Research Article

Health related quality of Life and Related Factors in Pregnant Women

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Short title: Quality of Life in Pregnancy

ABSTRACT
Backgrounds: This study aimed to assess the health related quality of life (HRQoL) and related factors in pregnant women.
Methods: In this cross-sectional study, 388 pregnant women from Yasuj, Iran in 2016 participated in the study. The SF36 and Enrich Couples Scale questionnaires were used to assess HRQoL and marital satisfaction, respectively. Collected data were analyzed by SPSS 22. Multiple logistic regression analysis was used to determine the predictors of HRQoL.
Results: The mean and standard deviation of HRQoL in pregnant women was 60.21±19.86. Among the HRQoL dimensions, MH had the highest mean (64.64) and RP had the lowest (55.99). The mean scores of HRQoL and marital satisfaction were significantly higher in women with compared to those with high school diploma (p<0.01), as well as significantly higher in employed women than unemployed women (p<0.01). ANOVA test showed that the mean scores of academic education HRQoL and marital satisfaction were significantly higher in women with good economic status compared to those with average and poor economic status (p<0.01). The mean score of HRQoL in subjects with normal BMI was higher significantly compared to obese subjects (p<0.01). Multiple logistic regression analysis showed that, the most important predictive variables for HRQoL were respectively BMI (OR=2.40, sig=0.02, 95% CI=1.13-5.09), marital satisfaction (OR=1.05, sig=0.001, 95% CI=1.03 - 1.07), maternal age (OR=0.40, sig=0.02, 95% CI=0.18-0.88) and economic status (OR=0.21, sig=0.02, 95% CI=0.05 - 0.78).
Conclusion: Modifying the BMI before and during pregnancy, as well as implementing psychological interventions, can predispose the promotion of HRQoL.

Keywords: health related quality of life, marital satisfaction, BMI, pregnant women, marital satisfaction; BMI; academic education; economic status; maternal age

INTRODUCTION

Pregnancy is one of the most important periods, which is associated with many physical and emotional changes (1). Such changes can reduce the ability of women to perform their daily routines and thus their quality of life (2, 3). The World Health Organization (WHO) defines

Quality of Life as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns (4). On the other hand, the health-related quality of life (HRQoL) is a functional experience of various symptoms of diseases and treatments and covers the different dimensions of health, and physical, psychological and social well-being of individuals (5). Mental health is one of the pivotal factors for assessing the health of different communities and plays a key role in ensuring dynamism and efficiency in society. Accordingly, the mental health of the pregnant women has a major impact on the mental health of the fetus. Failure to pay attention to the mental status and HRQoL of the pregnant women can have serious and irreversible consequences (6). Recent studies emphasize the importance of HRQoL in the broader range of maternal health and pregnancy outcomes (7, 8). According to various studies, low quality of life during pregnancy has been associated with adverse pregnancy complications, premature birth and low birth weight (9, 10). Some researches has shown that socioeconomic level, age, educational level, sexual activity and marital satisfaction are associated with quality of life for pregnant women and the incidence rate of perinatal diseases (11-13). On the contrary, the results of some other studies have revealed that factors such as occupation, income levels and the presence of spouses or colleagues have only little impact on the HRQoL of pregnant women. In general, each person's quality of life depends on the perception of life as well as the level of satisfaction with life, which includes the satisfaction of the psychological, social, economic, cultural, religious and marital satisfaction aspects (14). By definition, marital satisfaction is one of the most important and complex aspects of the marital relationship. In other words, one of the vital dimensions of a marital relationship is the satisfaction that spouses feel and experience in their relationship. However, divorce statistics indicate that marital satisfaction is not easy to achieve. Satisfaction with marriage and marital relationship plays a significant role in the normal functions of family (15). Some studies

have reported that HRQoL is directly related to marital satisfaction, which is one of the most important determinants of HRQoL (16, 17). On the other hand, limited studies have demonstrated that HRQoL has no significant relationship with marital satisfaction (18). Although HRQoL and correlated factors play a significant role in the health of pregnant women, but few studies have examined the role of HRQoL in pregnancy and correlated factors simultaneously. In addition, most studies have examined the HRQoL in those women who have a systemic condition, such as diabetes or hypertension. Hence, it can be said that few studies have been conducted on the HRQoL in pregnant women. In other words, most studies often ignore pregnancy as an independent determinant (19).

