Body Image, Quality of Life, and Their Predicting Factors in Pregnant Women: A Cross-Sectional Study

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Abstract

Pregnancy can influence women's psychological health, including body image and quality of life. This study aimed to examine the relationship between body image and quality of life and their predicting factors in pregnant women. This cross-sectional study was conducted on 250 pregnant women referred to health centers in Ilam City, Iran. Participants were selected using a random sampling method. Data collection tools comprised a sociodemographic questionnaire, Body Image Concern Inventory (BICI), and quality of life questionnaire (Short Form-12). Data were analyzed using statistical software. The mean ± SD of body image concern and quality of life was estimated at 31.77 ± 9.86 and 54.62 ± 15.71, respectively. There was a significant and negative correlation between body image and quality of life (p-value = 0.001, r = -0.313). Also, the most important predictors of body image were vitality, body mass index (BMI), general health, and unintended pregnancy, respectively, and body dissatisfaction was the most significant predictor of quality of life. This study revealed some variables affecting pregnant women's body image and quality of life. Further studies are required to consider other factors influencing body image and quality of life among pregnant women.

Keywords: body image, pregnant women, quality of life

Introduction

Pregnancy is a unique experience that can be accompanied by important physical, mental, and social changes.[1,2] During pregnancy, underlying alterations occur in women's appearance, body mass index (BMI), and body image, affecting their quality of life.[3,4] Body image is a multidimensional construct encompassing perceptions, attitudes, beliefs, feelings, and behaviors regarding one's appearance and also is an essential aspect of mental health that a mistake perception from body image can lead to psychological and physical problems.[5,6] Body image also refers to the person's view, negative and positive thoughts, mental picture and the perception of own physical body, and the attitude towards own physical body formed since birth and is complete by the development of an individual and change over the life stages.[7]

Body image may undergo disruption in response to changes and factors such as puberty, aging, pregnancy, and increased BMI, type of social behavior, and social factors like visual media, normative pressure on family and society, and standards and aesthetic definition in society.[8-11] Overweight and obesity in women of reproductive age are increasing and considered a critical challenge.[12] These changes in pregnancy are accompanied by dissatisfaction that leads to women's body image disturbance.[13] This dissatisfaction means a negative investigation from the body that its prevalence is growing. Continuity of this dissatisfaction during pregnancy leads to problems such as depression, social distress, decreased social participation, decreased self-esteem, the feeling of being unattractive, and intellectual conflict relative to appearance, which can, in turn, result in one's daily dysfunction.[10,14,15]

Hence, pregnant women turn to different ways, such as using a restrictive and unscientific diet and doing tough and intolerable sports to achieve the ideal body image, affecting maternal and infant health.[16,17] These can lead to inadequate weight gain, anemia, premature rupture of the amniotic sac, newborn with low Apgar scores, premature delivery, preterm delivery, low-birthweight infant, and even infant and maternal mortality.[18,19] Organic, hormonal and psychological changes along with factors such as economic status, stressful events, and body image disturbance can change one's ability for doing the usual roles of life during pregnancy, affecting both maternal and infant health.[20]

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Quality of life (QOL) is an important concept that has been considered in many studies, especially in medical and health sciences. The QOL is a multidimensional dynamic concept that affects the performance of individuals in physical, psychological, social, and spiritual aspects of life.[21] The World Health Organization (WHO) defines QOL as individuals' perception of their position in life in the context of the culture and value systems in which they live and concerning their goals, expectations, standards, and concerns. So, QOL is a subjective issue, which is not observable by others and is based on individuals' perceptions of different aspects of life.[22,23] Besides, QOL has become an area of increasing importance to maternal and child health. Pregnant women's perception of their quality of life is an essential measure of the quality and effectiveness of maternal and child health interventions.[24]

Few studies have investigated the relationship between body image concern and quality of life to the best of the authors' knowledge. There were few studies published to date which have examined the relationship between these concepts in pregnant women. Furthermore, QOL and body image are concepts affected by communities' cultural and social systems. The results of studies performed in western countries were not applicable in other countries, especially in Iran. Therefore, this study aimed to examine the relation between body image concern and quality of life and their predicting factors in pregnant women referring to health centers in one western city in Iran.

Method

This study used a descriptive-analytic method. The study population included all eligible pregnant women. Inclusion criteria were: a) having consent to enter the study; b) completion of the questionnaire entirely; c) writing and reading ability; d) aged 18 years and over; e) singleton pregnancy; f) gestational age of six weeks and above, and residing in Ilam City. The exclusion criteria were: a) unwillingness to continue being involved in the study; b) the history of underlying diseases; c) eclampsia and preeclampsia; d) smoking or taking sedatives medications and having mental diseases.

