Original Article

Association between Perceived Social Support and Health-Promoting lifestyle in Pregnant Women: A Cross-Sectional Study

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Abstract

Introduction: Adopting health-promoting lifestyle might be affected by a variety of factors. The existing evidence suggests that social support can improve health by fulfilling physical and mental needs. This study aimed to investigate the association between social support and health-promoting lifestyle in Pregnancy.

Methods: Using multistage cluster sampling method, this cross-sectional study was conducted on 360 pregnant women. Data were collected using three questionnaires, including a self-reported demographic and obstetric, health-promoting lifestyle profile and perceived social support questionnaires. Data were analyzed using a t-test, repeated measures ANOVA, and multivariate linear regression model with SPSS software ver. 21 with.

Results: The mean (SD) of health-promoting behaviors was 135.21(20.03). Amongst the different dimensions of health-promoting behaviors, the highest mean was detected in spiritual growth 26.84 (4.90) and nutrition 26.17 (4.22), respectively. Meanwhile, the lowest scores were detected in sub-domains of stress management 19.80 (3.78) and physical activity 16.71(4.14), respectively. The mean (SD) of perceived social support was 60.31 (14.75), and 51.7% of the participants had intermediate social support. Results indicated a significant difference between the mean score of Health-Promoting Lifestyle at different levels of social support. There was a direct and significant association between the scores of social support and health-promoting behavior (r = 0.36; $P < 0.001$).

Conclusion: Pregnant women with better perception of social support had a better performance in adopting health-promoting Lifestyle. However, the status of health behaviors and social support was not favorable. Thus, there is a need to intervene and design programs to help pregnant women and improve their health.

Introduction

Adopting healthy behavior is the most important factor to achieve a favorable health status and to avoid developing chronic diseases.[1-3] Pregnancy, as a natural and recurrent phenomenon, is one of the most critical stages of a woman's life.[4] New conditions resulting from mental and physical changes during the pregnancy may affect a woman's lifestyle and behaviors.[5,6] Researchers believe that lifestyle adopted during pregnancy has a long term effect on the health and life quality of both the mother and child, and even the whole family.[7,8]

Based on the reviewed studies, health-promoting behaviors, including healthy diet, sufficient sleep, physical activity, controlling weight gain, avoiding smoking and alcohol, and emotional management skills are amongst the best strategies to achieve a desirable health status and

optimum pregnancy outcomes.[9,10] According to the world health organization (WHO), health-promotion is defined as a process of enabling individuals to develop more control over their behaviors.[2,8] As a result, a variety of factors might affect adopting and undertaking health promoting behaviors.[9] In this regard, previous studies indicated that all individuals, as well as social, environmental, cultural, and political factors may play a crucial role.[9,11] Recent research suggests that social support is helpful for health-promotion through behavioral and psychological ways.[12,13] For instance, Berkman believed that encouragement to adopt healthy behavior, such as participating in screening programs and avoiding harmful actions, could result in health-promotion.[14] In addition, social support may have positive effects on mental and physical health through its modulatory effects on stress which, in turn,

will lead to health-promotion.[15,16] Social support is a need to belong, to be respected, and to be valued; and it consists of emotional support, informational support, and belonging to social networks.[17] Despite the fact that there is not sufficient evidence on the effect of social support on reducing the adverse outcomes of pregnancy, some reports indicated that social support could have positive effects, including reduced smoking and improved health-promoting behaviors like improved prenatal care and satisfaction with it.[14,15]

In spite of published studies in Iran investigating the association between health improvement behaviors and social support in the elderly and women of reproductive age,[18,19] few studies have investigated the pregnancy period. According to previous research, poor social support can increase the incidence of diseases. It seems that social support from social groups can increase the well-being, individual health and, as a result, health promotion. Due to the importance of both mother and child health, there is a critical need for understanding the factors affecting the health-promoting behaviors, which may lead to better programs and interventions for achieving a desirable quality of life during pregnancy. Accordingly, this study aimed to determine the association between perceived social support and health-promoting lifestyle in pregnant women.

