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Predictors of Mental Health During High-Risk Pregnancy

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Abstract

Objectives: Given the increased morbidity and mortality rates in high-risk pregnancies, which are associated with stress, this study aimed to investigate the predictors of the mental health of mothers during high-risk pregnancy.

Materials and Methods: To this end, 750 eligible couples referring to hospitals and public health centers of Gorgan (2016-2017) were selected using stratified-cluster random sampling method. Then, pregnancy worries and social support questionnaires were completed by mothers and mental health questionnaire was completed by the couples. Next, the correlation level was measured by Pearson correlation coefficient. Finally, the contribution of each variable as the predictor of maternal mental health was discussed by utilizing stepwise regression analysis.

Results: The mean score of worry was 34.57 among the mothers, which was lower than the mean value while the support score was 14.45 which was higher than the mean value. The strongest predictors of the mental health of mothers with high-risk pregnancy were mother's worry, the mental health of fathers, and the social support with standard coefficients of 0.447, 0.153, and -0.88, respectively.

Conclusions: In general, counseling and care programs are recommended for high-risk pregnant mothers in order to reduce their worries while increasing the mental health of the spouses and encouraging important relatives to attract further social support and improve the maternal mental health.

Keywords: Mental health, Predictors, High-risk pregnancy

Introduction

A high-risk pregnancy is considered as the condition in which the mother, fetus, or newborn is at a higher risk of death, disability, or disease (1). Over 100 000 pregnant women are subject to high-risk pregnancies per year, from whom 700 000 cases are hospitalized (2). According to the World Health Organization statistics, 830 pregnant women are daily deceased due to problems associated with pregnancy in the world (3).

High-risk pregnancies are correlated with maternal and newborn mortality and morbidity which lead to stress and anxiety for pregnant mothers (4). In a high-risk pregnancy, women are worried about their health and their neonates' health, and therefore, may devote less energy to interact with their spouses and relatives. In addition, men are forced to increase their attention to other children, perform more household tasks, or restrain some other activities due to the reduced availability of their partner (5). Many men face a great deal of concerns and distrust over their ability to confront paternal challenges and thus damage to their families (6).

Several factors predispose to the mental health of mothers during pregnancy. According to a systemic review by Lancaster et al, the following parameters are related to a greater probability of antepartum depressive symptoms: The worry of the mother; the stress of life; the background of depression; the absence of social support; unwanted pregnancy; health insurance; domestic violence; lower earning; lower education; smoking; single; poor relationship quality (7)

According to previous evidence, the risk factors of mental health during pregnancy often vary in different cultures. Considering that there is little information on the mental health predictors of mothers with high-risk pregnancy among the Iranian population, this study was designed and implemented to evaluate the mental health predictors of mothers with high-risk pregnancy in Gorgan, Golestan province, Iran during 2016-2017.

Materials and Methods

The present cross-sectional study sought to examine the mental health predictors of mothers with high-risk pregnancy. To select the samples, stratified-cluster random sampling technique was applied in Sayyad Shirazi Hospital and four public health centers in Gorgan during 2016-2017. Women with high-risk pregnancy and their

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spouses, who had no previous history of mental illness or psychotherapy, were also interested in participating in the study. The total sample number was estimated 750 couples with high-risk pregnancy as well.

Then, data were collected through four questionnaires. A demographic characteristic questionnaire was developed by the researcher. In addition, the Symptom Checklist-25 (SCL-25) of psychological symptoms was utilized as well. This questionnaire is a short form of the 90-item SCL questionnaire containing nine sub-scales such as somatization, obsessive-compulsive disorder, interpersonal sensitivity, depression, anxiety, anorexia, phobic anxiety, paranoid ideation, and psychoticism (8). The reliability and validity of this questionnaire were confirmed in the Iranian context. The cut-off point for each sub-scale and the total scale was 2.5 and 1.3, respectively (9). In this study, Cronbach alpha for all items was calculated to be 0.90 thus this tool enjoyed excellent reliability due to its internal cohesion.

Similarly, the Pregnancy Worries and Stress Questionnaire (PWS) was applied, which encompassed 25 items distributing into 6 subcategories like mother's health, neonatal health, delivery and maternity experience, parenting, as well as family-related and personal-occupational interests. In addition, the questionnaire had a minimum and maximum score of 0 and 100, respectively, and enjoyed satisfactory reliability and validity in Iranian society (10). In our study, the reliability was estimated at 0.91.