Sampling was conducted using a cluster sampling method. The study setting was comprehensive health centers of Ilam City in the west of Iran. So, Ilam City was divided into five geographical areas (north, south, center, east, and west). Then, two comprehensive health centers were randomly selected from each zone. Each zone was considered to be a cluster. Since the number of individuals covered by each center was different, the required sample within each center was computed based on cluster sampling. After reviewing the health record of each household, those who were eligible were identified and

$$\left[n = \frac{z_{1-\alpha/2}{}^2 p(1-p)}{d^2} = 240 \right]$$

Formula 1. Sample Size Estimation

invited randomly to participate in this study. The sample size was estimated at 240 subjects based on the Formula 1 with d = 0.05, z = 1.96, p-value = 0.2. From 270 pregnant women invited to participate, 250 agreed to participate in this study, considering a dropout rate of 10%.

This study's data collection tools consisted of a study-made sociodemographic questionnaire, Body Image Concern Inventory (BICI), and quality of life questionnaire (Short Form-12). Participants' self-report completed the questionnaires. The first section was the sociodemographic questionnaire. This questionnaire included ten questions, including age, gestational age, weight during pregnancy, height, education status, habitation status, employment status, husband's support, economic status, the timing of pregnancy, pregnancy status, the month of pregnant, exercise during pregnancy, craving during pregnancy, use of medication, and abortion history.

The second section was Body Image Concern Inventory (BICI), designed by Littleton, *et al.*,[25] This questionnaire was a 19-item self-report measure designed to assess dysmorphic body image concerns. For each item, respondents were asked to rate how often they had the described feeling or performed the described behavior on a Likert scale anchored by 1 = never and 5 = always. The total score of this questionnaire ranges from 19 to 95, with a higher score indicating the amount of dissatisfaction with body image or one's appearance. Littleton, *et al.*,[25] have also examined the factor structure of the questionnaire. The results showed two crucial and significant factors. The first factor with eleven items (1-3-5-8-9-14-15-16-17-18-19) described dysmorphic appearance concern, checking, and disguising defects. The second factor with eight items (2-4-6-7-10-11-12-13) described interference in functioning due to appearance. The reliability of the questionnaire was measured by Littleton, *et al.*,[25] using the internal consistency method, with a Cronbach alpha coefficient of 93%. The correlation coefficient of each item with the total score of the questionnaire was between 32%-73% with a 62% mean. Also, the Cronbach alpha coefficient of the first and second factors were 92% and 76%, respectively, and the Correlation coefficient between the two factors was reported to be 69%. In Iran, the reliability of this questionnaire in the study of Elah MN, *et al.*, and Heidari M, *et al.*, were assessed, and using the Cronbach alpha coefficient was estimated at 78% and 84%, respectively.[26,27] In this study, the reliability of the questionnaire for the first and second factors were estimated at 76% and 81%,

respectively, using the Cronbach alpha coefficient of 87%.

The third section was the quality of life questionnaire (Short Form-12), a short form of SF-36. This questionnaire consisted of eight subscales, including individual perceptions of general health (1 item), bodily functioning (2 items), physical health (2 items), physical problems (2 items), bodily pain (1 item), social functioning (1 item), energy and vitality (1 item), and mental health (2 items). The first four subscales indicated physical of health-related quality of life (HRQOL) and the last four indicated mental HRQOL. The reliability and validity of the questionnaire had already been evaluated by Montazeri, *et al.*,[28] and the reliability of 12-items for the mental and physical domains was approximately 73% and 72%, respectively.

Data were analyzed using SPSS (version 22, SPSS Inc., Chicago, IL). Descriptive statistics such as percentage, mean, and standard deviation (SD) were used for assessing sociodemographic characteristics and associated with participants' pregnancy. Analysis of variance (ANOVA) and independent t-test was applied to compare the mean scores of participants' quality of life and body image concern based on the sociodemographic variables associated with pregnancy. Pearson correlation coefficient was used to test the correlation between dimensions of quality of life and body image concern. Moreover, multiple linear regression was applied to determine the predictors of body image concern and pregnant women's quality of life. Variables that were significant in bivariate analysis were entered to model using the stepwise method.

Result

The mean ± standard deviation (SD) of age, height, and BMI of participants were found as 28.8±5.08, 161.2±5.93, 28.07±3.63, respectively. The duration of marriage was less than five years in 54.6% of participants. The majority of participants (74.4%) lived in urban areas. For the education background, 56.4% had tertiary education. More than half of the participants had high economic status, 85.6% reported intended pregnancy, 52.7% performed exercise activities, 80% had no abortion history, and 78.8% had no history of taking medication during pregnancy. The BMI of 80.8% of participants was more than 25, and 76% had body image concerns (Table 1).