Materials and Methods

Using a multistage cluster sampling method, this cross-sectional study was conducted on 360 pregnant women during the first six months of 2017 in Tabriz, Iran. The inclusion criteria included being Iranian, residency in Tabriz, singleton pregnancy, ability to read and write in Persian, age range of 18-40 years, no experience of severe psychological crises over the past six months (as declared by the participants), no known medical disorders or problems, and obstetric-related risk factors during and before pregnancy based on medical files approved by the physician or midwife at the center. The exclusion criteria were lack of willingness to participate in the study and incomplete questionnaires.

The sample size was once calculated as 180 based on the study conducted by Stark & Brinkley[20] on the standard deviation of sub-domains of health-promoting lifestyle ($M = 1.67$, $SD = 0.54$, $d = 0.05$, $\alpha = 0.05$ and power $= 0.8$) and recalculated as 72 based on the study conducted by Sharifi et al.,[17] on perceived social support ($M = 61.46$, $SD = 13.26$, $d = 0.05$, $\alpha = 0.05$ and power $= 0.8$). As the sample size based on health-promotion behaviors was greater, this was the sample size sought. Regarding cluster sampling and design effect of 2, the final sample size was considered to be 360 pregnant women.

After the approvals were obtained from the authorities of the healthcare centers, the sampling was done through multi-stage cluster sampling. The first 6 clusters were selected randomaly from 12 clusters existing in the city

(87 healthcare centers). Next, 36 healthcare centers were selected, using the Randomizer software. Then, the list of all eligible pregnant women covered by each center was extracted based on demographic characteristics. The inclusion criteria included singleton pregnancy, Maternal age range between 18-40 years, and no known medical disorders. Moreover, the names of the people were put in columns with numbers, and randomly selected with the Randomizer software. Those pregnant women who volunteered to enter the study were invited and the possible lack of meeting the other inclusion criteria for entering the study led to the replacement of the participant with an individual randomly chosen from the list. The sampling continued until reaching the estimated sample size.

The socio-demographic and pregnancy history questionnaire, consisting of the demographic variables of pregnant women such as age, educational level, occupational status of pregnant women and their spouses, self-assessment of household economic status, as well as obstetric variables, including the first day of the last menstruation, gestational age based on the first trimester ultrasound, and the number of pregnancies and childbirths.

The health-promoting lifestyle profile-II questionnaire, consisting of 52 items assessing six dimensions of interpersonal support (nine items), health responsibility (nine items), Physical activity (eight items), nutrition (nine items), stress management (eight items), and spiritual (nine items). All the items are scored based on a four-point Likert scale scores ranged from 1 for never to 4 for always. The total score for these behaviors is within the range of 52-208.[21] The Persian version of this tool has been evaluated in previous studies in terms of validity and reliability, and the Cronbach's alpha coefficient was 0.86 for the HPLP II and for the subscales ranged from 0.70 to 0.77.[18] In addition, the questionnaire has had sufficient reliability in the other study (0.89).[22]

The multiple scale of perceived social support questionnaire, which is a social support questionnaire designed by Zimet et al., encompassing 12 items scored based on a Likert scale. This questionnaire evaluates three domains of perceived support from specific people (four items), perceived support from family members and acquaintances (four items), as well as perceived support from friends (four items). The items are scored based on a seven-point (1 to 7) Likert scale from "completely disagree" to "completely agree", in which the minimum and maximum scores are 12 and 84, respectively.[19] The total scores of answering the questions fall in three categories: Low (scores 12-48), Moderate (scores 49-68), and High (scores 69-84) social supports.[23] This instrument has also been validated by Bagherian-Sararoudi et al., in Iran, for which the Cronbach's alpha coefficient was 0.92 for the scale, and 0.89, 0.92, and 0.87 for friends, specific people, and family subscales, respectively.[24]

The reliability of the questionnaire was determined

by conducting a pilot study on 20 pregnant women. For perceived social support ICC (confidence interval) was 0.94 (0.89 to 0.97) and Cronbach's alpha coefficient of 0.94, and for health-promoting ICC (confidence interval) was 0.93 (0.88 to 0.97) with Cronbach's alpha coefficient of 0.95.

