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Original Article

Role of social capital and self-efficacy as determinants of stress in pregnancy

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Abstract

Objectives: The study investigated the role of social capital, self-efficacy, and depression as determinants of stress during pregnancy. **Materials and Methods:** In a cross-sectional study, 200 low-risk pregnant women with at least 5 years of education and ages 18 or more were enrolled in public obstetric clinics of Babol University of Medical Sciences. The participants completed four questionnaires including Social Capital, Revised Prenatal Distress Questionnaire (NuPDQ), Perceived Stress, and General Self-efficacy. **Results:** Women at late phase of pregnancy had lower mean scores of total social capital (61.5 ± 17.1 vs. 47.1 ± 18.1) and self-efficacy (60.1 ± 9.7 vs. 55.1 ± 15.2) compared to those at early pregnancy. Social capital was the negative independent variable associated with pregnancy-specific stress in the adjusted model ($\beta = -0.418$, $P = 0.020$). Both social capital ($\beta = -0.563$, $P \leq 0.001$) and self-efficacy ($\beta = -0.330$, $P \leq 0.001$) were negative independent variables associated with general stress. **Conclusions:** Our findings suggest that health professionals should note the benefits of social capital in stress management and encourage women in establishing stronger relations and neighborhood environments during pregnancy.

Keywords: *Pregnancy, Self-efficacy, Social capital, Stress*

Introduction

Social capital is one of the most important factors of social environment that affects both physical and mental health [1]. That is a relatively new concept that has been used in a lot of fields, due to its effects on the living conditions of all societies [2]. Social capital is defined as the relationships between individuals, social networks, the usual norms, and their resulting trust [3]. It has a significant role in people's ability to access medical services and thus their health [2]. Studies show that people with greater social capital suffer less from mental health problems and it helps reduce stress through several ways including gaining access to information and other resources, strengthening self-worth, providing social support, and increasing self-confidence [4,5].

Due to numerous as well as simultaneous physiological and psychological changes during pregnancy, this period is considered a stressful event for women [6,7]. Stress sources of pregnancy are classified into two main categories: pregnancy-specific stress and general stress [8]. Pregnancy-specific stress refers to the mother's concerns, worries, and fears of pregnancy [9]. Women during pregnancy experience stresses that arise from pregnancy itself, including relationship concerns, parental concerns, physical changes, worries about labor and childbirth, as well as concerns about the baby's health, future care of the infant, worries about work responsibilities, and many other possible issues [6-10]. Stress during pregnancy can have negative consequences for maternal and fetal health [6,8]. Studies have shown that pregnancy stress increases maternal and neonatal risks, including pregnancy-induced hypertension, premature birth, and miscarriage or stillbirth [11-14]. Furthermore, women with higher stress are at risk of less self-care during pregnancy [15]. Some researchers have suggested that pregnancy-specific stress may play a more effective role in the birth outcomes than stress from pregnancy-related sources [9,11].

Social capital affects a wide range of health outcomes by facilitating the ability to cope with the negative effects of stress [1]. Social capital has a direct and moderating effect on the relationship between depressive symptoms and perceived stress [4,6]. A few studies on maternal health and social capital indicate that social support and social networks are associated with better health during pregnancy, and strong social networks are related to improved pregnancy outcomes [16-19]. Studies have suggested that pregnant women with higher perceived

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stress are more likely to have depressive symptoms [19,20]. Furthermore, a longitudinal study showed that social networks differ in women during pregnancy period from first to third trimester [21]. Meanwhile, individuals with high self-efficacy can cope with challenges and stressful events better than those with a lower self-efficacy. Research has shown that maternal stress is inversely related to women's self-efficacy [22,23].

