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The Effect of Progressive Muscle Relaxation with QS. Ar-Rahman Audio Accompaniment On Serotonin Levels and Premenstrual Syndrome Score

Fina Nurul Azizah[1,2], Sri Sumarni[1], Suryati Kumorowulan[3]

[1]*Poltekkes Kemenkes Semarang, Central Java, Indonesia*
[2]*Politeknik Kesehatan Karya Husada Yogyakarta, Yogyakarta, Indonesia*
[3]*Magelang Health Research and Development Agency, Central Java, Indonesia*

***Corresponding author: Fina Nurul Azizah**

ABSTRACT

Background: The prevalence of premenstrual syndrome in Indonesia in 2019 was 80.6%. Premenstrual syndrome is caused by fluctuations in ovarian hormones that can reduce serotonin, causing symptoms of premenstrual syndrome. Progressive muscle relaxation audio murottal QSAr.Rahman was the way to overcome this syndrome.
Objective: To prove an increase in serotonin levels and a decrease in premenstrual syndrome scores after being given progressive muscle with audio Murottal Qs. Ar-Rahman with a volume of 50-60 db for 15 minutes duration for 5 consecutive days.
Research Methods: This study used true experiment, pretest posttest control group design. The sampling technique was stratified random sampling, and obtained 20 respondents in each group. The intervention group was given a progressive muscle relaxation video with murottal QS. Ar-Rahman, volume 50-60 db for 15 minutes duration and the control group did rest/sleep and usual activities for 5 consecutive days. The respondents filled characteristics and SPAF questionnaires. Researchers took morning urine samples and examined using Serotonin ELISA KIT.
Results: In the intervention group, the mean pretest serotonin level was 67.02 mg/mL, posttest 111.57 mg/mL, serotonin levels increased 39.93% (p value: 0.001). The mean score of premenstrual syndrome pretest was 27, posttest was 20, decreased premenstrual syndrome was 25.92% (p value: 0.001). Different test between groups on serotonin levels obtained p value: 0.001(effect size: 1.22) and the premenstrual syndrome score p value: 0.001 (effect size : 0.98).
Conclusion: There was an increase in serotonin levels and a decrease in premenstrual syndrome scores after being given progressive muscle relaxation video with murottal audio murottal Ar-Rahman volume 50-60 dB duration 15 minutes for 5 days. The next study suggested adding eating habits as a confounding variable.

Keywords: Premenstrual Syndrome, Serotonin, Progressive Muscle Relaxation, Ar Rahman

INTRODUCTION

Premenstrual syndrome is a collection of physical, psychological and behavioral signs that appear seven to ten days before menstruation or throughout the luteal segment of the menstrual cycle. The prevalence of premenstrual syndrome in the world is pretty high. In 2018, as many as 86.3% of children in Beni Suef City, Egypt experienced premenstrual syndrome. Premenstrual syndrome has a serious influence on women's quality of life. As many as 53.3% of children in Beni-Suef City, Egypt in 2018 unable to lift out work and faculty things to do due to premenstrual syndrome (Arafa *et al.*, 2018). Premenstrual syndrome reasons 46.5% of excessive college students in Khon Kaen Thailand to lack concentration, 48.8% lack motivation, 48.8% lose overall performance power and 38.4% lack work collaboration (Buddhabunyakan *et al.*, 2017).

Symptoms of premenstrual syndrome include physical, psychological and behavioral symptoms. These encompass anxiety,
fatigue, challenge concentrating, subject sleeping, loss of energy, headache, belly pain, and breast tenderness.

These symptoms will disappear when menstruation starts off evolved (Anwar, Baziad and Prabowo, 2011; Joseph and Nugroho, 2011). A total of 74.4% of patients with premenstrual syndrome experienced breast pain, 70.9% headache, 46.5%, bloating, 20.9% swelling of the extremities, 97.7% angry, 73.3% anxious, 68.6% sensitive. , 48.8% depressed, 43% confused and 36% like to be alone (Buddhabunyakan *et al.*, 2017).

