Journal for Research in Public Health
ISSN 2685-5283 (Print) 2685-5275 (Online)

Journal for Research in Public Health, 31-42
Vol 4 No 1 July 2022
URL: https://jrph.org/

# Quantitative Study of the Effectiveness of Birthing Ball Exercises on Labor Pain and Self-Efficacy During Childbirth at the Baamang Community Health Center 1

**Marlina Diah Praise Rahayu**

Institute of Health Sciences STRADA Indonesia

**Corresponding author:** khaismart89@gmail.com

**ABSTRACT**

Many women in labor want to avoid labor pain by minimizing the use of pharmacological methods. *birthing ball* Physically beneficial so it can be used during pregnancy and childbirth. In this case, *birthing ball* optimal positioning of the mother's body and reduction of pain during uterine contractions give rise to unusual movements. The underlying reason for practicing *birthing ball* can work effectively in childbirth. The aim of this research is to analyze the effectiveness of exercise birthing ball on labor pain and self-efficacy during labor. Based on the research location, it is clinical research and there are treatments in the research. Based on the data source, it is primary research. This research is included in the Pre Experimental type of research with a pretest and posttest design. This research was conducted in the Maternity Room of Baamang 1 Health Center. The results of the study showed that 58 percent of mothers experienced mild pain before the birthing ball exercise at the Baamang I Community Health Center, 33 percent of mothers experienced moderate pain and 10 percent of mothers experienced severe pain. And after doing it, as many as 58 percent of mothers experience no pain, 42 percent of mothers experienced mild pain. This is all because the mother understands and wants to follow the directions given by the researcher. After testing *Wilcoxon* earned value Asymp.Sig. (2-tailed) is worth 0.000. Because the value of 0.000 is smaller than 0.05 (0.000<0.05), it is concluded that "The hypothesis is accepted". This means that there is a difference between the Pre Test and Post Test scores, so it can be concluded that "there is training effectiveness." *birthing ball* on labor pain and self-efficacy during labor. there is the effectiveness of the exercise *birthing ball* on labor pain and self-efficacy during labor

**Keywords**: **birthing ball, labor pain, self-efficacy**

## INTRODUCTION

The high incidence of pain in mothers giving birth, 15% experience mild pain, 35% with

moderate pain, 30% with severe pain and 20% of labor accompanied by very severe pain

(Rejeki, 2014). 67% of mothers are worried about pain during labor, therefore, it is necessary to consider how to deal with this pain. Research in the United States around 70% to 80% of mothers who give birth expect labor to take place without feeling pain, currently 20% to 50% of births At home Private hospitals in Indonesia perform Cesarean section. The current trend is that mothers choose to give birth by cesarean section to avoid pain during normal birth (Halimatussakdiah, 2017). The mother's psychological conditions such as fear, tension and anxiety make the mother more painful (Kennedy, Ruth, & Martin, 2019). (**Complementary midwifery: Reducing labor pain with birthing ball exercises, Noviyanti et al, 2020**)

No progress in labor or slow progress in labor is one of the worrying, complicated and unexpected complications of labor (Cunningham, 2010). Efforts to relieve labor pain can be done using pharmacological or non-pharmacological methods. Considering the potential side effects on the mother and fetus, the use of pharmacological methods in the form of analgesics and anesthesia may not be the first choice for delivery. Many women in labor want to avoid pain by minimizing the use of pharmacological methods (Gau & Tian S-H, 2011).

*birthing ball* Physically beneficial so it can be used during pregnancy and childbirth. In this case, *birthing ball* optimal positioning of the mother's body and reduction of pain during uterine contractions give rise to unusual movements. The underlying reason for this practice *birthing ball* can work effectively in childbirth (Gau & Tian S-H, 2011).Usage *birthing ball* during labor prevent the mother from being in the supine position continuously. One of the studies about *birthing ball* which is conducted by Kwan *et al* namely evaluation of use of birthing *ball* Intrapartum contributes to increasing maternal self-efficacy during labor and reducing pain. As many as 66% reported a decrease in pain levels after use *birthing ball*, 8% reported more pain than before, 26% reported no change in their pain level (Gau & Tian S-H, 2011)

Based on the background above, the author is interested in conducting research with the title "Effectiveness of Birthing Ball Exercises on Labor Pain and Self-Efficacy During Childbirth at the Baamang 1 Community Health Center".

