International Journal of Nursing and Health Services (IJNHS)
http://ijnhs.net/index.php/ijnhs/home
Volume 3 Issue 5, October 20th 2020, pp 598-607
e-ISSN: 2654-6310

The Impact of Maryam Exercise Towards the Stress Level and Cortisol Serum Level among *Primiparous* Pregnant Women

Maya Erisna*,[1], Runjati[2], Apoina Kartini[3], Mahalul Azam[4], Donny Kristanto Mulyantoro[5]

[1,2] Poletekes Kemenkes Semarang, Indonesia
[3] Faculty of Public Health, Diponegoro University, Indonesia
[4]Faculty of Sport Science, Universitas Negeri Semarang, Indonesia
[5]Balai Penelitian dan Pengembangan Kesehatan Magelang, Indonesia

Article info

***Article history*:**
Received: May 25th, 2020
Revised: June 29th, 2020
Accepted: July 20th, 2020

Correspondence author:
Maya Erisna
E-mail: mayaerisna@gmail.com

DOI:
http://doi.org.10.35654/ijnhs.v3i5.338

Abstract. Women are more at risk to stress in pregnancy than during the puerperium. One method of coping with stress is through physical exercise. Maryam Exercise can be used as an alternative to the development of pregnancy exercises in Indonesia because it covers the holistic aspects and easy to do. It is a combination of basic pregnancy exercises, Islamic prayer (*Salat*) movements and *dhikr*. The purpose of this study was to examine the impact of Maryam exercise on the stress levels and cortisol serum levels among primiparous pregnant women. This study used a quasi-experimental study design, pre-test and post-test with non-equivalent control group. In the third trimester of 40 primiparous women were randomly assigned into two groups such the experimental group (n=20) and the control group (n=20). The experimental group received the Maryam exercise while the control group received the standard antenatal exercise. There was a significant difference in stress levels between the intervention group and the control group before and after receiving the intervention ($p < 0.05$). The cortisol levels also showed the significance difference between the intervention group and the control group before and after receiving the intervention ($p < 0.05$). The findings of this study suggest that Maryam Exercise has a positive impact on stress levels and cortisol serum levels of primiparous pregnant women.

Keyword: Maryam Exercise, Stress Levels, Cortisol Levels, Pregnant Women

INTRODUCTION

The stress level of a pregnant woman has the potential to increase during gestational age period. In fact, women tend to be more prone to stress during pregnancy than the puerperium (1). Primigravida mothers experience many changes during pregnancy, causing an increase in perceived stress (2). A systematic review showed that psychological disorders among pregnant women in poor and developing countries occurred more frequently than in developed countries, which is 15.6% (3). In Indonesia, the prevalence of stress in pregnant women ranged between 64% -75% (4,5).

High perceived stress will activate the nervous system and hormones that increasing the risk for third trimester pregnant women to experience depression due to inflammation (5). Even though pregnant women have been exposed to the health care system, stress detection and treatment is still a problem (6). This is because stress during pregnancy is rarely measured so the level of stress and its effects on the mother and fetus are also unknown (7). In addition, pregnant women often not realize the symptoms of stress and consider it a normal condition (8).

Previous studies have shown that prenatal stress was associated with increased levels of maternal cortisol during pregnancy (9). This strong relationship between stress and cortisol levels makes cortisol a stress biomarker (10).

Several attempts have been made to prevent and manage maternal stress, including music therapy, antenatal education programs, mindfulness, relaxation, acupressure, yoga, CBT (Cognitive Behavioral Therapy), hypnotherapy, meditation, physical exercise and prayer therapy (11-14). Research by Perales et al mentioned that physical exercise during pregnancy can reduce symptoms of stress and depression in pregnant women (15). The American College of Obstetrics and Gynecology (ACOG) also recommends that all adults (including pregnant women and postpartum women without complications) exercise at least 150 minutes a week or about 20-30 minutes a day a week. However, pregnant women tend not to do any exercise during pregnancy or even reduce physical activity including reducing work and household affairs (14).

