The Effectiveness of Birthing Ball Gymnastics on Primigravida Maternity Gestational Age

Nanik Handayani[1]*, Yasi Anggasari[2*], Rata Ariesta D.A[3*], Ika Mardiyanti*[4]

[1,2,3,4]*Department of Midwifery, Faculty of Nursing and Midwifery, Universitas Nahdlatul Ulama Surabaya, Surabaya. Email: nanik_handayani@unusa.ac.id*

KEYWORDS

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ABSTRACT

One of the riskiest pregnancy conditions is post-term pregnancy, which is defined as a gestational age greater than the estimated day of delivery (HPL). This is because difficulties may arise for both the mother and the fetus, particularly when birthing is imminent. Birthing ball gymnastics is one complementary therapy that can help labor commence at full gestational age (term). The aim of the research was to evaluate the impact of birthing ball gymnastics on the gestational age of moms who were primigravidae. The study's quasi-experimental design, which included a treatment group and a control group, was randomized post-test only. The Midwife Independent Practice Place (TPMB) Sidoarjo served as the research site for five months, starting in February 2023 and ending in June 2023. Purposive sampling procedures were used in the study to collect samples from participants who satisfied the inclusion criteria. This resulted in the collection of 30 samples, 15 of which were treatment groups and 15 of which were control groups. Birthing ball exercises and birthing ball gymnastics are provided twice a week for 20 minutes to the treatment group starting at 32 weeks gestation. The control group, on the other hand, had no birthing ball gymnastics instruction and was assessed right away. Utilizing the chi square statistical test to analyze the data, the study's results (p value (0.000) < 0.05) indicated that birthing ball gymnastics was effective in reducing primigravida maternity mothers' gestational age at the Midwife Independent Practice Place (TPMB) in Sidoarjo. In order to prevent the delivery process with post-term gestational age, it is envisaged that the installation of birthing ball gymnastics can be carried out in healthcare facilities such as hospitals, clinics, or Midwife Independent Practice Places (TPMD) for primigravida pregnant women.

1. Introduction

The growth and development of the fetus from conception to delivery is called pregnancy. Normal labor is a low-risk physiological process of fetal ejection with a proportion of fetal back of the head that occurs spontaneously and during the course of labor within normal bounds. The gestation time is 37–42 weeks. (Darma et al., 2021). Pregnancy at the age of 37-42 weeks is also called term pregnancy is a normal delivery period, if it exceeds 42 weeks gestation, it includes post term pregnancy (Hulloli et al., 2021). The incidence of post term delivery is 95% in primigravida pregnancies, but it often occurs in multigravida pregnancies with a parity of >3 times due to having a stretched uterus (Maulinda &; Rusdyati, 2018). Based on research results (Herman et al., 2020) conducted on primigravida and multigravida mothers who experienced childbirth in 8 East Java Sakir Houses from 134 pregnant women (45 mothers with childbirth Early Preterm and 89 mothers with childbirth late preterm) consisting of 18.7% at Jemursari Hospital, 10.4% Soewandhi Hospital, 18.7% Airlangga Hospital, 9% Ibnu Sina Gresik Hospital, 17.9% Sidoarjo Hospital, 9% Jombang Hospital, 7.5% Sogaten Maudiun Hospital, and 9% Ngawi Hospital. Research conducted (Maulinda &; Rusdyati, 2018) 11 out of 19 pregnant women (57.89%) experienced post term, and 21.05% of them were primigravida pregnant women. A decrease in the lowest part of the fetus is one of the early indicators of labor, so post-term pregnancy can be caused by a number of factors, including maternal age, parity, occupation, education, and the size of the large baby that prevents the fetus from entering the upper pelvic door (PAP) (Mulyasari & Putriastuti, 2022). Pregnancy post term can pose a risk to the mother and her baby so efforts are needed to prevent post term labor. One of the efforts that can be done to avoid post term labor is to do gymnastics birthing ball. Pregnant gymnastics with birthing ball Very helpful for mothers in maintaining their health condition and the baby they are carrying. A series of physical therapy or exercises known as "birthing ball" or "childbirth ball gymnastics" are used during pregnancy and labor.

The activities involve sitting on a ball and pushing, swinging or rotating your pelvis to aid in the fetal head's descent (Darma et al., 2021). Gymnastics birthing ball This can be done independently because it is a simple exercise or physical therapy using a ball that can be done by pregnant women, childbirth women, and postpartum mothers, by doing birthing ball It can relieve back pain, help with long openings and to lower the baby's old head (Shanti &; Utami, 2021).. Moreover birthing ball Can adjust to the mother's body shape which makes it easier for the mother to relax, and muscle ligaments become flexible and reduce the pressure of the coccyx, blood vessels around the uterus and pressure on the bladder, back, waist, and reduce pressure on the perineum (Sari, 2019). Implementation of gymnastics birthing ball Can be done 2x / week with 20 minutes during pregnancy with a ball diameter of 55 cm or 65 cm (Marawita et al., 2023; Sriwenda, 2014). The application of a birthing ball gymnastic will maintain the muscles that support the spine and stimulate the postural reflex during pregnancy (Hyun et al., 2024). Sitting on a ball in a position similar to squatting will encourage the pelvis to move, which will help the baby adjust to the proper position and speed up copying at full-term gestation (Sinulingga &; Patriani, 2022). In order to prevent post-term gestational age at the time of delivery, this study attempts to determine how effective gymnastics birthing balls are against the gestational age of primigravida maternity mothers. If post-term gestational age is achieved during childbirth, it will negatively impact both the mother and her child.

