

Assessment of Health Promoting Life Style and Perceived Stress among Pre-eclamptic Women

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1.ABSTRACT

Background: Stress during pregnancy is one of risk factors of preeclampsia but following health promoting life style may reduce stress in pregnant women. **Aim:** To assess health promoting life style and perceived stress among pre-eclamptic women. **Design:** A descriptive cross sectional research design was used. **Setting:** The study was conducted at Outpatient Antenatal Clinic at new Obstetrics and Gynecology Hospital **Study Sample:** A purposive sample of 212 pregnant woman with mild preeclampsia was utilized. **Tools:** A Structured Interview Questionnaire, Health Promoting Lifestyle-II and Perceived Stress Scale. **Results:** The present study revealed that there was negative highly significant statistical correlation between perceived stress scale and both of nutrition, health responsibility and stress management domains. There was significant correlation between perceived stress scale and both of physical activity and spiritual growth domains. The results also highlighted that there was strong negative highly significant correlation between stress & health promoting lifestyle. **Conclusion:** Assessment of relationship between health promoting life style and perceived stress revealed that following healthy life style during pregnancy is very effective for reducing stress in mild pre-eclamptic women. **Recommendation:** Utilizing health educational sessions about important of follow health promoting life style for preeclamptic mothers.

Keywords: *life style, health promotion, Preeclampsia, stress*

2.Introduction

Pregnancy is a happy memorable and marvelous phase in the women's life which is very important for the continuation of human existence in the world, every mother desires her pregnancy with zero complications and without any challenges. The quality of Human Resource of any country is largely determined by the quality and care of its child development and women's health. The intimate relationship between the physiological and psychological wellbeing of a mother and her child has always been emphasized and remarkable (Kumari, 2020).

Gestational stress increases the risk of pregnancy miscarriages and predisposes the mother to perinatal infections, premature labor, hemorrhages and preeclampsia, children are also presumed to be negatively affected by prenatal stress since it predisposes them to develop mood disorders, attention deficit disorder, perinatal infections, and obesity at early ages and cancer and/ or degenerative disorders in adulthood (e.g., cardiovascular disease, cancer, diabetes, obesity, and behavioral, cognitive, and mood disorders)

(Gonzalez-Ochoa, Sanchez-Rodriguez, havarria, Gutierrez-Ospina & Romo-Gonzalez, 2018).

Preeclampsia is a hypertensive syndrome affecting 2% to 3% of pregnancies and characterized by endothelial damage in multiple organs. The current gold standard for preeclampsia diagnosis relies on observation of new-onset hypertension and proteinuria during the second half of pregnancy and has poor predictive ability for preeclampsia-related adverse outcomes (Stepan, Hund & Andrzejek, 2020).

Also, preeclampsia currently remains one of the leading causes of death and severe maternal morbidity. Although its prevalence is still underestimated in some places due to underreporting, preeclampsia is a disease that health professionals need to know how to deal with and take action, the complexity of its etiology is a challenge and requires further studies for its full understanding (Mayrink, Costa & Cecatti, 2018).

Pregnancy changes women's lifestyle and they should at least begin to lead a healthy lifestyle and perform health promoting behaviors during this

critical period in order to avoid problems that could harm themselves or the embryo, health-promoting behaviors during pregnancy reduce the likelihood of preterm delivery, the need for cesarean section and the risk of obesity and diabetes (Bahabadi, Estebarsari, Rohani, Kandi, Sefidkar & Mostafaei, 2020). Since providing maternal and newborn health services is one of the priorities of health systems, various strategies have been considered by healthcare providers to ensure the health of pregnant women, which involves health-promoting behaviors and a healthy lifestyle (Silva et al., 2019).