Physical exercise for pregnant women in Indonesia is implemented through the pregnancy exercise program in antenatal class. However, pregnancy exercise program still need some development. The implementation is only additional, not widely understood by pregnant women, and only focuses on physical preparation to the face of childbirth (16–19). Whereas currently midwifery practices applied a holistic approach to identified the needs of women as a whole, because health is a harmonization of the physical, mental, and soul (20).

Maryam Exercise can be used as an alternative to the development of pregnancy exercises in Indonesia because it meets the holistic aspects. In addition, Maryam exercises are easy to do everyday because their movements are a modification of basic prenatal exercises and prayer movements such as bowing, prostration, and *dhikr* (21). Maryam Exercise isn't only provides physical benefits through the movements but also provides psychological and spiritual benefits for pregnant women.

Maryam Exercise will increase blood flow to the uterus so that the distribution of nutrients from mother to fetus will be better. Besides, exercise during pregnancy will also increase maternal blood circulation thereby optimizing the amount of oxygen carried to the muscles and body tissues (22). Then, by doing *dhikr*, the human mind is directed towards remembrance to Allah and towards all the positive elements in life so that anxiety and stress can be reduced (23). Previous research showed that antenatal class using the Maryam method was more effective than the standart antenatal class in reducing anxiety levels in pregnant women ($p<0.05$), but further researches are still needed to explore variables that affect the level of anxiety such as levels of the hormone cortisol or β-Endorphin levels (24). Therefore, this study tries to provide it.

OBJECTIVE

This study aimed to examine the impact of Maryam exercise on the stress levels and cortisol serum levels among primiparous pregnant women.

METHODS

This study used a quasi-experimental approach with a pre-test and post-test with the non-equivalent control group. Forty pregnant women wer randomly assigned and allocated into 2 groups such as the intervention group (n=20) and the control group (n=20). The subjects in this study were primiparous pregnant women in their third trimester (28-36 weeks' gestation) from the villages within the working area of Gubug I Public Health Center, Grobogan District.

Cluster random sampling was performed with following inclusion criteria: 1) primipara, 28-36 weeks gestation, 2) Muslim regilius, 3) be able to join pregnancy exercise regularly, 4) able to read and speak Bahasa, no complication in pregnancy. Four villages were selected randomly from a total of 13 villages. There were two villages as an intervention group and two villages as the control group with 10 pregnant women from each village.

The intervention group received the Maryam exercise once a week for 4 weeks with a duration of 30 minutes while the control group was received the standard pregnancy exercise once a week for 4 weeks with the duration of 30 minutes. All participants involved in this study were given informed consent first and decided to participate voluntarily. This research was approved by Dr. Moewardi Regional Public Hospital Surakarta ethical committee with the number 1.329/XII/HREC/2019.

The instrument used to measure the stressPSS (Perceived Stress Scale) questionnaire and the level of cortisol was measured by using the ELISA method. The PSS questionnaire provided a Perceived Stress score for pregnant mothers. It consists of 10 question items with a maximum score of 40. A high score indicates a high level of perceived stress. The stress level is categorized high if the score is more than 13 (5). Intravenous blood sample to measure the cortisol level was taken from the subjects at 09.00 – 10.00 in the morning. The data collection was conducted in 4 weeks. Stress levels and cortisol levels were measured in the first week before the intervention and 4th week after intervention.

Data were analysed using SPSS (version 16.0 for Windows). Univariate analysis was conducted to describe various variables such as age, education, occupation, family income, stress levels before and after treatment, cortisol levels before and after treatment. Before conducting bivariate analysis, it is necessary to test the data normality. The normality test was done using the Shapiiro-Wilk test (25). Bivariate analysis using paired t-test was used to test the differences in score of stress and cortisol level before and after the intervention within the group. The Independent t-test was done to determine the difference between control and treatment (25).

