



The Differences in Effect Between Back Massage Therapy and Gym Ball on Back Pain in Pregnant Women Third trimester

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ABSTRACT

Pregnancy is an event that occurs in a woman, starting from the fertilization process (conception) until the birth of the baby. This process causes physical, mental and social changes which are influenced by several physical, psychological, environmental, socio-cultural and economic factors. The discomfort that pregnant women often experience, especially in the third trimester of pregnancy, is back pain. The objective of the research are knowing perbedaan providing back massage and gym ball therapy for back pain in third trimester pregnant women at TPMB "S" East Jakarta 2022. This research is quantitative sense *quasi experiment*, with a two group pretest-posttest design. The population in this study were 43 mothers who experienced back pain at TPMB "S" with a sample size of 30 respondents consisting of 15 gym ball groups and 15 back massage group respondents using purposive sampling, namely sampling based on exclusion and inclusion criteria. The average pretest and posttest back pain scores given the gym ball were different for back pain (9.57). The average pretest and posttest back pain score given back massage is the difference in back pain (5.26), Both there were significant changes, in giving gym ball and back massage, gym ball was more effective in reducing back pain by a difference of (4.27). There is an influence between gym ball therapy and back massage in reducing back pain It is hoped that this will be taken into consideration for non-pharmacological treatment, which can be done yourself at home using the gym ball that was given *gym ball* and back massage in reducing back pain in pregnant women who experience back pain.

Keywords: Gym ball, Back massage, Pregnancy, Back pain

Article history :

Received: 16 Juni 2023

Received in revised form: 22 Juli 2023

Accepted: 16 September 2023

Available online: 1 December 2023



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INTRODUCTION

Pregnancy is an event that occurs in a woman, starting from the fertilization process (conception) until the birth of the baby. This process causes physical, mental and social changes which are influenced by several physical, psychological, environmental, socio-cultural and economic factors. The discomfort that pregnant women often experience, especially in the third trimester of pregnancy, is back pain.¹

About 50-70% of pregnant women can experience lower back pain. Lower back pain is felt during the second and third trimesters of pregnancy and can interfere with physical activities such as climbing stairs, walking, working hard, participating in exercise, disrupting sleep quality.²

Management that can be done to reduce and prevent back pain requires providing exercises and sports such as gym ball and back massage. Gym ball and back massage are complementary treatments. The implementation of alternative complementary medicine in service facilities in Indonesia has been regulated in the regulation of the Minister of Health of the Republic of Indonesia Number 1109/Menkes/Per/IX/2007 article 3 which reads "alternative complementary medicine is carried out as a continuous service effort starting from improving health (promotive), prevention disease (preventive), cure disease (curative) and/or restore health (rehabilitative)³.

The importance of gym ball exercises can be useful for loosening stiff and painful joints due to increased burden on pregnant women, reducing complaints that arise due to changes in body shape, strengthening and maintaining the elasticity of the abdominal wall muscles, so as to prevent or overcome complaints of pain in the stomach. lower back⁴.

Back massage provides a comfortable pressing action by the hand on soft tissue, usually muscles, tendons and ligaments, without causing a shift or change in joint position in order to reduce pain, produce relaxation and increase circulation, this method is one of the non-pharmacological methods that can increase patient satisfaction because mothers can control their feelings and powers⁵

Based on the results of the initial survey at TPMB "S" through short interviews with 10 pregnant women, it was found that all pregnant women said they complained of lower back pain. When asked about pregnancy exercise activities, 4 pregnant women answered that they had done it but not regularly and 6 of them had never done gym ball or back massage. Even though 4 pregnant women had previously done this, they still complained of back pain. This is caused by the irregularity of pregnant women in carrying out gym balls and back massages.

The purpose of this study was to determine the differences in the effects of back massage and Gym Ball Therapy on Back Pain in Pregnant Women in the Third Trimester at TPMB "S" East Jakarta in 2022.

METHOD

This type of research is quasi-experimental with a pretest-posttest group design method. The population in this study was all pregnant women in the third trimester at TPMB "S" East Jakarta, totaling 43 pregnant women. The independent variables are back massage and gym ball, while the dependent variable is lower back pain in third trimester pregnant women. The research instrument used was a closed questionnaire with a Boubonis numerical rating scale. Analysis was carried out on two variables using the Spearman Rank statistical test using SPSS

RESULTS

Table 1. Average Level of Back Pain Pre Test and Post Test Gym Ball Therapy At TPMB "S" East Jakarta in 2022

Back Pain	Gym Ball Group					SD
	N	Min	Max	Mean	Mean Difference	
<i>Pretest</i>		21	34	26.00	9.53	3,094
<i>PostTest</i>	15	12	22	16.47		2,326

Based on table 1 above, the average back pain score before being given gym ball exercises was (26.00) and the average level of back pain after being given gym ball exercises was (16.47) with a difference in back pain levels of 9.53.