According to Hobfoll's conservation-of-resources theory, "individuals strive to retain, protect, and build resources" [24]. In fact, environment of a person has a potential of making resource without additional induced stress. The resources consisted of objects, conditions, and individual characteristics valued by persons, which can help achieve desired goals [25,26]. This study is focused on three constructs: stress in pregnant women, social capital, and self-efficacy with assumption to integrate them into Hobfoll's conservation-of-resources theory. Social capital comprises a resource for making or transferring information/knowledge within one's network and is considered useful for attaining pregnant women's goals. Having close and trustful social relationships makes bonding capital for individual that may be helpful to get emotional support and coping strategies with general or specific stress of pregnancy [27-29]. Based on Hobfoll's theory, we presented the assumption that bonding social capital represents a resource for pregnant women that provides access to other resources such as people can learn from others and friendship relationship that may be helped to women to cope with stress of pregnancy period [30].

Although previous studies have emphasized the role of social support on stress, there is little information on the influence of social capacity on stress of pregnant women. Better understanding of the role of social capacity of pregnant women on pregnancy stress in clinical settings may be the first step to stress in reduction during pregnancy. The current study addresses the existing gap in research regarding the interaction between social capacity and stress in pregnancy period. Furthermore, research confirmed that social capital production differs between different cultural contexts, as well as rural and urban communities. Social networks are small relationships but are more dense networks that would be more likely to provide access to resources in urban communities [31]. The first aim of the study was to describe and compare the scores of social capacity and self-efficacy of women in rural and urban communities as well as early and late pregnancy. The second purpose of the study was to examine the possible association between social capacity and self-efficacy during pregnancy. Finally, the study also investigated the roles of social capital and self-efficacy score as determinants of pregnancy-specific stress and general stress in pregnancy period.

Materials and methods

Participants and procedures

Ethical approval for this study (Ethical Committee MUBABOL. HRI. REC.1396.61) was provided by the Ethical Committee of Babol University of Medical Sciences, Babol, on August 27, 2017. Written informed consent was obtained from all patients before their enrollment in this study.

This was a cross-sectional study conducted between June and October 2018 at public clinics of Babol University of Medical Sciences located in North of Iran. The study was a part project that some results reported previously [32]. A simple random sampling technique using probability proportional to size was used to sample the clinics. One clinic of two obstetric clinics of teaching hospital and two obstetric clinics of public health center of thirty centers were selected randomly. A single proportion formula was used for sample size calculation: based on a 40% prevalence of pregnancy stress in pregnant women in a previous study [33], $\alpha = 0.05$, $d = 0.07$, and adding 10% of nonresponse, the minimum required sample size was 200 women.

The study population was registered during routine prenatal care of pregnant women with the available sampling method. A member of the research team attended the clinics and invited the pregnant women to enter the study. She interviewed the women and assessed the eligibility criteria to enter the study. Inclusion criteria were age above 18 years old, level of education of higher than primary school, and willingness to participate in the study. Pregnant women with complicated pregnancies such as hypertension, diabetes, multiple pregnancy, and obstetric hemorrhage were excluded from the study. Pregnant women with gestational age of 28 weeks and above were considered as late pregnancy. Women who were 6–27 weeks were defined as early pregnancy. The midwife explained the aim of the study and questionnaires to the eligible pregnant women. Furthermore, she obtained the participants' obstetric history and informed consent. The participants completed four questionnaires including Revised Prenatal Distress Questionnaire (NuPDQ), Perceived Stress, Social Capital, and General Self-efficacy.

Measures

Revised Prenatal Distress Questionnaire (NuPDQ)

The NuPDQ is a revised version of the 12-item PDQ [34,35]. Both PDQ and NuPDQ are popular tools for the assessment of specific stress of pregnant women [36,37]. NuPDQ is a 17-item tool that assesses distress associated with issues specific to pregnancy, including bodily changes, physical symptoms, fetal health, labor, and delivery. Responses indicate the extent to which they are feeling "bothered, upset, or worried" on a scale ranging from 0 (not at all) to 2 (very much). The Persian-validated version of NuPDQ was used in the study. The Persian version of 17-item NuPDQ consists of five areas in the third trimester including medical and financial problems, physical symptoms, infant health, parenting, as well as labor and delivery [32].