Data analysis was performed in SPSS software ver. 21) SPSS Inc., Chicago, IL, USA) using descriptive statistics to adjust the frequency tables and determine the central indexes, as well as the distribution of study variables to describe the features of the research units, health-promoting behaviors, social support, and nutritional behaviors. The t-test and ANOVA tests were used to determine the relationship between socio-demographic characteristics with score of health promotion behavior. Moreover, the one-way ANOVA was employed to test the differences among health-promoting lifestyles and perceived social support. The Bonferroni method was used for post-hoc comparisons, whereas the Pearson's correlation coefficient was used to investigate the association between health-promoting behaviors and perceived social support. Then, independent variables with $P < 0.2$ on bivariate tests were inserted into the multivariate linear regression model. The normality of quantitative data was measured based on kurtosis and skewness, all of which were normal. All statistical tests were two-sided, using a significance level of $P < 0.05$.

Results

In this study, 17 women were excluded due to their unwillingness to participate in the study; however, the sampling was continued until the sample size reached 360.

Data analysis indicated that the mean (SD) age of mothers was 27.49 (4.9) with range of 18-39 years old mostly between 25 to 35 years old. Furthermore, 90% of the participants had a high school or lower degrees and were housewives. Out of 360 participants, 121 were having their first pregnancy, 130 were having their second pregnancy, and the rest were experiencing their third to sixth pregnancies. The mean (SD) number of pregnancies was 1.74 (0.88) and range of 1 to 6 pregnancies. The mean (SD) gestational age at the time of participation was 24.01 (8.7) and domain of 10th to 40th week of pregnancy (Table 1).

Data analysis indicated that the mean (SD) score of health-promoting lifestyle in pregnant women was 135.21(20.03) with the range of 71-187. According to our data, the maximum and minimum scores were obtained by spiritual growth 26.84(4.90) and physical activity 16.71 (40.14), respectively. In addition, the mean (SD) score of health responsibility was 22.49(4.55) (Table 2).

The social support data analysis yielded an overall mean (SD) score of 60.31(14.75) with the maximum score of 21.92(5.82) obtained by familial support and the minimum score of 16.71(6.19) obtained by friend support. In addition, the results suggested that most of the participants (51.4%) perceived an intermediate level of social support (Table 3).

Table 1. Socio-demographic and obstetric characteristics, and their relationship with health-promoting lifestyle in pregnant women

Variable	N (%)	P value
Maternal age (year)		
18-25	104(28.9)	0.559[a]
26-30	235(65.3)	
31 and above	21(5.8)	
Maternal educational level		
Primary&secondary school	134(37.23)	
High school	129(35.83)	0.663[a]
University	97(26.94)	
Maternal occupational status		
Housekeeper	326(90.6)	
Employment	34(9.4)	0.392[b]
Educational level of spouse		
Primary & secondary school	153(42.5)	
Diploma	124(34.4)	0.035 [a*]
University	83(23.1)	
Occupational status of spouse		
Unemployed	9(2.5)	
Employed	64(17.8)	0.007[a*]
Self-employed	287(79.8)	
Self-assessment of health status		
Excellent	45(12.5)	
Good	179(49.7)	
Middle	122(33.9)	0.359[a]
Weak	14(3.9)	
Get support from		
Mother	43(11.8)	
Father	19(5.3)	
Mother and father	73(20.3)	
Husband	217(60.3)	
Friends	4(1.1)	0.303[a]
Others	4(1.1)	
Income level		
Less than sufficient	105(29.2)	
Sufficient	253(70.3)	0.001[a*]
More than sufficient (ability to save money)	2(0.6)	
Family size		
2	164(45.6)	
3	143(39.7)	0.234[a]
4 and above	53(14.7)	
Gestational age		
Under 14 weeks	66(18.3)	
15-28	179(49.7)	0.765[a]
29 and above	115(32)	
Number of pregnancies		
1	171(47.5)	
2	130(36.1)	0.048[a*]
3 and above	59(16.5)	

