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# Health-related quality of life and related factors among pregnant women

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**Abstract:**

**CONTEXT:** Quality of life is significant in all stages of life, including within pregnancy. The hormonal, emotional, psychological, and physical factors specific to pregnancy can affect and threaten the quality of life of pregnant mothers.

**AIMS:** This study sought to investigate the health-related quality of life (HRQoL) and related factors among pregnant women

**SETTINGS AND DESIGN:** This cross-sectional study was performed on 300 pregnant women who were in the second and third trimesters of pregnancy without any risk of high-risk pregnancy covered by a community health center in Yazd, Iran, between 2018 and 2019.

**SUBJECTS AND METHODS:** The required data were collected using demographic questionnaire and HRQoL (SF-12v2) questionnaire

**STATISTICAL ANALYSIS USED:** Data were analyzed using SPSS 18 software and ANOVA statistical tests ($P < 0.05$).

**RESULTS:** Physical dimension of quality of life of pregnant women had the mean and standard deviation of 43.7 ± 7.3 and that psychological dimension had the mean and standard deviation of 31.5 ± 11.8. Physical dimension of quality of life was significantly correlated with maternal age, gestational age, body mass index before 12 weeks of pregnancy, mother's education and job as well as spouse's level of education ($P < 0.05$). Furthermore, the psychological dimension of quality of life was significantly correlated with gestational age, mother's education and occupation as well as spouse's level of education ($P < 0.05$).

**CONCLUSIONS:** According to the findings, attention to physical and psychological aspects of quality of life of pregnant women and demographic factors affecting it is essential for improving maternal and child health during and after pregnancy.

**Keywords:**

Demographic factors, health-related quality of life, pregnant women, quality of life

## Introduction

Quality of life is a broad concept that encompasses all aspects of life including health and is related to physical, social, physical, and spiritual dimensions[1,2] that is one of the important health consequences that need to be addressed in such cases as evaluating and measuring health interventions. It should be noted that quality of life is difficult to define and measure because it encircles various areas such as illness and treatment, mental health, and social and economic well-being.[3,4] The importance of quality of life is to the extent that scholars have identified one of the major health challenges in the present century as a better quality of life.[5] In the past, assessing the impact of care interventions



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was based on recovery and disability and death. Quality of life as one of the important outcomes and one of the determinants of the impact of care processes on the treatment of diseases.[6]

According to the World Health Organization, quality of life includes people's perceptions of their position in life in terms of their culture, the value system they live in, their goals, expectations, standards, and priorities.[7-9] Researchers postulate that examining the quality of life and striving to improve it will play a large role in the health of individual and social life. Health is one of these factors and of course the most important factor in quality of life.[10] Health-related quality of life (HRQoL) focuses on the subjective evaluation of one's current health status or health care and health promotion activities.[10]

Pregnancy is one of the most important natural and important stages of a woman's life, where the woman's body gradually undergoes certain physiological and anatomical changes during the stages of fetal development.[11] The hormonal, emotional, psychological, and physical factors specific to pregnancy cause changes in the physical, mental, social, and overall health dimensions of pregnant women during pregnancy[5,12,13] and easily affect and threaten their quality of life.[7] Therefore, this period is often a stressful period with physiological and psychological changes.[7] For this reason, improving the quality of life of pregnant women is one of the important aspects of prenatal care and striving to improve the quality of life for pregnant women and to create favorable conditions for healthy fetal development and is considered as one of the priorities of reproductive health and prenatal care.[14] The health and progress of any society is largely based on women's health and pregnancy and that childbirth has a significant impact on women's health. The primary goal of health care during pregnancy is to achieve the best possible outcome for the mother and the fetus.[15] Failure to do so will cause irreparable consequences for both mother and baby in the years to come.[16] Therefore, maternal and neonatal health should be considered as one of the priorities of health services.[17]

Despite the important role of quality of life for pregnant women and considering the many cultural, social, and economic challenges in Iran, the factors affecting the quality of life of pregnant women are taken into consideration. Focusing on this issue may help plan interventions to improve the quality of life for future generations. The results of this study can be used as a basis for designing appropriate interventions to improve the quality of life of pregnant mothers and their children as well.

