The effectiveness of Self-care –training programs on promotion of the perceived stress in pre-eclampsia, A Clinical Trial study

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Abstract--- Objective: Preeclampsia is one of the causes of maternal and neonatal mortality in the world. Lifestyle changes in pregnant women with hypertension can prevent future risks for mother and fetus. The aim was the effectiveness of Self-care –training programs on promotion of the perceived stress in pre-eclampsia, A Clinical Trial study. Materials and Methods: This clinical trial study was performed on 96 pregnant women with preeclampsia (48 patients per group) in selected hospitals of Shiraz in 2018. The self-care education was conducted. The control group received only routine pregnancy cares. The self-care and perceived stress scores and the correlation between the two groups were assessed. Data were analyzed using t-test, Pearson correlation, Chi-square, Kolmogorov-Smirnov test. P-value of 0.05 was considered significant. Results: After intervention, the mean score of self-care in the intervention group was significantly higher than the control group (p <0.001) and the mean score of perceived stress in the intervention group was significantly lower than that of the control group (p <0.001). There was no significant correlation between the scores of self-care and perceived stress in intervention (p = 0.89) and control (p = 0.88) groups. Conclusions: The intervention group had a significant increase in self-care score and a significant decrease in perceived stress score. There was no significant correlation between self-care and perceived stress scores in the intervention and control groups. It is suggested that self-care education programs be provided for patients with preeclampsia.

Keywords--- Self-care, Education in pregnancy, Perceived stress, Preeclampsia.

I. INTRODUCTION

Preeclampsia is defined as hypertension after the 20th week of pregnancy with evidence of placental uterine dysfunction or proteinuria (1). Preeclampsia occurs in 5 to 7% of pregnancies and is the leading cause of morbidity and maternal and fetal mortality in developed and developing countries (2). 10-15% of maternal deaths in the world occur due to hypertensive disorders (3). Prevalence of preeclampsia in different regions of Iran is 5-6% (5.4). Today, the proportion of pregnant women with risk factors for preeclampsia such as a history of hypertension, obesity and old gestational age is increasing (6), Preeclampsia is a major cause of maternal complications and adverse fetal outcomes such as intrauterine growth restriction, preterm labor, distress and fetal death (1). 16% of maternal deaths in developed countries are due to hypertension. Maternal mortality due to hypertensive disorders in pregnancy is higher than mortality due to hemorrhage

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(13%), abortion (8%) and sepsis (2%) (7).

Perceived stress means a person's inability to cope with stressful situations (8). According to Kohn's definition of stress, when environmental needs, whether internal or external, real or imagined, are pressurized or exceed the capacity of the individual, they cause psychological and biological changes that put the individual at risk (9). Stress during pregnancy, childbirth and lactation can be associated with adverse pregnancy outcomes such as miscarriage, nausea and vomiting, preeclampsia, weight loss, preterm labor, low birth weight, immune suppression resulting in increased episiotomy and neonatal infections as well as some postpartum mental disorders (11 and 10). According to the observations of Liners et al. in one study, there is a relationship between stress during pregnancy and pregnancy hypertension (12). In a case-control study of 100 pregnant women, Sarmasti et al. (2017) found that women with preeclampsia were more exposed to stress (7). Another study showed a positive relationship between maternal anxiety disorders and an increased risk of preeclampsia (13). According to the World Health Organization (WHO), psychosocial status, including stressors, also affects one's health (14).

One of the aspects that could be involved in the management and control of stress is self-care. Self-care is defined as the essential maintenance of health and the prevention and management of chronic diseases (15). Self-care during pregnancy refers to the decisions and activities that a pregnant person makes to help her cope with or improve the health (16). A study in Uganda on women with preeclampsia showed that 64% of these women had knowledge about pregnancy hypertension but had no knowledge of self-care in this condition (17). A study in India on pregnant women also showed a strong relationship between self-care awareness and blood pressure control (18). Some studies indicated that more than half of women with preeclampsia had a high level of knowledge about pregnancy hypertension but none of them had knowledge about self-care (19). Various studies have shown the effect of self-care on perceived stress in patients with hypertension. But there is no study in Iran on whether these factors contribute to the prevention of pregnancy hypertension. The aim was the effectiveness of Self-care –training programs on promotion of the perceived stress in pre-eclampsia, A Clinical Trial study

II. MATERIALS AND METHODS

Study design

This clinical trial study investigated the effect of self-care education in pregnancy with perceived stress in 96 patients with preeclampsia referred to clinics of Shooshtari, Hafez and Hazrat Zeinab hospital in Shiraz in 2018. The sample size was obtained based on similar articles (20) and statistics of faculty members. After sample size calculation, Samples were selected through convenience sampling method then permuted block randomization was used to assign patients into two groups in a 1:1 ratio. Then, 16 blocks of 6 were prepared and the patients were consecutively assigned to the blocks utill the sample size in each group was completed (fig1).

