Investigating Women's Pregnancy Care Behaviors Based on the Health Belief Model and Social Support Patterns in Pregnant Women Referring to Health Centers Covered affiliated by Iranshahr-Iran faculty of medical science

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Abstract

Background: Pregnant women need information, skills and social support for the effectiveness of pregnancy care. Health education patterns play a major role in educational needs assessment in designing and implementing educational interventions.

Objectives: The present study aimed to investigate the pregnancy care behaviors, based on the health belief and social support model among pregnant women.

Methods: This cross-sectional study was conducted in 2016 with the participation of 215 pregnant women under the control of faculty of Iranshahr Medical Sciences who were selected by multi-stage sampling method. The data were collected through a questionnaire based on the structures of the health belief and social support model, knowledge, behavior and demographic information. Data were analyzed by descriptive, Pearson correlation and multivariate regression tests in SPSS ver19 software.

Results: The highest rate of education among pregnant women (35.8%) was high school. The mean score of mothers' performance was 12.31 out of 22, and among the structures the perceived sensitivity score was the strongest, and the social support score was the weakest. Based on regression analysis, self-efficacy, perceived benefits, and social support were predictive behaviors which generally predict 27.5% of behavioral changes.

Conclusion: Based on the results, the structures of self-efficacy, perceived benefits and social support should be considered as the most important predictor of pregnancy care behaviors in designing educational interventions.

Key words: pregnancy care, pregnancy, health education, Iranshahr, Iran

Introduction

Pregnancy is a natural phenomenon and many changes in this period occur to adapt pregnant women to new conditions and pregnancy care is necessary to avoid problems [1]. Pregnancy care is providing pregnancy services to improve the pregnancy outcomes or maternal and child health including monitoring maternal and fetal health status, providing medical, mental and supportive interventions as well as promoting health [2]. Lack of adequate care during pregnancy can lead to adverse outcomes such as maternal and fetal

mortality, premature birth, low birth weight, abortion, and the like can increase the relative risk of fetal death, early delivery and low birth weight to 3.3, 2, and 3 times, respectively [3.4]. Annually, nearly 600,000 women die in the world due to the complications of pregnancy and childbirth and more than 99% are related to developing countries. This significant difference in mortality and the prevalence of deadly complications among communities are related to the poor pregnancy care [5,6].

Regarding the causes of infant mortality in Argentina, the greatest cause of death is related to low birth weight and the highest risk factor is concerned with the lack of adequate care for pregnant mothers [6]. Despite the dramatic advances in medical technology in the United States, about 30,000 children die each year and the major cause of death is low birth weight which results from poor prenatal care [7]. An investigation conducted on 150 children who died under one year old in Bojnourd- Iran showed that among 27% of the cases, mothers had poor pregnancy care and 21% had moderate care during pregnancy [8]. Pregnant women need information, skills and social support (information, emotional and financial support) for more effective pregnancy care. Pregnant women, especially women who are pregnant for the first time, need to be empowered to adopt and promote pregnancy care [9]. Theories and models of health education are designed to determine and identify the individual, social and environmental factors affecting their behavior and their adaptation to the existing cultural and social structures. By examining the effect of these variables on the adoption of preventive behavior, appropriate strategies can be identified for promoting care behaviors [10,11]. One of the educational models in health education is Health Belief Model (HBM) which emphasizes how individual's perception motivates and creates a behavior in him. Based on this model, in order to adopt preventive behaviors, one should first feel unsafe in facing with the problem namely having adverse effects of unhealthy pregnancy (Giving birth to a dead baby, fetal death, mother's death) (perceived sensitivity) and she should understand the depth of this risk and the seriousness of its various side effects on

the physical, psychological, social and economic dimensions (perceived severity) until she believes that the program of pregnancy care is useful and applicable (perceived benefits) and finds preventative factors from action to practice less costlier than its benefits (perceived barriers). Further, an individual should believe his ability in doing pregnancy care behaviors (perceived self-efficacy) and by receiving internal and external impellent (practice guide) to health behavior, tries to adopt pregnancy care behaviors [10,11]. Various studies were conducted in Iran based on the health belief model in the field of pregnancy care such as oral health, nutrition and physical activity [12-14]. The results indicated that it is possible to change behavior by creating and intensifying sensitivity and perceived severity, diminishing the perceived barriers, highlighting benefits, creating self-efficacy and creating an appropriate action guide. However, the health belief model emphasizes on individual's responsibility. In the event of a person's failure to perform the desired behavior, it may lead to a feeling of failure and inability to resolve health problems. On the other hand, caring behaviors during pregnancy are influenced by individual factors as well as the social and ecological factors [15]. Furthermore, some studies conducted based on the health belief model in relation to nutrition during pregnancy and physical activity of women indicated that these behaviors are complex and influenced by factors such as economic, social or environmental factors which are beyond the individual's power and facilities and these factors are not considered by the health belief model [10,14]. Social cognitive theory is one of the theories which considers cognitive, environmental and behavioral factors in a two-way relationship [16]. Some studies show that social support as one of the structures of social cognitive theory has a positive effect on various aspects of caring behaviors. Social support is defined as the facilities that others provide to the individuals. [17]. Lack of social support is an important risk factor for maternal health during pregnancy which has harmful effects on pregnancy outcomes [18]. Therefore, in order to strengthen the health belief model and consider the influence of social factors on pregnancy care behaviors, the social support

