

## ORIGINAL ARTICLE

# Development and Psychometric Evaluation of the Men's Worry about Their Wives' High Risk Pregnancy Questionnaire

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### ABSTRACT

**Background:** High-risk pregnancy causes worry in not only the pregnant woman, but also her husband. There is no suitable instrument to measure the men's worry in high-risk pregnancies. The current study aimed to develop and psychometrically evaluate the instrument used to measure the men's worry about their wives' high-risk pregnancy.

**Methods:** This research is a mixed exploratory study used to develop a questionnaire and conduct psychometric study on it. This research was performed in the spouses of pregnant women who had referred to public health and treatment centers and hospitals in Gorgan in 2016. The items were derived from the results of interviews with 40 men and a review of literature. Then, content validity, face validity, criterion validity, construct validity and reliability were examined. For structure validity, 370 men were included in the study. As to criterion validity, the Symptom Checklist-25 and men's worry tool were used. The result of factor analysis was obtained using SPSS software and confirmatory factor analysis was performed by LISREL software.

**Results:** The results of the study revealed that the men were worried about pregnancy and delivery, neonatal health, maternal health, and personal and family data. General correlation of the instrument indicated a Chronbach's alpha of 0.91 and ICC showed an internal consistency of 0.91. Finally, an instrument with 30 items was developed with an acceptable validity and reliability.

**Conclusion:** The questionnaire developed a psychometric evaluation instrument to measure the men's worry in high-risk pregnancies.

**KEYWORDS:** High-risk pregnancy, Men, Psychometric, Questionnaire, Worry

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## INTRODUCTION

High risk pregnancy is a situation in which fetal as well as maternal life, health, comfort and consequently some conditions and factors are endangered.<sup>1</sup> High risk pregnancy include obesity, short height, pregnancy at ages younger than 18 or older than 35, having more than 5 pregnancies, a history of a complication, hemorrhage in the third trimester of pregnancy, taking unsafe medications, abnormality of the reproductive system, fever, acute emergency surgeries, chronic medical conditions, fetal infections, and post-term pregnancy.<sup>2</sup> More than one million pregnant women annually suffer from high risk pregnancies.<sup>1</sup> High-risk pregnancy results in increased anxiety for the pregnant woman and her family.<sup>3</sup> High risk pregnancy can affect both the husband and his wife. Psychological impacts of a high risk pregnancy engage both the woman and her husband.<sup>4</sup> A mother gets prepared for her maternal role during pregnancy, but a father will experience his paternal role after the birth of the baby. That's why a paternal role can shock the fathers.<sup>5</sup> Fatherhood as a transitional stage through the life of a man is a stressful event which may accompany depression, social isolation, and disrupted family relationships.<sup>6</sup>

A large number of men encounter with a great deal of worry and distrust towards their abilities in dealing with their paternal challenges.<sup>7</sup> The difficulty of transition to parenthood in the majority of men was moderate, which may result from economic pressures on men causing their worry for taking the role of a parent.<sup>8</sup> Worry is a key component of anxiety which is defined as prediction or expectation of unfavorable events in the future.<sup>9</sup> The concept of anxiety is divided into cognitive and behavioral components. The behavioral component of anxiety is manifested differently in different people, while the cognitive component is the same as worry which enjoys more consistency and follows a more homogenous pattern in different people.<sup>10</sup> Worry is defined as a chain of emotions, thoughts and images of a

negative nature in an uncontrollable manner.<sup>11</sup> There are serious shortcomings concerning what makes the men worried. There is an urgent need to understand what causes worry for their transition to a parental role in the men in order to consider their health-related needs.<sup>12</sup> To this end, it seems vital to identify the stressful factors experienced by the men in high risk pregnancies; indeed, an important step to promote their mental health is to acquire knowledge about their experience and worry during a high risk pregnancy.<sup>13</sup> The first step to identify worry in these men is to employ reliable instruments and methods.