[a] ANOVA test; [b] t-test; [*] statistically significant

Table 2. Score of total and sub-scales of health-promoting lifestyle profile (HPLP)

Variable	Mean(SD)	Min- Max
Interpersonal relationship	23.20 (4.01)	8-32
Health responsibility	22.49 (4.55)	11-32
Physical activity	16.71(4.14)	8-31
Spiritual growth	26.84(4.90)	9-36
Nutrition	26.17(4.22)	14-36
Stress management	19.80 (3.78)	10-31
Total score of HPLP-II	135.21 (20.03)	71-187

Table 3. Score of total and sub-scales of social support

Variable	N (%)
Social support from specific people[€]	21.64(5.89)
Family[€]	21.92(5.82)
Friend[€]	16.71(6.19)
Total score of social support[€]	60.31(14.75)
Level of social support	
Low social support	63(17.5)
Moderate social support	185(51.4)
High social support	112(31.1)

[€]Mean (SD)

The results of ANOVA test suggested a difference between the mean total score and subscale of health promoting behaviors at different levels of social support, in which case, upon increasing social support, there will be an increase in the total score of health promoting behaviors, as well as the score of its other subscale (Table 4).

Pearson's correlation coefficient showed a significant ($P<0.001$) direct, but powerless and week correlation between the total score of perceived social support and total score of health-promoting lifestyle profile and its sub-scales (Table 5).

There was a significant relationship between the score of health-promotion lifestyle profile with the number of pregnancies, spouse's education, spouse's occupation, and income. These variables and the score of perceived social support were entered into the multivariate linear regression model with backward strategy. First, the binary linear regression analyses were used in investigating the association between social support and health-promotion lifestyle profile. The results of the linear regression analysis (unadjusted) revealed that social support predicted the health-promotion lifestyle by 13.4% (RR = 0.36,

95% CI: 0.37-0.64). After adjusting the results for other variables, we found that the income level and social support remained in the model and could predict 14.6% of the variance in the score of health-promotion lifestyle (Adjusted $R^2 = 14.6\%$) (Table 6).

Discussion

The current study investigated the association between perceived social support and health-promoting lifestyle in pregnant women. The results showed that pregnant women obtained moderate scores in both main variables of the study. So that, the average score of total health-promoting lifestyle was 135, which is considered a moderate score. The results of this study are comparable with those of other studies in the field.[22,25] The bulk of research in this area reported pregnant women all over the world receiving intermediate to low scores in health-promoting lifestyle, except for two studies in which pregnant women were reported to have received intermediate to high scores.[26,27] These differences could have resulted from different factors, including social and cultural factors, especially demographic and individual differences of the study samples. For instance, the high scoring samples were the women at their second semester of pregnancy; according to the existing research, at this gestational age, woman are in more stable conditions than the first and third semester.

According to the scores obtained in various dimensions of the health-promotion lifestyle, the highest to lowest scores were dimensions of spiritual growth, nutrition, health responsibility, stress management, and physical activity. Based on several Iranian studies, the highest scores were gained by spiritual growth and nutrition dimension of health-promoting lifestyle profile (HPLP).[28,29] The

Table 4. The association between level of social support and health-promoting lifestyle and it subscales in pregnant women