Premenstrual syndrome is precipitated by hormonal fluctuations in the course of the luteal segment of the menstrual cycle. According to Mubarak et al. (2015) Hormone fluctuations show up generally in the hormones estrogen and progesterone (Mubarak, Indawati and Susanto, 2015). Serotonin is additionally one of the hormones that play a function in inflicting premenstrual syndrome (DeRubeis and Strunk, 2017).Serotonin (5-HT, 5-hydroxytryptamine) plays a role in the onset of premenstrual syndrome symptoms such as anxiety, depression, feelings of sensitivity, bloating, breast tenderness and changes in appetite (Appleton, 2018).

One remedy to relieve the symptoms of premenstrual syndrome is progressive muscle relaxation with murottal audio accompaniment QS. Ar-Rahman. Progressive muscle leisure is a therapy via tensing the facial muscle tissues to the legs and then relaxing them. Progressive muscle relaxation performed by listening to Murottal QS. Ar Rahman quantity 50-60 db has a therapeutic effect, which can trade intelligence waves from beta waves (14-20 hertz) to alpha waves (8-13 hertz) which is a calm wave. These reactions in the brain can expand a variety of neurotransmitters such as serotonin and dopamine which provide a calming and calming impact (Yana, Utami and Safri, 2015; Aizid, 2016; Wirakhmi, Utami and Purnawan, 2018; Mukhlis and Marini, 2020).

The results of a preliminary study conducted in P Village, Srumbung Magelang District, found that 88, 77% of adolescents experience premenstrual syndrome. Of the total adolescents who have premenstrual syndrome, 34.48% of adolescents have mild premenstrual syndrome, 35.63% moderate and 29.88% severe. The purpose of this study was to prove an increase in serotonin levels and a decrease in premenstrual syndrome scores after being given progressive muscle with Murottal Qs audio. Ar-Rahman with a volume of 50-60 db for 15 minutes for 5 consecutive days.

METHODS

This type of research is a true experiment with a pretest posttest control group design. This research was carried out on March 20-6 May 2021. The population in this study was all teenagers in Srumbung District as many as 87 people. The sample of this study were 20 respondents in each group consisting of 6 people with mild premenstrual syndrome, 7 people with moderate, and 7 people with severe premenstrual syndrome. The sampling technique in this research is stratified random sampling.

In the intervention group, the first urine collection was carried out in the morning between 04.00-06.00 WIB and a characteristic questionnaire and SPAF (The Shortened Premenstrual Assessment form) before the intervention. After that, the researcher gave a progressive muscle relaxation video to the accompaniment of Murottal QS. Ar. Rahman by Muzammil Hasballah in Mp4 form and adjusted the volume using a sound level meter. Respondents are required to make movements according to the video once a day for 5 days. After that, the first morning urine sample and the SPAF questionnaire were taken after the intervention was finished.

In the control group, the first urine collection was carried out in the morning and the SPAF questionnaire was then recommended to carry out its habits in overcoming premenstrual syndrome for 5 days. After it finishes, The researcher took the first urine in the morning (urine at 04.00-06.00 WIB) and asked respondents to fill out the SPAF questionnaire. Bring urine to the laboratory for testing serotonin levels with the ELISA KIT.

Data were analyzed by univariate and bivariate analysis. Bivariate analysis was performed using Wilcoxon, Paired T-test, Mann Whitney and Independent T-test. This research got ethical clearance from Medical and Health Research Bioethics Commission Sultan Agung Islamic University No.87/III/2021/ Bioethics Commission on March 15, 2021

RESULTS

Characteristics of Respondents

The characteristics of research respondents are presented in the following table.