## RESEARCH FOCUS

Based on the background of the problem above, the problem can be formulated, namely how effective the training is birthing ball on labor pain and self-efficacy during labor. The focus of the research is: training birthing ball on labor pain and self-efficacy during labor

## GENERAL PURPOSE

1. **General purpose**

   Analyze the effectiveness of training birthing ball on labor pain and self-efficacy during labor.

2. **Special purpose**

   a. Identifying labor pain before and after birthing ball exercises.
   b. Identifying self-efficacy before and after birthing ball training.
   c. Analyze the effectiveness of training birthing ball against labor pain
   d. Analyze effectiveness exercise birthing ball to efficiency self during delivery

## METHOD

Based on the research location, it is clinical research and there are treatments in the research. Based on the data source, it is primary research. This research is included in the Pre Experimental type of research with a pretest and posttest design. This research was conducted in the Maternity Room of Baamang 1 Health Center.

## RESEARCH RESULTS AND DISCUSSION

### A. Identify labor pain before and after birthing ball exercises

**Table 1.** Characteristics Of Research Respondents Based On Pain Before Birthing Ball Exercise

| CRITERIA | LABOR PAIN | FREQUENCY | PERCENTAGE (%) |
|---|---|---|---|
| 0 | NO PAIN | 0 | 0% |
| 1-5 | LIGHT PAIN | 23 | 58% |
| 6-8 | MODERATE PAIN | 13 | 33% |
| 9-10 | SEVERE PAIN | 4 | 10% |
| **TOTAL** | | **40** | **100%** |

Based on table 2, it shows that 58 percent of mothers experienced mild pain before the birthing ball exercise at the Baamang I Community Health Center, 33 percent of mothers experienced moderate pain and 10 percent of mothers experienced severe pain.**Table 2.** Characteristics of Research Respondents Based on Pain after birthing ball exercise.

| CRITERIA | LABOR PAIN | FREQUENCY | PERCENTAGE (%) |
|---|---|---|---|
| 0 | NO PAIN | 23 | 58% |
| 1-5 | LIGHT PAIN | 17 | 43% |
| 6-8 | MODERATE PAIN | 0 | 0% |
| 9-10 | SEVERE PAIN | 0 | 0% |
| **TOTAL** | | **40** | **100%** |

Based on table 2, it shows that 58 percent of mothers experienced no pain after the birthing ball exercise at the Baamang I Community Health Center, 42 percent of mothers experienced mild pain.

**Ranks**

| | | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| Posttest Labor Pain - Labor Pain Pretest | Negative Ranks | 40[a] | 20.50 | 820.00 |
| | Positive Ranks | 0[b] | .00 | .00 |
| | Ties | 0[c] | | |
| | Total | 40 | | |
| Self-Efficacy Posttest - Self-Efficacy Pretest | Negative Ranks | 0[d] | .00 | .00 |
| | Positive Ranks | 40[It is] | 20.50 | 820.00 |
| | Ties | 0[f] | | |
| | Total | 40 | | |

Based on table it shows Negative ranks or the (negative) difference between pain values labor For the Pre Test and Post Test there were 40 negative data (N), which means that the 40 mothers who gave birth at the Baamang I Community Health Center experienced a decrease in pain during pregnancy. labor after training the birthing *ball. Mean Rank* or the average decrease in pain during labor is 20.50, whereas the sum *of rank* is 820.00. Positive ranks or difference (positive) pain values labor for the Pre Test and Post Test is 0, both at the N value, *Mean Rank* nor *Sum Rank.* This value of 0 indicates there is no (increase in pain) from the Pre Test value to the Post Test value.

These results are in line with research by Regina WC Leung, et al (2013) which states that there is an influence of the birthing ball on reducing labor pain by from 5.3 (2.6) before birthing ball training to 4.3 (2.5) afterward, mean reduction to 1.0 (95% confidence interval [CI], 0.8-1.3) ; The degree of pain reduction was statistically significant (P<0.001). (Regina WC Leung, dkk, 2013).

Women who are afraid and do not know what is happening to them and are not prepared with relaxation and breathing techniques to overcome contractions, will move uncontrollably even though the contractions are mild. On the other hand, if a woman is prepared to face the experience of childbirth and receives support from professional staff, she will show a process of self-control when strong contractions occur.