Because the mental and physical health of pregnant women is closely related to the health of the fetus (20), Therefore, the recognition of factors related to the HRQoL of pregnant women will ensure the health of mother and the fetus. Hence, the assessment and improvement of HRQoL is importance in planning of care for mothers and infants. According to the introduction and the existence of ambiguity in the results of existing research, the current study aimed to investigate the factors correlated with the HRQoL among pregnant women in Yasuj, Iran, 2016.

MATERIAL AND METHODS

In this cross-sectional study, 388 pregnant women who referred to Yasuj health care centers were randomly selected during the period of 9 months from April 2016 to the end of December 2016. The research design of this study was approved by the Ethics Committee of Yasuj University of Medical Sciences with IR.YUMS.REC.1395.107 code. After the participants were informed about the study design, individual informed consent was obtained. Inclusion criteria were the confirmation of pregnancy according to expert opinion, gestational age of 9 weeks and older, age over 18 years, no history of neurological or chronic and incurable diseases. Exclusion criteria included the inadequacy of filling in

research questionnaires and the inability to read and understand questions.

In addition to demographic variables and pregnancy data, the 36-Item Short Form Survey (SF-36) questionnaire was used to assess the HRQoL and the ENRICH Couple Scales (ECS) was used to assess marital satisfaction.

SF-36 questionnaire

The SF-36 consists of 36 questions and 8 subscales, including physical function (PF), role-physical (RP), role-emotional (RE), vitality (VT), social functioning (SF), bodily pain (BP), mental health (MH) and general health (GH). The questionnaire is divided into two subscales of Physical Component Summery (PCS) and Mental Component Summery (MCS). Scores of each subscale range from 0 to 100. Lower scores indicate lower quality of life and vice versa. This questionnaire has been used in many studies in Iran, and its validity and reliability have been confirmed (21).

Enrich Couple Scales (ECS)

This questionnaire was developed by Olson in 1985 and updated in 2010. It has 35 questions of five options to evaluate the marital satisfaction. Scoring is based on the five-point Likert scale, including 1=strongly disagree, 2=slightly disagree, 3=neutral, 4=slightly agree, 5=strongly agree. The questions are scored from five to one and reverse questions from one to five. In this questionnaire, lower scores indicate lower marital satisfaction and vice versa. The total score of marital satisfaction was considered in this study. This questionnaire has been used within many studies in Iran, and its validity and reliability have been confirmed (22).

Collected data were analyzed by SPSS software version 22 using mean, standard deviation, tables and charts for describing the data, Pearson and Spearman correlation coefficients for studying the relationship between research variables and HRQoL, ANOVA and independent t-test for group comparison. Multiple logistic regression analysis represented predictive factors for HRQoL.

RESULTS

This study was performed on 388 pregnant women with the mean age of 28.29 ± 6.38 years. The mean number of children was 1.31 and their mean BMI was 27.50 ± 4.62. The mean HRQoL of pregnant women was 60.21 ± 19.86, the mean MCS score was 19.83 ± 60.95 and the mean PCS score was 22.06 ± 59.36. The mean dimensions of HRQoL are shown in figure 1. (figure 1)

Among the HRQoL dimensions, MH had the highest mean (64.64) and RP the lowest mean (55.99). According to the results, the marital satisfaction (r=0.59, p<0.01) and economic status (r_s=0.39, p<0.01) had the highest direct relationship with the HRQoL. BMI (r=-0.22, p<0.01) and occupation (r_s=-0.21, p<0.05) had the highest inverse relationship with the HRQoL. Table 1 presents the research variables and their correlation with the HRQoL. (table 1).