Table 1: Characteristics of Patients with Premenstrual Syndrome

Group	Variable	Mean ±SD	*Levene Test* p value
Intervention	Age	17.05±3.8	0.473
	BMI	21.6 ±2.7	0.644
	Stress	12.9 ±2.3	0.338
Control	Age	17.7 ±2.95	0.340
	BMI	21.9 ±3.25	0.674
	Stress	12.7 ± 1.8	0.964

Based on table 1 in the intervention group the value of *mean* the age of the respondent is 17.05 years, the standard deviation is 3.8 with a p value of 0.473>0.05, which means that the age of the respondent in the intervention group is homogeneous. The mean BMI of respondents was 21.60 kg/m2, standard deviation was 2.7 with p value 0.644>0.05, which means that the BMI of respondents in the intervention group was homogeneous. The mean value of respondent stress is 12.9, standard deviation is 2.3 with p value 0.338> 0.05, which means that the stress score of respondents in the intervention group is homogeneous.

In the control group, the mean age of the respondents was 17.7 years, the standard deviation was 2.95 with a p value of 0.340>0.05, which means that the age of the respondents in the control group was homogeneous. The mean BMI of respondents was 21.9 kg/m2, standard deviation was 3.25

with a p value of 0.674>0.05, which means that the BMI of respondents in the control group was homogeneous. The mean value of the respondent's stress is 12.7, the standard deviation is 1.8 with a p value of 0.964> 0.05, which means that the stress score of the respondents in the control group is homogeneous.

Analysis of the Effect of Progressive Muscle Relaxation with Murottal Ar Rahman Audio Accompaniment on Serotonin Levels in Each Group

Table 2: Serotonin levels in the intervention and control groups

Group	Measurement	Min-Max	Mean±SD	Mean	Percentage Mean	p value
Intervention	*Pretest*	51.37-164.82	67.02±24.89	44.55	39.93%	0.001
	Posttest	60.43-256.08	111.57±49.19			
Control	*Pretest*	55.85-102.37	78.93±14.06	-11.40	14.44%	0.001
	Posttest	52.63-97.86	67.53±12.29			

Based on table 2 in the intervention group, the pretest score for serotonin levels was a minimum of 51.37 mg/mL and a maximum of 164.82 mg/mL with an average of 67.02 mg/mL with a standard deviation of 24.89 mg/mL. Posttest score of serotonin levels minimum 60.43 mg/mL maximum 256.08 mg/mL with mean 111.57 mg/mL standard deviation 49.19 mg/mL, delta mean 44.55 mg/mL (39.93%). After testing the effect using Wilcoxon, the p-value = 0.001 <0.05, which means that therapy using progressive muscle relaxation with the accompaniment of murottal Qs. Ar Rahman can increase serotonin levels in premenstrual syndrome by 44.55 mg/mL (39.93%). In the control group, the pretest score of serotonin levels was 55.85 mg/mL, maximum 102.37 mg/mL with an average of 78.93 mg/mL with a standard deviation of 14.06 mg/mL. Posttest score of serotonin levels minimum 52.63 mg/mL maximum 97.86 mg/mL with an average of 67, 53 mg/mL standard deviation 12.29 mg/mL delta mean -11.40 mg/mL with a percentage of 14.44%. After testing the effect using the Paired Sample T Test, the p-value was obtained: 0.001 <0.05.

Analysis of Differences in the Effectiveness of Progressive Muscle Relaxation with Murottal Ar Rahman Audio Accompaniment in the Intervention and Control Group

Table 3: Different Tests of Serotonin Levels in the Intervention and Control Group

Variable	Group	Mean ±SD	Effect Size	p-value
Serotonin Levels (mg/mL)	Intervention	44.54 ± 48.30	1.22	0.001
	Control	-11.39 ±9.07		

The average difference in serotonin levels in the intervention group was 44.5 mg/mL with a standard deviation of 48.3 mg/mL. In the control group, the average difference in serotonin levels was -11.39 mg/mL, standard deviation 9.07 mg/mL with an effect size of 1.22 (large effect). After the Mann Whitney test was carried out, the p-value was 0.001 < 0.05. The mean delta of the intervention group was positive and higher than the control group. Progressive muscle relaxation with murottal audio accompaniment QS. Ar-Rahman was more significant in increasing serotonin levels compared to the control group.

Analysis of Confounding Variables Serotonin Levels

Table 4: Analysis of Confounding Variables Serotonin Levels

Variable	R Square
Age Stress BMI	0.071

The results of the analysis in table 4 show that the confounding variables of age, stress and BMI on serotonin levels obtained the coefficient of determination (R2) of 0.071.