RESULT

Respondent's Characteristic

Table 1. Characteristics of Pregnant Women in both the intervention group and Control Group

Characteristic	Intervention Group n = 20 n(%)	Control Group n=20 n(%)	Total n=40 n(%)	*p value*
Education				
Elementary School	6(30%)	3(15%)	9(22.5%)	0.555[b]
Middle School	6(30%)	8(40%)	14(35%)	
High School	7(35%)	9(45%)	16(40%)	
University	1(5%)	0(0%)	1(2.5%)	
Occupation				
Housewife	15(75%)	17(85%)	32(80%)	0.415[b]
Private	3(15%)	2(10%)	5(12.5%)	
Enterpreneur	1(5%)	1(5%)	2(5%)	
Farmer	1(5%)	0(0%)	1(2.5%)	
Age (mean±SD)	23.80±2.567	24±3.212		
18 – 22 years old	6(30%)	6(30%)	12(30%)	0.829[a]
23 – 27 years old	12(60%)	11(55%)	23(57.5%)	
28 – 32 years old	2(10%)	3(15%)	5(12.5%)	
Family Income (mean±SD)	1577500±60403 7.9	15200000±55 4977.4		
< Rp 1.830.000	13(65%)	13(65%)	26(65%)	0.890[b]
≥ Rp 1.830.000	7(35%)	7(35%)	14(35%)	
Gestational Age (mean±SD)	31.20±2.648	30.50±2.395		
27 – 29 Week	6(30%)	8(40%)	14(35%)	0.418[b]
30 – 32 Week	7(35%)	8(40%)	15(37.5%)	
33 – 35 Week	7(35%)	4(20%)	11(27.5%)	

[a]*Independent T Test,* [b]*Mann Whitney Test*

The majority of respondents had attended a high school education (40%) and housewives (80%). In the intervention group, the mean age of the respondents was 23.80 years while in the control group was 24 years. The average family income in the intervention group was 1,577,500 rupiahs while in the control group was 1,520,000 rupiahs. Respondents in the intervention group had a mean of gestational age 31.20 weeks while in the control group it was 30.50 weeks.

There was no significant difference between the intervention group and the control group based on education (p=0.555), occupation (p=0.415), age (p=0.829), monthly income (p =0.890), and Gestational age (p=0.418). It revealed that both groups had equal proportions.

STRESS LEVEL

Table 2. PSS scores before and after the intervention in both groups

PSS Score	Intervention Group (Mean±SD)	Control Group (Mean±SD)	*p* value[b]
Pre-test	19.35±4.283	16.75±5.883	0.118
Post-test	16.55±4.322	17.35±5.101	0.596
p value [a]	0.001	0.408	
Δ PSS	-2.80±3.318	0.60±3.168	0.002

[a]*Paired t-test,* [b]*Independent t-test*

As shown in table 2, there were significant differences between the mean of PSS scores before (19.35) and after (16.55) in the intervention group (p= 0.001<0.05), but it showed no significant difference in the control group (before=16.75, after=17.35); (p=0.408>0.05). The stress level in the treatment group decreased by 2.80, with a standard deviation of 3.318 and in the control group, it increased by 0.60 with a standard deviation of 3.168. A comparison of the mean difference (delta) in the PSS Score between group by independent *t*-test showed a significant difference (p=0.002<0.05). Changes in stress level from each group are shown in Figure 1