Given women's role in maintaining their family's health, health promoting behaviors are important for all members of the society, especially women. According to the literature, a health-promoting lifestyle is a multi-dimensional pattern of self-initiated feelings and behaviors aiming at ensuring individual's health, self-actualization, and self-accomplishment (Darkhor, Estebarsari, Hosseini, Charati & Vasli, 2018). These behaviors include any measures taken to maintain and enhance the health of an individual or a group. Health-promoting behaviors should be further emphasized because the promotion of health in society is a dynamic process of empowering individuals to control their health based on first-grade preventive interventions and is focused on positive lifestyle changes (Rahimian, Mohammadi, Mehry, Rakhshani, 2018).

Healthy life style during pregnancy can prevent many complications during pregnancy (obesity risk, premature birth risk, maternal infection, low birth weight or early neonatal death, etc.). It is possible for pregnant women to protect themselves and their babies from numerous risks before, during and after delivery with healthy lifestyle behaviors. Therefore, determining pregnant women's level of healthy lifestyle behaviors and the factors affecting them are considered to be important. (Kerkez, & Kaplan, 2023).

2.1 Significance of the study

Preeclampsia complications which occurs in approximately 2 to 4% of pregnancies globally is progressive, unpredictable, and serious. It is associated with approximately 46,000 maternal deaths and approximately 500,000 fetal and newborn deaths annually, the disease burden is borne disproportionately by women in low- and middle-income countries or who are otherwise disadvantaged. Much of the literature focuses on preterm preeclampsia, which accounts for up to one third of cases and is associated with a much higher

risk of maternal and fetal or newborn complications than preeclampsia at term. However, a much larger number of women have term disease, which makes a substantial contribution to preeclampsia-related morbidity and mortality (Magee, Nicolaides, & Von Dadelszen., 2022)

Maternal mortality in Egypt is still relatively high, a 2005 study of global maternal mortality by the world health organization, in collaboration with UNICEF and the World Bank revised the official national maternal mortality rates. The report put maternal mortality in Egypt at 130/100,000 live birth, compared to a rate of 84/100,000 as announced by the Egyptian ministry of health. Many of these deaths can be prevented, if women had timely access to high-quality obstetric care (Amin, Ibrahim, & Ali, 2021).

Also stress during pregnancy negatively affects both the pregnant woman and the unborn child. Pregnant women, who report subjective stress, who are exposed to objective stressors or who have higher cortisol values, more often deliver preterm infants and children with a lower birth weight. Children of pregnant women with a high stress level also more often show emotional disorders and cognitive impairments (Lenz et al., 2018). Therefore, this study was done performed.

2.2 Aim of the study

The present study aimed to assess health promoting life style and perceived stress among pre-eclamptic women.

2.3 Research Questions

- 1- What is the health promoting life style of mild pre-eclamptic women?
- 2- What is the perceived stress among mild pre-eclamptic women?
- 3- What is the relationship between health promoting life style and stress among pre-eclamptic women?

3. Subjects and Method

3.1 Study design

A descriptive cross sectional study design was utilized in this study

3.2 Study setting

This study was carried out in outpatient Antenatal clinic in new Obstetrics and Gynecology Hospital. It's located at the first floor and consists of waiting hall with approximately 30 chairs, laboratory and 3 rooms. One of them for 4D ultrasound and the other two rooms for the routine examination of the pregnant women (consist of coach, 3 chairs, weight scale, sphygmomanometer

and Doppler ultrasound). The antenatal clinic is opening daily from Saturday to Wednesday from 9 am to 1 pm. The day off for the antenatal clinic is Thursday. It is affiliated to Mansoura University Hospital and Ministry of Higher Education. The unit provides antenatal, postnatal follow up services and gynecological services. The flow rate of mild pre-eclamptic women was about 3-5 women per week.

3.3 Study Subjects

The study sample included 212 pregnant women who attended predetermined setting according to the following criteria:

Inclusion Criteria: Age of 18-35 years, pregnant women with mild preeclampsia, Gestational age \geq 20 weeks, pregnant women with alive fetus and not in labor.