## Subjects and Methods

This study is a cross-sectional descriptive-analytical study which was carried out from October 2018 to March 2019 in Yazd, Iran. A total of 259 ones were selected as the study sample using sample size formula taking into account the probability of first type error $\alpha = 0.05$, $1-\beta$ value = 0.90, and $r = 0.20$ (Pearson correlation coefficient). With a 15% chance of sample loss, 300 people were considered.

$$n = \left[\frac{\left(Z_{1-\alpha/2} + Z_{1-\beta}\right)}{0.5 \times \ln([1+r]/[1-r])}\right]^2 + 3$$

Pregnant mothers who were in the second and third trimesters of pregnancy were enrolled in the study using random sampling technique (the center file number to be even). Pregnant mothers who had problems including high-risk pregnancy (bleeding, preterm rupture of membranes, preeclampsia or eclampsia, or gestational diabetes with insulin injections) or those who had physical or mental problems or underlying diseases such as gestational diabetes, hypertension, and cardiovascular disease were excluded from the study.

### Data collection instrument

Demographic information consists of age, maternal education, employment status, spouse's level education, spouse's employment, gestational age, body mass index before 12 weeks of pregnancy,[16] and HRQoL questionnaires (SF-12v2).

### Health-related quality of life (SF-12v2)

The SF-12v2 questionnaire is a summary of the SF-36. The questionnaire encompasses 12 items and examines the dimensions of physical and mental health related to HRQoL The questionnaire is used as a valid instrument to measure HRQoL.[18,19] In this questionnaire, physical health dimension is then assessed by six items, out of which four are on the Likert scale and two items on the yes and no bases. Furthermore, mental health dimension encompasses six items including four items on the Likert scale and two items with yes or no options. The instrument was valid and reliable for the Iranian population, and Cronbach's alpha coefficient was 0.73 for physical health and 0.72 for mental health.[19] QualityMetric Health Outcomes scoring software version 2 was run to calculate the physical and mental dimensions of quality of life. The software uses all 12 items to provide a physical and mental dimension of quality of life and employs a normative calculation algorithm derived from information from the American general population. Accordingly, the assumption for the mean in this questionnaire is calculated as a mean of 50 and a standard deviation of ten. Possible scores for the mental and physical dimensions

ranged from 0 (worst) to 100 (most favorable).[19] In order to determine the validity of the questionnaires, content validity and face validity were quantitatively evaluated. Questionnaires were administered to teen community health nursing professors (four ones), maternal and child health specialists (three ones), and family health professionals (three ones). In the present study, all the items were approved. It should be noted that in order to assess the internal consistency of the questionnaire, Cronbach's alpha was used to assess the reliability of the questionnaires. Cronbach's alpha for the physical dimension and mental dimension was 0.74 and 0.78, respectively.

### Ethical considerations

This study was approved by the Research Council of Shahid Beheshti University of Medical Sciences with the ethics code IR.SBMU.RETECH.1397.27. Written consent was obtained from the participants.

### Data analysis

After data collection, Statistical analyses were done with SPSS 24 software (SPSS Inc., Chicago, IL, USA) on a Microsoft Windows-based computer. First, the data normality was tested using Kolmogorov–Smirnov, and it was found that the data enjoyed a normal distribution. Descriptive statistics (frequency, mean, standard deviation, and ANOVA) were used to analyze the data. $P < 0.05$ is taken as the level of statistical significance.

## Results

The mean age of pregnant mothers was 32.85 ± 6.11. With regard to the level of education, 52% of mothers had high school education and 66% were housewives. More information is provided in Table 1.

Results showed that the physical dimension of quality of life of pregnant women had the mean and standard deviation of 43.7 ± 7.3 and psychological dimension had the mean and standard deviation of 31.5 ± 11.8. Information about subdimensions is available in Table 2.

Result of ANOVA test showed that the physical dimension of quality of life was significantly correlated with age, gestational age, body mass index before 12 weeks of pregnancy, mother's education, and spouse's education ($P < 0.01$) [Table 3]. Furthermore, the psychological dimension of quality of life was significantly correlated with variables of gestational age, mother's education and occupation as well as spouse's education ($P < 0.01$) [Table 3].