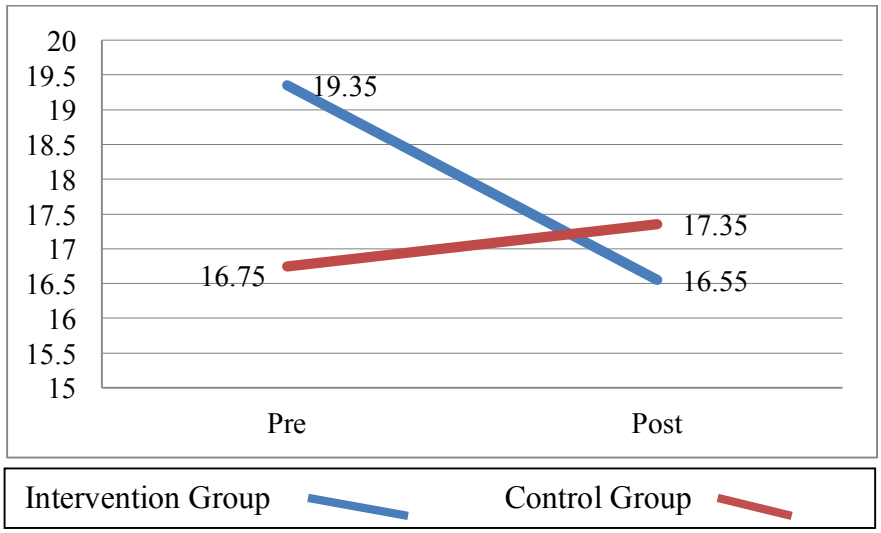

Figure 1. Stress Level Differences Between Groups

CORTISOL LEVEL

Table 3. Cortisol Level before and after the intervention in both groups

PSS Score	Intervention Group (Mean±SD)	Control Group (Mean±SD)	*p* value[b]
Pre	102.48±22.147	97.01±22.147	0.402
Post	91.82±23.118	105.62±16.540	0.036
p value [a]	0.082	0.002	
Δ Cortisol Level	-10.66±25.957	8.61±10.604	0.005

[a]*Paired t-test,* [b]*Independent t-test*

Before the intervention, the mean of cortisol level in the experimental group and the control group was 102.48 and 97.01, respectively, and after the intervention, it was 91.82 and 105.62. Moreover, a paired *t*-test showed a significant difference on comparing the mean scores of cortisol level before and after intervention in the control group (P=0.002<0.05), but it showed no significant difference in the intervention group (P=0.082<0.05), The mean difference (delta) of cortisol level in the experimental group before and after the intervention was obtained as -10.66 (25.957), whereas it was 8.61 (10.604) in the control group, and independent t-test showed a significant difference (p=0.005<0.05). Changes in cortisol level from each group are shown in Figure 2.