Exclusion criteria: Occurrence of stressful events in the past 2 months or any high risk conditions during pregnancy

3.4 Sample size:

Calculating sample size for assessment of health promoting life style and perceived stress in pregnant women with preeclampsia, through Clin Calc.com sample size calculator software, at 5% α error (95.0% significance) and 20.0 β error (80.0% power of the study), assuming the average perceived stress (27.3 ± 7.1) (Malakouti et al., 2015) and it increased by 5.0% in women in our area. The calculated sample size is 212 pregnant women.

3.5 Tools of data collection:

Three tools were utilized for data collection: **The first tool** was a Structured Interview Schedule. It designed by the researcher based on reviewing the related literatures. It entails two parts as follows; **part I:** Demographic data: It was designed to assess the general characteristics of the pregnant women (as, age, educational level, occupation, residence and family income); **Part II:** Obstetric history (as, gravidity, parity, number of living children and number of unwanted pregnancy).

The second tool: Health Promoting Lifestyle profile-II (HPLP II): This tool was adopted from (Walker et al., 1985). It is provide a multi-dimensional assessment of health promoting behaviors in six dimensions (52 items), nutrition (9 items) for example, (choose diet low in fat, saturate fat, and cholesterol.), physical activity (8 items) for example (follow a planned exercise program.), spiritual growth (9 items) for example (feel I am growing and changing in positive ways), health responsibility (9 items) for example (read or watch

TV programs about improving health), stress management (8 items) for example (take some time for relaxation each day), and interpersonal relationships (9 items) for example (discuss my problems and concerns with people close to me).

Scoring system

The tool consists of 52 items. All items are based on the Likert scale of 1 to 4 (1 = never, 2 = sometimes, 3 = often, 4 = always). Scores are ranged between 52-208 sets. The breakpoint of the scale is the average score obtained from the study group. When calculating the scores from the sample; the values below the average scores (107.430) refers to a negative health promoting life style, the values above average scores refers to a positive health promoting life style. (Ozturk and Ayaz-Alkaya, 2020)

The third tool: Perceived Stress Scale (PSS): This tool was adopted from (Cohen et al., in 1983). It was used to measure perceived stress in past one month. It consists of 14 questions. Each question has 5 options that half of them are direct (0, 1, 2, 3, 4), and the other half are reverse (4, 3, 2, 1, 0). Scoring system based on the Likert scale (0 = never, 1 = low, 2 = moderate, 3 = much, 4 = very much) scoring. Scores are ranged between 0-56 sets. It should be noted that 7 questions as positive concepts (4, 5, 6, 7, 9, 10, 13) are reverse (4 = never, 3 = little, 2 = moderate, much = 1, too much = 0). When calculating the scores from the sample; mean score (30.622) was calculated, high mean refer to high stress and low mean refer to low stress.

3.6 Validity of the study tools:

The tools were reviewed by 3 juries of experts in woman's health and midwifery nursing field (Dr. Eman A. Fadel, Dr. Ahlam Goda and Dr. Amal Youssef) assistant professors of Woman's Health and Midwifery Nursing to test the validity of the content. And the recommended modifications had done accordingly. Such as questions regarding obstetric history of the studied sample, some questions removed and other added to make evaluation more specific.

3.7 Reliability of the study tools:

The tools of data collection tested for its reliability by using statistical package for Social Science (SPSS) version 20. The cronbach's alpha test used to check the internal consistency of the tools and it was (0.91) for health promotion profile, and it was (0.89) for perceived stress scale which refers to be highly reliable.

3.8 Pilot study

A pilot study was carried on 10% of the study sample (20 pregnant women) to evaluate the clarity and applicability of the tools. The results of the pilot study didn't include in the sample size and according to analysis of pilot study results, necessary modifications done such as paraphrasing of some sentences.