The independent t-test results showed that the mean scores of *HRQoL and marital satisfaction were significantly higher in women with academic education compared to those with high school diploma (p<0.01), as well as significantly higher in employed women than unemployed women (p<0.01). ANOVA test showed that the mean scores of HRQoL and marital satisfaction were significantly higher in women with good economic status compared to those with average and poor economic status (p<0.01).*

In addition, the mean score of *HRQoL in subjects with normal BMI was higher significantly compared to obese subjects (p<0.01).* The HRQoL of individuals with normal BMI was significantly better in RP (p<0.01), RE (p<0.01), SF (p<0.05) and Pain (p<0.01) compared to obese subjects.

Multiple Logistic regression analysis was used to evaluate the predictive variables for HRQoL, including maternal age, gestational age, number of pregnancies, number of delivery, number of children, number of abortions, BMI, occupation (employed and unemployed), economic status (poor, average and good) and marital satisfaction. The results of Model Coefficients showed that the model was statistically significant (p<0.0005). (table 2)

As shown in Table 2, the most important *predictive variables for HRQoL in pregnant women were respectively BMI (OR=2.40, sig=0.02, 95% CI=1.13-5.09) meaning that the BMI changes from the obese to normal would be associated with a 2.40-fold increase in HRQoL, the marital satisfaction (OR = 1.05, sig = 0.001, 95% CI = 1.03 - 1.07) meaning that HRQoL was improved by 1.05 times per every one unit increase in marital satisfaction, and the maternal age (OR = 0.40, sig = 0.02, 95% CI = 0.18-0.88) meaning that the change in age of women from the 25-30 year group to over 30 years of age would be related to a change by 0.40 times in the HRQoL. The last predictive variable was economic status (OR = 0.21, sig = 0.02, 95% CI = 0.05 - 0.78) meaning that 0.12-fold change can be seen in the HRQoL for the change in the economic situation of individuals from moderate to poor status.*

DISCUSSION

The results of this study indicated that the mean HRQoL of pregnant women was 60.21 that is higher than average 50. In other words, *the pregnant women in the study have had a good HRQoL status.* In a research by Abbaszadeh et al. (23), the HRQoL among pregnant women was 61.1. In a study of Mir Mohammad Ali Yi et al. (24), the mean HRQoL was 62.8 in the pregnant women, which is similar to the results of present study.

In the present study, the mean score of PCS was lower than MCS. This finding was consistent with a study of Hueston et al., who concluded that physical changes in pregnancy were more than mental changes (3).

According to the results present study, among the HRQoL dimensions, MH had the highest mean and RP had the lowest mean. Otchit et al. found that pregnant women had lower scores in functional limitations due to physical problems compared to healthy ones (25).

The changes in pregnancy and the occurrence of a series of discomforts and problems during this period such as nausea and vomiting, fatigue, pain (back, leg, groin and thigh), leg cramps, etc. can have a significant effect on the daily activities of pregnant women and alter their ability to perform routine life roles.

In assessing the correlation between study variables and HRQoL, number of pregnancies, number of births, number of children, number of abortion and BMI had a significant negative correlation with HRQoL. Moreover, there was a direct and significant relationship between the educational level, occupation, economic status and marital satisfaction with HRQoL. Based on the results of this study, the HRQoL and marital satisfaction were significantly higher in women with academic education compared to those with high school diploma. Furthermore, the HRQoL and marital satisfaction of employed women were significantly higher than in unemployed women. In addition, HRQoL and marital satisfaction of pregnant women with good economic situation were significantly higher compared to women with average and poor economic status. Also, the HRQoL was significantly higher in subjects with normal BMI than in obese ones. Individuals with normal BMI were significantly better in the RP, RE, SF and BP domains when comparing with obese subjects.