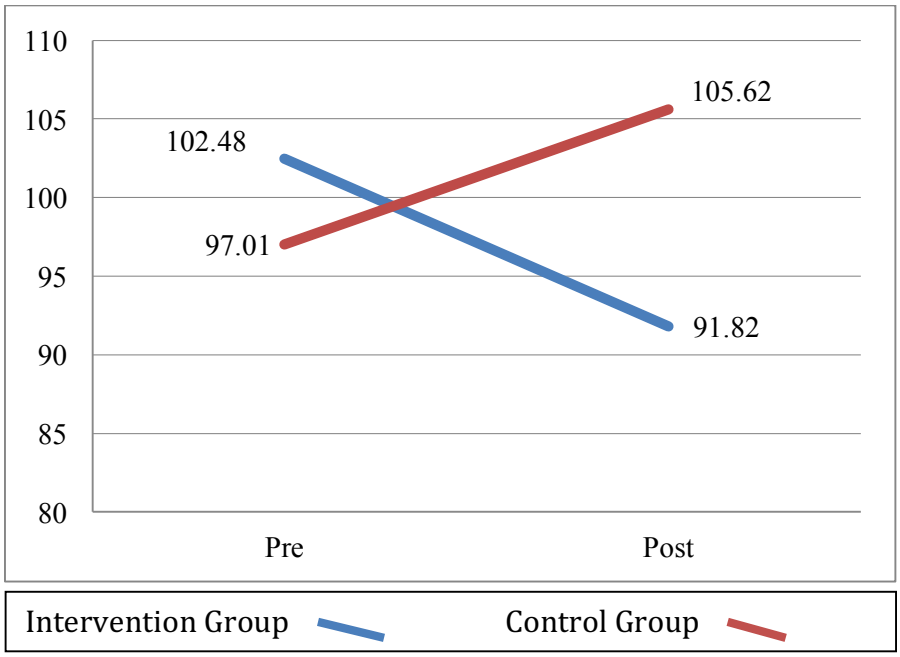

Figure 2 Cortisol Level Differences Between Groups

DISCUSSION

Impact of Maryam exercise on the stress levels in pregnant women

This study generally showed that the intervention of the Maryam exercise had a beneficial effect on pregnant women. The results of this study on the impact of Maryam exercise on the stress level showed a significant difference before and after the intervention. In Maryam exercise intervention, respondents practiced exercise and Islamic prayer (*Salat*) movements while doing *dhikr*. This will have a calming effect and reduce stress levels not only focuses on physical preparation to the face the labor (19).

Spirituality in pregnancy has the meaning of support and direction from God, security, getting protection and blessings from God, strength, and confidence. It will create a sense of peace and well-being (26). When performing *salat* movement, most of the joints and muscles are stimulated and trained. This is the same as doing mild to moderate physical exercise. In addition to physiological benefits, *salat* also provides psychological and spiritual benefits. (27).

Several studies on the application of *salat* in psychotherapy showed positive results in individuals who exhibit pathological symptoms such as stress, anxiety, depression, and anti-social tendencies (28). This is because *Salat* provides a relaxing effect that causes a balance between the mind and the human body. The results of a study by Doufesh in 2012 showed

that alpha waves in the human brain were significantly higher during *Salat*. High alpha wave activity associated with a peaceful, comfortable, and calm mind (29). In addition to *Salat*, *dhikr* (chanting the name of Allah) is also considered to give a feeling of peace. Through *dhikr*, the human mind is directed towards Allah's remembrance and all the positive elements in life so that anxiety and stress can be reduced (23).

Niko's study on the effectiveness of *dhikr* therapy in pregnant women showed that *dhikr* therapy has an effect on reducing anxiety levels in pregnant women. *Dhikr* will help someone form the perception of the belief that any stressor will be dealt with the help of God. Muslims believe that *dhikr* can heal souls, heal various diseases, and one of a way to get close to God, to search for his care and protection. Then, It will arouse confidence, strength, security, security, and happiness (30).

This result was consistent with the study by Marddhiyah and Khaerani that reported *dhikr* training can reduce anxiety in primiparous pregnant women. *Dhikr* that performed with full concentration will make the body relax. This condition will stimulate the release of natural sedative substances in the brain or often referred to as endorphins so that they can generate positive emotions, provide calm, peace, not anxious, not stressed, and depressed (a state of well being) (31).

When the body relaxes there will be a decrease in anxiety and stress by breaking the stress-causing chain. If someone experiences stress due to certain conditions, it will affect the central nervous system so that it will provide a stimulus that will add to the response of tension and stress. If this condition is stopped within a certain time then the stress level of the pregnant woman will be reduced. They will feel more comfortable, relaxed and able to deal with the problems in the right ways (32).

Impact of Maryam exercise on the cortisol serum levels in pregnant women

This study results revealed that there was a significant decreasein cortisol levels before and after giving the Maryam exercise in the intervention group, while in the control group there was a significant increase before and after giving standard pregnancy exercise. There was a significant effect on the reduction in cortisol levels in the intervention group compared to the control group.