3.9 Ethical Considerations

Ethical approval obtained from the Research Ethics Committee of the Faculty of Nursing, Mansoura University. Before data collection, consent was obtained from all participants after explaining the nature and purpose of the study. Participation in the study was voluntary and all participant informed about their rights to refuse participation and withdrawal from the study at any time. They were reassured about the privacy and confidentiality of the obtained information. The study maneuvers could not entail any harm to participants. All the participating women were informed that the results will be used as a component of the necessary research for the master study as well as for publication and education

3.10 Field work

An official permission to carry out the study was obtained from the Dean of Faculty of Nursing and director of Outpatient Antenatal Clinic in the Obstetrics and Gynecology Hospital.

The researcher attended predetermined setting three days per week. At the first interview: The researcher introduced herself to all selected women and obtained their consent to participate in the study after explanation of the aim. The researcher used structured interview questionnaire (the first tool) to assess demographic data and obstetric history. Then the researcher assessed the health promoting life style by using questionnaire provides a multi-dimensional assessment of health promoting behaviors then the researcher assessed stress by using perceived stress scale. The researcher attending previous determined setting until the sample was completed.

3.11 Statistical Analysis

Collected data coded, computed and all statistical tests were conducted using SPSS for windows version 20 (SPSS, Chicago, IL). Continuous data were normally distributed and were expressed in mean \pm standard deviation (SD). Categorical data were expressed in frequency and percentage. Chi-square test was used for comparison of variables with categorical data. Statistical significance was set at $p < 0.05$, while highly significance was set at $p < 0.001$.

3.12 Limitation of the study

The main limitation of this study was less number of patient visiting Outpatient Antenatal Clinic in the new Obstetric and Gynecological Hospital during the period of collecting data for the study because of corona pandemic.

4. Results

Table (1) shows that mean age of the studied sample was 28.9 years old, 58.5% of them had university education and more, 60.8 % of the studied sample was working, 67% of the studied sample had inadequate income.

Table(2): Shows that more than half of the studied sample had negative health promoting life style regarding nutrition, health responsibility, stress management, spiritual growth, and physical activity (53.3%, 52.8%, 52.4%, 54.2%, and 62.3% respectively), while 54.7% has positive health promotion life style regarding interpersonal relationship.

Table (3): Shows that 40.1% of the studied sample reported that they were fairly often have been upset because of something that happened unexpectedly, unable to control the important things in their life 44%, feel stressed and nervous 41.5 %. 49.1 % of the sample sometimes effectively copes with important changes that occurs in their life, and feels confident about the ability to handle personal problems (50.9 %). 58 % sometimes were angry because of things that happened outside of control. (32.1 %) sometimes feels difficulties during piling up so high that could not overcome them.

Table (4): Shows that Mean \pm SD concerning nutrition was (23.844 \pm 5.166), physical activity was (3.486 \pm 3.486), health responsibility was (20.844 \pm 4.347), stress management was (17.150 \pm 3.542), interpersonal relationship was (22.066 \pm 4.486), and spiritual growth was (20.141 \pm 3.899).

Table (5) shows that there was negative mild significant statistical correlation between perceived Stress Scale and both of nutrition, health responsibility, and stress management domains, while there was mild positive significant correlation between perceived Stress and, interpersonal relationship. Finally there was no significant correlation between perceived Stress and both of physical activity & spiritual growth domains.

Figure (1): shows the that there was strong negative highly significant correlation between stress and health promoting life style

Assessment of Health Promoting Life Style and . . .

Table (2): Distribution of studied sample according to their health promoting life style profile domains (N= 212)

Domains	Positive		Negative	
	No	%	No	%
Nutrition	99	46.7	113	53.3
Physical activity	80	37.7	132	62.3
Health responsibility	100	47.2	112	52.8
Stress management	101	47.6	111	52.4
Interpersonal relationship	116	54.7	96	45.3
Spiritual growth	97	45.8	115	54.2

Table (1): Distribution of studied sample according to their demographic data N=212)