2. Methodology

Materials

This study was conducted on primigravida pregnant women with the third trimester of pregnancy in Independent Practice Midwives (BPM) as many as 30 pregnant women. In this study using the independent variable, namely birthing ball gymnastics, while the dependent variable is gestational age at term or post term delivery.

Data collection procedures

Two groups were employed in this study: the treatment group, which received therapy, and the control group, which did not get treatment that was directly observed or assessed (Alamer et al., 2023). The study was carried out utilizing a quasi-experimental design with a randomized post-test only control design. The Midwife Independent Practice Place (TPMB) Sidoarjo served as the research site for five months, starting in February 2023 and ending in June 2023. Purposive sampling procedures were used in the study to collect samples from participants who satisfied the inclusion criteria (Bobir et al., 2024). This resulted in the collection of 30 samples, 15 of which were treatment groups and 15 of which were control groups. Third trimester pregnant women (32–36 weeks), primigravidas (first pregnancies), single pregnant women, no history of miscarriage, head presentation, and willingness to participate in the study were the inclusion criteria. Although a history of infectious illnesses and years (TB, hypertension, asthma, diabetes mellitus, heart) were the exclusion criteria in this study, pregnancy complications (pre-eclampsia, placenta previa, vaginal hemorrhage) were also considered. The gestational age of pregnant women was ascertained through the use of pink KIA (maternal and child health) books as the data collection method in this study. Birthing ball gymnastics is scheduled twice a week for 20 minutes, beginning at 32 weeks gestation and ending at delivery. The ball used for the exercise has a diameter of either 55 or 65 centimeters. The control group, on the other hand, had no birthing ball gymnastics instruction and was assessed right away. The birthing ball gymnastics monitoring sheet will be used to document the birthing ball gymnastics sessions, and before to delivery, pregnant women are evaluated by determining the gestational age at which primigravida women give birth (term or post term gestational age).

Data analysis

The Chi-Square statistical test was employed in this study's data analysis to ascertain the impact of

birthing ball gymnastics on the gestational age of primigravida maternity mothers.

3. Results and discussion

Table 1. Characteristics of Respondents Based on Maternal Age, Education, and Occupation

No.	Characteristics of Respondents	Category	Frequency	Percentage (%)
1.	Mother's Age a. Treatment groups	<20 Years 20-35 Years >35 Years	1 13 1	6.7 86.7 6.7
	b. Control group	<20 Years 20-35 Years >35 Years	2 13 0	13.3 86.7 0
2.	Education a. Treatment groups	SMPSMA Diploma/Bachelor	0 14 1	0 93.3 6.7
	b. Control group	SMPSMA Diploma/Bachelor	0 13 2	0 86.7 13.3
3.	Work a. Treatment groups	Housewives Work	11 4	73.3 26.7
	b. Control group	Housewives Work	13 2	86.7 13.3
			30	100

Source: Primary Data, 2023

Table 1. revealed that the majority of respondents (86.7%) in both the treatment and control groups were between the ages of 20 and 35. In the high school category, the majority of responders (93.3%) had their education in the therapy group. The control group included the majority of respondents (86.7%) who worked as housewives.

Table 2. Gestational Age at Childbirth Primigravida Mother After Birthing Ball Intervention

No.	Gestational Age at Childbirth	Category	Frequency	Percentage (%)
1.	Treatment groups	Aterm (37-42 weeks) Post-term (>42 Weeks)	15 0	100 0
2.	Control group	Aterm (37-42 weeks) Post-term (>42 Weeks)	13 2	80 20
Uji Chi Square p value (0.000) < (0.05)				

Source: Primary Data, 2023

The chi-square test statistical results in Table 2 indicate that the p-value (0.000) < (0.05), indicating that birthing ball gymnastics has an influence on the term gestational age (old enough) at childbirth in the treatment group to the extent of 100%. Twenty percent of pregnant women in the untreated control group gave birth to their babies later than expected. Based on the gestational age of primigravida maternity women at the Midwife Independent Practice Place (TPMB) Sidoarjo, it can be determined that birthing ball gymnastics is effective. In the control treatment group, the majority of pregnant women (86.7%) were between the ages of 20 and 35, according to the results of the mother age responders. Because the mother's age is a determinant in both the quality of her pregnancy and her

willingness to become pregnant, it has a significant impact on the length of her pregnancy and the time she spends giving birth. Pregnant women who are younger than twenty-five or older than thirty-five are more likely to experience health issues throughout pregnancy and childbirth, which puts mothers and their unborn children at risk. Age <20 in terms of biology The uterus is not fully developed and ready for conception, and repeated births and age above 35 will cause the reproductive organs to operate less well, or degrade. However, because the reproductive organs are prepared for pregnancy, the ideal age range for conception and delivery is between 20 and 35 years old (M &; Rahmawati, 2021). The study's primigravida pregnant participants were at an ideal age to reduce the likelihood of delivery-related problems.