Table 2. Average Frequency of Back Pain Pre Test and Post Test Back Massage Therapy At TPMB "S" East Jakarta in 2022

Back Pain	Back Massage Group				
	Min	Max	Mean	Mean Difference	SD
<i>Pretest</i>	21	26	23.53	5.26	1,807
<i>PostTest</i>	16	21	18.27		1,335

Based on table 2 above, the average back pain score before the back massage intervention was given was (23.53) and the average back pain score after the back massage intervention was given was (18.27) with a difference in back pain level of 5.26.

Table 3. The Effect of Providing Gym Ball Therapy on Pretest and Post Test Back Pain for Pregnant Women in the Third Trimester at TPMB "S" East Jakarta in 2022

Variable	Gym Ball Group			
	Mean	Mean Difference	SD	<i>P-value</i>
Back Pain				
<i>Pretest</i>	26.00	9.53	3,094	0,000
<i>PostTest</i>	16.47		2,326	

Based on table 3, the statistical test results show a P-value of 0.000 <0.05, meaning there is a significant difference between pretest and posttest back pain after being given the gym ball intervention.

Table 4. The Effect of Back Massage on Back Pain at TPMB “S” East Jakarta in 2022

Variable	Back Massage Group			P-value
	Mean	Mean Difference	SD	
Back Pain				
<i>Pretest</i>	21	5.26	1,807	0.001
<i>PostTest</i>	16		1,335	

Based on table 4, the statistical test results show a P-value of 0.000 <0.05, meaning there is a significant difference between pretest and posttest back pain after being given back massage intervention 2 times a week for 4 weeks. This means that H_a is accepted and H_0 is rejected, so the conclusion is that giving back massage has an effect in reducing back pain at TPMB “S” East Jakarta 2022.

Table 5. The Effect of Providing Gym Ball Therapy and Back Massage on Back Pain at TPMB "S" East Jakarta 2022

	N	Mean	SD	P-value
<i>Gym Ball</i>	15	11.40	2,326	0.009
<i>Back Massage</i>	15	19.60	1,335	

In table 5 of The results of the Mann Whitney Test showed a p-value (0.009) <0.05, meaning there was a significant difference between gym ball therapy and back massage for back pain in pregnant women.

DISCUSSION

1. Average Frequency of Back Pain Pretest and Post Test Given Gym Ball Intervention

Based on the results of research conducted, the average level of back pain before being given lavender aromatherapy was (26.00) and the average level of back pain after being given gym ball therapy was (16.47) with a difference in back pain level of (9.53). there is a significant reduction in back pain at TPMB “S” East Jakarta 2022.

Based on research by Irfana (2020), gym ball has a greater effect on reducing back pain than pregnancy exercise based on the difference in reducing back pain in pregnant women before and after doing gym ball by 3.01, while in the pregnancy exercise group the reduction in back pain is 1.33, so gym ball is more effective. to reduce the level of back pain in pregnant women.⁶

Wijayanti's research (2020) stated that there was a difference in the reduction of back pain in pregnant women in the third trimester before and after in the gym ball exercise group, which was 3.01, while the pregnancy exercise group had an average reduction in back pain levels of 1.33. This proves that gym ball exercise has a greater effect on reducing pain compared to pregnancy exercise. Gym ball exercises have a greater effect on reducing pain compared to pregnancy exercises⁷

Lower back pain in third trimester pregnant women is caused by changes in the musculoskeletal system that occur due to breast enlargement and anterior rotation of the pelvis allowing for lordosis, so that mothers often experience pain in the back and waist due to maintaining a stable position, increased load on the back muscles and vertebrae column. , gymball is a conservative choice using a ball because the body responds automatically to instability as time goes by the back and abdominal muscles used to maintain balance will become stronger.⁴

2. Average Frequency of Back Pain Pretest and Post Test Given Back Massage Therapy

Based on the results of research conducted, the average level of back pain before being given back massage therapy was (25.53) and the average level of back pain after being given back massage therapy was (18.27) with a difference in the level of back pain (7.26). there is a very significant reduction in back pain at TPMB "S" East Jakarta 2022.

Based on research by Kartika (2018), it was found that there was a difference in pain intensity between before and after giving back massage, in the experimental and control groups with a value of $p=0.002$. because the p value is $0.002 < 0.05$, it can be concluded that there is a relationship between giving or not giving back massage and pain intensity in third trimester pregnant women.⁸

From the results of Hasnia's (2022) research on the effect of a combination of back exercise and massage on changes in lumbar functional ability due to lower back pain in third trimester pregnant women measured using the Oswestry Disability Index (ODI) instrument, it was found that the combined intervention of back exercise and massage could produce a significant increase in lumbar function. on lower back pain in third trimester pregnant women with a value of $p=0.004$. Thus, back exercises and massage are effective in improving functional abilities in research subjects⁹

Women who received regular massage during pregnancy experienced reduced anxiety, decreased back pain and were able to sleep better than women who did not receive massage. The group that received massage also had fewer complications during labor and had lower levels of stress hormones. Women who received massage during labor experienced a significant reduction in anxiety, reduced pain and shorter labor times⁹.