**Table 1: Frequency distribution of demographic variables among pregnant women (*n*=300)**

| Variable | Frequency (%) |
|---|---|
| Age | |
| <20 | 78 (26) |
| 20-25 | 57 (19.6) |
| 26-30 | 50 (16.1) |
| Over 30 | 115 (38.3) |
| Level of education | |
| Illiterate | 80 (27) |
| Primary | 30 (10) |
| Junior high school | 65 (22) |
| High school | 75 (52) |
| University and higher | 50 (16.1) |
| Occupation | |
| Household | 200 (67) |
| Employed | 100 (33) |
| Level of education of spouse | |
| Illiterate | 25 (8.3) |
| Primary | 25 (8.3) |
| Junior high school | 60 (20) |
| High school | 125 (41.7) |
| University and higher | 65 (21.7) |
| Occupation of spouse | |
| Unemployed | 55 (18.3) |
| Self-employed | 205 (68.4) |
| Employee | 40 (13.3) |
| Gestational age | |
| Second trimester | 175 (58.3) |
| Third trimester | 125 (41.7) |
| BMI (before 12 weeks of pregnancy) | |
| <18.5 | 18 (6.1) |
| 18.5-24.9 | 71 (23.7) |
| 25-29.9 | 108 (35.9) |
| Over 30 | 103 (34.3) |

BMI=Body mass index

**Table 2: Dimension and subdimensions of health-related quality of life in pregnant women**

| Variable | Mean±SD |
|---|---|
| Subdimensions of HRQoL | |
| Physical functioning | 40±23.84 |
| Role functioning | 64.16±29.04 |
| Physical problem | 60±14.60 |
| General health | 44.16±23.90 |
| Vitality | 43±19.29 |
| Social functioning | 36.25±16.70 |
| Role functioning | 52.5±33.50 |
| Mental health | 25.5±18.59 |
| Dimensions of HRQoL | |
| Physical dimension of HRQoL | 43.7±7.30 |
| Mental dimension of HRQoL | 31.5±11.80 |

HRQoL=Health-related quality of life, SD=Standard deviation

## Discussion

In this study, the physical dimension of pregnant women was more desirable than the psychological dimension. It can be said that most of the study participants were in the second trimester of pregnancy. This period is less weighty than the third trimester of pregnancy,[20,21] so women's physical activity will be less affected by

**Table 3: Relationship between demographic variables and the physical and mental dimension of health-related quality of life**

| Variable | Mean of mental dimension of HRQoL | *P* | Mean of physical dimension of HRQoL | *P* |
|---|---|---|---|---|
| Age | | | | |
| <20 | 16.46±1.44 | 0.382 | 12.60±2.10 | 0.005* |
| 20-25 | 16.52±1.67 | | 12.30±1.74 | |
| 26-30 | 15.66±1.00 | | 14.33±1.80 | |
| Over 30 | 16.57±1.43 | | 13.01±2.06 | |
| Education | | | | |
| Illiterate | 16.18±1.34 | <0.001* | 12.75±2.29 | 0.015* |
| Primary | 16.66±1.39 | | 13.66±2.08 | |
| Junior high school | 17.00±1.25 | | 12.69±1.82 | |
| High school | 16.00±1.47 | | 12.20±2.18 | |
| University and higher | 17.00±1.86 | | 12.90±0.95 | |
| Occupation | | | | |
| Household | 16.27±1.45 | <0.001* | 13.42±2.00 | <0.001* |
| Employed | 16.95±1.53 | | 11.30±1.01 | |
| Education of spouse | | | | |
| Illiterate | 16.60±2.91 | <0.001* | 9.80±0.40 | <0.001* |
| Primary | 15.60±0.50 | | 12.20±2.44 | |
| Junior high school | 17.16±1.47 | | 12.41±2.19 | |
| High school | 16.52±1.30 | | 13.44±1.77 | |
| University and higher | 16.15±1.62 | | 12.92±1.14 | |
| Occupation of spouse | | | | |
| Unemployed | 16.36±1.62 | 0.755 | 11.27±1.61 | <0.001* |
| Self-employed | 16.53±1.38 | | 13.26±1.90 | |
| Employee | 16.50±1.96 | | 11.87±1.71 | |
| Gestational age | | | | |
| Second trimester | 1.63±0.12 | 0.012* | 1.78±0.13 | 0.008* |
| Third trimester | 1.27±0.11 | | 2.23±0.19 | |
| BMI (before 12 weeks of pregnancy) | | | | |
| <18.5 | 16.57±1.28 | 0.750 | 12.46±1.96 | <0.001* |
| 18.5-24.9 | 16.46±1.56 | | 12.02±1.74 | |
| 25-29.9 | 16.46±1.60 | | 13.60±1.98 | |
| Over 30 | 17.33±1.15 | | 14.33±0.057 | |