That's mean that the ability of these variables to affect serotonin levels was 7.1%. This variable does not include confounding because it is less than 20%.

Analysis of the Effect of Progressive Muscle Relaxation with Murottal Ar Rahman Audio Accompaniment on Premenstrual Syndrome Scores in Each Group

Table 5: Premenstrual Syndrome Scores in the Intervention and Control Group

Group	Measurement	Categories Premenstrual Syndrome			
		Normal (N)	Light (N)	Currently (N)	Heavy (N)
Intervention	*Pretest*	0	7	7	6
	Posttest	0	16	4	0
Control	*Pretest*	0	7	7	6
	Posttest	1	6	7	6

In the pretest data intervention group with normal premenstrual syndrome categories 0 people, 7 people mild, 7 people moderate and 6 people heavy. Posttest data with normal premenstrual syndrome category 0 people, mild 16 people, moderate 4 people and heavy 0 people.

In the control group, pretest data with normal premenstrual syndrome category were 0 people, 7 people mild, 7 people moderate and 6 people heavy. Posttest data with the category of normal premenstrual syndrome 1 person, mild 6 people, moderate 7 people and heavy 6 people.

Table 6: Categories of Premenstrual Syndrome

Group	Measurement	Min-Max	Mean±SD	Mean	Percentage Mean	p value
Intervention	*Pretest*	14-38	27±8	-7	25.92%	
	Posttest	12-29	20±5			0.001
Control	*Pretest*	12-39	26±9	1	3.7%	
	Posttest	11-39	27±8			0.748

In the intervention group the PMS pretest score was minimum 14, maximum 38 with an average of 27 standard deviations 8. The minimum PMS posttest score was 12, maximum 29 with an average of 20 standard deviations 4, delta mean -7 (25.92%). After testing the effect using Wilcoxon, the p-value was obtained: 0.001 <0.05, which means that progressive muscle relaxation with the accompaniment of murottal Qs. Ar Rahman can reduce the premenstrual syndrome score by 7 scores (25.92%).

In the control group the PMS pretest score was minimum 12, maximum 39 with an average of 26 standard deviations 9. The PMS posttest score was minimum 11, maximum 39 with an average of 27 standard deviations of 8, delta mean 1 (3.7%). After testing the effect using the Paired Sample T Test, the p-value was obtained: 0.748 <0.05, which means that progressive muscle relaxation with Qs. Ar Rahman murottal accompaniment could not reduce the premenstrual syndrome score.

Analysis of Differences in the Effectiveness of Progressive Muscle Relaxation with Audio Accompaniment Murottal Ar Rahman on Levels of Premenstrual Syndrome in the Intervention and Control Group

Table 7: Table of Differences in Premenstrual Syndrome Scores in the Intervention and Control Group

Variable	Group	Mean ±SD	Effect Size	p-value
PMS Score	Intervention	-6.05 ±5,13	0.98	0.001
	Control	0.05 ±0.68		

The average difference in PMS scores in the intervention group was -6.05 with a standard deviation of 5.13. In the control group, the average PMS score difference was 0.05, standard deviation was 0.68 with an effect size of 0.98 (large effect). After the Independent Sample T Test was conducted, the p-value was 0.001 < 0.05. The mean delta of the intervention group was negative and lower than the control group. Progressive muscle relaxation with murottal audio accompaniment QS. Ar-Rahman was more significant in reducing premenstrual syndrome scores compared to the control group.

Analysis of Confounding Variables Premenstrual Syndrome Score

Table 8: Analysis of Confounding Variables Score Premenstrual Syndrome

Variable	R Square
Age Stress BMI	0.07

The results of the analysis of the confounding variables of age, stress and BMI on the premenstrual syndrome score, the coefficient of determination (R2) was 0.07, meaning that the ability of these variables to influence the premenstrual syndrome score was 7%. This variable does not include confounding because it is less than 20%.