Perceived Social Support-Family Scale (PSS-Fa), as the fourth questionnaire, analyzed social support on the part of family and included items related to experiences, perceptions, and feelings that most people occasionally experience in relation to their families. The Alpha coefficient related to family scale was 0.88-0.91, which showed good coherence and the total score range of questions was 0-20 and a higher score represented more social support (11). The estimated Cronbach alpha was equal to 0.80 in the present study. It should be noted that pregnancy concerns and social support questionnaires were completed by mothers and mental health questionnaire was completed by couples.

Statistical Analysis

The data were analyzed using SPSS software. The correlation level was measured by Pearson correlation coefficient and a significance level of $P<0.05$ was acceptable. Finally, the contribution of each variable predictor of maternal mental health was discussed by utilizing stepwise regression analysis.

Results

The mean age of mothers and fathers was 28.76 ± 7 and 33.12 ± 6.8 years, respectively, and the mean duration of marriage was 7.26 ± 5.8 years. In addition, the subjects were from different ethnicities, and Fars ethnicity was the most common one including 62.4% of pregnant women. The study of the number of pregnancies showed that 31.7% of the subjects had no previous pregnancies while 31.7% had one pregnancy. Further, 21.9% and 14.7% of subjects experienced two and more pregnancies, respectively. Furthermore, the survey of economic conditions demonstrated that 74.1% of couples had an adequate income level.

Research showed that maternal worry score was in the range of 0-104, and the average score of 34.57 among mothers of our study indicated that mothers had a below-average level of worry. The components of worry were also lower than the average score since the worry for maternal health was in the range of 0-24, but the average score among mothers in our study was 13.8. Moreover, maternal worries in delivery and motherhood experience were within the range of 0-16, which was 7.59 in our research, and the neonate health dimension ranged from 0 to 20, with an average score of 7.31 in mothers who participated in our study. Additionally, worries in personal and family dimensions were in the range of 0-20 with an average score of 7.14 among our subjects. As regards worries in personal-occupational dimension, the scores ranged from 0 from 16 with an average score of 3.33 among our mothers. Likewise, the scores related to worries about mother and child interests were between 0 and 8 with an average score of 1.08 among these mothers. The social support score ranged between 0 and 20 and a high score was considered as higher support. Eventually, the support score was 14.45 in the tested sample, which was higher than the mean score of 10. In other words, the majority of mothers enjoyed support (Table 1).

The correlation between maternal worry, social support, and the mental health of the couples was investigated using Pearson correlation test.

According to Table 2, social support had a negative relationship with health and its dimensions, indicating that mothers enjoying a higher level of support had a lower grade of a disorder. In other words, they were healthier. The relationship between support and the dimensions of depression, phobic anxiety (PHOB), and anorexia (ANOR) were not significant (the probability of 0.154, 0.71, and 0.989, respectively), but it was significantly related to

Table 1. Descriptive Statistics of Social Support and Worries of Mothers With High-Risk Pregnancies

Mother's Worries	Mean ± SD
Delivery and motherhood experience	7.59 ± 4.70
Neonate health	7.31 ± 5.71
Mother and child interests	2.15 ± 1.08
Maternal health	8.13 ± 6.15
Personal and family	7.14 ± 5.15
Personal-occupational	3.79 ± 3.33
Mother's worry	34.57 ± 19.18
Social support	14.54 ± 3.22

Table 2. Relationship Between Social Support, Mothers Worry and its Components With the Mental Health Dimensions of Mothers