structure (environment structure) of Bandura's social cognitive theory was also considered along with the health belief model. Measuring the Health Belief Model and Social Support Structure can be the predictor factor of pregnancy care behaviors. Therefore, the present study aimed to investigate the pregnancy care behaviors based on the health belief model and social support structure in order to use the study results in maternal and child health promotion planning.

Methods
The present study is a descriptive-analytic study which were conducted on a cross-sectional basis from March to May in 2016. By considering the proportion of people with adequate pregnancy care (proportion of people who at least scored 80% of pregnancy care behaviors), 15% (in pilot study), 95% confidence level, test power of 80% and the precision of 5%, the sample size calculated 195 subjects for this study and by accounting 10% of the probable loss, the final sample size estimated 215 subjects. The population included the pregnant women referring to health centers covered by Iranshahr-Iran Faculty of Medical Sciences (Balochistan region). In this study, in each of the five under control cities, an Urban Health Center was selected by a simple random sampling method and then 43 primiparous pregnant women were randomly selected from each urban health center. Generally, from 5 cities covered by Iranshahr-Iran Faculty of Medical Sciences, 215 primiparous pregnant women were selected and studied. The inclusion criteria of the present study included the first pregnancy, having a pregnancy case in health care centers, having literacy, having a desire to participate in the program, monogamy, being the age ranged between 18-35, and a pregnancy diagnosis during the first 3 months. Those samples who were not interested in participating in the study or completed the questionnaire incompletely were excluded from the study. In order to comply with the ethical and legal principles, necessary licenses were issued to conduct the research. Before conducting the study, the purpose and method of study were explained to the participants and if they had willingness to participate in the study, they could enter into the study by giving a written consent. It should be noted that in the data collection stage, the necessary information was explained about answering the questions voluntarily and with no obligation, confidentiality of information and assistance in conducting a genuine research. Data collection tool was a researcher-made questionnaire including demographic information, knowledge, health belief model, social support and pregnancy care behaviors. The questionnaire consisted of questions related to knowledge (26 questions), perceived sensitivity (8 questions), perceived severity (8 questions), perceived benefits (7 questions), perceived barriers (9 questions), practice guidance (3 questions), self-efficacy (7 questions), social support (8 questions), and pregnancy care behaviors (11 questions), which were measured based on the Likert scale with triple spectrum (according to the level of literacy and perception of samples from items). Regarding the questions related to knowledge, attitude (structures of health beliefs model and social support structure) and pregnancy care behaviors, answering "favorable" option was scored 2, answering "undesirable" option was scored 0 and answering "no idea" option (or middle option, for example, in social support questions answering "low" option) was scored 1. According to the number of attitude questions and the need to answer at least 60% of the questions for the behavioral sector and based on the idea of experts in this field, contractually, the score below 60% was weak and the score of 60% and higher was considered as a strong class. The content validity of the questionnaire was evaluated by expert panel method and the corrective comments of 10 specialists of maternal and child health education were applied to the questionnaire, too. In order to determine the reliability of the questionnaire, the questionnaire was given to 20 pregnant women who were similar to the subjects. The alpha coefficient was calculated 0.81 using Cronbach's alpha. The collected data was entered into the statistical software SPSS ver.19.A restriction method was used to control the age-confounding variable, so that those pregnant women ranged between 18 and 35 years old were included in the study. Moreover, in the analysis phase, linear regression was used to control the

possible confounding variables. The central indicators and dispersion and frequency distribution tables were used to describe the data, and Pearson tests were used to examine the relationship between performance and structures and multivariate linear regression in order to predict the variables of health belief model and social support. The significance level of the test is considered p<0.05.

Results
The mean age and standard deviation of pregnant women was 24.8±7.79 years. The information source for pregnant women about pregnancy care was 63.7% health care personnel, 10.7% friends, 8.8% Internet, 4.7% television and 4.2% books. Furthermore, 4.2% of pregnant women did not know where to get the required information.