3. The Effect of Pretest and Post Test Back Pain on Giving Gym Ball Therapy

The results of the independent t test showed that the research results of the gym ball group respondents obtained a P -value = 0.000 (< 0.000), meaning that there was a difference in pretest and posttest back pain given the gym ball therapy intervention at TPMB "S" East Jakarta 2022.

Peninsari (2021) There is a strong influence between implementing ball therapy and reducing back pain scores with a p value of $0.000 < 0.05$

Selpyani (2022) increasing knowledge of gym ball among pregnant women is expected to increase the feeling of comfort and reduce pain in mothers during the pregnancy period leading up to delivery to ensure safe, comfortable and smooth delivery.

4. Differences between pretest and posttest back pain when given back massage therapy

The results of the Mann Whitney test show that the research results of respondents in the back massage group obtained a P-value = 0.000 (<0.000), meaning that there was a difference in pretest and posttest back pain given back massage therapy at TPMB "S" East Jakarta 2022.

Previous research conducted by Jumirah (2018) found that there was an effect of deep back massage on reducing labor pain during the first active phase at the Dewi Sartika General Hospital, Kendari City in 2018. Massage and touch helped mothers feel more relaxed and comfortable during labor because massage stimulated the body to release endorphin compounds which are natural pain relievers and create feelings of comfort and pleasure. Illustration of the Gate control theory that the pain fibers carrying painful stimulation to the brain are smaller and the sensation travels more slowly than the broad touch fibers. When touch and pain are stimulated together, the sensation of touch travels to the brain closing the gates in the brain. With massage which has a distraction effect it can also increase the formation of endorphins to relax muscles¹⁰

Another research by Silvana (2021) shows that the discomfort of back pain experienced by mothers can be resolved by doing back massage therapy, which is proven by carrying out pretests and posttests. Where before the back massage therapy was carried out, the back pain felt by the mother did not decrease significantly every day, namely around 8 on a numerical scale, after being given care by the author, the back pain felt by the mother decreased with the post test results on a numerical scale of 3 to 1.¹¹

Pregnant women often complain of upper and lower back pain, especially in the third trimester, because there is an increase in lordosis or curvature of the spine. This causes a shift in the body's center of balance which shifts forward in the direction of the spine and because the weight of the uterus is above the pelvic area, causes the pelvis to shift forward so that the waist becomes more curved. This situation can cause low back pain. One of the causes of lower back pain is hormonal changes which cause changes in the supporting and connecting soft tissue resulting in decreased muscle elasticity and flexibility. Massage therapy is a non-pharmacological therapy that can reduce back pain for pregnant women. Massage will reduce muscle tension and pain, increase mobility and improve blood circulation¹²

5. The Effect of Giving Gym Ball Therapy and Back Massage on Back Pain

The results of the Mann Whitney Test showed a p-value (0.009) <0.05, meaning there was a significant difference between gym ball therapy and back massage for back pain in pregnant women.

Factors that cause back pain in third trimester pregnant women include weight gain, rapid changes in posture, previous back pain, repeated stretching, many children, high levels of relaxin. Changes in posture and pelvic instability can cause back pain during pregnancy and after. The transversus is a stabilizing muscle of the trunk and is important for restoring stability to the trunk¹³.

Management that can be done to reduce and prevent back pain requires providing exercises and sports such as gym ball, pregnancy exercises, back massage or other physical exercises. Gym ball, pregnancy exercises and back massage are complementary treatments³

Gym ball exercises change sensation and treat lower back pain. Apart from that, weakness in the pelvic and lumbo pelvic complexes is related to chronic instability. Gym ball exercises will increase the strength of the trunk stabilizing muscles such as the multifidus, erector spinae and abdominal muscles (transversus, rectus and oblique). Another positive effect of gym ball training is reducing imbalances in muscle work thereby increasing movement efficiency⁴

Back massage is a massage action that is carried out for 3-10 minutes on the back with slow strokes. Back massage can create a mechanism for closing pain impulses when gently rubbing the back. Back massage can also produce endorphins which can reduce muscle tension and provide a relaxing effect. Physiologically, back massage helps release pain-inhibiting neurotransmitters by increasing the activity of the substantia gelatinosa. Substantia gelatinosa is found at the dorsal end of the spinal cord nerve fibers and acts as a closing and opening gate for pain. When massage is performed, the pain impulse mechanism will close and cause T cell activity to stop. This causes the delivery of pain stimuli to the central nervous system to be hampered¹⁴.

The researcher's assumption is that back massage and gym ball are effective treatments for reducing back pain in third trimester pregnant women, both are to provide elasticity to the back and waist area so that muscle relaxation occurs in the back and waist area of pregnant women which physiologically causes compression and lordosis. In the back area, gym ball movements and back massage must be done repeatedly or routinely to achieve elasticity in this area.

CONCLUSION

The average pretest and posttest back pain scores given the gym ball were different for back pain (9.57). The average pretest and posttest back pain score given back massage is the difference in back pain (5.26). There is an influence between gym ball therapy and back massage in reducing back pain.

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