Today, mothers with high risk pregnancy receive physical and mental health care services in the developed countries. In order to specify the effectiveness of the relevant interventions, there are instruments such as standard questionnaires to measure the pregnant mothers' worries including Cambridge Worry Scale and Prenatal Distress Questionnaire developed by Alderdice and Lynn,<sup>14</sup> both of which were respectively localized for Iranian pregnant women.<sup>15</sup> The main challenge along this research line is development of an instrument that not only it has adequate validity and reliability, but also it can be useful clinically to measure worry in these men. Couvades' 29-item questionnaire addresses the physical-psychological symptoms in the men who are experiencing the first pregnancy and postpartum period of their spouses. This questionnaire was developed by Ganapathi (2014) in India in which the items considered the physical and psychological symptoms. Although this instrument benefits from a high reliability (Chronbach's alpha= 0.89),<sup>5</sup> a limitation of this questionnaire is that it just considers the physical and psychological symptoms of men in pregnancies without medical and obstetric complications and lacks sensitivity in the case of high risk pregnancies.

A high risk pregnancy results in worry in both pregnant women and their spouse. However, there is no appropriate instrument to assess the men's worry in high risk

pregnancies. Therefore, the present study aimed to develop a psychometric instrument to evaluate worry in men coming across a high risk pregnancy.

As a result, regarding the lack of a suitable instrument to measure the men's worry about their wives' high-risk pregnancy, the current research was conducted to identify the men's experience in a high risk pregnancy and develop a psychometric instrument to measure the men's worry as a basis for the state and effectiveness of future interventions. Therefore, the current study aimed to develop and conduct a psychometric evaluation of the instrument used to measure the men's worry about their wives' high-risk pregnancy.

## **MATERIALS AND METHODS**

This research is a mixed exploratory study to develop a questionnaire and conduct a psychometric study on it. The research community in both qualitative and quantitative phases included the spouses of pregnant women who had referred to public health and treatment centers and hospitals in Gorgan in 2016. The research samples were those men whose wives had a high risk pregnancy. The participants gave their oral consent. Inclusion criteria were being Persian speaker, not being drug abuser, not having a recognized psychological or mental illness at present and in the past.

Exclusion criterion was lack of interest in the continuation of the interview. According to Schneider et al, several steps should be taken to develop a questionnaire.<sup>16</sup> The first step included determination of the definition of the men's worry about their wives' high-risk pregnancy by reviewing the related literature. Here, paternal worry was defined as intense worry experienced by the men. The second step consisted of individual interviews with purposive sampling of 40 expectant fathers in a private room in a hospital or health center by an experienced researcher. Data were obtained through in-depth semi-structured interviews with the men. For achieving the maximum variation, the samples were also different in

terms of risk factors for pregnancy including medical conditions, pregnancy trimester, obstetric and gestational problems, maternal anatomy problems, fetal health problems, level of education, age range, and different socioeconomic and cultural status.

Interviews were written carefully and then analyzed in the shortest possible time. Analysis of the interviews was controlled by 3 participants (member checking) and 2 faculty member colleagues (external checking). In the third step, the items of the questionnaire were determined and incorporated according to the results of interviews and the review of literature. In this study, first inductive and then deductive methods were used. The data were analyzed using MAXQDA 10 software. The fourth step included determination of the validity of the questionnaire, using content validity, face validity, criterion validity, and construct validity. In order to identify the face validity, both qualitative and quantitative methods were applied. In order to quantitatively characterize face validity, 10 fathers were asked to comment on this instrument, and then its difficulty, fitness and ambiguity levels were checked. Following modifications based on the comments presented by the fathers, in order to reduce or remove inappropriate statements and to determine the importance of each statement in the next step, item analysis method was utilized. As such, a 5-point Likert scale was considered. The impact factor equal or larger than 1.5 indicate that the item is convenient for subsequent analyses. In order to quantitatively investigate the content validity, we used content validity ratio (CVR) and content validity index (CVI).

In order to determine the content validity, we sent the questionnaire to 13 experts from among faculty members with experience in the areas of pregnancy healthcare and mental health. Their specialized fields were as follows: two PhD degrees in psychology, one PhD degree in nursing, two PhD degrees in reproductive health, and 8 midwives. The items were accepted or rejected based on CVR; so that, if CVR was equal or larger than

the value reported in Lawshe's CVR table (based on the number of experts), the item was accepted unconditionally. In the current study (based on 13 participating experts), if CVR of each item was larger than 0.54, that item was accepted.