Exercise *birthing ball* aims to reduce labor pain and speed up the descent of the fetal head so that it is hoped that the mother will be more prepared and calm in facing labor and the delivery will take place more quickly. With practice *birthing ball* for 30 minutes, labor pain can be reduced

Usage *birthing ball* makes the mother feel safe and comfortable in moving, making it easier for the fetus to move in the pelvis. The same research results were shown by Venkatesan, that primigravidas who received treatment in the form of exercise *birthing ball* have higher coping values comparedwith the control group. The same thing was stated by Taavoni, *et al* which concludes that practice *birthing ball* can reduce pain.

The use of a birthing ball by mothers giving birth by kneeling and hugging the ball during contractions also has the benefit of helping the mother feel more relaxed and as a distraction from labor pain, speeding up the process of cervical dilatation, supporting an upright body posture which will facilitate the birth process and help the position of the fetus. is in the optimal position making it easier to give birth normally. The mother in labor hugs the ball as comfortably as possible and the shape of the curve of the ball is round and flexible adapt The shape of the mother's body stimulates receptors in the 67 pelvis which are responsible for secreting endorphins which can make it easier for the mother to relax, besides that the ligaments and muscles, especially those in the pelvic area, become looser and reduce pressure on the sacroiliac joints, blood vessels around the uterus and pressure on the bladder. urinary tract, back, waist, tailbone and can reduce pressure on the perineum (Maryani, 2016).

The Birthing *ball* theory above is in line with the results of research by Kurniawati et al (2016) entitled The Effectiveness of birthing ball Exercises on Reducing Labor Pain in the Active Phase of First Stage in Primigravida, which shows an $R^2$ value of 0.49, which means that birthing ball exercises and the support of husbands and families contribute to labor pain is

49%. The intensity of pain in the first stage of labor in primigravida mothers who did birthing ball exercises was lower than those who did not do birthing ball exercises.

Based on theory and research results, it can be concluded that one of the factors that influenced the decrease in the pain scale in research in the Baamang 1 Community Health Center Maternity Room was the use of the birthing ball method. The pain scale decreases from moderate to mild during the labor process and the use of this method makes the birthing mother more relaxed and comfortable during the labor process.

**B. Identifying self-efficacy before and after birthing ball practice Table 4.9 Criteria for Research Respondents Based on Self-efficacy before birthing ball training**

| CRITERIA | SELF EFFICACY | FREQUENCY | PERCENTAGE (%) |
|---|---|---|---|
| ≥12 | HEIGHT | 30 | 75% |
| ≤11 | LOW | 10 | 25% |
| **TOTAL** | | **40** | **100%** |

Based on table it shows that 30 mothers (75%) experienced high self-efficacy before doing the birthing ball exercise at the Baamang I Community Health Center. birthing ball, and as many as 10 mothers (25%) experienced low self-efficacy before training.

**Table 3.** Criteria for Research Respondents Based on Self-Efficacy after birthing ball training

| CRITERIA | SELF EFFICACY | FREQUENCY | PERCENTAGE (%) |
|---|---|---|---|
| ≥12 | HEIGHT | 40 | 100% |
| ≤11 | LOW | 0 | 0% |
| **TOTAL** | | **40** | **100%** |

Based on table 3, it shows that self-efficacy after carrying out the birthing ball exercise at the Baamang I Community Health Center was 40 mothers (100%) who experienced self-efficacy.

**Ranks**

| | | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| Posttest Labor Pain - Labor Pain Pretest | Negative Ranks | 40[a] | 20.50 | 820.00 |
| | Positive Ranks | 0[b] | .00 | .00 |
| | Ties | 0[c] | | |
| | Total | 40 | | |
| Self-Efficacy Posttest - Self-Efficacy Pretest | Negative Ranks | 0[d] | .00 | .00 |
| | Positive Ranks | 40[It is] | 20.50 | 820.00 |
| | Ties | 0[f] | | |
| | Total | 40 | | |

Based on table 3, it shows Negative ranks or the (negative) difference between pain values labor For the Pre Test and Post Test there were 40 negative data (N), which means that the 40 mothers who gave birth at the Baamang I Community Health Center experienced a decrease in pain during pregnancy. labor after training the birthing *ball. Mean Rank* or the average decrease in pain during labor is 20.50, whereas the sum *of rank* is 820.00. Negative ranks or the difference (negative) of self-efficacy values for the Pre Test and Post Test is 0, both at the N value, *Mean Rank* nor *Sum Rank.* This value of 0 indicates the absence (decrease) in self-efficacy shown from the Pre Test score to the Post Test score.

