

## Effect of Peanut Ball Exercise on Fear of Labour among Primigravida Mother

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### Abstract

**Background:** Fear of giving birth is the primary factor that has reduced the preference for natural birth. The sudden rise in the percentage of C-sections has harmed women's pregnancy and new-born health.

**Purpose:** To evaluate the effectiveness of peanut ball exercise on reducing fear among primigravida mothers.

**Materials and Methods:** Thirty participants were randomly assigned to experimental (peanut ball exercise, antenatal exercise, antenatal education) and conventional (Antenatal exercises) groups. The fear of childbirth questionnaire (FCQ) was used to evaluate the pre-test the same test used to determine post-treatment values after 12 weeks of the treatment.

**Results:** A significant difference was observed between the experimental and control groups ( $P = 0.0001$ ). peanut ball exercise and antenatal education were effective in mothers with a fear of childbirth.

**Conclusion:** Peanut ball training is effective in mothers with a fear of childbirth.

**Key Word:** pregnancy, antenatal education & exercises, peanut ball exercise, fear, labour

### Introduction

One of the most prevalent childbirths-related fear is around 20%, with 6%-10% of women experiencing poorly functioning or disabling fear of labour and birth. In the population, caesarean section (CS) rates are greater over According to a recently published WHO report, there is a large disparity in CS rates in Asia (19.2%)<sup>1</sup>. Fear of pain, anxiety about perineal damage, low self-efficacy, worry about sexual problems following delivery and fear of maternal and neonatal death is the most common reason for fear of childbirth<sup>2</sup>. The prevalence rate of caesarean sections

in India has been steadily increasing over the years. According to data from the 2015-16 National Family Health Survey (NFHS) approximately 17.2% of births in India were Delivered via caesarean section. This suggests a significant rise in the Caesarean section rate compared to previous years. Fear of childbirth, in addition to negative psychological effects, is strongly linked. Anxiety, depression and a history of having an eating disorder are examples of psychological problem, sadness is another psychological complication that forces mothers to seek counselling in the postpartum period<sup>3,6</sup>.

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Using a birth ball during labour is common practice in hospitals that value humanized birth and women's empowerment because it is a low-cost, reusable, non-pharmacological, and non-invasive resource. Based on feedback, nurses and midwives have used birthing balls and peanut balls as alternative non-pharmacologic adjuncts to labour management for decades. The Peanut ball was a different kind of plastic birthing ball which is frequently used by health care professionals as an alternative to the conventional birthing ball for people who are labouring with an epidural because it is more mobile<sup>4</sup>.

The physical movements involved in the (PB) exercise can help relieve stress by releasing endorphins which are known as the "feel-good" hormones. These endorphins help improve mood, reduce anxiety and promote a sense of relaxation. By incorporating the peanut ball exercise into their routine expectant mothers may experience a decrease in fear and an increase in overall well-being. "Peanut balls" reduced labour time and increased vaginal birth rates, the use of peanut balls to a significant reduction in labour length and caesarean rates<sup>5</sup>.

Regular exercise during pregnancy has been shown to have numerous benefits including helping to reduce fear and anxiety associated with antenatal care. Here are some ways in which exercise can contribute to reducing fear in antenatal care: Promotes a sense of control, Endorphin release, enhances physical fitness, Decrease pregnancy discomforts, social support and connection<sup>7</sup>.

**Physiological Factors:** Sympathetic Nervous System Activation: Fear triggers the body's - "fight or flight" response has been defined by Sympathetic nervous system activation. This results in the production of Stress hormones such as cortisol and adrenaline, which can raise heart rate and blood pressure, and respiratory rate. These changes prepare the body for a potentially dangerous situation but they can also hinder the progress of labour by causing muscle tension and reducing blood flow to the uterus and interfering with the Progression of labour. The birthing person may experience increased pain, Reduced muscle relaxation, and slower cervix dilation. For some individuals, this can lead to prolonged labour or difficulties progressing

Through the different stages of childbirth. In cases where fear-induced Physiological responses impede labour progress or pose potential risks to the mother or baby, healthcare providers may recommend a caesarean section.<sup>8</sup>This study aimed to determine whether Peanut ball exercise reduces fear in labour and childbirth.

### **Aim**

To evaluate the effectiveness of the Peanut ball exercise on fear of labour among primigravida mothers.

### **Materials and Methods**

It was an experimental study conducted on 30 subjects with a fear of childbirth during the antenatal period age of 20-28 years primigravida mothers taken from Saveetha Medical College and Hospital, Chennai. Convenient sampling Technique.

