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The association between social support and psychological factors with health-promoting behaviours in pregnant women: A cross-sectional study

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Abstract:

INTRODUCTION: Health promotion is one of the most important aspects in pregnancy, and health-promoting behaviors are one of the major determinants of health under the influence of various factors. This study aimed to determine the association between social support and psychological factors with health-promoting behaviors in pregnant women.

MATERIALS AND METHODS: This cross-sectional was performed on 375 pregnant women when they had 24–28 weeks in Ilam, October 2018 to May 2019. Two-stage cluster sampling was performed after checking the inclusion criteria. Data collection tools consisted of four questionnaires that were completed in self-report form. The collected data were analyzed by the descriptive and inferential tests with the SPSS software version 19.

RESULTS: The mean score of health-promoting behaviors was 139.87 (21.26) and self-healing and physical activity had the highest and the lowest mean 27.67 (4.84) and 16.29 (4.84), respectively. Linear regression analysis showed a significant difference between different level of stress, anxiety, depression, and social support with health-promoting behaviors ($P < 0.001$). The results showed that one-point increase in the score of stress, anxiety, and depression led to the 2.2%, 6.1%, and 24.1% reduction of health-promoting behaviors, respectively, and one-point score increase in social support resulted in 40% increase in health-promoting behaviors ($P < 0.001$).

CONCLUSION: A negative association was found between psychological factors and a positive relationship with health-promoting behaviors. Although perceived moderate health promotion behaviors and perceived social support were moderate, they did not have a good status in terms of psychological factors. Given awareness of the issues under study in each region is essential and planning to improve stress, anxiety, and depression, as well as promoting and correcting inappropriate behaviors through planned interventions are required.

Keywords:

Anxiety, depression, health promotion, pregnancy, social support, stress

Introduction

Health promotion is one of the most important aspects of every person's life,^[1,2] and health promotion behaviors are one of the major determinants of health that

have been identified as the underlying cause of many diseases.^[3] Health is directly related to these behaviors.^[4] These behaviors include taking actions to maintain or enhance the level of health and self-actualization of individuals which are considered a health

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protection strategy and an international goal.^[5] These behaviors were classified in 1996 by Pender into six dimensions of individual nutrition, physical activity, stress management, interpersonal relationships, mental health, and health responsibility.^[6] During pregnancy, women are highly motivated to perform health-promoting behaviors to improve their and fetuses' health.^[7] This period is one of the most valuable, sensitive, and critical periods in any woman's life,^[8] because accompanied by major physical, psychological, and social changes in women.^[7-9] Some lifestyle factors, including poor nutrition, physical inactivity, socioeconomic factors, and undesirable perceived social support, have important effects on maternal and fetal health.^[10,11] Various factors affect to change successful of the behaviors and choose a healthy lifestyle.^[2] Studies on women of child-bearing age have shown that social support, age, marriage, and education are the factors associated with health-promoting behaviors.^[12] that The adoption of health behaviors and healthy lifestyle is under the mutual influence of individual characteristics and socioenvironmental factors.^[2] One of the most important factors contributing to healthy behaviors is social support. Social support is the interaction between the individual and environment, and it is effective in enabling coping with health problems and protects individuals from the harmful effects of stressful conditions.^[5] Despite there is not sufficient evidence supporting the effect of social support on reducing the adverse outcomes of pregnancy.^[12-14] Another factors that can effect on health behaviors are psychological factors because psychological problems cause disability in all age groups in the population, so that perceived stress and depression are associated with increased mortality and morbidity in the population.^[13] Pregnancy is associated with social, psychological, and physiological changes that have a negative impact on psychological health and stress experience during this period.^[14] Various studies have shown the association between psychosocial factors and lifestyle and their effects on pregnancy outcomes.^[15,16] How do the psychological problems events effect on health seriously have yet to be questioned? Coping with psychological factors influence the physical and social performance.^[2] In a study by Stark *et al.*, on pregnant women in US, significant association has been found between perceived stress and negative spiritual growth, interpersonal relationships, and stress management.^[16] In a review of mental health status, 25.9% of women had a mental disorder and women reported poorer health-related quality of life than men. Investigating the factors associated with health-promoting behaviors in pregnant women, especially psychosocial factors, has a potential impact on advancing their health dimensions and will also reduce health-care costs.^[17,18] According qualitative study of Fathnezhad-Kazemi and Hajian, what should

be considered in planning and designing interventions is focused on removing barriers and strengthening facilitators, in particular by moderating social factors and taking into account individual needs and personal expectations^[19] Due to the different prevalence of psychological factors in different communities and population groups and the lack of similar studies that have evaluated the relationship between psychological factors and social support with health-promoting behaviors in pregnant women. Review of the literature show that, association between health promotion lifestyle and the psychological factors such as depression and anxiety in Iran has not been studied. Since the health-promoting behaviors has attracted wide attention in the research as a key factor in health improvement and here is limited research evidence in this area for pregnant women with disease. The purpose of this study was to determine the association between social support and psychological factors with health-promoting behaviors in pregnant women.