Some studies suggest using a birthing ball during labor (Chambers et al., 2011). This technique is one way to divert the attention of the birthing mother from the pain she is feeling so that the mother is not stressed and the mother's anxiety is reduced.

When a birthing mother focuses her attention on the pain she is feeling, this will affect her perception of pain, which will cause the pain she feels to increase. This can be overcome by distraction, namely efforts to divert a person's pain to another stimulus. a birthing ball is a method of reducing pain using distraction techniques, namely diverting the mother's attention to other things so that she can reduce her awareness of pain and even increase her threshold/tolerance for pain. So it is necessary to do birthing ball exercises during labor. Based on this research, it can be analyzed that there is effectiveness of birthing ball exercises to reduce pain and increase self-efficacy during labor in the intervention group and this exercise is able to divert the pain that occurs. felt mothers give birth and switch to other stimuli.

The use of a birthing ball facilitates the birthing mother to carry out physical movements that are patterned with pelvic rocking hips). Pelvic rocking can strengthen the abdominal and

waist muscles, reduce pressure on the waist, reduce pressure on the bladder, help the mother relax so that it can reduce tension which has an impact on reducing the labor pain felt by the mother.

## C. Analyzing the Effectiveness of Birthing Ball Exercises on Labor Pain

**Table 4.** Test Results *Wilcoxon Signed Rank*

**Test Statistics**

| | Posttest Labor Pain - Labor Pain Pretest | Self-Efficacy Posttest - Self-Efficacy Pretest |
|---|---|---|
| WITH | -5.531[b] | -5.594[c] |
| Asymp. Sig. (2-tailed) | .000 | .000 |

Based on Table 4.15, the "Test Statistics" output is known as Asymp.Sig. (2-tailed) each worth 0.000. Because the value of 0.000 is smaller than 0.05 (0.000<0.05), it is concluded that "The hypothesis is accepted". This means that there is a difference between the Pre Test scores and Post Test, so that it can be concluded that "there is effectiveness of training *birthing ball* against labor pain"

Birthing ball training is a simple exercise or body movement using a ball that can be done during pregnancy, childbirth and postpartum, aimed at reducing non-pharmacological pain and also trying to increase the emotional and psychological components of care. One study stated that birthing ball exercises contributed to increasing maternal self-efficacy during labor and reducing pain. Birthing ball training has succeeded in increasing pregnant women's confidence in their ability to cope with childbirth.

By focusing the client's attention and concentration on other stimuli, their awareness of pain decreases. When a birthing mother applies the use of a birthing ball, her attention to pain will be diverted by physical activity by doing patterned movements that make her feel comfortable and relaxed and can build the birthing mother's confidence to cope with the pain she feels. That way, the pain felt by the mother can be reduced (Leung RW, 2013).

## D. Analyze effectiveness Exercise Birthing Ball to Efficacy self during delivery.

**Table 5.** Test Results *Wilcoxon Signed Rank*

**Test Statistics**

| | Posttest Labor Pain - | Self-Efficacy Posttest - |
|---|---|---|

| | Labor Pain Pretest | Self-Efficacy Pretest |
|---|---|---|
| WITH | -5.531[b] | -5.594[c] |
| Asymp. Sig. (2-tailed) | .000 | .000 |

Based on Table 5, the "Test Statistics" output is known as Asymp.Sig. (2-tailed) each worth 0.000. Because the value of 0.000 is smaller than 0.05 (0.000<0.05), it is concluded that "The hypothesis is accepted". This means that there is a difference between the Pre Test and Post Test scores, so it can be concluded that "there is effectiveness of training birthing ball on self-efficacy during labor".

Good self-efficacy will lead the mother to a stable mental condition, so she is able to receive directions. Pregnant and delivery mothers who have received preparation for childbirth in the form of training *birthing ball* and psychologically, you will gain a learning process and experience, so you can better prepare yourself for contractions. In order to then be able to adapt to pain and discomfort during the birthing process.

This self-efficacy determines the amount of confidence regarding the ability of each individual to carry out the learning process, so that they can achieve optimal results. Individuals who have high self-efficacy will be able to organize themselves to learn.