#### **Inclusion Criteria:**

- Subjects who are willing to do exercises.
- Primigravida mothers.
- Age group between 20-28.
- Starting of second and trimester mothers (13 to 36 weeks).

#### **Exclusion Criteria:**

- who had a history of respiratory illness, cardiovascular diseases.
- Mothers with unstable vitals
- who had high-risk pregnancies were excluded.
- Mothers not willing to do exercise
- Subject of multiparous women excluded
- Previous history of surgery
- Intrauterine insemination (IUI) & In vitro fertilization

#### **Outcome Measure:**

The assessment was performed (before starting treatment) in the antenatal period and after 12 weeks of study before the labour.

- Fear of childbirth questionnaire (FCQ)

## Procedure

Thirty-five respondents were initially enrolled in the study based on study criteria. Among them 4 lefts after Explaining the procedure and another one-mother transferred to native place. Finally 30 mothers were chosen and the study continued using a convenient sampling technique, Finally, of the 30 Primigravida mothers, n = 15 were allocated to the experimental group, and n = 15 were allocated to the control group. based on the inclusion and exclusion criteria. All individuals provided written informed consent before beginning the study. Assessment of all the included participants was done according to the assessment form.

The primigravida mother with fear of childbirth during the antenatal period was assessed using the FCQ questionnaire to evaluate the pre-test and post-test.

### Group A: (Peanut ball exercise, Antenatal exercises, Antenatal education given)

Participants receive the peanut ball exercise for the duration of 12 weeks (3 days in the week alternatively) From the second trimester till the third trimester (5th to 8th months) When the Peanut ball Exercises provided by the physical therapist only in OPD with Therapist for 45 minutes exercise for 3 days / 12 weeks. The antenatal exercise was taught for 30 minutes for 3 days /12 weeks first few weeks in the OPD OBG department and then monitored through phone.

- **Pelvic tilt:** with the back on the birthing ball, lean it up against a wall and sit. Push and gently curve the back towards the ball by slightly moving the abdomen. Stronger lower back and uterine muscles can be achieved with this abdomen.
- **Circling movement:** Put the feet slightly wider than hip-width apart on the floor and firmly alight on the ball. In a circular motion, move the hips to “draw” little circles on the Ground with the ball.
- **Side to side:** Starting Position - sitting with feet flat on the floor, buttocks Lightly pressed into the Ball. Action - tilt pelvis to the left and right, and keep head and shoulders Steady. Contract abdominal muscles, so that the trunk remains erect.

- **Side-lying position:** The side-lying position is when you lie on either your right or left Flow of oxygen and blood to the placenta. To assume this position, place a peanut ball between your thighs and wrap both of your legs around it. Keep your legs slightly bent and positioned low beneath you. Alternatively, you can try bringing your legs higher towards your And positioned low beneath you. Alternatively, you can try bringing your legs higher towards your Abdomen creating a squatting position while lying on the bed.



Figure 1- side-lying position

- **Bouncing exercise:** The bouncing exercise involves softly and repeatedly bouncing on the A Peanut ball for short durations. This activity aims to enhance Your leg strength, stability and balance.
- **Lunge position:** Rotate your upper body in order to open up your pelvis. Slide a ball horizontally underneath the top leg placing it between the thigh and the bed. Slowly lower body into a lunge position with the top leg extended Forward and the bottom leg bent at the knee. This variation of the exercise will help to open up the pelvis in a different direction providing a beneficial change to your routine.



Figure 2: bouncing exercise

- **Hula hoop exercise:** To engage and strengthen your core muscles can incorporate a peanut ball into your workout routine. Begin by sitting on the peanut ball and placing your hands on hips. Then mimic the motion of hula hooping by rotating hips in a circular motion. This exercise targets your abdominal muscles obliques and lower back helping to improve the stability and tone of the core.
- **Side-lying position:** The side-lying position is when you lie on either your right or left side in bed. This position is beneficial as it helps facilitate a good flow of oxygen and blood to the placenta.
- **Antenatal education given:** Introduction and overview of pregnancy early Signs of labour, relaxation techniques benefits, changes during pregnancy, progresses of labour, breathing awareness, back care, ergonomic advice given.

**Group B: (Antenatal exercise)**

- Breathing exercises, neck stretches, forearm stretches, calf stretches, hamstring stretches, cat and camel exercise, half squats, full squats butterfly stretch, and half circle.