DISCUSSION

Characteristics of respondents, namely age, obesity (BMI) and homogeneous stress in both groups. In this study, all respondents were teenagers (12-24 years old) and had mild to moderate stress. In addition, BMI with obesity level 1 is only 5 people. The results of the analysis showed that these variables had no effect on serotonin levels and premenstrual syndrome scores.

Based on the results of the study that progressive muscle relaxation with the accompaniment of murottal Ar Rahman can increase serotonin levels of premenstrual syndrome by 39.93% with a significance value or p value = 0.001 <0.05. In the control, it is known that there is a decrease in serotonin levels by 14.44% with a significance value of 0.001 <0.05. Progressive muscle relaxation with murottal audio accompaniment QS. Ar-Rahman was more significant in increasing serotonin levels compared to the control group with p-value 0.001 <0.05. This study has an effect size of 1.22, which means that progressive muscle relaxation with Ar Rahman's murottal accompaniment has a large effect in increasing serotonin levels.

Based on the results of the study, a number of respondents experienced a decrease in the category of premenstrual syndrome after the intervention. Progressive muscle relaxation with Ar Rahman's murottal accompaniment can reduce the premenstrual syndrome score by 25.92% with a significance value of 0.001 <0.05. Progressive muscle relaxation with murottal audio accompaniment QS. Ar-Rahman was more significant in increasing the premenstrual syndrome score compared to the control group with p-value 0.001 < 0.05. This study has an effect size of 0.98, which means that progressive muscle relaxation with Ar Rahman murottal accompaniment has a large effect in reducing premenstrual syndrome scores.

Premenstrual syndrome ratings have reduced due to the incidence of quite a few mechanisms in the body. Progressive muscle rest performed by way of tensing and enjoyable muscle groups from the face to the feet can create impulses that are acquired with the aid of receptors in the muscles. Then it will be forwarded to the hypothalamus of the brain, thereby influencing it to activate corticotrophin releasing factors. Then it stimulates the raphe nucleus to stimulate the synthesis of tryptophan into serotonin so that the signs and symptoms of premenstrual syndrome are decreased (Guyton and Hall, 2000; Bamalan and Khalili, 2020).

Another mechanism for reducing premenstrual syndrome ratings is listening to murottal QS audio. Ar Rahman with a extent of 50-60 dB. Audio stimuli are obtained by the ear receptors and then forwarded to the cerebral cortex. Volume 50-60 db which ability gentle volume can exchange talent waves from beta waves (14-20 hertz) to alpha waves (8-13 hertz). This response stimulates the raphe nucleus of the brain to stimulate the synthesis of tryptophan into serotonin so that the signs of premenstrual syndrome are decreased (Keshavers *et al.*, 2010; Aizid, 2016; Wirakhmi, Utami and Purnawan, 2018).

This find out about is in line with the results of Bakay et al. (2018)
which ambitions to show the impact of physical exercise on serum serotonin and melatonin ranges during premenstrual syndrome. This study was once performed on 20 woman athletes in Turkey. The intervention in this study was to dance three instances a week for six months. In this study it was observed that serotonin stages extended notably after energetic exercise (p value 0.017)(Bakay, H and T, 2010).

The results of this study are in line with Thirupathi's research (2017) which explains that progressive muscle relaxation performed on day 14 or 15 of ovulation and continued for up to 5 days has the effect of reducing premenstrual syndrome in adolescents (p value: 0.000). In this study, it was explained that before the intervention, 40 respondents had mild, 47 moderate, and 13 severe premenstrual syndrome. After intervention, 47 respondents had no premenstrual syndrome, 50 mild premenstrual syndrome, and 3 severe (Thirupathi, 2017).

The research of Darmadi & Armiyati (2019) explained that murottal therapy with Surah Ar-Rahman by Muzammil Hasballah with medium timbre, 44hz pitch, regular and consistent harmony with a volume of 60 db for 30 minutes duration can reduce the anxiety level of pre-catheterized patients as much as the heart (p-value ; 0.001)(Darmadi and Armiyati, 2019).