Perceived stress scale-14

It is a self-reporting 14-item 5-point Likert scale used to assess general stress and its severity. This tool has been validated and used in Iran and other parts of the world. The scores range from 0 to 56. Higher scores indicate higher stress level [38].

Social capital-20

The scale developed by Rafiey *et al*. consists of 20 items and 5-point Likert from 1 to 5. The scores range from 0 to

100. Higher scores indicate greater interactions and communication resources among humans. The scale consists of five subscales called empathy and belonging, trust, partnership, different interests, and different lifestyles [39].

General self-efficacy scale

It is a 17-item tool developed by Sherer *et al*. GSE is a scale to measure women's self-efficacy during pregnancy. Items are rated on 5-point scale (1 = strongly disagree and 5 = strongly agree). The total score is obtained by summing up all responses, with higher scores indicating greater self-efficacy of the respondent [40].

Data analysis

All statistical analyses were performed using SPSS version 24 (IBM Analytics, Armonk, NY, USA). We assessed the normality assumption of the dependent variables by Kolmogorov–Smirnov tests. All variables were normally distributed; therefore, the mean of the psychological variables was compared using Student's *t*-test between rural and urban women, as well as women in early pregnancy and late pregnancy periods. The correlation between the variables was determined using Pearson's correlation coefficient. Adjusted and nonadjusted multiple linear regression models were conducted to link social capital, self-efficacy, and depression score as the independent variables and pregnancy-specific stress and general stress as the dependent variables. The controlling variables in all adjusted regression models were age, education, and gestational age. $P < 0.05$ was considered statistically significant.

Results

The mean age of the respondents was 27.5, with a standard deviation of 5.3 years. There was no difference between urban and rural women regarding age, level of education, and job [Table 1].

Table 2 compares the mean value of dependent and independent variables of pregnant women regarding gestational age and place of living. The results of *t*-tests revealed that pregnant women in the late phase of pregnancy had lower mean scores of total social capital compared to those in the early pregnancy ($P < 0.001$). Furthermore, women in the late pregnancy had significantly lower mean scores all of subscales of social capital including empathy and belonging, trust, partnership, different interests, and different lifestyles compared to those in early pregnancy ($P < 0.05$). Regarding the self-efficacy, the mean scores of pregnant women in the late pregnancy were significantly lower than those in early pregnancy ($P = 0.012$). Further, the mean scores of pregnancy-specific and general stress were significantly higher in women in the late pregnancy than in the early pregnancy ($P < 0.05$). Rural women had significantly higher mean scores of total social capital and all subscales than those lived in city. However, there was no difference between pregnant women who lived in city and village regarding the mean scores of self-efficacy, general stress, and pregnancy stress ($P > 0.05$).

Table 1: Demographic characteristics of population study regarding to place of living

Variables	Urban women (*n*=100)	Rural women (*n*=100)	*P*
Age, mean±SD	27.66±5.33	27.33±5.18	0.657
Gestational age, mean±SD	25.49±6.87	22.47±5.99	0.010
Level of education, *n* (%)			
Primary/high school	76 (76.0)	77 (77.0)	0.052
University	24 (24.0)	23 (23.0)	
Job, *n* (%)			
Employee	5.0 (5.0)	3.0 (3.0)	0.159
Un employee	88 (88.0)	90 (90)	

SD: Standard deviation

Table 3 reports the correlations between psychological variables. Pregnancy-specific stress had a significantly negative correlation with two subscales of social capital including different interests ($r = -0.140$, $P = 0.04$) and different lifestyles ($r = -0.142$, $P = 0.04$). The general stress of pregnant women was correlated negatively with total social capital scores ($r = -0.209$, $P < 0.001$) as well as four subscales (empathy and belonging, trust, partnership, and different interests). Furthermore, general stress of pregnant women correlated negatively with self-efficacy ($r = -0.334$, $P < 0.001$).