		SOM	O-C	INT	DEP	ANXI	PHOB	PAR	PSY	ANOR	Mental Health
Social support	R	-0.133	-0.122	-0.142	-0.074	-0.130	-0.093	-0.119	-0.159	-0.001	-0.149
	P	0.010	0.018	0.006	0.154	0.012	0.071	0.021	0.002	0.989	0.004
Delivery and motherhood experience	R	0.203	0.226	0.288	0.240	0.273	0.226	0.212	0.235	0.088	0.313
	P	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.088	0.000
Neonate health	R	0.199	0.255	0.288	0.224	0.248	0.137	0.195	0.229	0.085	0.292
	P	0.000	0.000	0.000	0.000	0.000	0.008	0.000	0.000	0.099	0.000
Mother and child interests	R	0.115	0.153	0.135	0.115	0.092	0.093	0.157	0.118	0.062	0.166
	P	0.026	0.003	0.009	0.026	0.075	0.072	0.002	0.023	0.234	0.001
Maternal health	R	0.350	0.246	0.436	0.293	0.286	0.230	0.304	0.378	0.257	0.442
	P	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Personal and family	R	0.259	0.363	0.361	0.299	0.254	0.147	0.201	0.331	0.118	0.362
	P	0.000	0.000	0.000	0.000	0.000	0.004	0.000	0.000	0.022	0.000
Personal-occupational	R	0.232	0.312	0.320	0.204	0.204	0.167	0.179	0.272	0.160	0.322
	P	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.002	0.000
Mother's worry	R	0.349	0.386	0.471	0.353	0.352	0.253	0.314	0.403	0.200	0.485
	P	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

R: Pearson correlation coefficient; P: P-value; SODM: Somaticization; O-C: Obsessive-compulsive disorder; INT: Interpersonal sensitivity; DEP: Depression; ANXI: Anxiety; PHOB: Phobic anxiety; PAR: Paranoid ideation; PSY: Psychoticism; ANOR: Anorexia.

other dimensions. Conversely, there was a positive and significant relationship between worry and the dimensions of health, which represented that the maternal health was disturbed by an increase in worries. In addition, a positive relationship was observed between the subscales of worry with health dimensions, demonstrating that the health was disturbed by increasing the worries. Similarly, the subscales of worry were positively related to health dimensions since the correlations were not significant except for delivery and motherhood experience, neonate health, maternal-child relationship with ANOR and the correlation between anxiety, PHOB, and ANOR (Table 2).

Next, the role of support and health of the spouse in the overall maternal health was addressed using step-by-step regression analysis. The variables entered into the model in three steps, followed by obtaining the final model. The results of regression variance analysis were significant in all steps and all the components remained in the final model. Then, the coefficient of determination and the adjusted coefficient of determination were estimated at 0.266 and 0.260, respectively. The ascending values of the adjusted coefficient during all three steps indicated that the entered variables affect the overall explanation of maternal mental health variable thus it can be assumed that the linear model fitted to the data was significant. In the following section, the parameters in the final model are examined, and Table 3 estimates the standard and non-standard coefficients, along with the *t* test in each step. As shown, given the severity of the impacts of the variables, mother's worry, spouse's mental health, and social support entered into the model in the first, second, and third steps, respectively.

Discussion

Based on the results, worry was the strongest predictor of maternal mental health and the average score of worry among pregnant women was lower than average. In a study, the worries of pregnant women were higher than average (12) while in the other were lower than average (13). Previous research demonstrated that partner support plays an important role in the degree of worry among pregnant mothers irrespective of economic, social, and cultural factors (14). In the present study, a lower degree of worry was probably due to stronger social support received by the majority of mothers, as well as the improved mental health that reduced their worries.

Similarly, maternal health was the first area of worry for pregnant mothers in our study. In another study in New Zealand, the comparison of the worry and anxiety among pregnant women hospitalized due to medical problems and pregnant women in the community showed that the main worry of hospitalized pregnant women was the lack of proper understanding of their health status (15). The results of the present study are consistent with those of the above-mentioned study. In our study, all the subjects had high-risk pregnancies and 20% of them were hospitalized in the high-risk pregnancy ward because of a medical problem. Meanwhile, they were unlikely to have a proper understanding of their medical condition. Therefore, worries about maternal health were the most important type of worries. In midwifery care model, it is important

Table 3. Estimation of the Coefficients of Multiple Regression Model Between Predictor Variables With Maternal Mental Health

Coefficients	Non-standard Beta	Standard Beta	T Statistics	*P* Value
Constant	0.654	-	4.565	0.000
Mother's worry	0.015	0.447	9.845	0.000
Spouse mental health	0.114	0.153	3.393	0.001
Social support	-0.017	-0.088	-1.975	0.049

for caregivers to pay attention to women's health and their sense of control over the disease in their supportive relationships (16).