Items	NO	%
Age per (year)		
18-23	27	12.7
24-29	95	44.8
30-35	90	42.5
Mean ± SD	28.9 ± 6.359	
Residence		
Urban	75	35.4
Rural	137	64.6
Educational level		
ic education	3	1.4
ondary education	29	13.7
ldle institute	56	26.4
iversity and more	124	58.5
Occupation		
rker	129	60.8
sewife	83	39.2
Monthly income		
dequate	142	67.0
equate	53	25.0
equate and save	17	8.0

Table (3): Distribution of studied sample according to their perceived stress scale (N= 212)

In the last month, how often have you.....	Never		Almost Never		Some times		Fairly Often		Very Often	
	NO	%	NO	%	NO	%	NO	%	NO	%
- Upset because of something that happened unexpectedly?	1	0.5	13	6.1	86	40.6	85	40.1	27	12.7
- Felt that you were unable to control the important things in your life?	1	0.5	14	6.6	87	41	82	38.7	28	13.2
- Felt nervous and “stressed”?	0	0	5	2.4	89	42	88	41.5	30	14.2
- Dealt successfully with irritating life hassles?	7	3.3	42	19.8	112	52.8	36	17	15	7.1
- Felt that you were effectively coping with important changes that were occurring in your life?	6	2.8	43	20.3	104	49.1	43	20.3	16	7.5
- Felt confident about your ability to handle your personal problems?	5	2.4	45	21.2	108	50.9	39	18.4	15	7.1
- Felt that things were going your way?	5	2.4	39	18.4	119	56.1	38	17.9	11	5.2
- Found that you could not cope with all the things that you had to do?	6	2.8	40	18.9	102	48.1	52	24.5	12	5.7
- Able to control irritations in your life?	6	2.8	38	17.9	119	56.1	41	19.3	8	3.8
- Felt that you were on top of things?	5	2.4	35	16.5	145	68.4	23	10.8	4	1.9

- Angered because of things that happened that was outside of your control?	0	0	16	7.5	123	58	67	31.6	6	2.8
- Found yourself thinking about things that you have to accomplish?	5	2.4	12	5.7	149	70.3	40	18.9	6	2.8
-Able to control the way you spend your time?	5	2.4	33	15.6	123	58	44	20.8	7	3.3
- Felt difficulties were piling up so high that you could not overcome them?	12	5.7	64	30.2	68	32.1	61	28.8	7	3.3

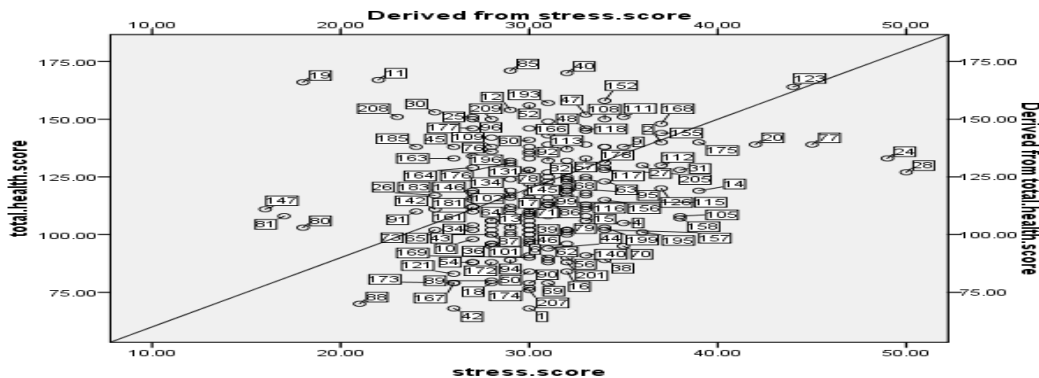
Table (4): Means and standard deviation of the health promoting life style profile among studied sample

Domain	Mean ± SD
Nutrition	23.844 ± 5.166
Physical activity	3.486 ± 3.486
Health responsibility	20.844 ± 4.347
Stress management	17.150 ± 3.542
Interpersonal relationship	22.066 ± 4.486
Spiritual growth	20.141 ± 3.899

Table (5): The relationship between stress and health promotion life style domains