Theoretically, cortisol is a very important regulator in humans, free cortisol in the blood has a negative feedback on the release of the hormone corticotrophin releasing hormone (CRH) from the hypothalamus. CRH will drop through the veins of the hypothalamic portal system to the anterior pituitary and stimulates the release of ACTH (Adrenocorticotropic hormone). There will be an increase in cortisol levels when someone is experiencing psychological stress (33). In a normal pregnancy, the cortisol hormone will increase two to four times of normal adult level of cortisol (9). Pregnant women become sensitive to HPA axis dysregulation; which secretes the cortisol due to hormonal changes during pregnancy. The hormone cortisol is released in response to stress and is a major physiological marker of activation of the stress response. Stressors experienced by pregnant women will stimulate the HPA axis by releasing corticosteroids, which has the effect of decreasing immune function. (34).

The results also showed that the majority of respondents in the intervention group had a decrease in stress levels as well as a decrease in cortisol hormone levels. whereas, in the control group most of the respondents had an increase in stress level followed by an increase in the hormone cortisol.

A study by Runjati, et al stated that intervention of Antenatal Coping Skill Training (ACST) was proven to reduce stress levels then led to a significant contribution to decrease cortisol levels in pregnant women. The activation of the HPA axis response and the neuroendocrine system will be affecting cortisol production because of the decreased stress level(35).

This result was consistent with the study by Rabiepur et al t who reported a significant relationship between perceived stress and cortisol levels in pregnant women (36). However, a review by sheikh, et al that discussed the relationship between stress and cortisol levels in pregnant women showed inconsistent results. It could be caused by differences in stress measurement instruments, stress measurement times, sample characteristics, and research designs (37).

The decreased cortisol in the intervention group proved that Maryam exercises had a relaxing effect through *salat* movement and *dhikr*. When the body relaxes there will be a decrease in anxiety and stress by breaking the stress-causing chain. The relaxation effect of Maryam exercise has a significant impacton the mother to reduce muscle tension, pain, anxiety, and stress levels (32).

Previous research by Wahyuni showed that the *dhikr* psychoeducation was more effective in lowering cortisol levels. It stated that dhikr mediate the subject in accepting stressors through the development of a source of belief based on understanding the meaning and experience of doing *dhikr.* This affects the formation of perception and the realization of a sense of patience, gratitude, pleasure, and the ability to take wisdom for changes in pregnancy until postpartum. Decreased stress perception triggers the HPA axis response through CRH removal, and stimulates the adrenal cortex in controlling cortisol(34).

CONCLUSION

Our results suggest that Maryam exercise during pregnancy has a positive impact on stress levels and cortisol serum levels of primiparous pregnant women. Moreover, it is cost-effective, has no side effects, and has a holistic approach compared to the standard pregnancy exercise. Further studies are needed to explore the impact of Maryam exercise on other biomarkers such as IgG and endorphins levels. Although the study has reached its objective, there were some limitations. First, the Maryam exercise can be implemented in pregnant women who are Muslim, so it is necessary to develop other methods that can be implemented in all circles of pregnant women. Second, the randomization of the samples was done at the regional level and the authors were not able to implement blinding.

ACKNOWLEDGMENT

Sincere gratitude to the respondents who participated in this study. Furthermore, the contributions of midwives as facilitators are gratefully acknowledged.

REFERENCES

(1) Runjati, Susanto H, Sawitri DR, Thaufik S. The effect of antenatal class plus coping skill training on the level of stress and childbirth self-efficacy. Advanced Science Letters. 2017;23(4):3329–33.
(2) Lobel M, Dunkel Schetter C. Pregnancy and Prenatal Stress. Encyclopedia of Mental Health: Second Edition. 2015;3:318–29.
(3) Fisher J, de Mello MC, Patel V, Rahman A, Tran T, Holton S, et al. Prevalence and determinants of common perinatal mental disorders in women in low-and lower-middle-income countries: A systematic review. Bulletin of the World Health Organization. 2012;90(2):139–49.
(4) Kasenda P, Wungouw H, Lolong J. Hubungan Stres Dengan Kejadian Insomnia Pada Ibu Hamil Di Puskesmas Bahu Kota Manado. Jurnal Keperawatan. 2017;5(1):1–7.