According to the results, the mean ± SD total score of pregnant women's quality of life was 54.62±15.71, and the lowest and highest score was related to the role limitation due to physical problems and fatigue dimension, respectively. The mean ± SD total score of body image concern was found at 31.77±9.86. The body dissatisfaction dimension had the highest score compared to other body image dimensions (Table 2).

As shown in Table 3, the mean body image was higher among those with better economic status (p-value = 0.001), those with unintended pregnancy (p-value =

Table 1. Frequency Distribution of Individual and Underlying Variables among Study Pregnant Women

Characteristics	Category	n	%
The duration of the marriage	<5 years	136	54.4
	5-10 years	89	35.6
	>10 years	25	10
Birthplace	Town	186	74.4
	Village	64	25.6
Education status	Illiterate and primary education	11	4.4
	Middle school	8	3.2
	Diploma	9	36
	Tertiary education	141	56.4
Economic status	Poor	12	4.8
	Moderate	102	40.8
	High	136	54.4
Pregnancy status	Intended	214	85.6
	Unintended	36	14.4
Month of pregnancy	The first trimester	69	27.6
	The second trimester	83	33.2
	The third trimester	98	39.2
Timing of pregnancy	Nulliparous	161	64.6
	Multiparous	89	35.6
Exercise	Yes	143	57.2
	No	107	42.8
Abortion history	Yes	50	20
	No	200	80
Taking medication during pregnancy	Yes	53	21.2
	No	197	78.8
Pica*	Yes	101	40.4
	No	149	59.6
Husband's support	Yes	239	95.6
	No	4.4	4.4
BMI	25≤	48	19.2
	≥25	202	80.8
Body image concern	Low	190	76
	Moderate	57	22.8
	High	3	1.2

Notes: BMI = Body Mass Index, *Pica = Eating disorder characterized by eating nonnutritive, nonfood substances over at least one month by pregnant women.

Table 2. The Mean ± SD of Dimensions of Body Image Concern and Quality of Life in Pregnant Women

Scale	Dimension	Mean ± SD
Quality of life	Physical functioning	56.30 ± 35.46
	Role-limitation due to physical problems	50.14 ± 23.70
	Role-limitation due to emotional problems	61.75 ± 23.89
	Fatigue	79.50 ± 67.22
	Vitality	62.92 ± 26.95
	Social functioning	62.70 ± 26.24
	Pain	60.02 ± 28.03
	General health	67.10 ± 26.13
	The total score of QOL	54.62 ± 15.71
Body image	Body dissatisfaction	16.18 ± 5.04
	The interference of one's concern with the appearance in social functioning	15.58 ± 5.67
	The total score of body image	31.77 ± 9.86

Notes: QOL = Quality of life, SD = Standard Deviation

Table 3. The Association between Body Image and Quality of Life with Sociodemographic and Pregnancy-related Variables

Variable	Category	Body Image		Quality of Life	
		Mean ± SD	p-value	Mean ± SD	p-value
The duration of the marriage	<5 years	31.34±9.78	0.493	64.31±15.02	0.100
	5-10 years	32.74±10.15		59.73±16.37	
	>10 years	30.68±9.32		62.94±16.16	
Birthplace	Town	31.88±9.58	0.773	61.98±15.80	0.336
	Village	31.46±9.96		64.17±15.45	
Education status	Illiterate and primary education	30.72±10.53	0.139	64.63±18.07	0.034
	Middle school	34.75±11.10		61.56±8.23	
	Diploma	33.47±11.59		58.73±5.34	
	Tertiary education	30.60±8.35		65.79±15.73	
Economic status	Poor	27.41±7.71	0.001	65.34±9.88	0.214
	Moderate	34.38±11.34		60.47±15.10	
	High	30.20±8.30		63.85±16.47	
Pregnancy status	Intended	31.14±9.73	0.013	62.50±16.02	0.928
	Unintended	35.55±9.90		62.76±13.96	
Month of pregnancy	The first trimester	32.04±10.33	0.783	63.55±15.14	0.238
	The second trimester	31.15±8.67		64.16±16.43	
	The third trimester	32.11±10.52		60.46±51.71	
Timing of pregnancy	Nulliparous	31.76±10.32	0.979	62.59±15.85	0.973
	Multiparous	31.79±9.02		62.66±15.77	
Exercise	Yes	31.46±9.44	0.606	62.28±15.51	0.765
	No	32.14±10.43		62.89±16.05	
Abortion history	Yes	32.44±9.92	0.596	59.91±15.59	0.186
	No	31.61±9.86		63.20±15.71	
Disease during pregnancy	Yes	32.16±10.00	0.032	62.25±15.96	0.314
	No	27.10±6.53		62.04±12.14	
Taking medication during pregnancy	Yes	34.20 ±11	0.043	59.02±16.48	0.066
	No	31.12±9.36		63.49±15.40	
Husband's support	Yes	31.76±9.92	0.964	62.47±15.95	0.739
	No	31.90±8.76		64.09±9.54	
BMI	≤25	29.10±6.74	0.037	64.07±16.43	0.45
	≥25	32.41±10.38		62.18±15.56	

