**STRADA Jurnal Ilmiah Kesehatan**
DOI: 10.30994/sjik.v10i1.637
ISSN: 2252-3847 (print); 2614-350X (online) Vol.10 No.1 May 2021 Page. 344-349

# Changes of Anxiety Scores in Pregnant Women With Hypertension After Progressive Muscle Relaxation Therapy

**Rizqi Dian Pratiwi[1]*, Lanny Sunarjo[1], Mateus Sakundarno Adi[2]**
*[1]Poltekkes Kemenkes Semarang, Indonesia*
*[2]Universitas Diponegoro, Semarang, Indonesia*
** Correspondent Author: Rizqidianmst@gmail.com*

**ABSTRACT**
Pregnant with hypertension is one of the main causes of maternal and fetal death, but efforts to resolve them have not been optimal. Purpose: To determine the difference in anxiety scores by Progressive Muscle Relaxation (PMR) on pregnant women with hypertension. Methods: This study used a cross-over design. A total of 36 women in the third trimester obtained by random sampling were given PMR and bed rest. The measurement used HARS questionnaire. Data were analyzed using paired t-tets. Results: There was a significant difference in anxiety scores before and after PMR (P <0.001), while there was no difference in bed rest (P> 0.05). There was a significant difference between PMR and bed rest on anxiety scores (P <0.001) with a greater mean reduction on PMR therapy. Conclusion: PMR can reduce anxiety scores in pregnant women with hypertension, so PMR can be a complementary therapy in obstetric care for them.

**Keywords:** Anxiety Score, Bed rest, Pregnant with Hypertension, Progressive Muscle Relaxation

Received February 8, 2021; Revised February 15, 2021; Accepted March 9, 2021

DOI: 10.30994/sjik.v10i1.637
ISSN: 2252-3847 (print); 2614-350X (online) Vol.10 No.1 May 2021 Page. 344-349

## BACKGROUND

Pregnancy complications because of hypertension are as much as 5-10% which is the main cause of maternal and infant morbidity and mortality, such as preterm delivery, Intrauterine Growth Restriction (IUGR), Intrauterine Fetal Death (IUFD), placental abruption, increasing the incidence of Sectio Cesarea (SC), kidney failure, heart failure and death. (Dimitrova et al., 2017; Kementerian Kesehatan RI, 2014)

Pregnancy in mothers with complications such as hypertension during pregnancy have a higher risk of experiencing stress such as depression and anxiety.(Bastard & Tiran, 2009) There is a relationship between anxiety and hypertension in pregnancy, namely anxiety in pregnant women with hypertension is significantly higher than pregnant women. normal. As many as 61.9% of pregnant women with hypertension suffer anxiety. (Rudiyanti & Raidartiwi, 2017) Pregnant women who anxiety will increase their risk of preeclampsia by 3.64 times. (Qiu, Williams, Calderon-Margalit, Cripe, & Sorensen, 2009)

During exposure to anxiety, the stress regulation system, that is the hypothalamic-pituitary-adrenal cortex system and the sympathetic nervous system-adrenal medullary system is activated. The hypothalamus secretes the hormone corticotropin (CRH). Then CRH stimulates the production and secretion of adrenocorticotropin (ACTH) by the pituitary. In turn, ACTH stimulates the production and secretion of the hormone cortisol by the adrenal cortex which increases anxiety. On the other hand, the hypothalamus stimulates the anterior pituitary, namely the sympathetic nerve, the sympathetic nerve stimulates the adrenal medulla to produce and secrete the hormones epinephrine and norepinephrine. The adrenal glands will secrete epinephrine (adrenaline) and norepinephrine (noradrenaline) which will increase blood pressure and blood sugar levels to meet the needs of the brain, heart, muscles, and bones to overcome the crisis.(Ward, Clarke, & Linden, 2009)

The balance of the body's regulatory mechanisms has a lot to do with stress or anxiety disorders. The effects of anxiety on pregnant women on their babies are IUGR, congenital disorders (cleft palate, cleft lip), premature birth, stillbirth, and IUFD. Anxiety can lead to negative experiences of mothers about pregnancy and childbirth, reduced milk production, increased risk of postpartum depression, and reduced ability to perform maternal roles.(Gandomi et al., 2017) If anxiety is suffered by pregnant women with hypertension, it will further aggravate it. The hypertension condition is increasing blood pressure, increasing organ disorders, eclampsia and death. (Yuliani, Widyawati, Rahayu, Widiastuti, & Rusmini, 2018)