The study inclusion criteria were: Iranian nationality, women with preeclampsia, age of 18-45 years, gestational age of 20-42 weeks, singleton delivery, no history of pre-pregnancy hypertension, no history of neonatal death in previous pregnancies, less than 4 previous deliveries, no chronic disease such as diabetes, severe obesity, kidney disease, cardiovascular disease, anemia, mental illness and living in Shiraz to attend training classes. The study exclusion criteria were: aggravation of the disease and its changing into eclampsia and death, failure to attend two training sessions and incomplete response to questionnaires.

Intervention method

Sampling was conducted after obtaining written permission from research environment centers, obtaining a clinical trial center code and written consent from mothers. According to the demographic data of the midwifery questionnaire, 96

women were included in the study after obtaining written consent through convenience sampling method. 48 patients were included in the intervention group and 48 persons in the control group. Patients in the intervention group received self-care training for five 45-minute sessions with one week interval. Self-care education program included eating a healthy diet such as low-salt and low-fat diets, daily consumption of vegetables, milk and calcium, active living style, not smoking and not using alcohol, taking blood pressure medications, regular blood pressure and weight control, avoiding stress and receiving regular pregnancy care (Table 1). The intervention group was given one month to use the training materials and then self-care questionnaire and perceived stress questionnaire were completed by interview. The control group completed the two mentioned questionnaires after receiving routine pregnancy care.

Study tools

The study tools included demographic and fertility information questionnaire, researcher-made questionnaire of self-care and perceived stress questionnaire.

1- Midwifery demographic questionnaire consists of two parts: The first part includes questions about age, pre-pregnancy weight, height, body mass index, employment status, level of education, family income. The second part includes questions of midwifery information such as number of pregnancies, gestational age, history of miscarriages, preterm labor, preeclampsia, hypertension in previous pregnancies, etc.

2- The researcher-made questionnaire of pregnancy self-care contains 13 questions on a 4-point Likert scale from "never" (zero) to "always" (score three). Its minimum score is zero and its maximum is 39. To determine the validity of the questionnaire, after designing its questions based on the content of the training sessions by the research team, the questionnaire was administered to ten experienced professors of School of Nursing and Midwifery of Shiraz Fatemeh (P.B.U.H). Then, by preliminary examination, thirty copies of the Knowledge Assessment Questionnaire were completed by pregnant women within two weeks and its Cronbach's alpha was determined using SPSS software. In this study, Cronbach's alpha coefficient of $\alpha = 81\%$ was obtained the reliability of which was good for the present study. The Cohen's Perceived Stress Questionnaire was used to measure general perceived stress in the past month. This questionnaire assessed thoughts and feelings about stressful events, controlling, overcoming and coping with stress and experienced stresses. In this study, a 14-item version of this questionnaire was used. Subject responses were scored on a five-point Likert scale ranging from "never" (score one) to "most of the time" (score five). This 14-item questionnaire includes 7 negative items indicating the inability to cope with stress and 7 positive items indicating good compliance with stressors. The lowest score is zero and the highest is 56. A higher score indicates more perceived stress. Cronbach's alpha for this scale in three studies ranged from 0.84 to 0.86 (9, 21).

Statistical analysis

SPSS version 23 was used to enter data. Descriptive test was used to report frequency, percentage of frequency, mean and standard deviation. Analytical tests were used to compare the mean of quantitative factor (self-care and perceived stress) between the two groups. Independent t-test and Pearson correlation test were used to examine the correlation between two quantitative factors (self-care and perceived stress). Chi-square test was used to investigate the relationship between qualitative factors and Kolmogorov-Smirnov test was used to examine the normality of each quantitative factor. P <0.05 was considered significant.