Variables	r	p
Perceived Stress Scale & nutrition	- 0.276	0.010*
Perceived Stress Scale & physical activity	- 0.093	0.176
Perceived Stress Scale & health responsibility	- 0.253	0.038*
Perceived Stress Scale & stress management	- 0.489	0.003*
Perceived Stress Scale & interpersonal relationship	0.398	0.004*
Perceived Stress Scale & spiritual growth	- 0.125	0.070

Figure (1): Correlation between stress and health promoting life style



5. Discussion

The current study aimed to assess health-promoting lifestyle (HPLS) and perceived stress among pre-eclamptic women. This aim was achieved through the present study findings which revealed a strong negative highly significant correlation between stress. Negative mild significant correlations between the perceived stress scale and both nutrition, health responsibility, and stress management domains were found, while there was a mild positive significant correlation between the perceived stress scale and the interpersonal relationship. Finally, there were no significant correlations between the perceived stress scale and both the physical activity and the spiritual growth domains.

Regarding health promoting life style, study finding revealed that stress and altered life style are common among mild pre-eclamptic women, but little research exists to assess the relationship between them in preeclamptic women. Among the multiple dimensions of the HPLS, the highest score for women was in the nutrition dimension followed by the interpersonal relationship domain, but the lowest scores were for the stress management, and physical activity dimensions. This can be explained as in the Egyptian culture the family gives support to the pregnant women, enhancing their care about their nutrition and limiting their practicing heavy duties or sports to take care of their pregnancy.

This was congruent with An Egyptian study onducted by Ibrahim, Hassanen, and Hassan,

(2020), about effect of cognitive behavioral therapy on anxiety, stress, depression, and coping pattern among pregnant women with preeclampsia, as they found that the highest mean scores are in interpersonal relations, self-actualization, and nutrition and related that to the culture and beliefs of Egyptians in giving support to each other during luxury and difficult times. While, the lowest mean scores were in physical activity, and stress management. In the same context, in Iran **Hamzehgardeshi, Keshvar, and Kardan Soraky, (2018)**, about Health-promoting lifestyles and related factors in pregnant women). They found that interpersonal relations scored maximal, and physical activity scored the lowest. They related that to the education of the husband and the wife, the family income, and the decision-maker.

The present study results were congruent with another study in Iran by **Fathnezhad-Kazemi, Aslani, and Hajian (2021)** about health-promoting lifestyles and related factors in pregnant women which revealed that the highest scores detected were in nutrition and spiritual growth. Meanwhile, the lowest scores were detected in sub-domains of stress management and physical activity. They reported that the high-scoring samples were the women in their second semester of pregnancy; according to the existing research, at this gestational age, women are in more stable conditions than in the first and third semester.

Moreover, the present study findings were in agreement with **Yilmaz, Demir, and Esenturk, (2016)**, about health-Promoting Lifestyle Behaviors of Employees in Public as they declared that their participants' lowest score was in physical activity, but the highest point was in interpersonal relationships. Also, **Mirghafourvand, Charandabi, Lak, and Aliasghari (2017)** studied the "relationship between HPLS and quality of life in women with polycystic ovarian syndrome" and found that women's highest score was in nutrition, but the lowest mean was in stress management.

On the other hand, the findings of the study by **Fatahi Ardakani et al. (2019)** about Factors influencing the adoption of health promoting behaviors in overweight pregnant women showed that the highest scores were in the domains of health responsibility, and self-actualization, while the lowest scores were in stress management and physical activity.

The present study showed that slightly more than half of the sample had negative health promotion specifically, regarding nutrition, health responsibility, stress management, spiritual growth, and physical activity. While slightly more than half

of them had a positive HPLS regarding the interpersonal relationship. This may be due to mental and physical changes during the pregnancy that may affect a woman's lifestyle and behaviors. Also, these women's educational levels, monthly income, life satisfaction, and gestational age may have contributing factors.