The limitations of hypertension management in pregnancy carried out by midwives generally focus on monitoring blood pressure.(Serudji, Utomo, & Machmud, 2014) So that more attention is needed to address the problem of anxiety. Management of anxiety can be done with pharmacology such as using antidepressant drugs. (Palmsten et al., 2013) However, this provision has side effects, especially if consumed by pregnant women, namely the risk of congenital abnormalities in the fetus such as heart defects, in addition to the effect of SNRI antidepressant drugs (Serotonin and Norepineprin Inhibitors) and Tricilic can increase the risk of developing preeclampsia. (Huybrechts, Palmsten, & et al., 2014; Palmsten et al., 2013) Anxiety in pregnant women with hypertension has an impact on the well-being of the mother and the fetus if left untreated.(Yuliani et al., 2018)

Progressive Muscle Relaxation (PMR) is a relaxation technique of tensing and relaxing muscles which is a psychological mechanism that connects the mind and body. PMR focuses attention on a muscle activity by paying attention to muscle tension and relaxation so that it has a relaxing effect. In a relaxed state, the body will rest and activate the parasympathetic nervous system. PMR is done by tensing the muscles for 5 seconds and

DOI: 10.30994/sjik.v10i1.637
ISSN: 2252-3847 (print); 2614-350X (online) Vol.10 No.1 May 2021 Page. 344-349

relaxing for 5-10 seconds on the forehead, eyes, mouth, jaw, neck, chest, shoulders, back, biceps, hands, thighs, calves and toes which are done for 20- 30 minutes. (Pan, Zhang, & Li, 2012) The work of the parasympathetic nerves stimulates the production of endorphin hormones which then provide a comfortable and relaxing effect, then this will inhibit the hormone cortisol which is causes a decrease in anxiety level.(Wilhelm et al., 2010)

This study aims to determine the differences in changes in anxiety scores in pregnant women with hypertension after given PMR therapy.

## METHODS

The design of this study is a quasy experiment with a cross-over design so the subject becomes the control for herself. The research subjects were pregnant women with hypertension. The research place was at the Magelang District Health Center from February to May 2020. The sampling technique was through simple random sampling, and 36 respondents were obtained. The sample inclusion criteria included: blood pressure ≥ 140/90 mmHg, age of mother 20-35 years, gestational age 28-36 weeks, having anxiety problems and being domiciled in the study area. Respondents were given bed rest therapy for 20 minutes every day on the first to the 5th day, on the 6th day was washout or rest, then on the 7th to 11th they were given PMR therapy for 20 minutes. The instrument for measuring anxiety scores using the HARS questionnaire (Hamilton Anxiety Rate Score with validity or r value of 0.39-0.79 and a cronbach's alpha value of 0.94. (Hawari, 2013)) Ethical clearance was obtained from the Health Research Ethics Commission of Dr. Moewardi Hospital. number 050 / I / HREC / 2020. Data analysis used the paired t-test parametric test.

## RESULTS

Table 1.Frequency Distribution of Respondent Characteristics by Education, Parity, Income, and Occupation

| Characteristics | | Frequency (n) | Percentage (%) |
|---|---|---|---|
| Education | | | |
| | Elementary School | 16 | 44,5 |
| | Junior High School | 17 | 47,2 |
| | Senior High Scholl | 3 | 8,3 |
| Parity | | | |
| | Primigravida | 10 | 27,8 |
| | Multigravida | 26 | 72,2 |
| Income | | | |
| | < UMR | 21 | 58,3 |
| | ≥ UMR | 15 | 41,7 |
| Occupation | | | |
| | Work | 10 | 27,8 |
| | Not work | 26 | 72,2 |

The results of the analysis of the distribution of the characteristics of respondents in the table show that most of the respondents have junior high school education as many as 17 people (47.2%), then based on parity it can be seen that some of the respondents are multigravidas as many as 26 people (72.2%), the majority of respondents have family income. less than the UMR as many as 21 people (58.3%) and according to occupation, 26 people (72.2%) did not work.

DOI: 10.30994/sjik.v10i1.637
ISSN: 2252-3847 (print); 2614-350X (online) Vol.10 No.1 May 2021 Page. 344-349

Table 2. Differences in Average Anxiety Scores Before and After PMR Therapy and Bed Rest.

| Anxiety Score (n=36) | Time | Mean | SD | 95%CI | *P-value* |
|---|---|---|---|---|---|
| PMR | *Pre-test* | 30,25 | 3,96 | 28,91-31,59 | 0,000* |
| | *Post-test* | 20,64 | 4,25 | 19,20-22,08 | |
| Bed Rest | *Pre-test* | 31,58 | 4,44 | 30,08-33,09 | 0,547 |
| | *Post-test* | 31,36 | 3,8 | 30,07-32,65 | |

Table 2 shows the anxiety score in the PMR group has decreased in average from the previous 30.25 to 20.64. Meanwhile, the bed rest group also showed a decrease in anxiety scores from 31.58 to 31.36. The results showed that there were differences in anxiety scores before and after being treated in the PMR group (p-value <0.001), but in the bed rest group there was no significant difference in anxiety scores with p-value> 0.05.