Ethical considerations

The ethics committee approval was obtained from the Research Ethics Committee of Shiraz University of Medical Sciences (project number: 1396-01-85-15318, ethic code: IR.SUMS.REC.1396.144). Permission to conduct the research

was given by the authorities of the related units, and the full description of the objectives of the study was explained to the authorities. The authorities were assured that all research information was kept confidential.
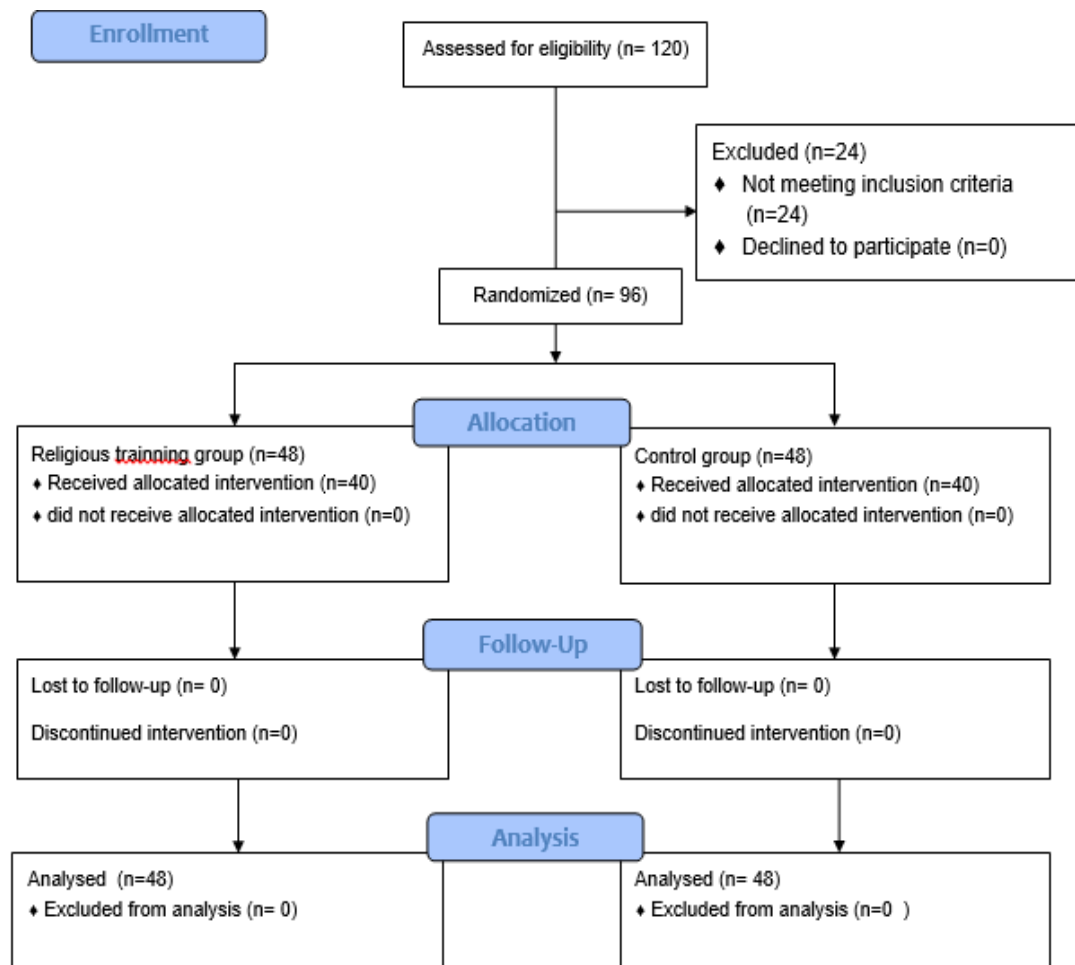

Figure 1: CONSORT flow diagram of participants

III. RESULTS

In this study, 96 pregnant women referred to the study environment were investigated (48 persons in intervention group and 48 in control group). The samples were 19 to 43 years old with mean score of 29.31 ± 7.3. Most women had a high school diploma (33.3%) and the majorities were housewives (62.5%). Demographic and clinical information of the intervention and control group are provided in Table 2.