The results of multiple linear regressions (adjusted and nonadjusted) for independent variables are listed in Table 4. Social capital was the negative independent variable associated with pregnancy-specific stress in the adjusted model ($\beta = -0.418$, $P = 0.020$), not nonadjusted regression models. However, self-efficacy was not significantly associated with pregnancy-specific stress in either the nonadjusted or adjusted regression models ($P < 0.05$). Both social capital ($\beta = -0.563$, $P \leq 0.001$) and self-efficacy ($\beta = -0.330$, $P \leq 0.001$) were negative independent variables associated with general stress in both the nonadjusted and adjusted regression models.

Discussion

This study was the first to determine the psychological predictors of both pregnancy-specific stress and general stress in pregnant women. The results confirmed the significant roles of social capital and self-efficacy for predicting pregnancy-specific stress and general stress in pregnant women.

The findings revealed that social capital was a strong negative variable associated with general stress. As this study has been first report on the correlation between social capital and general stress in pregnant women, we compared these results with other studies related to mental health. Consistent with our results, a research found that an increased level of social capital is correlated with a lower level of stress in general population [41]. Another study reported a significant positive correlation between increasing social capital and mental health of pregnant women [2]. Furthermore, an exploratory qualitative study suggested that increasing social capital in pregnant women is associated with greater physical and mental health [18].

Now, the question is how was the mechanism of social capital as a negative determinant of both pregnancy-specific

Table 2: The mean and standard deviation of psychological variables based on time of pregnancy and citizen

Variables	Mean±SD			*P*	Mean±SD		*P*
	All subject	Time pregnancy			Place of living		
		Early	Late		Village	City	
Social capital							
Empathy and belonging	17.6±6.1	18.5±6.4	13.6±6.3	<0.001	23.2±3.5	12.1±3.8	<0.001
Trust	8.7±3.2	9.2±3.1	7.1±3.2	<0.001	11.1±2.4	6.3±1.9	<0.001
Partnership	5.9±2.8	6.4±2.7	4.1±2.4	0.005	8.2±1.3	3.5±1.6	<0.001
Different interests	14.1±5.1	15.4±4.9	12.0±5.1	<0.001	17.5±4.1	11.8±4.5	<0.001
Different lifestyle	11.6±3.6	12.0±3.4	10.1±4.2	<0.001	13.7±2.6	6.6±3.3	<0.001
Total score of social capital	58.6±12.2	61.5±17.1	47.1±18.1	<0.001	73.9±8.8	43.4±10.9	<0.001
Self-efficacy	59.1±11.1	60.1±9.1	55.1±15.2	0.012	60.2±9.1	57.9±12.7	0.142
General stress	23.8±5.8	23.4±5.9	25.2±5.2	0.010	23.5±6.2	23.9±5.4	0.570
Pregnancy stress	11.6±4.8	11.2±4.8	13.4±4.2	0.010	11.5±4.7	11.6±4.9	0.907

SD: Standard deviation

Table 3: Correlation matrix of the psychological variables

Variables					*P*				
	Social capital (total score)	Empathy and belonging	Trust	Partnership	Different interests	Different lifestyles	Self-efficacy	General stress	Pregnancy stress
Social capital (total score)	1								
P									
Empathy and belonging	0.878**	1							
P	<0.001								
Trust	0.858**	0.757**	1						
P	<0.001	<0.001							
Partnership	0.903**	0.863**	0.793**	1					
P	<0.001	<0.001	<0.001						
Different interests	0.828	0.524**	0.619**	0.635**	1				
P	<0.001	<0.001	<0.001	<0.001					
Different lifestyles	0.757**	0.470**	0.524**	0.556**	0.724**	1			
P	<0.001	<0.001	<0.001	<0.001	<0.001				
Self-efficacy	0.226**	0.167*	0.242**	0.192**	0.220**	0.148*	1		
P	0.001	0.018	0.001	0.007	0.002	0.037			
General stress	−0.209**	−0.162*	−0.201**	−0.164*	−0.221**	−0.128	−0.334**	1	
P	0.003	0.022	0.004	0.020	0.002	0.070	0.000		
Pregnancy stress	−0.126	−0.079	−0.061	−0.118	−0.140*	−0.142*	−0.081	0.276**	1
P	0.075	0.265	0.389	0.095	0.049	0.044	0.252	0.000	