Table 1: Demographic characteristics of studied pregnant women

Variable		Frequency (%)
Age	≤20	92(42.8)
	21-24	65(30.2)
	25-29	43(20)
	≥30	15(7)
Education level	Primary	53(24.7)
	Secondary	42(19.5)
	High school	77(35.8)
	College	43(20)
Employment	Housewife	203(94.5)
	Employed	12(5.5)
Insurance	Yes	170(79.1)
	No	45(20.9)
Monthly income	Less than 5 million Rial	123(57.5)
	Between 5 million to 10 million Rial	69(32.1)
	Between 10 to 20 million Rial	21(9.8)
	More than 20 million Rial	2(0.9)
Get Educational Resources	Yes	0(0)
	No	215(100)

Table 2: Distribution of behavioral score, knowledge and structures of the health belief model integrated with social support structure

Variable	Scales range	Men±Sd	Score classification		
			Weak	Strong	Total
			Frequency (%)	Frequency (%)	Frequency (%)
knowledge	0-52	38.30±7.51	41(19.1)	174(80.9)	215(100)
Perceived sensitivity	0-16	14.07±2.1	9(4.2)	206(95.8)	215(100)
Perceived severity	0-16	11.55±3.26	54(25.1)	161(74.9)	215(100)
Perceived benefits	0-14	12.93±2.01	13(6)	202(94)	215(100)
Perceived barriers	0-18	11.47±5.08	88(40.9)	127(59.1)	215(100)
Perceived self-efficacy	0-14	9.29±1.82	56(26)	159(74)	215(100)
social support	0-16	7.66±2.04	172(80)	43(20)	215(100)
Behavior	0-20	12.31±2.18	99(46)	116(54)	215(100)

Table 3: Correlation between mothers' performance on pregnancy care and structures
of the health belief model and social support structure

Variable	Behavior	P value
	Pearson Correlation	
knowledge	0.128	0.062
Perceived sensitivity	0.180	0.008
Perceived severity	0.101	0.141
Perceived benefits	0.229	0.001
Perceived barriers	0.145	0.033
Perceived self-efficacy	0.245	0.000
Social support	0.190	0.007

In step-by-step regression analysis to predict pregnancy care behaviors using integrated model structures, it was determined that among the variables studied, variables of self-efficacy, perceived benefits, and social support were identified as predictors of caring behaviors. Totally, these variables predicted 27.5% ($R^2=0.275$) of behavioral changes (Table 4).

Table 4: Stepwise regression analysis of predictive structures of pregnancy care
behaviors among pregnant women

Step	Predictive variables	B	Beta	t	P	R2
1	self-efficacy	0.397	0.345	3.645	0.0001	0.188
2	self-efficacy	0.337	0.316	2.854	0.005	0.220
	Perceived benefits	0.272	0.231	3.569	0.012	
3	self-efficacy	0.226	0.296	3.899	0.004	0.275
	Perceived benefits	0.295	0.252	4.084	0.015	
	Social support	0.196	0.193	3.254	0.02	

Discussion

Pregnant women's access to correct information, as well as family and community support of them by making positive changes in behaviors, can effectively improve pregnancy care and empower women [19]. In the field of pregnancy care, the level of awareness, as well as the score of the structures of sensitivity, benefits, barriers, severity and perceived self-efficacy of the majority of pregnant women were at a high level, but they were poor in terms of social support. In addition, 46% of pregnant women were poor in pregnancy care, which indicates that although pregnant women consider themselves vulnerable to the implications of the lack of pregnancy care, they still face with many barriers in pregnancy care. The highest distribution of the score of the composite model structures at the strong level (95.8%) was related to the perceived sensitivity. This demonstrates a high perception of the vulnerability of women to the consequences of the lack of pregnancy care for their own health and their newborns. In the study of Ekhtiariet al. (2015) (10), most of the pregnant women, while having a high level of knowledge about pregnancy care, have seen many barriers in their prenatal care, which is in line with the results of the present study. However, unlike the present study, the perceived sensitivity score was reported at a poor level in the study of Ekhtiari et al. (2015) which seems to be related to the high statistics of adverse pregnancy outcomes like maternal and fetal mortality and low birth weight in women in the Balochistan region, which led the pregnant women of this area to have a higher perceived sensitivity and severity, as Zhianian et al. (2015) emphasized this issue (20). In line with the conducted study on prenatal care in Zahedan, the results of the present study showed that pregnancy care is at a low level [20].

In the present study, the perception of 59.1% of pregnant mothers about the barriers of pregnancy care was higher than average. In this study, the most perceived barriers of pregnant women included having not enough information about all prenatal care and the place of services delivery, gastrointestinal complications of pregnancy supplements, poor economic condition to provide proper food during pregnancy, ridicule and harassment of others while walking, lack of park near the house for hiking, long distance of home to family health clinic, busy health centers, and the need for a family member to attend a pregnancy visit or tests in accordance with the cultural characteristics of the area.

