air and is used to reduce pain during labor. Birth Ball is one method of pain reduction with distraction techniques, which is to turn the attention of the birther to something else so as to reduce alertness to pain and even increase the threshold / tolerance to pain .. Gentle movements performed over the ball greatly reduce pain during contractions. With the ball placed on the bed, the mother can stand and lean comfortably over the ball, pushing and swinging the pelvis for mobilization. The mother can also kneel and bend with weight resting on the ball. In labor, the birth mother sits upright on top of the ball shown to improve blood circulation to the uterus, placenta, and fetus, widen the surface of the pelvis, push the baby's head down, retreat the pelvis, and release discomfort due to pain [7].

Indications of birth ball use are inpartu mothers who feel pain, a long opening of more than 2 hours at each opening, and a decrease in the baby's long head., As for contraindications to the use of birth ball are malpresentation, antepartum bleeding, pregnant women with hypertension, and decreased consciousness (Siti, 2019).

According to Cuningham et al in fadmiyanor, stated that pain labor is caused by the presence of dilation and thinning of the cervix and uterine ischemia (decreased blood flow so that oxygen decreases) due to myometrium

contractions. Contraction of the myometrium muscle causes: 1) Reduced supply of oxygen to the uterine muscles (labor pain becomes more intense if the interval between contractions is short, so that the supply of oxygen to the uterine muscles has not fully recovered), 2) Stretching of the cervix (effacement and dilation), 3) The baby's pressure on the nerves in and near the cervix and vagina, 4) Tension and stretching of the connective tissue supporting the uterus and pelvic joints during the contraction and decline of the baby, 5) Pressure on the urinary tract, bladder, and anus,6) Stretching of the pelvic floor muscles and vaginal tissues, 7) Fear and anxiety that can trigger the release of large amounts of stress hormones that cause longer and intense pain[6].

Labor pain is affected by several factors, namely:

3.1. Age

In the review of 2 articles that wrote these characteristics, the majority of respondents were obtained, namely the age of 20-35 years as many as 44 respondents (97.78%). This suggests that most respondents are of healthy reproductive age. This statement is in accordance with the BKKBN (2012) which states that the ideal age of women to get pregnant is the age range of 20-35 years because at that age it is a safe age for childbirth and fertility is in peak condition.

Younger mothers have more intense pain sensors compared to older ages. Young age tends to be associated with psychological conditions that are still unstable that trigger the occurrence of anxiety so that the pain felt is stronger. Age is also used as a factor in determining tolerance to pain [8].

3.2. Education

Review 2 articles that wrote the characteristics obtained by the majority of respondents, namely highly educated (SMA-PT) as many as 31 respondents (68.89%). Education can have an impact on a mother's knowledge of labor including about labor pain and how to manage pain. Mothers who participate in infant birth education better understand what happens in the labor process and experience less anxiety. The higher the level of education, the more materials, materials and knowledge they have to achieve changes in good behavior. So highly educated mothers are abler to tolerate the pain they experience [9].

3.3. Parity

Based on 1 article that writes the characteristics of the majority results are Multipara as many as 23 respondents (76.67%). According to Silfia et al, hat parity can affect the intensity of labor back pain when I am active because in mothers who have previous labor experience will be better prepared in the face of labor, because they have

understood about the pain that will be felt and have a mechanism to overcome pain, while in the mother primipara will be the first experience for him so that the level of anxiety and anxiety. Fear in the face of childbirth is higher than multipara. This low back pain occurs due to a decrease in the lowest part of the fetus, causing suppression in the spinal area.

This is supported by the theory put forward by Judha et al. which explain that the experience of childbirth earlier can also affect the mother's response to pain. For mothers who have had painful and difficult experiences in previous labors, feelings of anxiety and fear of past experiences will affect the sensitivity of pain.

3.4. Gestational Age

Based on 1 article that writes these characteristics obtained the results of the majority of respondents, namely the gestational age of 40 weeks as many as 10 respondents (66.67%), all respondents with a gestational age of quite months or a term.

Trimester III pregnancy begins at 28-40 weeks of gestation. Pregnant women tend to look worried at this gestational age because it is approaching the labor process. In the third trimester pregnant women are also required to make labor preparations. The preparation of labor does not guarantee that labor will take place without pain. However, labor preparation is needed to reduce anxiety and fear of labor pain so that the mother can choose various techniques or methods of exercise so that the mother can overcome her fears.

3.5. Decreased Labor Pain

Based on the results of reviews from five journals, the results of statistical tests from each journal are p-value <0.05. So that it can be concluded that the use of *birth ball* affects the reduction of pain intensity in maternity mothers.

This is in line with Hani's research which is l (atihan birth *ball* conducted by maternity mothers by sitting casually and swaying on the ball, hugging the ball during contractions has the benefit of helping the mother in reducing pain during labor. A mother who is able to relax in rhythm with uterine contractions takes place then the mother will experience comfort during the labor process [11].

In line with the study that there are benefits obtained by using *birth ball* during labor, namely reducing pain and anxiety, minimizing the use of petidin, helping the process of head loss, reducing the duration of labor during I, increasing satisfaction and well-being of the mother. *Birth ball* exercises can improve the pelvic mobility of pregnant women. This exercise is performed in an upright and sitting position, which is believed to

encourage labor and support the perineum for relaxation and relieve labor pain [1].

Birth Ball is one method of pain reduction with distraction techniques, which is to turn the attention of the birthed to something else so as to reduce alertness to pain and even increase the threshold / tolerance to pain. According to Reeder, no pharmacological methods of treating pain consist of 3 systems, namely motivational-affectivesystems, cognitive-evaluativesystems, and discriminatory sensory systems. The use of birth ball as a nonpharmacological pain reliever includes 2 of the 3 systems, including cognitive-evaluative systems and discriminatory sensory systems.

The use of *birth ball* as a pain reliever of labor with a *cognitive-evaluative* system is done by giving the mother the ability to control pain and lower negative thoughts and assessments of pain through distraction techniques and patterned physical movements. In addition, labor pain can also be minimized by doing patterned physical movements. The use of this *birth ball* facilitates the birth mother to perform physical movements patterned with *pelvic rocking* (wiggle the pelvis). According to Sahtria, *pelvic rocking* can strengthen the abdominal and waist muscles, reduce pressure on the waist, reduce pressure on the bladder, help the mother relax so as to reduce tension that has an impact on reducing labor pain.

4. CONCLUSION

This review literature discusses the decrease in labor pain that can be overcome with the use of Birth Ball. Decreased labor pain is influenced by several factors in addition to the use of birth ball therapy, namely age, education, parity and gestational age. The use of birth ball therapy needs to be socialized since pregnancy enters the second trimester as one of the preparations for midwives to accompany maternity mothers in efforts to reduce labor pain. Recommendations for future studies are necessary to assess whether the use of birth ball therapy can reduce the risk of anxiety and reduce the risk of childbirth by action.

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