CONCLUSION

There was an increase in serotonin levels after being given progressive muscle relaxation with audio accompaniment murottal QS. Ar-Rahman volume 50-60 db duration of 15 minutes for 5 consecutive days

There was a decrease in the premenstrual syndrome score after being given progressive muscle relaxation with audio accompaniment murottal QS. Ar-Rahman volume 50-60 db duration of 15 minutes for 5 consecutive days

Progressive muscle relaxation with audio accompaniment murottal QS. Ar-Rahman volume 50-60 db duration of 15 minutes for 5 consecutive day is more significant in increasing serotonin levels compared to the control group.

Progressive muscle relaxation with audio accompaniment murottal QS. Ar-Rahman volume 50-60 db duration of 15 minutes for 5 consecutive day is more significant in reducing premenstrual syndrome scores compared to the control group.

REFERENCES

1. Aizid R. Tartil Al Quran untuk Kecerdasan dan Kesehatanmu. Yogyakarta: Diva Press; 2016.
2. Anwar M, Baziad A, Prabowo RP. Ilmu kandungan. 3rd ed. Jakarta: P T. Bina Pustaka Sarwono Prawirodihardjo; 2011.
3. Appleton SM. Premenstrual syndrome: evaluation and treatment. Clin Obstet Gynecol. 2018;00(00).
4. Arafa AE, Senosy SA, Helmy HK, Mohamed AA. Prevalence and patterns of dysmenorrhea and premenstrual syndrome among Egyptian girls (12-25 years). Middle East Fertil Soc J. 2018;23(4):486-90. doi: 10.1016/j.mefs.2018.01.007.
5. Bakay H, U, T, A. The effect of physical activity on the levels of the hormones, serotonin and melatonin in premenstrual syndrome. Clin Exp Obstet Gynecol. 2010;37(1).
6. Bamalan OA, Khalili Y. Physiology serotonin. Natl Libr Oof Med. 2020;l.
7. Buddhabunyakan N, Kaewrudee S, Chongsomchai C, Soontrapa S, Somboonporn W, Sothornwit J. Premenstrual syndrome (PMS) among high school students. Int J Womens Health. 2017;9:501-5. doi: 10.2147/IJWH.S140679, PMID 28860863.
8. Darmadi S, Armiyati Y. Murottal and clasical music therapy reducing Pra cardiac Chateterization anxiety. S East Asia Nurs Res. 2019;1(2):52-60. doi: 10.26714/seanr.1.2.2019.52-60.
9. DeRubeis RJ, Strunk DR. The Oxford handbook of mood disorders. Oxford University Press; 2017.
10. Guyton AC, Hall J. extbook of medical physiology (Guyton physiology). saunders; 2000.
11. Joseph, Nugroho M 2011. Catatn Kuliah Ginekologi dan Obstetri (ONSGYN). Yogyakrta: Nuha Medika.
12. Keshavers M et al. The effect of holly Quran recitation on physiological responses of premature infant. Koomesh. 2010;11(3):169.
13. Mubarak WI, Indawati L, Susanto J. Buku ajar ilmu Keperawatan dasar. Jakarta: Salemba Medika; 2015.
14. Mukhlis H, Marini M. Pengaruh Terapi Murottal terhadap Denyut Nadi dan Pernafasan pada Bayi dengan Berat Badan Lahir Rendah. Indones Berdaya. 2020;1(1):29-37. doi: 10.47679/ib.202015.
15. Thirupathi S. Effectiveness of progressive muscle relaxation therapy in reducing the affective symptoms in Pre- menstrual syndrome among the young adult girls. Indian J Contin Nurs Educ. 2017;18(December):92-6.
16. Wirakhmi IN, Utami T, Purnawan I. Comparison of listening Mozart music with Murotal al Quran on the pain of hypertension patients. J Keperawatan Soedirman. 2018;13(3). doi: 10.20884/1.jks.2018.13.3.813.
17. Yana R, Utami S, Safri. ”Efektivitas Terapi Murottal Al-Qur”an terhadap intensitas Nyeri Persalinan kala 1 fase AKTIF. J Online Mahasiswa. 2015;2(2).