*P<0.5, **P<0.01

Table 4: Results of linear analysis regressions (adjusted and non-adjusted) for prediction of pregnancy stress

Dependent variable	Predictors	Nonadjusted model		Adjusted model*	
		β	*P*	β	*P*
Pregnancy-specific stress	Self-efficacy	0.081	0.253	0.075	0.310
	Social capital	−0.126	0.075	−0.418	0.020
General stress	Self-efficacy	−0.334	<0.001	−0.330	<0.001
	Social capital	−0.209	0.003	−0.563	<0.001

*The model adjusted for age, education, gestational age, and place of living

stress and general stress in pregnant women. Although the response is not clear, some hypotheses can be proposed. First, social capital could lead to reduced stress through boosting coping with stress, raising awareness of human rights, and promoting self-esteem as well as mutual respect [3,9]. Second, consolidation of social capital during pregnancy beginning from providing additional care from husbands, neighbors, and relatives, receiving special attention as well as respect, along with talking to the pregnant women about her future may facilitate reduction of stress in pregnant woman [34,42] Third, increasing social capacity in pregnant women is associated with greater access to health-care services and provision of resources to mitigate worries related to pregnancy [43]. Fourth, social relationships may be helpful to get emotional support and coping strategies with general or specific stress of pregnancy and increase mental health of pregnant women [44,45].

The results indicated that self-efficacy was negatively associated with general stress of pregnant women. Although evidence emphasized the positive effect of self-efficacy on reduction of stress [2], little evidence supported our results regarding pregnant women. A study investigated the relationship between self-efficacy and well-being of 492 pregnant women in England. The results reported an association between self-efficacy and mental well-being as well as social support [46]. A review article examined the relationship between social capitals in providing self-efficacy for pregnant women. The results

concluded that social capital can empower pregnant women by paying more attention to the mothers' health [16]. Self-efficacy of pregnant women may be empowering them to cope with stressful situations. Pregnant women with high self-efficacy experience a lower level of stress, as well as high social relationship and support. Conversely, women with low self-efficacy reported more negative experience in relationship with others in pregnancy [47].

The study had a number of strengths and limitations. One strength was that the results of this study can be used in obstetric clinics to capture the relationship between social capital and pregnancy stress of women during pregnancy. One of the limitations was its cross-sectional design, and the association between variables is not a causal relationship. Thus, cohort studies are required to determine better understanding of the effect of social capital and self-efficacy on pregnancy-specific stress and general stress. Another limitation is related to self-reporting of the participants who may cause bias in the results.

The results can have clinical implications. All health-care professionals could emphasize the positive effects of social capital on reducing pregnancy stress as well as increasing self-efficacy during management care of pregnant women. Educating pregnant women and their husbands about the benefits of enhancing social capital during pregnancy may be an important facilitating factor for stress management during pregnancy. Health-care providers should increase the women's attention to overcoming pregnancy problems by involving the family directly in planning activities, such that their families can provide social support in dealing with pregnancy stress.

Conclusions

The finding demonstrated that social capital and self-efficacy are significantly negatively associated with general and pregnancy-specific stress. Our findings suggest that pregnant women should actively build stronger social networks to reduce pregnancy stress. Furthermore, the findings supported that health-care providers should pay attention to psychological factors, especially social factors and self-efficacy, in stress management of pregnant women. Further research including an interventional planning to improve the social capital in pregnant women during prenatal usual care would be useful.

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Conflicts of interest

There are no conflicts of interest.

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