Materials and Methods

The cross-sectional descriptive-analytical study was carried out in Ilam city between October 2018 and May 2019. The statistical population included all pregnant women referring to health centers. The inclusion criteria were: pregnant women aged 15–45 years with 24–28 gestational weeks; ability to read and write; no restrictions on physical activity; without high risk pregnancy and no experience of stressful events such as divorce, family disputes or the death of loved ones in the past 6 months. The exclusion criteria were lack of willingness to participate in the study and incomplete questionnaires. After obtaining permission from the research assistant of Ilam University of Medical Sciences and the authorities of health centers, sampling was performed using the cluster random sampling. Ilam city in southwest of Iran has 97,736 women in reproductive age. Ilam city was divided into five geographic regions (Central, North, South, East, and West) which each zone was considered as a cluster that consisted of four health centers. We selected two urban health centers per cluster by using randomizer software (www.random.org), (A total of 10 were selected), and then family health records were reviewed and pregnant women were identified who had 24–28 gestational weeks and were selected randomly by using randomizer software. Initially, they were called and invited to participate in the study. In case of noncooperation, another person would be replaced. In order to collect and complete the questionnaires, the researcher with the prior coordination by telephone with the participants in the present health centers and after controlling for other inclusion criteria and explaining the purpose of the research, informed consent was obtained from the samples and assured that their information will

be kept confidential and can be excluded at any time. The study data were collected using a questionnaire that was completed by self-report questionnaires. If the research samples did not understand the questionnaire's questions, the questions were explained by the researcher or the trained researcher. The questionnaires took an average of 30 min to complete. Sample size was calculated according to the following formula:

$$n = \frac{Z^2 P(1-P)}{d^2} \quad (n = 380, P = 14.8\%; d^2 = 0.0013).$$

The number of 380 of total of patients was calculated that the data for 375 persons were completed and 5 of them with incomplete information were excluded. In addition, after explaining the research objectives for the participants, informed written consent was received for participation in the project.

Data collection tools consist of four parts: (1) Demographic and midwifery questionnaire: demographic and midwifery questionnaire designed by the research team, including questions about pregnant woman's age, spouse's age, education of spouse and wife, occupation of spouse and wife, ethnicity, number of pregnancies, gap between pregnancies, supplement consumption and iron intake during pregnancy, multivitamin intake during pregnancy. (2) Health Promotion Lifestyle Questionnaire: This questionnaire was first designed by Walker *et al.* And consists of 52 questions that cover 6 dimensions of self-efficacy, responsibility for health, interpersonal relationships, stress management, exercise and physical activity, nutrition. Measures with 8 or 9 questions. Each question has 4 Likert-scale answer options, never, sometimes, more often, and always. The minimum score on this questionnaire is 52 and a maximum of 208, with high scores indicating better health-promoting behaviors. The validity and reliability of this questionnaire in Iran were evaluated by Mohammadi Zeidi *et al.* Cronbach's alpha for flourishing 64, health responsibility 86, interpersonal relationships 75, stress management 91, exercise 79, nutrition 81%, and for the total questionnaire was 82.^[20,21] (3) Standard stress, anxiety, and depression questionnaire (DASS-21): This is a 21-item questionnaire first presented by Love bound in 1995 that uses seven questions to measure each of the symptoms of stress, anxiety, and depression. This questionnaire was designed as a Likert questionnaire. The lowest score for each question was a score of zero and the highest the score of 3. In each section related to anxiety, depression, and stress, a score of 1–7 indicated a mild level, a score of 8–14 indicated a moderate level, and a score of 15–21 indicated a severe level of anxiety, depression, and stress. This questionnaire has been used in various surveys at home and abroad and its validity and reliability have been confirmed.^[22] (4) Multidimensional Perceived Social Support Scale Questionnaire: Perceived Multidimensional Social Support Scale by Bagherian-Sararoudi *et al.* was

prepared in 1998 to assess perceived social support from three sources of family, friends, and important people in life, with a minimum score of 12 and a maximum score of 84. A score of 12.48 showed low social support and a score of 49–68 showed a moderate level of social support and a score of 69–84 showed a high level of social support; its validity and reliability in Iran through content analysis and Cronbach's alpha coefficient ranged from 86 to 90 It was calculated for the subscales and 86% for the whole instrument.^[23]