CVI demonstrates comprehensiveness of the judgments concerning validity or applicability of the final model, test or instrument.<sup>17</sup> Generally, CVI can be described as an index to rate each item based on the relevance and clarity that reflects general relevance and clarity of the instrument.

CVI is calculated through division of the number of experts who rated an item 3 or 4 by the number of all experts. A CVI higher than 0.79 is considered as adequate. A CVI between 0.7 and 0.79 is questionable and needs modification and review.<sup>18</sup>

For criterion validity, the Symptom Checklist-25 and men's worry tool were used concurrently. The number of required samples in the factor analysis varied and was estimated between 3 and 10 samples per item.<sup>17</sup> Consequently, considering having 33 items and attrition, 370 men were selected by cluster random sampling method.

For evaluation of the factorial structure of the questionnaire, exploratory factor analysis was applied. In order to answer this question "whether the measuring scale for the men's

worry is saturated with several factors or not", we used principal component analysis with varimax rotation. In order to verify the assumptions presented by exploratory factor analysis, Kaiser- Meyer- Olkin (KMO) test and Bartlett's Sphericity test were employed.

The fifth step included determination of the reliability of the questionnaire by internal consistency. Cronbach's  $\alpha$  was calculated for each factor and the total questionnaire. The current article with an Ethics Code IR.SBMU.RETECH.REC 1395.912 was approved at Behavioral Science Research Center of Shahid Beheshti University of Medical Sciences.

## RESULTS

Data from interviews were analyzed and categorized to develop meaningful codes. The codes were used to create the items in the questionnaire for the concept of men's worry in high risk pregnancies in 4 themes and 16 categories. These themes are the pregnancy and delivery, neonatal health, maternal health, and personal-family (Table 1).

The initial questionnaire was developed with 33 questions with 5-point. All items had an impact factor of at least 1.5 points. Therefore, all the 33 items were kept. Three items CVR which were rated below 0.54 were removed, reducing the number of items from

**Table 1:** Categories and themes of the qualitative study of men's worry scale in high risk pregnancies

| Qualitative results    |  |
|------------------------|--|
| Theme                  | Category   |
| Pregnancy and delivery | No knowledge of the process of delivery<br>Pregnancy outcome<br>Unpredictable events<br>Labor pain tolerance<br>Wife's Nutrition |
| Neonatal health        | Physical problems<br>Mental retardation<br>Fetal and infant death  |
| Maternal health        | Physical illness<br>Mental problems<br>Mother's death  |
| Personal-family        | Marital relationship<br>Paternal role<br>Irregularities in home affairs and child care<br>Financial issues<br>social relations   |

33 to 30 items. CVI calculated results showed that 3 items had scores between 0.7 and 0.79, so we needed modification and revising.

For criterion validity, Symptom Checklist-25 and men’s worry tool were used concurrently. Our evaluation showed that the relationship between the score of men’s worry tool and total score of Symptom Checklist-25 with the severity of 0.74 was significant. Therefore, criterion validity implies the confirmation of the tool (Table 2).

As to construct validity, factor analysis method was used for 30 items. The entire statistical sample (N=370) was included in the factor analysis. The mean age of the men was 33.12±6.8 years. The largest percentages of the samples were Persian (62%), Zaboli (16%), Turkman (15%) and other items (%). In terms of education, the majority of them had high school (36%) and university degrees (30.1%) and other items (33.9%). The KMO measure in this study was .90. As the factors are extracted with an eigenvalue greater than 1, KMO index was obtained and the results of Bartlett’s test were significant (P<0.001).

In this analysis, only the factor loadings greater than 0.4 related to the items from different components were calculated. Totally, four components had an eigenvalue greater than 1. In general, these four components revealed 57.47% of the total variance observed

in the questionnaire scores.