Delivery and maternal experience was another worry of mothers in this study. In another study, pregnancy complications associated with delivery and hospitalization caused worries for pregnant women (17), which is in line with the findings of this study. In Finland study, 31.7% of the samples experienced their first pregnancy. Further, 82.4% of mothers attended no pregnancy training courses while only 9.1% attended more than six sessions. Therefore, the majority of these mothers failed to benefit from the educational content of these courses because of the lack of participation in the classroom. Prenatal education and midwives are believed to play important roles in reducing the worry of pregnant mothers (18). Furthermore, authorized health personnel, especially midwives, as well as family and spouse support during pregnancy and childbirth cause a sense of confidence and trustworthiness in pregnant mothers, which is particularly significant for primiparous women.

Neonatal health, as another area of worry for mothers, was also considered as another area of concern. For instance, Borghei et al examined the pregnancy concerns in a qualitative study in Iranian context and reported fetal health as the main worry of pregnant mothers (19). In another study in Madrid, fetal health was the main worry of mothers in the first trimester, which decreased in the third trimester. Worries about the health of fetus are common in all nationalities. Primiparous women, as well as those with unplanned pregnancy and a history of previous abortions had more worries about the health of their fetus (20). In our research, mothers' worries about fetal health decreased during the third trimester as a result of relaxation and the reduced worry of couples after receiving the screening test results. The results of the study in Finland corroborate with the findings of the present study in terms of changes in the degree of worry during the third trimester. The difference between this study and other studies (19,20) regarding the main worry of mothers may be a function of the difference of subjects in terms of high-risk pregnancy since all the samples of this study had previous experience of high-risk pregnancies.

Personal and family issues were also an area of worry for mothers in the current study. Marital affairs, financial problems, and worries about the non-fulfillment of maternity duties were the sub-scales of this area. Most studies reported reduced sexual intercourse during pregnancy (21), and financial problems were not specific to the subjects of this research. Likewise, Öhman et al found that the worries of mothers included financial problems and relationship with the spouse (22), which is in conformity with the results of this study. Training of the maternal role and sexual counseling should be emphasized in prenatal care given the sexual problems during pregnancy.

Similarly, the mental health of the spouse is another predictor of a pregnant mother's mental health. Moreover, the disrupted mental health of the pregnant mother impairs the mental health of her spouse as well. The results of this study are consistent with those of the study which stated that if the husband or wife has an anxiety disorder, there is a higher likelihood of disturbance in their marital relationships, leading to increased psychological distress and reduced mental health of the spouse (23). This is warranted considering the fact that mental disorder reduces the chance of satisfactory relationships for the individual. On the other hand, people with depression also decrease their relationships with the family and the spouse (24).

Additionally, social support is regarded as another predictor of mental health. Based on the results of the present study, social support affected the mother's mental health by reducing the degree of worries, directly and indirectly. Evidence demonstrated that this type of support can improve mental health while reducing stress (25). In addition, social support leads to a sense of self-confidence and assurance of effective and useful confrontation with problems. Basically, high social support is associated with decreased blood cortisol levels and the consequent reduction in anxiety (26). In extreme cases, however, it can lead to the overdependence of the individual, which is different in various cultures. In eastern countries, offering social support is considered as a value, but it is less valued and is even denounced in western countries (27).

In the present study, mental health status was screened based on the survey questionnaires and no clinical examination was performed, which is a limitation of this study. On the other hand, this study investigated fathers' mental health, which is considered as one of the strong points of the study. In addition, samples were taken from the reference hospital in Golestan province, which increases the generalizability to the level of the province.

Conclusions

Overall, it is suggested to consider educational and care programs for high-risk mothers to reduce the worry of pregnant mothers while increasing the mental health of the spouses and encouraging important relatives (e.g., the spouse and other close relatives) to attract further social support and thus to improve maternal mental health.

Conflict of Interests

Authors have no conflict of interests.

Ethical Issues

This paper was derived from a Ph.D. dissertation in reproductive health, which was approved by the Medical Research Ethics Committee at Shahid Beheshti University of Medical Sciences under the ethics code of IR.SBMU.RETECH.REC.1395.212 on June 21, 2016.

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