In the present study, multiple logistic regression results indicated that BMI, marital satisfaction, maternal age and economic status were the most important predictors of the HRQoL among pregnant women. Mouradi et al. and Sahrakorpi et al. reported that high BMI and obesity have a significant and inverse relationship with the HRQoL of pregnant women (12, 26). It can be said that obese people are mentally suffering from stigma of obesity, and have other poor psychological features such as self-confidence and self-efficacy. On the other hand, obese people have problems in performing some daily activities due to their high weight and physical limitations. Obesity in women, in addition to affecting the development of the fetus, causes infertility, stillbirth, hypertension, diabetes, fetal death, macrosomia and the incidence of pregnancy complications (27, 28). Therefore, BMI is an important factor affecting the life satisfaction of couples as well as their HRQoL. For this reason, it is recommended that women who intend to have a pregnancy are better encouraged to have normal BMI and thus better HRQoL.

Marital satisfaction was another predictor of the HRQoL in pregnant women in this study. Consistent with the results of this research, other investigations exhibited a positive and significant relationship between marital satisfaction and HRQoL (29-31). Marital satisfaction is the process established during the life of couples and can affect the relationships between parents and children, the individual health, mental health of child and family. Spouses with good communication and understanding have a better health status. In fact, high marital satisfaction indicates a better physical and mental condition. It can be said that the reduction of marital satisfaction in pregnant women affects the level of communication with the spouse, so family problems remain unresolved. These problems, as stressors, impair the mental relaxation and self-confidence of the family members. Such situations decrease the HRQoL of pregnant women and their health status.

Similarly, the results of other studies show that age has a significant relationship with the HRQoL (26, 32). The results of studies by Taşdemir et al. (33) and Drescher et al. (34) demonstrated that pregnant teenagers have lower HRQoL scores. These results may be due to physical, mental and social problems of pregnant teenagers before their physical and mental maturity. Bruke and Liston argued that lower gestational age could be regarded as both positive and negative experiences (35). It should be noted that the pregnancy at early age can be dangerous for growth of adolescents and confronts them with some limitations. On the other hand, pregnancy and education of children can enhance responsibility in adolescents.

Several studies have shown that insufficient monetary status for food and housing has a significant relationship with the health status of pregnant women (32, 36). This finding is in line with the findings of present study. DeGraaf et al. stated that the low socioeconomic status is a known risk factor in pregnancy (37). It can be said that the good economic situation can affect the health of pregnant women by providing more access to health and education facilities, making food and living conditions easier and generally affecting living conditions. People with suitable economic conditions and sufficient income are in a better position to obtain the necessary training and consequently learn healthy behavior.

According to the results of this study, healthcare providers are recommended to check and modify the BMI of pregnant women before and during pregnancy on the agenda. It is also proposed to provide improved marital satisfaction in pregnant women based on psychological interventions for solving conflicts of couples.

This study had limitations; for example, lack of causal inference because of the cross-sectional nature of the study. A field trial study is also suggested to investigate the effect of marital satisfaction training on HRQoL.

declaration of interest statement

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this article.

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Table1. Correlation matrix of study variables

	HRQOL	Mother Age	Gestational Age	Pregnancy Number	delivery Number	Abortion Number	Children Number	BMI	education	Employment	Economic situation	Marital satisfaction
HRQOL	1											
Mother Age	.05	1										
Gestational Age	-.05	.02	1									
Pregnancy Number	-.17**	.41**	.01	1								
Delivery Number	-.16**	.51**	.03	.80**	1							
Abortion Number	-.11*	-.00	-.00	.57**	.11*	1						
Children Number	-.11*	.53**	.03	.70**	.92**	-.01	1					

BMI	-.22**	.15**	.22**	.20**	.12*	.16**	.05	1				
Education	.26**	.13**	-.00	-.17**	-.21**	-.03	-.21**	.01	1			
Employment	.21**	.10*	-.07	-.08	-.17**	.04	-.18**	.06	.38**	1		
Economic situation	.39**	-.03	.08	-.20**	-.22**	-.09	-.18**	-.00	.28**	-.33**	1	
Marital satisfaction	.59**	.01	-.02	-.23**	-.26**	-.16**	-.21**	-.05	.28**	-.20**	.46**	1

* Correlation is significant at the 0.05 level.