In the next stage, factor analysis was performed for 30 items loading to derivation of 4 Components. Table 3 illustrates the factor loading. According to this Table, the first Component was revealed by the items 1-2-3-4-5-30 about the pregnancy and delivery and with a 24.47% of the explained variance. The second Component was revealed by items 6-7-8-9-11 about the neonatal health with a 13.55% of the explained variance. The third Component was revealed by items 12-13-14-15-16-17-18 about the spouse’s health revealed by items 12-13-14-15-16-17-18 with a 9.877% of the explained variance. And finally, the fourth Component was revealed by items 10-19-20-21-22-23-24-25-26-27-28-29 about the personal and family issues with a 9.56% of the explained variance (Table 3).

Table 4 illustrates the initial eigenvalues and the percentage of variance explained by the components extracted in the rotated matrix of the expectant men’ worry scale in high risk pregnancies. According to this Table, four components had an eigenvalue greater than 1. In general, these four components showed 57.47% of the total variance observed in the questionnaire scores. The first and second components showed 24.47% and 13.56% of the explained variance and the third and fourth components 9.88 and 9.57% of the

**Table 2:** The association between the men’s worry questionnaire and Symptom Checklist-25

| Men’s worry                   | Pregnancy and delivery |          | Neonatal health |          | Maternal health |          | Personal-family |          | Total worry |          |
|-------------------------------|------------------------|----------|-----------------|----------|-----------------|----------|-----------------|----------|-------------|----------|
|                               | R                      | P value* | R               | P value* | R               | P value* | R               | P value* | R           | P value* |
| <b>Symptom check-list-25</b>  |                        |          |                 |          |                 |          |                 |          |             |          |
| Somatization                  | 0.47                   | <0.001   | 0.45            | <0.001   | 0.44            | <0.001   | 0.47            | <0.001   | 0.68        | <0.001   |
| Obsessive-compulsive disorder | 0.50                   | <0.001   | 0.44            | <0.001   | 0.42            | <0.001   | 0.48            | <0.001   | 0.68        | <0.001   |
| Interpersonal sensitivity     | 0.45                   | <0.001   | 0.45            | <0.001   | 0.42            | <0.001   | 0.46            | <0.001   | 0.66        | <0.001   |
| Depression                    | 0.41                   | <0.001   | 0.39            | <0.001   | 0.39            | <0.001   | 0.48            | <0.001   | 0.62        | <0.001   |
| Anxiety                       | 0.42                   | <0.001   | 0.43            | <0.001   | 0.45            | <0.001   | 0.43            | <0.001   | 0.63        | <0.001   |
| Phobia                        | 0.43                   | <0.001   | 0.41            | <0.001   | 0.36            | <0.001   | 0.41            | <0.001   | 0.59        | <0.001   |
| Paranoid                      | 0.42                   | <0.001   | 0.39            | <0.001   | 0.40            | <0.001   | 0.38            | <0.001   | 0.59        | <0.001   |
| Psychosis                     | 0.47                   | <0.001   | 0.42            | <0.001   | 0.41            | <0.001   | 0.44            | <0.001   | 0.64        | <0.001   |
| Anorexia                      | 0.42                   | <0.001   | 0.34            | <0.001   | 0.35            | <0.001   | 0.40            | <0.001   | 0.56        | <0.001   |
| Mental disorder               | 0.52                   | <0.001   | 0.48            | <0.001   | 0.48            | <0.001   | 0.51            | <0.001   | 0.74        | <0.001   |