*Significant at *P*<0.05. BMI=Body mass index, HRQoL=Health-related quality of life

the conditions.[22,23] Moreover, in the present study, the dimension of role functioning had the highest score. It may be argued that women, due to physical appearance changes, may limit some of their roles as a citizen or a colleague and even a mother and a spouse. The results of this study are in line with the results of studies in Iran[23] and other countries.[24] Mental health dimension also scored the lowest on the mental health scale. Role functioning can disrupt the social activities of pregnant women and thus affect their mental health. This result is confirmed by other studies in Iran[25] and other countries.[26]

According to the results of analysis of variance, the most important components affecting demographic factors on physical quality of life were related to gestational age, age, education, occupation, and maternal body mass index. These results were also confirmed by other studies in Iran[23,25] and other countries.[13,27] Some studies have correlated HRQoL with body mass index,[28,29] as well as relationship with maternal age, education, and occupation.[30,31] Mother's age is an important factor for quality of life. Women who experience pregnancy between the ages of 18 and 35 years are less likely to experience pregnancy problems, and when faced with pregnancy problems, they will be better able to adapt.[32] Young, educated, and working mothers, due to their better socioeconomic status, are likely to have a greater and better understanding of the importance of their health and their impact on fetal health and more on their appearance and weight control and body mass index.[12,33]

In the present study, spouse occupation was also considered as one of the effective factors on the quality of life of pregnant mothers. Previous similar studies also confirmed that these factors had a significant relationship with the quality of life of pregnant women.[34-36] Outcomes of good economic status such as increase of social supports, more variety of leisure time activities, possibility of reaching health and different

educational, social, and familial success, and increase of the possibility of helping others can increase happiness. Happiness is one of the most important factors affecting women's mental health.[37]

The lowest score of quality of life in the present study is related to the psychological dimension. It can be concluded that pregnancy is a critical period for women who can experience mental health problems during this time. In fact, pregnant women are prone to vulnerability to stressors, so that in this group of women, depression and anxiety are three times higher than others.[38]

According to the results of analysis of variance, there was a significant relationship between gestational age, education, and maternal occupation with psychological dimension of HRQoL among pregnant women. Mothers working alongside pregnancy-related issues such as hormonal changes develop fatigue, weakness, lethargy, and fatigue, which may result in neglect[39] and therefore devote less time to themselves. The results of this study are in line with those of Iran[24,40] and other countries.[27,41,42]

In the present study, however, the effect of spouse's education on the psychological dimension of quality of life of pregnant women was also confirmed. It can be said that higher awareness of spouses due to higher education results in more emotional and physical support from their pregnant spouses, which will have an impact on the quality of life of pregnant women. The results of this study are confirmed by the results of other studies.[8,13,30,31] A systematic review conducted by Lagadec *et al*. in 2018 revealed that in 15 studies examining factors related to the quality of life of pregnant women, demographic-social factors such as mean maternal age and lower gestational age, lack of economics problems, higher education, employment, being married, and being with family and friends have a strong and significant relationship with quality of life. It has been reported that lower quality of life is attributed to physical factors such as pregnancy complications, physician-assisted pregnancy, prepregnancy obesity, physical symptoms such as nausea and vomiting, sleep problems, or psychological factors such as anxiety and stress during pregnancy or depression.[43] Quality of life during pregnancy is particularly important. Promoting mental health in order to improve the quality of life of pregnant women should also be considered as one of the public health priorities and that psychological interventions for pregnant women seem to be quintessential. What is certain is that the evaluation of quality of life in terms of timely and contextual preventive measures during pregnancy is important and should emphasize the health of pregnant women, leading to increased quality of care and well-being.

The limitations of the present study were the second and third trimesters of pregnancy due to the lack of accurate information regarding the first trimester of pregnancy. Therefore, it is suggested to examine the quality of life in the first trimester of pregnancy when hormonal changes, especially pregnancy symptoms, begin.

## Conclusions

According to the results of this study, considering this issue, especially in terms of identifying demographic factors affecting it, it can be emphasized that the production and conduct of scientific and expert research to identify all aspects of this area and to solve the problems and factors that create the problems are among the basic needs of our society. The results of this study can be used as a basis for designing appropriate interventions to enhance the lifestyle and subsequently quality of life of pregnant women by policymakers and health-care providers, especially for the health of pregnant women. It is also helpful to provide staff with the necessary training to better justify mothers with the benefits of health-promoting behavior.

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### Conflicts of interest

There are no conflicts of interest.

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