Because it is correlated with a pregnant woman's degree of knowledge, education level has an impact on pregnancy and childbirth in addition to the mother's age. The majority of respondents (93.3%) in the high school category were in the treatment group, according to the findings of educational study, while 86.7% of the respondents in the control group had high school education. Due to its correlation with information reception skills, education is a significant factor in assessing the caliber of human knowledge. Pregnant primigravida women who have completed enough schooling are knowledgeable enough to understand the basics of pregnancy and birthing health (Marawita et al., 2023). On the other hand, a pregnant woman's conduct in preserving her everyday health will be impacted if she lacks health knowledge. The majority of trial participants were housewives, accounting for 86.7 percent of the control group's employment and 73.3% of the treatment group's. Pregnant women who choose to stay at home or are unemployed will have more time to perform birthing ball exercises. Based on the chi square test statistics, it can be concluded that birthing ball gymnastics at the Midwife Independent Practice Place (TPMB) Sidoarjo is effective in reducing the gestational age of primigravida maternity mothers. The results show that the p value (0.000) < (0.05), which indicates that Ha is accepted. The gestational age is term (full age) 100% in the maternity gestational age treatment group. Twenty percent of pregnant women in the untreated control group gave birth to their babies later than expected. Pregnant women who are primigravidas will have a longer labor than those who are multigravidas because the pelvic muscles have not flexed due to their lack of labor experience, which means that the process of lowering the baby's head is taking longer and could result in labor starting later than expected. The study found statistically significant changes in gestational age primigravida maternity difficulties between the birthing ball exercise control group and the treatment group. Pregnant women who participate in birthing ball gymnastics may find it easier to handle labor at full term.

This study used birthing balls for gymnastics. carried out during pregnancy and will be assessed in terms of gestational age upon marriage, whether it is post-term or during term. Exercise during pregnancy can strengthen and improve the circulatory system, boost blood flow to the uteoplacenta, and enhance uterine muscle growth and fetal development (Hasanah et al., 2021). By using a birthing ball twice a week for 20 minutes, pregnant women in their third trimester (32–36 weeks) before delivery can benefit from prenatal exercises (Sriwenda, 2014). Gymnastics implementation The fetus can move the pelvis into PAP by 30% thanks to the birthing ball's ability to make surrounding muscles and ligaments more flexible. Additionally, as oxygen reaches the uterine muscles, the contractions become stronger, enabling pregnant women to give birth normally (Mainquarter &; Essential, 2023). The main advantages of gymnastics birthing ball is to improve posture, relaxation, stretching, and strengthening of pelvic muscles (Sari, 2019). By doing birthing ball exercises, the pelvic and surrounding muscles increasingly become flexible and aid in lowering the baby's head position and into the lowest region of the fetus in order to accelerate labor at full term gestational age. This is because it makes uterine contractions harder and more effective, which aids in lowering the fetal head and cervical dilation. based on studies (Mu'alimah &; Wigayati, 2022) Because it can speed up labor at the first stage, the usage of birthing balls has an impact on primigravida pregnant women from the time of conception until delivery. Research (Hernawati, 2021) It was discovered that the use of gym balls had an impact on the labor progress of primigravida maternity women in order to prevent post-term copying, with regard to the effect of gym ball guidance on the delivery progress of these mothers. studies of the literature carried out (Rakizah et al., 2023) In contrast to a number of studies on the

subject, it was discovered that using gym balls to assist primigravida pregnant women in losing their heads and shortening the length of labor is highly successful. Hence, primigravida mothers give birth at the time of term.

4. Conclusion and future scope

It can be inferred from the aforementioned research's findings that gymnastics birthing balls are effective. Opposed to primigravida maternity mothers based on gestational age. In the treatment group birthing ball gymnastics, the gestational age of primigravida maternity mothers was at term gestational age, while in the control group, there were no birthing balls there were 2 primigravida pregnant women giving birth at post-term gestational age. Doing gymnastics birthing ball Primigravida pregnant women during pregnancy 2x / week for 20 minutes, especially in the third trimester of pregnancy (32-26 weeks) can help the pelvic and surrounding muscles become flexible, change the position of the baby's head down, stimulates postural reflexes, avoid coccyx pressure, Blood vessels around the uterus and pressure on the bladder, back, waist, as well as reducing pressure on the perineum, and before labor stimulate the baby's head to enter the lowest part of the fetus (PAP) for labor. So that by doing gymnastics birthing balls Can do full-term labor (term) and avoid post-term labor, especially in primigravida pregnant women.

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Conflict of interest

In conducting research, the author does not have a conflict of interest related to research.

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