\*Pearson correlation coefficient

**Table 3:** The factor loading of items "men's worry scale in high risk pregnancies"

|   | <b>Rotated Component Matrix</b>  |          |          |          |
|---|----------------------------------|----------|----------|----------|
|   | <b>Component(factor loading)</b> |          |          |          |
|   | <b>1</b>                         | <b>2</b> | <b>3</b> | <b>4</b> |
| Item 1: I am always worried about the outcome of my wife's pregnancy.   | 0.12                             | 0.02     | 0.01     | 0.77     |
| Item 2: I am worried about my wife's delivery.  | 0.01                             | 0.13     | 0.16     | 0.71     |
| Item 3: I am worried about my wife's tolerance for labor.   | 0.23                             | 0.19     | -0.02    | 0.61     |
| Item 4: I have little information about delivery.   | 0.18                             | 0.06     | 0.15     | 0.53     |
| Item 5: I am worried about unexpected events during my wife's pregnancy and delivery.   | 0.10                             | 0.21     | 0.13     | 0.70     |
| Item 30: I am worried about the reappearance of terrible events that occurred during the last pregnancy of my wife.           | 0.22                             | 0.10     | 0.17     | 0.54     |
| Item 6: I am worried about the health of my child during delivery.  | -0.02                            | 0.17     | 0.72     | 0.22     |
| Item 7: I am worried that my child would have a birth defect or a serious problem.  | -0.01                            | 0.17     | 0.73     | 0.11     |
| Item 8: I am worried about the premature birth of my child.   | -0.01                            | 0.19     | 0.75     | 0.13     |
| Item 9: Sometimes I think that my child is weak and could soon contract a disease.  | 0.13                             | 0.08     | 0.73     | 0.11     |
| Item 11: I am worried that pregnancy complications would have a negative impact on the normal life of my child in the future. | 0.17                             | 0.10     | 0.74     | 0.01     |
| Item 12: I do not understand the physical and psychological changes of my wife.   | 0.08                             | 0.75     | 0.08     | 0.04     |
| Item 13: I am worried about not being able to take the right decision for my wife.  | 0.11                             | 0.79     | 0.06     | 0.04     |
| Item 14: I am worried that the health of my wife would be endangered by pregnancy or delivery.                                | 0.010                            | 0.75     | 0.09     | 0.15     |
| Item 15: I am worried about my wife's nutrition.  | 0.07                             | 0.69     | 0.25     | 0.05     |
| Item 16: I am worried about my wife's concerns.   | 0.03                             | 0.76     | 0.03     | 0.14     |
| Item 17: I am worried about proper treatment and healthcare services for my wife.   | 0.05                             | 0.71     | 0.13     | 0.22     |
| Item 18: I am worried that my wife could be deceased because of the risks of pregnancy and delivery.                          | 0.07                             | 0.68     | 0.22     | 0.12     |
| Item 10: I am worried about my ability to take care of my child.  | 0.76                             | 0.06     | 0.04     | 0.07     |
| Item 19: I am worried about the needs of my wife.   | 0.70                             | 0.19     | 0.04     | 0.13     |
| Item 20: I am worried that I may not be able to perform my duties as a father.  | 0.74                             | 0.03     | -0.05    | 0.10     |
| Item 21: I am worried about the continuation of an intimate marital relationship with my wife.                                | 0.77                             | 0.05     | 0.01     | 0.04     |
| Item 22: I am worried that my wife would have little time for me  | 0.85                             | 0.02     | 0.04     | 0.07     |
| Item 23: I am worried about financial problems.   | 0.76                             | 0.08     | 0.09     | 0.12     |
| Item 24: I am worried about the future needs of my child and family.  | 0.82                             | 0.14     | 0.05     | 0.11     |
| Item 25: I am worried about restrictions on my social interaction after the birth of my baby.                                 | 0.74                             | 0.07     | 0.02     | 0.07     |
| Item 26: I am worried about limitation of daily activities after the birth of my child.                                       | 0.83                             | 0.01     | 0.08     | 0.10     |
| Item 27: I am worried about disrupted home affairs during this pregnancy.   | 0.84                             | 0.01     | 0.03     | 0.12     |
| Item 28: I am not pleased with my loneliness at home during my wife's hospitalization period due to a medical problem.        | 0.65                             | 0.05     | 0.09     | 0.16     |
| Item 29: I am worried with the interference in care of my other children during this pregnancy.                               | 0.71                             | -0.10    | 0.05     | 0.16     |

Extraction Method: Principal Component Analysis; Rotation Method: Varimax with Kaiser Normalization

**Table 4:** Components with initial eigenvalues and percentage of variance explained by the components extracted in the rotated matrix of men's worry scale in high risk pregnancies

| <b>Component</b> | <b>Initial Eigenvalues</b> |                      |                     | <b>Rotation Sums of Squared Loadings</b> |                      |                     |
|------------------|----------------------------|----------------------|---------------------|--|----------------------|---------------------|
|                  | <b>Total</b>               | <b>% of Variance</b> | <b>Cumulative %</b> | <b>Total</b>                             | <b>% of Variance</b> | <b>Cumulative %</b> |
| 1                | 8.46                       | 28.21                | 28.21               | 7.34                                     | 24.47                | 24.47               |
| 2                | 4.67                       | 15.56                | 43.76               | 4.07                                     | 13.56                | 38.03               |
| 3                | 2.23                       | 7.44                 | 51.21               | 2.96                                     | 9.88                 | 47.90               |
| 4                | 1.88                       | 6.27                 | 57.47               | 2.87                                     | 9.57                 | 57.47               |

explained variance (Table 4).