Table 3. Differences in the Change in Anxiety Score of the PMR Therapy group and Bed Rest

| Anxiety Score (n=36) | S.E | SD | *P-value* |
|---|---|---|---|
| PMR | 9,61 | 3,507 | 0,000 |
| Bed Rest | 0,22 | 2,192 | |

Table 3 shows that in the intervention group, the mean difference was 9.61 with a standard deviation of 3.507. Whereas in the control group, the mean difference was 0.22 with a standard deviation of 2.192. The p-value shows that it is 0,000 <0.05, it can be concluded that there is a difference in anxiety scores in the Progressive Muscle Relaxation therapy group and the bed rest therapy group.

## DISCUSSION

The results of statistical tests showed that there was a significant difference in anxiety scores in the group given PMR therapy and the group on bed rest. This is because PMR is a technique of tensing and relaxing muscles which is a psychological mechanism that connects the mind and body. PMR focuses attention on a muscle activity by paying attention to muscle tension and relaxation so that it has a relaxing effect. In a relaxed state, the body will rest and activate the parasympathetic nervous system. The work of the parasympathetic nerves stimulates the production of endorphin hormones which then provide a comfortable and relaxing effect, which in turn inhibits the secretion of adrenocorticotropin (ACTH) and the hormone cortisol which then causes a decrease in anxiety scores. This is same the research conducted. by Urech et al in 39 pregnant women with gestational age of 32-34 weeks who were given PMR which was done once for 30 minutes can significantly reduce cortisol levels with a P value <0.001 and reduce ACTH levels with a P value <0.001.(Wilhelm et al., 2010)

This is in line with study by Mardiyanti which shows that PMR therapy is effective in reducing anxiety levels in third trimester primigravida pregnant women with a P value of 0.000 <0.05. (Mardiyanti, 2017) Other studies reveal that PMR can reduce stress scores, anxiety , and depression in normal pregnant women which is relaxation with simple techniques and can be done in health services and at home. (Nasiiri, Akbari, Tagharrobi, & Tabatabaee, 2018)

In pregnancies complicated, PMR can reduce anxiety, as in the results of a study which shows that PMR therapy can reduce anxiety levels in preterm labor with a P value of 0.03. (Chuang et al., 2012) In line with this, Pan proved that PMR can reduce anxiety in women with interrupted ectopic pregnancies receiving methotrexate treatment. PMR given in a short period of time that is during the methotrexate treatment in the hospital which is from day three until treatment is complete where the longest treatment is 15 days. (Pan et al., 2012)

DOI: 10.30994/sjik.v10i1.637
ISSN: 2252-3847 (print); 2614-350X (online) Vol.10 No.1 May 2021 Page. 344-349

Urech and Alder in their research also showed that PMR in a single session has an effect on reducing anxiety (Fink et al., 2011; Wilhelm et al., 2010)

## CONCLUSION

Based on the results of the study, it can be concluded that there is a significant difference in anxiety scores between those given PMR therapy and bed rest therapy, and the decrease in anxiety scores in the PMR group is greater than in the bed rest group. For health workers, PMR can be an alternative complementary therapy in the care of pregnant women with hypertension. It is necessary to do further research with the addition of variables and a longer study duration in order to obtain long-term effects from PMR therapy.

## REFERENCES

Bastard, J., & Tiran, D. (2009). Reprint of: Aromatherapy and massage for antenatal anxiety: Its effect on the fetus. *Complementary Therapies in Clinical Practice*, *15*(4), 230–233. https://doi.org/10.1016/j.ctcp.2009.06.010

Chuang, L. L., Lin, L. C., Cheng, P. J., Chen, C. H., Wu, S. C., & Chang, C. L. (2012). The effectiveness of a relaxation training program for women with preterm labour on pregnancy outcomes: A controlled clinical trial. *International Journal of Nursing Studies*, *49*(3), 257–264. https://doi.org/10.1016/j.ijnurstu.2011.09.007

Dimitrova, N., Zamudio, J. R., Jong, R. M., Soukup, D., Resnick, R., Sarma, K., … Jacks, T. (2017). The Combined Association of Psychosocial Stress and Chronic Hypertension with Preeclampsia. *NIH Public Access*, *32*(7), 736–740. https://doi.org/10.1371/journal.pone.0178059

Fink, N. S., Urech, C., Isabel, F., Meyer, A., Hoesli, I., Bitzer, J., & Alder, J. (2011). Fetal response to abbreviated relaxation techniques. A randomized controlled study. *Early Human Development*, *87*(2), 121–127. https://doi.org/10.1016/j.earlhumdev.2010.11.011

Gandomi, N., Sharifzadeh, G., Torshizi, M., Gandomi, F., Moghadam, H. M., & Norozi, E. (2017). An enquiry into pregnancy anxiety and associated factors among pregnant women in Birjand in 2016. *J Health Sci Technol*, *1*(2), 55–63.