**Treatment protocol:**

- Duration of the session: 30- 40 m
- Frequency: Single session per day / 12 weeks
- Sets: 2 sets Repetitions: 10 repetitions
- Rest: 2-3 mins break between sets

**Data analysis**

**TABLE 1: COMPARISON OF PRE-TEST AND POST-TEST ANALYSIS OF FCQ OF GROUP A**

Test	Mean	SD	P value
Pre-test	3.6	1.1	0.001*
Post-test	.48	.63	0.001*

**\*WILCOXON SIGNED RANK TEST: 3**

**TABLE 2: COMPARISON OF PRE-TEST AND POST-TEST ANALYSIS OF FCQ OF GROUP B**

Test	Mean	SD	P value
Pre-test	3.2	.86	0.001*
Post-test	2.4	.63	0.001 *

**\*WILCOXON SIGNED RANK TEST**

**TABLE 3: COMPARISON OF POST-TEST ANALYSIS OF FCQ OF BOTH GROUPS**

Group	Mean	SD	P value
A	.48	.63	0.001 *
B	.24	.99	

**\*MANN-WHITNEY TEST**

**Results**

- The study was conducted on 30 subjects. Both groups have 15 subjects each. Assessed using Kolmogorov-Smirnova, Shapiro-Wick, and Mann Whitney test and Wilcoxon test used for non-normality distributed variable fear of childbirth questionnaire. The significant results were confirmed if p 0.01. Out of 30 subjects were the second trimester 17 and were third trimester 13 .
- Using the FCQ questionnaire for the analysis of the Study revealed that the mean and SD reduction of pain using the (FCQ) pretest was 3.6± .48 and post-test 1.1 ±.63 In experimental exercise and conventional group pre-test 3.2±.86 post-test 2.4 ± .99 the mean Reduction in the experimental group whereas it was less improvement in the conventional group comparatively after the completion of the study. Both groups Significantly improved as measured but in comparison to the conventional group. The experimental group showed noticeably better improvement in alleviating pregnancy-Related fear in the antenatal period.

**Discussion**

The peanut ball exercise also known as the birthing ball or stability ball Has gained popularity as a form of exercise during pregnancy. This Exercise involves conducted by Smith et al. (2019)

demonstrated that Pregnant women who engaged in peanut ball exercise experienced Significantly lower levels of fear compared to those who did not Participate in the exercise.

Another study by Brown et al. (2018) found that antenatal women who Regularly practiced peanut ball exercises reported reduced fear and anxiety Along with improved positive emotions and overall well-being<sup>9</sup>.

The American Pregnancy Association. The Use of a Birthing Ball During Pregnancy and Labour. Using a sitting bouncing or rolling on a peanut-shaped ball to improve strength flexibility and overall comfort during pregnancy can help the mother feel more comfortable and reassured, reducing anxiety and stress levels. Studies have shown that women who receive continuous emotional support during Labour experience decreased levels of pain perception and require lesser Pain relief interventions (Eisenach et al 2008).

### Limitation

The (PB) exercise itself might not be sufficient as the sole method of Managing fear or anxiety during the antenatal period. It is crucial to address fear and anxiety with a comprehensive approach that includes Emotional support education counselling and other relaxation techniques.

PB for exercise during pregnancy that may not be suitable for Everyone. Pregnant women with certain medical conditions or Complications may need to consult with their healthcare provider before Engaging in any exercise program including the use of a peanut ball. Additionally, women must be cautious while using the peanut ball and should not overexert themselves especially as pregnancy progresses.

PB are typically used during labor to help optimize fetal positioning and facilitate progression. However, they may not be available in all Birthing facilities or used as a routine practice. It is advisable for expecting Parents to discuss and plan their birth preferences with their healthcare Provider including the use of a peanut ball well in advance to ensure that all necessary arrangements are made.

**Individual differences:** While the use of a (PB) during labour can help Promote comfort and encourage efficient contractions it is essential to understand that its effectiveness may vary from person to person. Each Labour and delivery experience is unique and what works for one woman May not be as effective for another. It is crucial to listen to your body Communicate your needs with your birth support team and be open to Exploring other comfort measures if needed.

**Access and availability:** The use of a peanut ball for exercises may depend on the availability and accessibility of these balls in antenatal care settings. Some healthcare facilities may not have the resources or equipment to Provide peanut balls for every pregnant woman limiting the feasibility and Practicality of using this tool for fear reduction.

### Conclusion

All outcome indicators in both groups showed significant improvement. There was a slight improvement in peanut ball exercise, antenatal exercise, and education, which was statistically significant. This study concluded that Peanut ball exercise reduces fear of childbirth during the antenatal period and it will help them in labour time. A further recommendation for this study was to conduct using increased number of samples.

**Ethical clearance:** The study was approved by the committee of the institutional scientific review board. All study participants were informed about the study objectives and those who agreed to participate signed informed consent forms.

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**Conflicts of interest:** The authors declare that they have no conflicts of interest.

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