Table 1-The topics and activities of self-care education sessions

Sessions	Topic of sessions	Sessions Activities
First	Investigation of the importance of self-care, stress and preeclampsia in pregnancy	Explanations for group discussion on the importance of self-care, stress and pregnancy hypertension
Second	The effect of self-care on how to control blood pressure	Providing information on the complications of hypertension and its effects on mother and fetus and methods to reduce these complications through self-care
Third	Comparison of diet in pregnancy with and without preeclampsia	Giving awareness of a healthy diet and foods that affect high blood pressure
Fourth	Methods to prevent hypertension by emphasizing lifestyle parameters	Providing information on healthy lifestyle such as obesity, regular physical activity, smoking using alcohol and avoiding stress
Fifth	Controlling blood pressure and prenatal care emphasizing the impact of stress on pregnancy, evaluation	Providing information on regular referrals to physicians and midwives, regular use of blood pressure medications, questionnaire completion

Table 2- Demographic and clinical information of control and intervention groups

Factors	Category	Group		Total	Statistical index	p-value(sig)
		Control N=48	Intervention N=48			
		M±SD	M±SD	M±SD		
Age		79.29±7 .7	83.28±9 .6	29.3±7.3	0.64(T)	0.52
Gravid		65.2±25 .0	15.2±19.0	2.39±0.16	1.58(T)	0.12
		N (%)	N (%)			
Occupation	Housewife	30(31.3)	30(31.3)	60(62.5)	0(X2)	1
	Employed	18(18.8)	18(18.8)	36(37.5)		
Education	Uneducated	4(4.2)	2(2.1)	6(6.3)	(X2) 0.14	0.54
	Under the diploma	15(15.6)	14(14.7)	29(30.2)		
	Diploma	13(13.5)	19(19.8)	32(33.3)		
	Academic	16(16.7)	13(13.5)	29(30.2)		
Income	below 1 million	31(32.3)	32(33.3)	63(65.6)	0.05(X2)	0.83
	Above 1 million	17(17.7)	16(16.7)	33(34.4)		
Satisfaction with the relationship with the husband	Yes	44(45.8)	45(46.9)	89(92.7)	0.15(X2)	0.69
	No	4(4.2)	3(3.1)	7(7.3)		
husband Education	Uneducated	3(3.1)	1(1)	4(4.2)	2.88(X2)	0.41
	Under the diploma	19(19.8)	23(24)	42(43.8)		
	Diploma	13(13.5)	16(16.7)	29(30.2)		
	Academic	13(13.5)	8(8.3)	21(21.9)		
Abortion history	Yes	10(10.4)	7(7.3)	17(17.7)	0.64(X2)	0.42
	No	38(39.6)	41(42.7)	79(82.3)		

T= Independent t-test
X^2 = chi-square test

Table 3- Comparison of the mean scores of self-care and perceived stress between the control and intervention

Factors	Group	M	SD	Statistical index	P-value
Self-care	Intervention	45.89	3.16	20.94*	P<0.001
	Control	30.12	4.15		
Perceived stress	Intervention	11.79	4.51	30.002*	P<0.001
	control	38.71	4.63		

*= Independent t-test

Table 4- Comparison of the mean scores of self-care and perceived stress between control and intervention groups after intervention

Group	Factors	Self-care	Perceived stress
Intervention	Self-care	-	
	Perceived stress	r =-0.02 p = 0.89	-
Control	Self-care	-	
	Perceived stress	r=0.02 p=0.88	-

r=pearson correlation, p= p-value

The results showed that the intervention and control groups were homogeneous in terms of demographic and fertility characteristics (Table 2). The mean score of self-care in the intervention group was significantly higher than that of the control group (p <0.001) (Table 3). Also, the mean score of perceived stress in the intervention group was significantly lower than that of the control group (p <0.001). According to the Pearson correlation test, there was no significant correlation between self-care score and perceived stress in the intervention group (p = 0.89). Also the correlation between self-care score and perceived stress in the control group was not significant (p = 0.88) (Table 4).

IV. DISCUSSION

The results of the present study showed that in the intervention group the mean score of self-care was significantly higher and the mean perceived stress score was significantly lower than that of the control group (p <0.001). Rasouli et al. (2019) in a retrospective study of 70 studies between 1980 and 2016 found that self-care was very effective in preventing