Hawari, D. (2013). Manajemen Stress Cemas dan Depresi (p. 66). Jakarta: FK UI.

Huybrechts, K. F., Palmsten, K., & et al. (2014). Antidepressant Use in Pregnancy and the Risk of Cardiac Defects. *NIH Public Access*, *370*(25), 2397–2407. https://doi.org/10.1161/CIRCULATIONAHA.110.956839

Kementerian Kesehatan RI. (2014). Infodatin Pusat Data dan Informasi Kementerian Kesehatan RI: Mother's Day Situasi Kesehatan Ibu. (p. 6). Jakarta: Kementerian Kesehatan RI.

Mardiyanti, S. (2017). The Effects Of Progressive Muscle Relaxation On The Level Of Anxiety Experienced By The Primigravid Women In The Third Trimester In BPM Ika Mardiyanti Prambon Sidoarjo. *Palliative Care Research*, *25*(1), 9–14. https://doi.org/10.1016/j.jpainsymman.2017.04.009

Nasiiri, S., Akbari, H., Tagharrobi, L., & Tabatabaee, A. S. (2018). The effect of progressive muscle relaxation and guided imagery on stress, anxiety, and depression of pregnant women referred to health centers. *Journal of Education and Health Promotion*, *7*, 1–6. https://doi.org/10.4103/jehp.jehp

Palmsten, K., Huybrechts, K. F., Michels, K. B., Williams, P. L., Mogun, H., Setoguchi, S., & Hernández-Díaz, S. (2013). Antidepressant Use and Risk for Preeclampsia. *Nicotine and Tobacco Research*, *24*(5), 682–691.

DOI: 10.30994/sjik.v10i1.637
ISSN: 2252-3847 (print); 2614-350X (online) Vol.10 No.1 May 2021 Page. 344-349

https://doi.org/10.1097/EDE.0b013e31829e0aaa

Pan, L., Zhang, J., & Li, L. (2012). Effects of Progressive Muscle Relaxation Training on Anxiety and Quality of Life of Inpatients With Ectopic Pregnancy Receiving Methotrexate Treatment. *Research in Nursing and Health*, *35*(4), 376–382. https://doi.org/10.1002/nur.21486

Qiu, C., Williams, M. A., Calderon-Margalit, R., Cripe, S. M., & Sorensen, T. K. (2009). Preeclampsia risk in relation to maternal mood and anxiety disorders diagnosed before or during early pregnancy. *American Journal of Hypertension*, *22*(4), 397–402. https://doi.org/10.1038/ajh.2008.366

Rudiyanti, N., & Raidartiwi, E. (2017). Tingkat Kecemasan pada Ibu Hamil dengan Kejadian Pre Eklampsia di Sebuah RS Provinsi Lampung. *Jurnal Keperawatan*, *13*(2), 173–179.

Serudji, J., Utomo, Y. S., & Machmud, R. (2014). Perbedaan Skor Kecemasan Taylor Minnesota Anxiety Scale ( TMAS ) Maternal Pada Kehamilan Dengan Preeklampsia Dan Hamil Normal. *Obgin Emas*, *2*(16), 1–7.

Ward, P. . J., Clarke, W. R., & Linden, R. W. . (2009). At a Glance Fisiologi (pp. 25, 60, 90). Jakarta: Erlangga.

Wilhelm, F. H., Alder, J., Bitzer, J., Fink, N. S., Urech, C., & Hoesli, I. (2010). Effects of relaxation on psychobiological wellbeing during pregnancy: A randomized controlled trial. *Psychoneuroendocrinology*, *35*(9), 1348–1355. https://doi.org/10.1016/j.psyneuen.2010.03.008

Yuliani, D. R., Widyawati, M. N., Rahayu, D. L., Widiastuti, A., & Rusmini, R. (2018). Terapi Murottal Sebagai Upaya Menurunkan Kecemasan Dan Tekanan Darah Pada Ibu Hamil Dengan Preeklampsia : Literature Review Dilengkapi Studi Kasus. *Jurnal Kebidanan*, *8*(2), 79. https://doi.org/10.31983/jkb.v8i2.3738