Reliability of the questionnaire was determined by using test-retest method after conducting a pilot study on 20 pregnant women. Internal consistency (Cronbach's alpha coefficient) was determined for DASS-21 standard questionnaire, it was 0.89, 0.92, and 0.88 for the domain of depression, anxiety, stress, respectively, and Cronbach's alpha coefficient was 0.88, 0.86 for health promotion lifestyle questionnaire, multidimensional perceived social support scale, respectively.

SPSS software version 19 (Statistical Package for the Social Sciences, version 19.0, SPSS Inc, Chicago, Illinois, USA) was used for the data analysis. Descriptive statistics were used to determine the frequency, percentage, mean and standard deviation (SD), and Pearson test was used to investigate the association between health-promoting behaviors and perceived social support. Then, independent variables, with $P < 0.05$ on bivariate tests inserted into the multivariate linear regression model.

Results

The data for 375 persons were completed and 5 of them with incomplete information were excluded.

Nearly two-thirds of the 224 (59.7%) of the pregnant women were in the group age of 26–34 years, and the mean (SD) was 28.29 (5.24). More than half of the participants had 205 (54.7%) first pregnancies and 63 (16.8%) had more than three or more pregnancies. The majority of participants (89.3%) were Kurdish [Table 1].

The mean (SD) total score of health-promoting behaviors in the studied samples was 139.87 (21.26) of 208 according to the results of different dimensions, spiritual growth dimension 27.67 (4.84) and physical activity 16.29 (4.84) were the highest and the lowest mean (SD), respectively. The rest of the dimensions scored average. Survey of data regarding the status of psychological factors in the samples showed that the total score of social support was 5.38 (1.17) and the majority of the subjects (44.8%) had high social support. According to the results, 43 (11.5%), 164 (43.7%), and 168 (44.8%) of the participants had low, moderate, and high levels of social support, respectively. Furthermore,

data analysis showed that 229 (61.1%) had moderate depression and 146 (39%) had severe and very severe depression. The majority of pregnant women in the study had 294 (78.4%) moderate-to-high levels of stress, whereas 112 reported severe stress and 56 reported very severe stress. More than half of the participants (239%) had severe anxiety (63/7%) [Table 2].

Table 1: The demographic and obstetrics characteristics of the participants (n=375)

Variable	Frequency (%)
Ethnicity	
Kurdish	335 (89.3)
Fars	6 (1.6)
Others	34 (9.1)
Women's education	
Under high school	41 (10.9)
High school	131 (34.9)
University	203 (55.2)
Women's occupation	
Homemakers	329 (87.7)
Employees	46 (12.3)
Husband's occupation	
Unemployed	5 (1.3)
Employees	370 (98.7)
Husband's education	
Under high school	51 (13.6)
High school	141 (37.6)
University	183 (48.8)
Iron intake during pregnancy	
Regular	301 (80.3)
Irregular	49 (13.1)
Not taking	25 (6.7)
Multivitamin intake during pregnancy	
Regular	262 (69.9)
Irregular	56 (14.9)
Not taking	57 (15.2)

Table 2: Health-promoting behaviors, social support and stress, anxiety, and depression questionnaire (DASS-21), and its subscales in pregnant women

Variable	Mean (SD)	Min	Max
Total health-promoting behaviors	139.87 (21.26)	56	199
Interpersonal relations	25.95 (4.36)	12	37
Health responsibility	19.89 (3.81)	8	31
Physical activity	16.29 (4.84)	8	32
Spiritual growth	27.67 (4.84)	9	38
Nutrition	26.42 (4.42)	10	36
Stress management	20.49 (3.70)	8	32
Total perceived social supports	5.38 (1.17)	1	12
Social support form specific people	5.87 (1.18)	1	7
Friend	4.40 (1.96)	1	24
Family	5.86 (1.21)	1	7
Stress	25.29 (8.17)	14	84
Anxiety	22.71 (7.38)	14	60
Depression	21.00 (7.38)	14	84

Data presented as mean (SD). SD=Standard deviation

Pearson test of correlation showed, stress, anxiety, and depression had an inverse significant correlation with health-promoting behaviors ($P < 0.001$). Furthermore, social support had a positive significant association [Table 3].