and controlling preeclampsia. The examined self-care factors included lifestyle changes, healthy diet, stress management learning, physical activity, and dietary supplements (17) which are consistent with the present study in terms of the effects of self-care on controlling and reducing of stress as well as preeclampsia. Also in one study by Malakouti et al. (2015) it was reported that health promoting behaviors decrease with increasing of perceived stress which is in line with the present study (22). Lifestyle changes, especially nutritional interventions, can lead to a decrease in preeclampsia. Therefore, promoting a healthy lifestyle including weight control, consumption of vegetables and fruits, and folate supplements should be considered to reduce the risk of preeclampsia (1). A study by Torgerson et al. (2014) showed that women who often ate an organic vegetarian diet had a lower risk of preeclampsia than those who sometimes or rarely used this diet (23). Some studies suggested that increasing the consumption of vegetables and fruits, vegetable oils, supplements such as folate and iron and reducing the consumption of fast foods, high-fat foods and alcoholic beverages could be a way to prevent preeclampsia (23 and 17). Studies have suggested that increasing the consumption of vegetables and fruits, vegetable oils, supplements such as folate and iron, and reducing the consumption of fast foods, high-fat foods and alcoholic beverages could be a way to prevent preeclampsia (17, 23).

Another goal of self-care is to increase patients' knowledge of the nature of their illness. Patients' knowledge about the disease and how to control it is important and has an impact on disease control (24). The purpose of this study was to educate pregnant women with preeclampsia to reduce the complications of preeclampsia by increasing their knowledge and awareness as well as controlling stressful conditions.

Another result of the present study was the low mean score of perceived stress in the intervention group (11.79 ±4.1). A study by Oney et al. (2015) reported that women with perceived stress had an increase in gestational hypertension (OR = 1.16, CI = 1.05,1.30, P<0.01), gestational diabetes, induction of labor and cesarean section (25).

Self-care education in prenatal care in patients with gestational hypertension led to reduced stress and anxiety, improved patient compliance and improved health. Self-care knowledge of pregnancy hypertension is effective in controlling hypertension and constant awareness of self-care skills in pregnancy hypertension is one of the prenatal education requirements for those who refer to hospitals.

Yunxisan et al (2013) showed that psychosocial stress associated with chronic hypertension can increase the risk of preeclampsia (2). Grobman et al. (2018), in a cohort study of 9470 women with singleton gestations between 2010 and 2014 showed that stress during pregnancy in some races can increase gestational hypertension (26) which is consistent with the present study. Some studies also showed the adverse effects and consequences of stress during pregnancy such as preterm labor, low birth weight, fetal neurological disorders, behavioral and emotional disorders in childhood (27).

Shamsi et al. (2010), in a case-control study of 393 pregnant women in two Pakistani cities, reported that family history of hypertension, gestational diabetes and stress during pregnancy are risk factors for preeclampsia and therefore can be used as screening tools to predict preeclampsia (28). Women with pregnancies with complications were more susceptible to perceived stress (29). Therefore, attending self-care education sessions, in addition to raising awareness and improving patients' attitude, can make patients more sensitive to self-care and control the complications of the disease. Although studies have shown a positive effect of self-care on gestational hypertension, there is still no comprehensive method or guideline for preventing and controlling preeclampsia to be used by women and midwives. Inadequate self-care is an important challenge in patients with preeclampsia and can lead to adverse maternal and fetal outcomes.

In the present study, only 13.5% of the subjects in the intervention group had university education which is not consistent with Rezvani study. (30). In this regard, Rockwell states that more educated patients have better judgment and make better decisions for their self-care behaviors (31). Understanding the illness can affect one's mental health and ability to adapt to the disease. This perception of the disease in guiding adaptation practices and specific illness-related behaviors

such as adherence to treatment and self-care is of great importance (30). According to the results of this study, it can be said that self-care education promotes women's awareness and can improve their ability to control and manage stress.

One of the strengths of this study was face to face education which is one of the most effective educational methods. One of the limitations of this study is the lack of standard self-care questionnaire in pregnancy. Also, this study was performed on a limited number of women with preeclampsia and is not generalizable to the entire community. Similar studies are suggested to be performed in other treatment centers.

V. CONCLUSION

This study showed that the mean score of self-care in the intervention group was significantly increased. The mean score of perceived stress in the intervention group was significantly lower than that of the control group. Also, there was no significant correlation between factors of self-care and perceived stress in the intervention and control groups. It is recommended to perform a well-designed education program for pregnancy care in high-risk mothers.