Men' worry scale is represented in the following Figure 1. The Scree plot in Figure 1 shows that the first four factors have the greatest change and the next factors are less important.

When the components were characterized, Chronbach's alpha and inter-item correlation matrix were calculated to evaluate the reliability of subscales and the instrument. In order to determine the internal consistency, intra-class correlation coefficient (ICC) was utilized.

Table 5 illustrates the reliability of the subscales and the instrument. According to Table 5, the factors extracted from exploratory analysis indicate the evaluation of the instrument's reliability. Chronbach's alpha was within an acceptable range. Likewise, inter-item correlation, correlation with the total score and alpha value after omitting each item were calculated. The results suggested

that there was a positive correlation among the items and all the items were correlated with the total score. Removing any one item did not increase the alpha. The respective findings are not included in this article. Internal consistency was also measured by ICC; for the first factor, it was 0.77 located in the confidence interval of 0.72 to 0.80, and for the second factor it was .816 within the confidence interval of 0.78 to 0.85. ICC for the third factor was 0.87 within the confidence interval of .85 to 0.89, and for the Fourth factor it was 0.94 within the confidence interval of 0.93 to 0.95.

In evaluation of total correlation of the instrument, Chronbach's alpha of 0.91 was within an acceptable range. Correlation with total score and alpha level after omission of each one item were also calculated. Omission of any one item did not increase the alpha level. As a result, this set of items can coherently form a component. Internal consistency measured

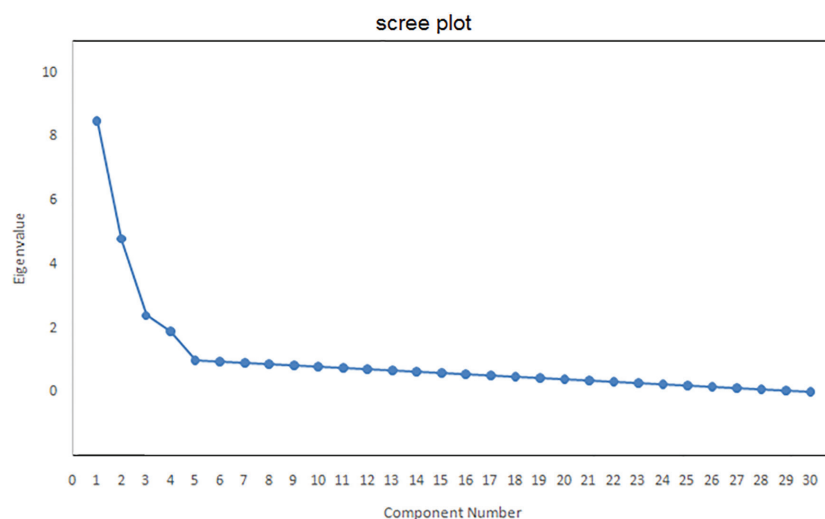


Figure 1: Scree plot of the questionnaire for the men' worry.

Table 5: Methods of evaluating the reliability of the scale for men' worry

| Scale                      | Items                               | Chronbach's alpha | ICC <sup>a</sup> | Confidence interval | P value |
|----------------------------|-------------------------------------|-------------------|------------------|---------------------|---------|
| 1 (pregnancy and delivery) | 1-2-3-4-5-30                        | 0.77              | 0.77             | 0.72-0.80           | <0.001  |
| 2 (neonatal health)        | 6-7-8-9-11                          | 0.82              | 0.82             | 0.78-0.85           | <0.001  |
| 3 (maternal health)        | 12-13-14-15-16-17-18                | 0.87              | 0.87             | 0.85-0.90           | <0.001  |
| 4 (personal-family)        | 10-19-20-21-22-23-24-25-26-27-28-29 | 0.94              | 0.94             | 0.93-0.95           | <0.001  |
| The entire instrument      |                                     | 0.91              | 0.91             | 0.89-0.92           | <0.001  |

<sup>a</sup>Intra-class correlation coefficient

by ICC was 0.91 within the confidence interval of 0.89 to 0.92 (Table 5).