In accordance with these findings, **Hamzehgardeshi et al. (2018)** about health-promoting lifestyles and related factors in pregnant women demonstrated that pregnant Iranian women had moderate health promotion. Also, **Fathnezhad-Kazemi, and Hajian (2019)** showed that their participants had a moderate HPLS, and they interpreted that the pregnant women tend to change to positive behaviors because of their health concerns for their infants. So, they concluded that pregnancy can be a good time for adopting health measures, should be used well, and also moderating social factors and taking into account individual needs and personal expectations should be considered in the planning and design of interventions. Furthermore, in Turkey, the results of the study conducted by **Gokyildiz, Alan, Elmas, Bostanci, and Kucuk, (2014)** about Health - promoting lifestyle behaviours in pregnant women in Turkey showed that total HPLP II scores were moderate with the highest score obtained on the spiritual growth dimension, but the lowest on the physical activity dimension.

This was incongruent with **Mahmoodi et al., (2022)** about Health promoting behaviors in pregnant women admitted to the prenatal care unit of Imam Khomeini hospital of Saqqez in Iran demonstrated that the mean overall score of health promotion was desirable. These differences could have resulted from different factors, including social and cultural factors, especially demographic and individual differences in the study samples. For instance, the high-scoring samples were the women in their second semester of pregnancy; according to the existing research, at this gestational age, women are in more stable conditions than in the first and third semesters.

In the present study, the researcher used the Perceived Stress Scale (PSS) to measure the degree to which situations in the preeclamptic women's life were appraised as stressful. The results revealed that the studied women had a high perceived level of stress. This may be explained as the pregnancy itself imposes stressful loads on them. Similar to the findings, an Ethiopia study by **Sarmasti, Ayoubi, Mahmoudi, and Heydarpour, (2019)** about Comparing social support and perceived stress in healthy pregnant women and

pregnant women with preeclampsia, compared the PSS in healthy pregnant women and pregnant women with preeclampsia and found that women with preeclampsia experienced a higher level of stress compared with women without preeclampsia.

Additionally, in the USA, **McLeod et al., (2022)** about demographic factors affecting perceived stress during pregnancy and the association with immune-mediator concentrations, depicted that women with high-risk pregnancies were more likely to have increased PSS, and provided evidence that increased perceived stress is associated with physiological changes.

Close to present study findings, in Egypt, **Hassan, Gouda, El-Monshed, and Kandeel, (2020)** about Effect of cognitive behavioral therapy on anxiety, stress, depression, and coping pattern among pregnant women with preeclampsia, found that their participants perceived higher stress levels in the pre-intervention phase, and they stated that pregnancy imposes additional physical and psychological stress on the woman's body, and preeclampsia is one of the most serious complications during pregnancy that can lead to psychological problems such as stress, depression, and anxiety.

Accordingly, both the HPLS and the perceived stress in pre-eclamptic women have attracted wide attention in the research, which found that there is a strong negative highly significant correlation between stress and HPLS.

6. Conclusion

More than half of the studied pregnant women had negative health promoting life style regarding nutrition, health responsibility, stress management, spiritual growth, and physical activity. While slightly more than half of the sample has positive health promotion life style regarding interpersonal relationship also the studied sample women had high perceived level of stress. There was negative mild significant statistical correlation between perceived stress scale and both of nutrition, health responsibility and stress management domains, while there was mild positive significant statistical correlation between perceived stress scale and interpersonal relationship.

7. Recommendation

- Using poster to increase awareness of pregnant women about elements of health diet.
- Utilizing health educational sessions about importance of exercises as walking, bicycling and dancing during pregnancy.

- Increase awareness of mild pre-eclamptic women about importance of attending educational programs on personal health care.
- Increase awareness of mild pre-eclamptic women to get enough sleep, more relaxation and use specific methods to control stress.
- Advice mild pre-eclamptic women to spend time with friends.

Further research

- to investigate the effect of following the health promoting life style on women health and stress.
- to investigate the barrier against women's compliance with health promoting life style.

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