In the study related to Shamsi et al. (2009), the perceived barriers in pregnant women about the correct use of drugs was higher than average (74%) [21]. In the study of Pormosayebi et al. (2015), the perceived obstacles in pregnant women was higher than average (59.16%) [22]. However, in the study of Ekhtiari et al. (2015), the perceived barriers in pregnant women for prenatal care were less than average [10]. The reason for this difference is the age difference of pregnant women, the history of pregnancy, cultural and economic characteristics, urban facilities (park for walking, flat footpaths, street lighting, etc.) and the level of awareness of individuals.

In the present study, a significant relationship was observed between perceived sensitivity, perceived benefits, perceived barriers, self-efficacy, and social support and care behaviors during pregnancy, which is consistent with the results of the study of Shamsi et al. (2009) [21] which indicated a significant correlation between performance and sensitivity, severity, barriers, benefits and self-efficacy. In the study of Rise et al. (2003), there is a significant relationship between self-efficacy and health behavior [23]. Furthermore, Zhianian et al. (2015) observed that the relationship between self-efficacy and prenatal care behaviors was significant [20]. It is worth noting that with the increase in each of the above structures, it is possible to promote pregnancy care behaviors. However, Abdollahpour et al. (2015), in their study, did not find a significant statistical correlation between social support and prenatal care. The reason for the difference

between the results of this study and the study of Abdollahpour et al. (2015) can be due to the difference in the target group including the combination of wanted and unwanted pregnancy, age difference, number of pregnancies, cultural, economic, and social differences in the study [24]. Pregnant women did not have access to printable media such as pamphlets, posters, booklets and health pamphlets, which the result is congruent with the study result of Shamsi et al. (2009) [21]. In the present study, the most sources of information on pregnancy care were health care personnel, which is consistent with the results of the study of Austin et al. (2002) in which health care staff plays the most important role in informing individuals [25]. Considering the highlighted role of health care personnel in educating and informing pregnant women, it is essential to provide adequate force and devote sufficient time to education. Additionally, considering the importance of the role of mass media and print media, the principles of the Health Belief Model and Social Support Structures can help to design and produce educational and encouraging messages, so that a greater percentage of women can be advised in promoting pregnancy care. Finally, the results of this study showed that self-efficacy, perceived benefits and social support are the most important predictors of the integrated model (Health Belief Model and Social Support Structures) which can be used to design educational programs. Namely, the increase in the average score of structures of self-efficacy, perceived benefits, and social support enhances the rate of pregnancy care behaviors in pregnant women. Shamsi et al. (2009) also emphasized on the self-efficacy structure in the design of training programs of drug abuse prevention in pregnant mothers [21]. Zhianian et al. (2015) indicated the importance and the highlighted role of self-efficacy on care behaviors during pregnancy. Pormosayebi (2015) [22] identified perceived benefits as one of the most important predictive structures for the prevention of pregnant women's exposure to air pollution.

Although the prediction of perceived social support is less than self-efficacy and perceived benefits in the present study, health care personnel

should consider it in interventions for promoting pregnancy care behaviors because the social support of the relatives, especially the spouse, along with the quality of prenatal care, determines the quality of pregnancy, the type of delivery and the health of the fetus [25]. In order to enhance the influence of interventions on the promotion of pregnancy care, it seems that social support can also be considered as an effective component in pregnancy care along with other factors. Elsenbruch et al. (2007) showed that lack of social support is a significant risk factor for maternal health during pregnancy which has a harmful effect on the outcomes of pregnancy [18]. Further, social support increases self-efficacy [27]. Generally, the predictive power of the combined model of health belief and social support in the present study is more than the similar studies [22,26] in which health belief model is used solely.

It is concluded that if we use the results of the needs assessment based on the combined model (composition of health belief model and social support structure) for designing and implementing educational intervention on prenatal care behaviors in women, it will be necessary to focus on changing attitudes in women about prenatal care behaviors, especially structures of self-efficacy, perceived benefits and social support, and pay more attention to these structures in providing curriculum content and consider structures of self-efficacy, perceived benefits and social support as focal points for future interventions.

Regarding the limitations of this study, the following issues can be pointed out: Using a researcher-made questionnaire, due to the lack of a standard questionnaire in this field, limits the comparison of the results of this study with other similar studies' results. The data are self-reporting and there is the probability of low or high reporting and the results should be interpreted with caution.

However, regarding the strengths of the present study, we can refer to the combination of the health belief model with the social support structure or the development of this model, the consideration of social and environmental causes as well as the individual causes considered in most of the previous studies in this area in pregnancy care and the design of tools based on the cultural and social features of the target group.

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