Univariable linear regression analysis showed a significant difference between different level of stress, anxiety, depression, and social support with health-promoting behaviors ($P < 0.001$). That way one-point increase in the score of stress, anxiety, and depression led to the 2.2%, 6.1%, and 24.1% reduction of health-promoting behaviors and one-point score increase in social support resulted in 40% increase in health-promoting behaviors ($P < 0.001$). However, in multivariable linear regression analysis showed a significant difference between different levels of depression ($P = 0.002$) and social support ($P < 0.001$) with health-promoting behaviors [Table 4].

Discussion

According to the results of different dimensions of the health promotion questioner, spiritual growth and physical activity dimensions were the highest and the lowest mean (SD), respectively. These findings are similar to the study results of other study, in study Mirghafourvand *et al.*, Altıparmak *et al.*, and Yadollahi *et al.*, the lowest score was for physical activity dimension.^[12,24,25] The rate of physical activity in women is relatively low at all times. During pregnancy, due to the sensitivity of this period and the problems related to pregnancy in each trimester (nausea, vomiting, weakness, fatigue, and limitation of movement), the amount of physical activity is low.

Another finding of the present study was that pregnant women received an average score (5.38) of the perceived social support, and most common support is given from specific individuals and families. This finding is in line with other studies. In the study of Dolatian *et al.*, 50% of the participants had a moderate status in terms of perceived social support and achieved average scores. Other studies have also reported an average score of perceived social support,^[26] and most pregnant women have reported more social support from family and individuals than friends, which confirms the present study.^[2] Studies on women's reproductive ages also reported a positive and significant association between social support and health-promoting behaviors and its dimensions.^[27,28]

The main purpose of this study was to investigate the association between social support and psychological factors with health-promoting behaviors in pregnant women in the second half of pregnancy. The result of

Table 3: Correlation coefficients between social support and psychological factors health promotion behaviors and subscales

Variable	Social support		Stress		Anxiety		Depression	
	r	P	r	P	r	P	r	P
HPLP-II	0.40	<0.001	-0.33	<0.001	-0.32	<0.001	-0.41	<0.001
Nutrition	0.25	<0.001	-0.22	<0.001	-0.21	<0.001	-0.26	<0.001
Health responsibility	0.27	<0.001	-0.21	<0.001	-0.21	<0.001	-0.28	<0.001
Stress management	0.36	<0.001	-0.32	<0.001	-0.31	<0.001	-0.35	<0.001
Interpersonal relationship	0.48	<0.001	-0.23	<0.001	-0.22	<0.001	-0.37	<0.001
Spiritual growth	0.39	<0.001	-0.35	<0.001	-0.35	<0.001	-0.47	<0.001
Physical activity	0.21	<0.001	-0.25	<0.001	-0.23	<0.001	-0.24	<0.001

Pearson test was used. HPLP=Health-promoting lifestyle profile

Table 4: Linear regression analysis for the factors association with health promotion

Variable	Univariable linear regression					
	Adjusted R ²	β unadjusted	β adjusted	t	(aCI95%) for B	P
Stress	0.105	-0.854	-0.400	-8.43	(-1.10 to -0.60)	<0.001
Anxiety	0.102	-0.914	-0.320	-6.51	(-1.19 to -0.63)	<0.001
Depression	0.167	-1.183	-0.411	8.70-	(-1.45 to -0.91)	<0.001
Social Support	0.158	0.606	0.400	8.43	(0.46 to 0.74)	<0.001

Variable	Multivariable linear regression				
	β unadjusted	β adjusted	t	(CI 95%) for B	P
Stress	-0.057	-0.022	-0.27	(-0.46 to 0.35)	0.783
Anxiety	-0.175	-0.061	-0.85	(-0.58 to 0.22)	0.395
Depression	-0.693	-0.241	-3.10	(-1.13 to -0.253)	0.002
Social Support	0.433	0.287	5.82	(0.28 to 0.58)	<0.001

Adjusted R²=0.232%

this study showed an inverse relationship between the levels of stress, anxiety, and depression with the total score of health-promoting behaviors and the direct relationship between the levels of social support with adopting healthy behaviors.

The findings show that one-point score increase in social support resulted in 40% increase in health-promoting behaviors ($P < 0.001$), these findings were consistent with the results of other several studies.^[29,30] The association between social support and health-promoting behaviors in women is complex and has not been widely studied.^[31] The results of some studies showed no association between social support and health-promoting behaviors.^[32] Evidence from psychological research suggests that support provided by others may sometimes be ineffective or even negative,^[31] while others reported that such a relationship existed.^[33] Differences in the results of studies due to the differences in the type of studies, the different research community; therefore, it is recommended to conduct prospective studies and examine individuals in each trimester of pregnancy.