Variable	Low social support N=63	Moderate social support N=185	High social support N=112	ANOVA		Post hoc[*]
	Mean (SD)	Mean (SD)	Mean (SD)	F	P value	Multiple comparisons
HPLP (total)	124.84 (19.88)	132.63 (17.46)	145.24 (19.67)	27.83	<0.001	Low<moderate<High
Nutrition	25.14 (4.35)	25.58 (4.18)	27.71 (3.80)	12.08	<0.001	Low, moderate < High
Physical activity	15.92 (4.08)	16.19 (3.97)	18.01(4.19)	8.59	<0.001	Low, moderate < High
Health responsibility	21.07 (4.10)	22.15 (4.49)	23.84 (4.59)	8.92	<0.001	Low, moderate < High
Stress management	17.60 (3.41)	19.66 (3.48)	21.27 (3.83)	22.07	<0.001	Low<moderate<High
Interpersonal relationship	21.38 (4.22)	22.57 (3.50)	25.25 (3.85)	27.20	<0.001	Low, moderate < High
Spiritual growth	23.71 (4.81)	26.52 (4.25)	29.12 (4.84)	29.39	<0.001	Low<moderate<High

[*]Statistically significant (P < 0.001) after bonferroni correction for post-hoc analysis

Table 5. Correlation coefficients between social support with health-promoting lifestyle profile (HPLP) and sub-scales

Variable	Social support		Friend support		Family support		Support from specific person	
HPLP-II	r	P value	r	P value	r	P value	r	P value
Nutrition	0.21	<0.001[*]	0.26	<0.001[*]	0.35	<0.001[*]	0.27	<0.001[*]
Health responsibility	0.23	<0.001[*]	0.17	<0.001[*]	0.21	<0.001[*]	0.11	0.03[*]
Stress management	0.35	<0.001[*]	0.20	<0.001[*]	0.22	<0.001[*]	0.12	0.021[*]
Interpersonal relationship	0.35	<0.001[*]	0.23	<0.001[*]	0.33	<0.001[*]	029	<0.001[*]
Spiritual growth	0.38	<0.001[*]	0.26	<0.001[*]	0.32	<0.001[*]	0.25	<0.001[*]
Physical activity	0.21	<0.001[*]	0.18	<0.001[*]	0.37	<0.001[*]	0.38	<0.001[*]
HPLP-II	0.36	<0.001[*]	0.20	<0.001[*]	0.24	<0.001[*]	0.10	0.05

[*]Statistically significant

Table 6. Multivariable linear regression analysis for factors association with health-promoting lifestyle profile (HPLP)

Variable	health-promotion lifestyle profile			
	B unadjusted	B adjusted	CI95%[a]	P value
Number of pregnancies	0.21	0.01	(-1.99 to 2.49)	0.82
Spouse's education (diploma)	-	-	-	-
Primary & secondary school	2.74	0.06	(-1.84 to 7.32)	0.23
University	3.08	0.06	(-2.55 to 8.72)	0.28
Spouse's occupation(self-employed)	-	-	-	-
Employed	-1.60	-0.12	(-16.38 to 13.18)	0.83
Unemployed	-3.15	-0.06	(-9.28 to 2.98)	0.31
Income(sufficient and more)	-	-	-	-
Less than sufficient	-4.61	- 0.11	(-0.10 to -9)	0.04[*]
Social support	0.49	0.35	(0.36 to 0.63)	<0.001[*]

[a]Unadjusted confidence interval 95%, [*]statistically significant

highest score was gained by the nutrition dimension only in women with preeclampsia.[8] In addition, pregnant women obtained low scores in physical activity and moderate scores in social support.[16,30] However, pregnant women in other countries had high scores in spiritual growth, social support, and responsibility, moderate scores in the nutrition aspect, and low scores in stress management and physical activity. They also had better scores than the women participating in the current study in social support dimension of the health-promoting lifestyle.[22,31,32] Apparently, these differences are due to inter-personal differences like age, education level, occupation, income, social factors, as well as psychological factors like self-efficacy. Glazier et al., have investigated the association between social support and mental health; and their findings show that social support has a positive effect on emotional health.[16]