(5) Wahyuni S. Percived stress dan sindrom depresi pada ibu primigravida. Jurnal Ilmiah Bidan [Internet]. 2018;3(2):21–8. Available from: https://www.e-journal.ibi.or.id/index.php/jib/article/view/74
(6) Leis JA, Mendelson T, Tandon SD, Perry DF. A systematic review of home-based interventions to prevent and treat postpartum depression. Archives of Women's Mental Health. 2009;12(1):3–13.
(7) Senturk V, Abas M, Berksun O, Stewart R. Social support and antenatal depression in extended and nuclear family environments in Turkey: A cross-sectional survey. BMC Psychiatry [Internet]. 2011;11(1):48. Available from: http://www.biomedcentral.com/1471-244X/11/48
(8) Kurniawan ES, Ratep N, Westa W. Factors Lead To Depresion During Antenatal Care Every Trimester of Pregnant Mother. e-Jurnal Medika Udayana. 2013;2(3):502–14.
(9) Su Q, Zhang H, Zhang Y, Zhang H, Ding D, Zeng J, et al. Maternal Stress in Gestation: Birth Outcomes and Stress-Related Hormone Response of the Neonates. Pediatrics and Neonatology [Internet]. 2015;56(6):376–81. Available from: http://dx.doi.org/10.1016/j.pedneo.2015.02.002
(10) Greenstein B, Wood D. At a Glance Sistem Endokrin. 2nd ed. Jakarta: Airlangga; 2010.
(11) Marc I, Toureche N, Ernst E, Hodnett ED, Blanchet C, Dodin S, et al. Mind-body interventions during pregnancy for preventing or treating women's anxiety. Cochrane database of systematic reviews (Online). 2011;(7).
(12) Fontein-Kuipers YJ, Nieuwenhuijze MJ, Ausems M, Budé L, De Vries R. Antenatal interventions to reduce maternal distress: A systematic review and meta-analysis of randomised trials. BJOG: An International Journal of Obstetrics and Gynaecology. 2014;121(4):389–97.
(13) El-Rafie MM, Khafagy GM, Gamal MG. Effect of aerobic exercise during pregnancy on antenatal depression. International Journal of Women's Health. 2016;8:53–7.
(14) Nascimento SL, Surita FG, Godoy AC, Kasawara KT, Morais SS. Physical activity patterns and factors related to exercise during pregnancy: A cross sectional study. PLoS ONE. 2015;10(6).
(15) Perales M, Refoyo I, Coteron J, Bacchi M, Barakat R. Exercise During Pregnancy Attenuates Prenatal Depression: A Randomized Controlled Trial. Evaluation and the Health Professions. 2015;38(1):59–72.
(16) Kementerian Kesehatan RI. Buku Pedoman Pelaksanaan Kelas Ibu Hamil. Jakarta: Kementerian Kesehatan RI; 2014.
(17) Isrofah, Sumaningrum E. Evaluasi Pelaksanaan Kelas Ibu Hamil Di Puskesmas Siwalan Kabupaten Pekalongan. Jurnal Ilmiah Ilmu-Ilmu Kesehatan. 2015;XIII(1):29–37.
(18) Nurhudhariani R, Umariyah SNF, Putri VTA. Ketrampilan Senam Hamil Di Wilayah Kerja Puskesmas. In: The 2nd University Research Coloquium 2015. 2015. p. 637–45.
(19) Puty I, Wibowo A. Pengaruh Keikutsertaan Senam Hamil Terhadap Kecemasan Primigravida Trimester Ketiga Dalam Menghadapi Persalinan. Jurnal Biometrika dan Kependudukan. 2012;1(1):26–32.
(20) Yanti Y, Claramita M, Emilia O, Hakimi M. Students' understanding of "Women-Centred Care Philosophy" in midwifery care through Continuity of Care (CoC) learning model: A quasi-experimental study. BMC Nursing [Internet]. 2015;14(1):1–7. Available from: ???
(21) Kurniati N, Hadisaputro S, Pujiastuti RSE. Pengaruh Senam Maryam Pada Ibu Hamil Terhadap Durasi Persalinan dan Kondisi Fisik Bayi Baru Lahir [Internet]. [Semarang]: Repository Politeknik Kesehatan Kemenkes Semarang; 2019. Available from: http://repository.poltekkes-smg.ac.id/index.php?p=show_detail&id=20005&keywords=