The findings show that there was a significant reverse association between the stress, anxiety and depression, and health-promoting behavior. In this study, one-point increase in the score of stress, anxiety, and depression led to the 2.2%, 6.1%, and 24.1% reduction of health promoting behaviors. Previous studies revealed that

some psychological factors such as depression, stress, and social support are related to healthy behaviors in pregnant women.^[29,34]

In order to study the association between different levels of perceived stress and health promoting behaviors, there was a negative relationship between stress level and healthy behaviors, and this relationship was significant at different levels except for severe and stress levels. There was a significant difference in severity and with increasing perceived stress, a low average score was obtained in health-promoting behaviors. This finding is consistent with other studies in which studies have reported an association between increased risk behaviors and decreased healthy behaviors with stress status.^[35] A similar study has not been performed in low-risk pregnant women, for such comparisons, similar studies are needed. What is important is to obtain severe stress scores in pregnant mothers in this study. More than half of the participants reported severe and very severe stress.

Evaluation of mean (SD) scores of health-promoting behaviors at different levels of perceived anxiety state, including moderate, severe, and very severe, which were 135.72 (19.73), 143.20 (21.11), and (157.81), respectively. Data analysis showed that this difference was significant ($P < 0.001$) and was lower with increasing anxiety perception scores in healthy behaviors. This

result is consistent with other studies conducted. Similarly, Basharpour *et al.* found a significant negative association between the total score and its dimensions. Hence that the results showed a negative association between pregnancy anxiety with the overall score of health-promoting behaviors and its components, namely health responsibility, physical activity, nutrition, spiritual growth, relationships interpersonal, and stress management.^[6] In the present study, most of the pregnant women reported high levels of anxiety, which was done in a prominent and preliminary study in Tabriz in Urmia. Furthermore, the women in their study reported high levels of anxiety. Although pregnancy anxiety is a common problem during pregnancy, it can also have negative consequences.^[8] Previous studies confirmed that pregnant women with lower physical activity levels had higher anxiety symptoms.^[29,34] Moshier *et al.* also found that individuals with higher anxiety levels had lower score in health-promoting behaviour,^[36] However, Kempand Maker, shown that, there is no association between anxiety levels and total HPLP score. It can be said that the difference in the results of their study can be due to cultural differences, and their study was performed in pregnant women with low economic status.^[37]

Depression status of pregnant women participating in this study indicated a high perception of depression, with 39% feeling severe and higher depression. The mean score of overall health promoting behaviors was significantly different between the different levels of depression, and this difference was significantly decreased with increasing depression. From moderate depression to very severe depression, respectively, about 13 scores and 23 scores mean reduction in mean score of health-promoting behaviors were observed. In the study, there was no significant relationship between depression and health-promoting behaviors in pregnant women. Recently, especially in developed countries, the relationship between people's lifestyles and various mental illnesses, including depression, have attracted a lot of attention.^[38] Because it is one of the important issue of health.

The study of psychological factors and social support as an aspect of social determinants of health and the role and impact of these factors on health-promoting behaviors in pregnant women is one of the strength our study. Furthermore, all these factors have an especially important role during pregnancy, which is a pivotal time in a woman's life, examining low-risk pregnant women who have been surveyed in the present study will better determine the impact of related factors. Consider pregnant women in a province where such a study has not been performed. In this regard, further studies are recommended in other cities due

to different cultural and environmental situations to compare them. Furthermore, in order to identify the barriers and facilitate health-promoting behaviors in pregnant women who are an important part of society, quantitative, and qualitative research is felt in different provinces with different cultural, environmental, and economic conditions.

One of the limitations of this study is the inability of cross-sectional study to express cause and effect association. Furthermore, questionnaire review and high number of questions can be one of the limitations. Unlike other studies that have studied all pregnant women without regard to trimester of the pregnancy, our study focused only on pregnant women in the second trimester. However, conducting cohort studies in different trimesters can provide more useful information about health-promoting behaviors, social support, psychosocial factors, and its association.

Conclusion

A negative relationship was found between psychological factors and a positive relationship with health promoting behaviors. Although perceived moderate health promotion behaviors and perceived social support were moderate, they did not have a good status in terms of psychological factors, including stress, anxiety, and depression. Given the awareness of the issues mentioned in each area is essential, and planning to improve stress, anxiety, and depression, as well as promoting and correcting inappropriate behaviors through planning interventions is necessary.

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Conflicts of interest

There are no conflicts of interest.

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