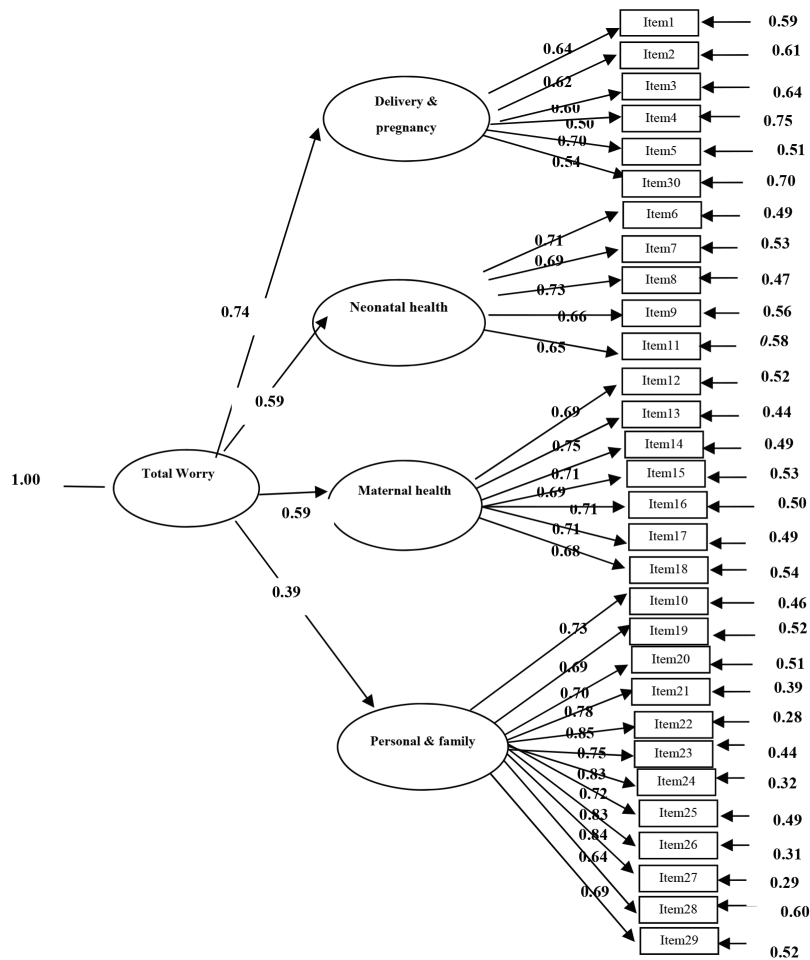
For exploratory factor analysis, the software SPSS was used. Then, confirmatory factor analysis was done on the same sample by using the LISREL software to determine whether this sample can be fitted on this trend or not. In confirmatory factor analysis, in addition to the formation of components, the structure integrity is studied.

The fitting indices of the model showed that the degree of freedom ratio was 2.24 (<3), which was ideal. Comparative Fit Index (CFI), Normalized Fit Index (NFI), and the Non-Normalized Fit Index (NNFI) were equal to 0.96, which was acceptable. Root Mean Square Error of Approximation (RMSEA) and standardized root-mean-square residual (SRMR) error rates were 0.06. Also, Goodness of fit index (GFI) and Adjusted goodness of

fit index (AGFI) indices were 0.85 and 0.83, respectively, which was relatively favorable. In general, the fit of the model for the worry questionnaire was acceptable (Figure 2).