(22) Jumhati S, Kurniawan SS. Analisis Faktor-Faktor Yang Mempengaruhi Trend Penurunan Pelaksanaan Senam Ibu Hamil Di Kabupaten Bekasi. Jurnal Ilmiah Kesehatan. 2019;11(1):27–36.
(23) Radzi HM, Ramly LZ, Sipon S, Othman K. The Influence of God Consciousness and Religiosity in Coping with Anxiety at Workplace among Malaysian Muslim Professionals. 2014;4(4).
(24) Setiyani T. Efektivitas Kelas Ibu Hamil Menggunakan Metode Maryam Terhadap Tingkat Kecemasan Pada Ibu Hamil. 2017;(November 2016):14–8.
(25) Dahlan MS. Statistik Untuk Kedokteran dan Kesehatan. 6th ed. Jakarta: Salemba Medika; 2014.
(26) Callister LC, Khalaf I. Spirituality in Childbearing Women. Journal of Perinatal Education. 2010;19(2):16–24.
(27) Osama M, Malik RJ. Salat (Muslim prayer) as a therapeutic exercise. Vol. 69, Journal of the Pakistan Medical Association. 2019. p. 399–404.
(28) Sayeed S, Prakash A. The Islamic prayer (Salah/Namaaz) and yoga togetherness in mental health. Indian Journal of Psychiatry. 2013;55(6):224.
(29) Doufesh H, Faisal T, Lim KS, Ibrahim F. EEG spectral analysis on muslim prayers. Applied Psychophysiology Biofeedback. 2012;37(1):11–8.
(30) Niko PF. Pengaruh Terapi Dzikir Untuk Menurunkan Kecemasan Pada Ibu Hamil. Jurnal Islamika. 2018;01(01):24–33.
(31) Mardhiyah U, Khaerani NM. Pelatihan Dzikir Untuk Menurunkan Kecemasan Ibu Hamil Pertama. Jurnal Psikologi Integratif. 2017;5(2):157–74.
(32) Aprillia Y. Hipnostetri Rileks, Aman dan Nyaman Saat Hamil dan Melahirkan. Sebastian S, Fabiratri RW, editors. Jakarta: Gagas Media; 2010.
(33) Kraemer KM, Luberto CM, McLeish AC. The moderating role of distress tolerance in the association between anxiety sensitivity physical concerns and panic and PTSD-related re-experiencing symptoms. Anxiety, Stress and Coping. 2013;26(3):330–42.
(34) Wahyuni S, Anies A, Soejoenoes A, Putra ST. Psikoedukasi Dzikr Menurunkan Kadar Kortisol dan Meningkatkan Kadar IGG pada Ibu Primipara. Jurnal Kesehatan Reproduksi. 2018;5(2):82.
(35) Runjati, Susanto H, Sawitri DR, Thaufik S. The impact of antenatal coping skill training (ACST) towards cortisol and igg serum level among pregnant women. Hiroshima Journal of Medical Sciences. 2018;67:21–8.
(36) Rabiepour S, Saboory E, Abedi M. The relationship between stress during pregnancy with leptin and cortisol blood concentrations and complications of pregnancy in the mother. Journal of the Turkish German Gynecology Association. 2019;20(4):218–23.
(37) Shaikh K, Premji S, Khowaja K, Tough S, Kazi A, Khowaj S. The Relationship between Prenatal Stress, Depression, Cortisol and Preterm Birth: A Review. Open Journal of Depression. 2013;02(03):24–31.