** Correlation is significant at the 0.01 level.

Table 2. The results of multiple logistic regression analysis for predicting HRQoL

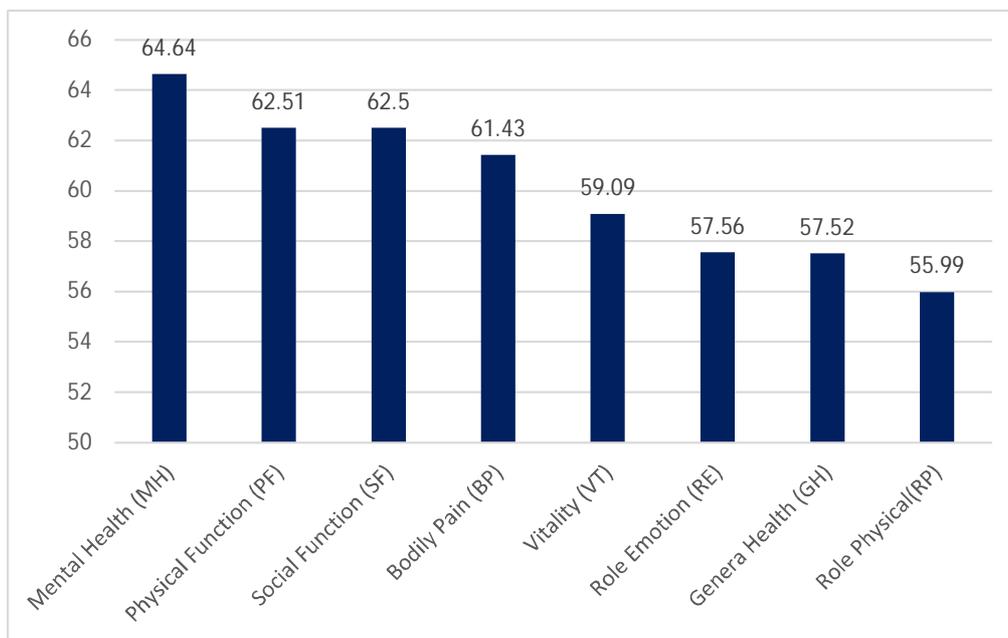|		B	S.E.	Wald	df	Sig.	OR	95% C.I. for OR	
								Lower	Upper
1	Gestational Age	-.051	.040	1.588	1	.208	.950	.878	1.029
2	Children NO	.455	.390	1.363	1	.243	1.576	.734	3.385
3	Pregnancy NO	-.225	.363	.383	1	.536	.799	.392	1.627
4	Delivery NO	.044	.414	.011	1	.916	1.045	.464	2.353
5	Abortion NO	.293	.361	.658	1	.417	1.340	.661	2.718
6	BMI			6.630	3	.085			
	BMI (1)	-1.210	1.879	.415	1	.520	.298	.007	11.861
	BMI (2)	*.879*	*.383*	*5.274*	*1*	*.022*	*2.408*	*1.137*	*5.099*
	BMI (3)	.649	.341	3.617	1	.057	1.914	.980	3.738
7	education(1)	-.346	.363	.907	1	.341	.708	.347	1.442
8	Employment(1)	.530	.420	1.596	1	.206	1.699	.747	3.868
9	Economic Situation			8.483	2	.014			
	Economic Situation (1)	*-1.538*	*.663*	*5.377*	*1*	*.020*	*.215*	*.059*	*.788*
	Economic Situation (2)	-.659	.599	1.212	1	.271	.517	.160	1.673
10	*Total Marital Satisfaction*	*.052*	*.009*	*35.877*	*1*	*.000*	*1.053*	*1.035*	*1.071*
11	Mother Age			5.095	2	.078			
	Mother Age(1)	-.556	.395	1.986	1	.159	.573	.265	1.243
	Mother Age (2)	*-.910*	*.403*	*5.094*	*1*	*.024*	*.403*	*.183*	*.887*
12	Constant	-2.115	1.872	1.276	1	.259	.121		

Fig 1. The mean dimensions of HRQoL