**DISCUSSION**

Based on the results of the qualitative study, men's worries were identified in four themes: pregnancy and childbirth, newborn's health, maternal health, and personal-family. Furthermore, concerning the findings of the current study, the first worry of men was pregnancy and delivery. According to a study conducted in Australia, transition to parenthood and expectations regarding delivery and birth lead to a high degree of worry and anxiety in some men. Paternity is exciting and stressful.<sup>13</sup> A large number of fathers go through this parenthood stage without readiness and this is



Chi-square=896.28 • pvalue< 0.001• RMSEA=0.060

**Figure 2:** A basic model with standard path coefficients.



a critical issue.<sup>19</sup>

Neonatal health, maternal health and personal-family health were the other worries of men in this study. According to a study carried out in America, worries of men as to Baby worries (Baby's health, Preparation for the baby, Mother's health), Security worries (financial and Job), and relationship worries (Marriage, Family and Friends) were 51.9%, 45.2%, 1%, respectively.<sup>12</sup> The results of the present study is consistent with those of the American study.

Studies show that there are worries and similar variables such as fear and anxiety in natural and abnormal pregnancies for mothers and fathers. In a review study, fatherhood experience was examined in qualitative studies during 2000-2008. The extracted themes included three codes of feeling alienation and confusion, identifying one's role as a father, and changing view of relationship with the spouse. The focus of fathers with respect to their roles is sponsoring the family needs.<sup>20</sup> In this study, worries over financial problems and relationship with their spouse were among the extracted themes. Moreover, due to the presence of men whose spouses had high-risk pregnancies, there were worries regarding the hospitalization of the spouse and accessibility of appropriate health care services for these men.

Based on a study conducted in USA in which worries of mothers and fathers were assessed, the mothers were most worried about their newborns' health and their relationship with spouses and relatives, while financial factors were a main worry of fathers. In other words, the worry of the parents during pregnancy are related to gender.<sup>12</sup> Although determining the most important priority of worry was not an objective of this study, worries about financial issues were among the worries of men in the study.

Based on another study, perceived fears of men were as follows: inadequacy, mother's and newborn's health, changing relationships, good fatherhood, lack of emotional attachment to the baby, financial problem,

lack of supporting the mother, and lifestyle changes. Uncertainty about the ability to cope with paternal challenges is another worry of men.<sup>21</sup> It seems that men are worried about pregnancy, and the dimensions of this worry vary with regard to the presence or absence of high-risk pregnancy, as well as cultural differences, social support from partners and relatives along with provision of health care and insurance services.

The main aim of the current research was to investigate psychometric characteristics of the questionnaire for the men's worry in high risk pregnancy. This questionnaire is the first instrument that addresses worry in the expectant fathers during high risk pregnancy.

This questionnaire enjoys an excellent reliability. Consistency of the instrument for all items in current research indicates the excellent reliability of the questionnaire. Pregnancy and delivery, spouse's health and the neonatal health had a good reliability, and personal and family issues had a very excellent reliability.

Internal consistency for all dimensions was acceptable. ICC for the whole questionnaire and the dimensions of pregnancy, delivery, spouse's health, and the neonatal health showed an optimal consistency.

Various psychometric tools have been developed with respect to pregnancy worry; however, the majority of these tools are designed for mothers. For example, Prenatal Distress Questionnaire identifies six areas of maternal worries, while there is no tool to specifically address the men's worries.<sup>22</sup> Couvade's tool, which is designed for men, shows their reaction to their spouses' pregnancy. These symptoms are a function of physical and psychological changes in men, including physical and psychosomatic symptoms.<sup>5</sup> However, in addition to identifying the dimensions of worries from the viewpoints of men, the present study introduces a tool with good reliability and validity that is able to assess the condition of men's worries for high-risk pregnancies.

One advantage of the present questionnaire

is lack of any record of psychological disorder and lack of pharmacotherapy which were among the inclusion criteria so that the samples were just worried about high risk pregnancy and its related problems not the outcomes of the patient's psychological disorders. Therefore, this instrument measures only worries about a high risk pregnancy. Another advantage is that worries about all three trimesters of pregnancy are considered and no significant difference was found in the number of fathers during different trimesters. It seems that the development of this tool is an innovative work that can also be used to measure the men's worries as well as the effectiveness of interventions.

### CONCLUSION

Generally, the present study demonstrate that this questionnaire (MWHPO) has appropriate face validity, content validity and reliability, making it applicable to studies concerning the men's worry in high risk pregnancies. A psychometric evaluation of this instrument in low risk pregnancies is suggested for the future studies.

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