VI. ACKNOWLEDGEMENT

Conflict of interest: Author not conflict of interest

REFERENCES

[1] Fox R, Kitt J, Leeson P, Aye CH, Lewandowski A. Preeclampsia: Risk Factors, Diagnosis, Management,and the cardiovascular Impact on the Offspring. J. Clin. Med. 2019; 8,1625; doi:10.3390/jcm8101625.(pubmed)

[2] Yu Y, Zhang SH, Mallow E,Wang G, Hong X,O. Walker SH,et al. The Combined Association of Psychosocial Stress and Chronic Hypertension with Preeclampsia.Am J Obstet Gynecol.2014 November ;209(5):doi:10.1016/j.ajog.2013.07.003.(pubmed)

[3] Khan KS, Wojdyla D,Say L, Gulmezoglu AM, Van Look PF.WHO analysis of causes of maternal death:a systematic review. Lancet.2006 Apr 1;367(9516):1066–1074.(PubMed: 16581405)

[4] Nehbandani S, Koochakzai M, Mirzaee F, Moghimi F. Prevalence of preeclampsia and its maternal and fetal complications in women referring to Amiralmomenin. Hospital of Zabol in 2014-2015.J Birjand Univ Med Sci.2018,24(4):306-312.(Google scholar)

[5] Rajaee M, Nikuei P, Nejatizadeh A, Rahimzadeh M. Prevalence of Preeclampsia in Hormozgan Province. Hormozgan Medical Journal,2014;18(6):460-465.(Googlescholar)

[6] Hinton L,T ucker K, Greenfield SH,Hodgkinson J,Mackillop L,McCourt C,et al.Blood pressure self-monitoring in pregnancy(BuMP)feasibility study; a qualitative analysis of women's experiences of self-monitoring.BMC Pregnancy and Childbirth(2017)17:427 DOI 10.1186/s12884-017-1592-1.(pubmed)

[7] Sarmasti N,Ayoubi SH,Mahmoudi G,Heydarpour S.Comparing Perceived Social Support and Perceived Stress in Healthy Pregnant Women and Pregnant Women with Preeclampsia.Ethiop J Health Sci.May2019,29(3):369-376.DOI:http://dx.doi.org/10.4314/ejhs.v29i3.9.(pubmed)

[8] Norhayati M,Hazlinn N Asrene A,Emilin W.Magnitude and risk factors for postpartum symptoms:A Literature review.J Affect Disord.2015Apr1;175:34-52.doi:10.1016/j.jad.2014(pub med)

[9] Cohen S,Kamarck T,Mermelstein R.A global measure of perceived stress.J Health Soc Behav.1983 Dec;24(4):385-96. DOI: 10.2307/2136404 (pubmed)

[10] Baker S,Chebli M, Rees S,LeMarec N,Godbout R,Bielajew C.Effects of gestational stress: Evaluation of maternal and juvenile offspring behavior.Brain Res.2008Jun 5;1213:98-110.doi: 10.1016/j.brainres.2008.03.035.Epub2008Apr1.(pubmed)

[11] Divney AA,Sipsma H,Gordon D,Niccolai L,Magriples U,Kershaw T.Depression during pregnancy among young couples:the effect of personal and partner experiences of stressors and the buffering effects of social relationships.J Pediatr Adolesc Gynecol. 2012 Jun; 25(3): 201–207.doi:10.1016/j.jpag.2012.02.003.(pubmed)

[12] Leeners B,Neumaier-Wagner P,Kuse S,Stiller R,Rath W.Emotional stress and the risk to develop hypertensive diseases in pregnancy.Hypertens Pregnancy. 2007;26(2):211-26.DOI:10.1080/10641950701274870.(pubmed)

[13] Qiu C,Williams MA,Calderon-Margalit R,Cripe SM,Sorensen TK.Preeclampsia risk in relation to maternal mood and anxiety disorders diagnosed before or during early pregnancy.Am J Hypertens.2009 Apr;22(4):397–402.[PubMed:19197246]

[14] World health organization.A Conceptual Frame work for Action on the Social Determinants of Health,Geneva,WHO;2010.