Self-efficacy influences a person's motivation to behave. How well a person can determine or ensure the fulfillment of motives leads to the desired action according to the situation at hand, namely the presence of physiological dilatation of the uterine cervix accompanied by discomfort until reaching complete cervical dilatation. Belief in all these abilities includes self-confidence, adaptability, cognitive ability, intelligence, and motivation to act in stressful situations.

If a woman is prepared to face the experience of childbirth and receives support from professional staff, she will show a process of self-control when strong contractions occur.

## CONCLUSION

Based on the results of research on the effectiveness of birthing ball exercises on labor pain and self-efficacy during labor at the Baamang 1 Community Health Center, the following conclusions were obtained:

1. There was no increase in pain during labor after receiving exercise *birthing ball* proven by test *Mean Rank* or the average decrease in pain during labor is 20.50, whereas the sum *of rank* is 820.00.
2. There is no decrease in self-efficacy after receiving training birthing ball proven by test *Mean Rank* or the average decrease in pain during labor is 20.50, whereas the sum *of rank* is 820.00.
3. There is the effectiveness of training *birthing ball* against labor pain with numbers significance test (0.000 < 0.05)
4. There is the effectiveness of training birthing ball on self-efficacy with numbers significance test (0.000 < 0.05)

## SUGGESTION

1. Suggestions for research sites

   It is hoped that the use of the birthing ball method can be applied to reduce labor pain and increase self-efficacy in mothers giving birth.
2. Suggestions for future researchers

   Expected Future researchers can dig deeper into the data regarding reducing pain and increasing self-efficacy as well as finding other benefits from using the birthing ball method in the labor process and using other variables that might influence reducing labor pain and increasing self-efficacy during labor.
3. Advice for the community

   It is hoped that the public will be more concerned about achieving a safe and comfortable pregnancy and birth so that they can learn to use the birthing ball method to reduce labor pain and increase self-efficacy.

## REFERENCES

Aprillia, Yessie. (2014).*Gentle Birth Balance : Persalinan Holistik mind, Body and Soul*.Bandung : Qanita

Kartini, Farida. (2021). Edukasi Holistik Meningkatkan Self Efficacy Ibu Mnghadapi Persalinan. Yogyakarta : DEEPUBLISH

Anik Maryunani. (2010). nyeri dalam persalinan. Jakarta: CV trans Info Media

Irawati, Ayu. (2019). Vol 2. No. 1, Mengurangi nyeri persalinan dengan teknik birthingball. Jurnal Bidan Cerdas

Gau M-L, Chang C-Y, Tian S-H, Lin K-C. (2011). Effects of Birth Ball Exercise on Pain and Self-Efficacy during Childbirth: a Randomised Controlled Trial in Taiwan. Midwifery [Internet]. 2011 Dec;27(6):e293–300.

Hau & Kwan Ws Chan S, Li W. (2011). The Birth Ball Exprience: Outcome Evaluation of The Intrapartum Use of Birth ball. HKJGOM [Internet]. 2011;11(1):59–64

Sulistyawati dan Nugraheny.2013. Asuhan Kebidanan pada Ibu Bersalin. Yogyakarta: Salemba Medika.

Surtiningsih , Kun Aristiati, S., Sri,W.,( 2017). Efektivitas Pelvic Rocking Exercises terhadap Lama Waktu Persalinan pada Ibu Primipara.*Jurnal Ilmiah Kesehatan (JIK)* Vol X, No 2, September 2017 ISSN 1978-3167, E-ISSN 2580-135X

Djuju, Sriwenda. (2014). Efektifitas Latihan *Birth Ball* terhadap Efikasi Diri *Primipara*dengan Persalinan Normal.Jurnal Ners dan Kebidanan Indonesia.http://ejournal.almaata.ac.id/index.php/JNKI

Notoatmodjo, Soekidjo. 2017. *Metodologi Penelitian Kesehatan.* Jakarta : Rineka Cipta.

Noviyanti,dkk (2020).Vo.14. Kebidanan komplementer: Pengurangan nyeri persalinan dengan latihan birth ball. Holistik Jurnal Kesehatan. http://ejurnalmalahayati.ac.id/index.php/holistik/article/view/2876

Gemini Astrika, (2019).The Effect Of Birthing Ball On The Duration Of Active Phase In Primigravida At Pmb Yulis Indriana, Malang.http://ojs.poltekkes-malang.ac.id/index.php/jpk/article/view/1021