Another finding of the current study was that over half of the participants had a moderate score in social support scale, and that most support came from family and other relatives. This finding was consistent with that of Sharifi et al., who reported a mean perceived social support score of 61.43.[17] Jamshidimanesh et al., reported a total score of 60.55 for perceived social support. In addition, the pregnant women participating in that study were found to have more family support than their friends, which is in agreement with the findings of the current study.[33] Interestingly, women with higher score of perceived social support had scored the highest in health-promoting lifestyle, in such a way that with an increase in perceived social support score, the score of health-promoting lifestyle increased as well. In this study, the social support score was significantly correlated with health-promoting lifestyle and its sub-domains, which are in accordance with several other studies, so that, based on the reviewed studies, individuals with better social support have a higher quality of life, health, and wellbeing.[34,35,36] Lack of social support is considered as an important risk factor threatening the maternal health during pregnancy, and it can have adverse effects on pregnancy outcomes.[16,30] Recent studies have reported a significant correlation between social support and adopted lifestyle.[37,38] Chen et

al., reported social support as a predictive factor for all dimensions of health-promoting lifestyle besides physical activity. Based on their study, 25% of overall variation of adopted health-promoting lifestyle is defined by depression and social support.[38] Jung & Chun reported a significant correlation between all aspects by investigating the association between social support [12] and health-promoting lifestyle, which was in agreement with other studies.[36,39,40]

According to the results of recent qualitative study, the barriers to adopting a healthy lifestyle behaviors included the lack of support from the healthcare providers and the family, the existence of family problems (especially with the spouse), and the manner of dealing with poor healthcare providers. They also mentioned family and social support, with an emphasis on supporting healthcare providers and the existence of a motivating environment, including appropriate training and adequate time spent by caregivers, as socio-environmental facilitators of the adopting health promotion behaviors.[9] Thus, it seems that healthcare providers can effectively communicate and educate the families of pregnant women, especially by encouraging the spouses to provide emotional and instrumental support.

Studying lifestyles in pregnancy is necessary because of its positive effects on pregnancy and neonatal outcomes. The main limitation of this study was its cross-sectional design, which restricted confirming the existence of a cause-and-effect association. Using self-reports was another limitation of this study.

Conclusion

The results of current study demonstrated that pregnant women are at moderate status of adopting health promoting behaviors and social support. In addition, women with better perception of social support had better performance in adopting health promoting behaviors. Although social support only explains a small fraction of such behaviors, it could be an effective factor. Accordingly, to promote-health of these vulnerable people, designing, executing, and evaluating interventions by politicians and specialists at individual and familial levels seems

Research Highlights

What is the current knowledge?
Pregnancy leads to change the women's lifestyle; therefore, their health- promotion lifestyle should be improved to avoid problems during this critical period, which requires knowledge of the factors affecting these behaviors. Social support can improve the ability to cope with stressful events. So, it can affect health behaviors.

What is new here?
Pregnant women with a better perception of social support had a better performance in adopting health promoting behaviors. Unfortunately, the status of health behaviors and social support in pregnant women is not favorable. Thus, there is a need to design programs to help pregnant women and improve their health.

essential. Studying other effective factors, especially social and cultural factors is recommended. We also recommend further studies on other areas, including the health requirements of pregnant women and other community members, especially women with pregnancy complications, who should be compared according to their different cultural and environmental situations. It would be best if cohort studies could review the status of health-promotion and social support in the first, second, and third trimesters and compare their outcomes. In addition, quantitative and qualitative studies are required to identify the effective factors, existing barriers, and facilitators of the social support in pregnant women.

Ethical Issues
This article was derived from a doctoral dissertation on reproductive health with mixed methods approach which approved by the research committee of Shahid Beheshti University of Medical Sciences (code no SBMU. REC. 1394.112 dated September 7, 2015). Written informed consent was obtained all the participants.

Conflict of Interest
The authors declare no conflict of interests in this study.

Author's Contributions
AFK: contributed to developing the concept, collected data, analyzed data, and wrote the draft and final article; SH: contributed to the analysis, and reviewed the draft and the final article; AA: contributed to data collection and manuscript writing; All authors read and approved the final manuscript.

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