[15] Riegel B,Moser CH,Buck V,VaughanDickson V,Dunbar S,Lee CH,et al.Self-Care for the Prevention and Management of Cardiovascular Disease and Stroke.A Scientific Statement for Healthcare Professionals From the American Heart Association.J Am Heart Assoc.2017 Aug 31;6(9) doi:10.1161/JAHA.117.006997.(Pubmed)

[16] Gomora A,Mukona D,Zvinavashe M,Dhaka A.The relationship between prenatal self care and adverse birth outcomes in young women aged 16 to 24 years.Journal of Nursing and Health Science.2015;4(1):72-80.(Google scholar)

[17] Rasouli M,Pourheidari M,Hamzeh Gardesh Z.Effect of Self-care Before and During Pregnancy to Prevention and Control Preeclampsia in High-risk Women.Int J Prev Med. 2019; 10: 21.doi:10.4103/ijpvm.IJPVM_300_17.(Pubmed)

[18] Soya K,Kumari VP,Mumthas K.Self-care activities of pregnancy induced hypertension and maternal outcome.Nurs J India.2003Mar;94(3):58-60.PMID:15310185.(pubmed)

[19] Pswarayi I.The Relationship between Pregnancy Induced Hypertension(PIH)Self Care Knowledge and Hypertension Control among Pregnant Mothers Aged18 to49Years in Bindura District:University of Zimbabwe;2010.(Googlescholar)

[20] Rostami, F.Ramezani Badr,F.Amini, K.Pezeshki,A.Effect of a Self-Care Educational Program Based on Orem's Model on Stress in Patients Undergoing Hemodialysis.PCNM J.2015;5(1)(Googlescholar)

[21] Leung D,Lam T,Chan S.Three versions of Perceived Stress Scale:validation in a sample of Chinese cardiac patients who smoke.BMC Public Health.2010Aug25;10:513.doi:10.1186/1471-2458-10-513.(Pubmed)

[22] Malakouti J,Sehhati F,MirghafourvandM,Nahangi R.Relationship between Health Promoting Lifestyle and Perceived Stress in Pregnant Women with Preeclampsia.J Caring Sci.2015Jun 1;4(2):155-63.doi:10.15171/jcs.2015.016.(Pubmed)

[23] Torjusen H,Brantsæter A,Haugen M,Alexander J,Bakketeig L,LiebleinG,et al.Reduced risk of pre-eclampsia with organic vegetable consumption:results from the prospective Norwegian Mother and Child Cohort Study.BMJ Open.2014;4(9).doi:10.1136/bmjopen-2014-006143.(Pubmed)

[24] 24-Speer PW,Jackson CB,Peterson NA.The relationship between social cohesion and empowerment: support and new implications for theory.Health Educ Behav.2001 Dec;28(6):716-32.DOI:10.1177/109019810102800605(Pubmed)

[25] Oni O,Harville E,Xiong X,Buekens P.Relationship between Stress Coping Styles and Pregnancy Complications among Women Exposed to Hurricane Katrina.J Obstet Gynecol Neonatal Nurs.2015 March;44(2):256–267.doi:10.1111/1552-6909.12560.(Pubmed)

[26] Grobman W,Parker C,Willinger M,Wing D,Silver R,Wapner R,et al.Racial Disparities in Adverse Pregnancy Outcomes and Psychosocial Stress.Obstet Gynecol.2018 February ; 131(2):328–335.doi:10.1097/AOG.0000000000002441.(Pubmed)

[27] Schetter C,Tanner L.Anxiety,depression and stress in pregnancy:implications for mothers, children, research, and practice.Curr Opin Psychiatry.2012 March;25(2):141–148. doi:10.1097/YCO.0b013e3283503680.(pubmed)

[28] Shamsi U,Hatcher J,Shamsi A,Zuberi N,Qadri Z,Saleem S.Amultiicentre matched case control study of riskfactors for Preeclampsia in healthy women in Pakistan.BMC Womens Health.2010 Apr 30;10:14.doi:10.1186/1472-6874-10-14.(Pubmed)

[29] Roy-Matton N,Moutquin JM,Brown C,Carrier N, Bell L.The impact of perceived maternal stress and other psychosocial risk factors on pregnancy complications.J Obstet Gynaecol Can.2011Apr;33(4):344-52.DOI:10.1016/s1701-2163(16)34852-6(Pubmed)

[30] Rezvan S,Besharati M,Khodadadpoor M,Matlabi M,Fathi A,Salimi A,Self-Care Assessment of Patients with Hypertension in Qom City in 2016(Iran).Qom Univ Med Sci J 2018,12(4):72-80. DOI:10.29252/qums.12.4.72(Googlescholar)

[31] Rockwell JM,Riegel B.Predictor of self-care in persons with heart failure. Heart Lung 2001;30(1):18-25.DOI:10.1067/mhl.2001.112503(Pubmed)