Notes: QOL = Quality of Life, BMI = Body Mass Index, SD = Standard Deviation

Table 4. Correlation between Body Image Concern and Quality of Life in Pregnant Women

		Physical functioning	Role-limitation due to physical problems	Role-limitation due to emotional problems	Fatigue	Vitality	Social functioning	Pain	General health	The total score of QOL
Body dissatisfaction	r	-0.036	-0.112	-0.217	-0.239	-0.343	-0.272	-0.071	-0.252	-0.314
	p-value	0.573	0.077	0.001	0.001	0.001	0.001	0.260	0.001	0.001
The interference of one's concern with the appearance in social functioning	r	-0.050	-0.046	-0.165	-0.212	-0.250	-0.167	-0.145	-0.253	-0.265
	p-value	0.468	0.009	0.001	0.001	0.008	0.022	0.001	0.001	0.001
The total score of body image	r	-0.047	-0.087	-0.206	-0.244	-0.319	-0.235	-0.120	-0.274	-0.313
	p-value	0.459	0.187	0.001	0.001	0.001	0.001	0.059	0.001	0.001

Notes: QOL = Quality of Life, r = Pearson correlation

0.039), those with the chronic disease during pregnancy (p-value = 0.032), those taking medication during pregnancy (p-value = 0.043), those with BMI more than 25 (p-value = 0.035), and those with social pressure (p-value = 0.008). Besides, the quality of life was higher among those with a higher education level (p-value = 0.034).

Table 4 represents the correlation between body image concern and quality of life in pregnant women. A negative and significant correlation was found between

Table 5. Predictors of Body Image Concern and Quality of Life among Pregnant Women

Outcome	Variable	Unstandardized Coefficient	SE	p-value	95% CI	Standardized Coefficient
BICI	Vitality	-0.081	0.023	0.001	-0.126 — -0.035	-0.220
	BMI	0.464	0.159	0.004	0.150 — 0.778	0.171
	General health	-0.067	0.023	0.005	-0.113 — -0.021	-0.177
	Pregnancy type	3.590	1.629	0.029	0.380 — 6.799	0.128
SF-12	Dysmorphic	-0.980	0.188	0.001	-1.350 — -0.579	-0.610

Notes: BMI = Body Mass Index, BICI = Body Image Concern Inventory, SF-12 = 12-Item Short Form Survey, SE = Standard Error, CI = Confidence Interval

body image, body dissatisfaction, interference of one's concern with appearance in social functioning, and role-limitation due to emotional problems (r = 0.206, p-value = 0.001), fatigue (r = -0.244, p-value = 0.001), vitality (r = 0.319, p-value = 0.001), social functioning (r = 0.235, p-value = 0.001), general health (r = 0.274, p-value = 0.001), and the total score of quality of life (r = -0.313, p-value = 0.001). Furthermore, a significant and negative correlation was observed between the interference of one's concern with the appearance in social functioning and pain (r = 0.145, p-value = 0.022) in the quality of life scale.

Multivariate linear regression was carried out to assess pregnant women's body image and quality of life (Table 5). The most important predictors of body image were vitality, BMI, general health, and unintended pregnancy, respectively. This result means that a decline in quality of life in the dimensions of vitality, general health, high BMI during pregnancy, and unintended pregnancy was associated with an increase in the probability of body image disturbances in pregnant women. Furthermore, body image dissatisfaction became the most important predictor of quality of life. A higher score of body image dissatisfaction was associated with lower quality of life in pregnant women.

Discussion

The objective of this study was to examine the relationship between body image and quality of life and associated factors with these in pregnant women. Although the variables of body image and quality of life in pregnant women have been investigated in previous studies, based on literature review, no study has examined the relationship of these two concepts in pregnant women in Iran; hence, the finding of this study was unique.

In this study, pregnant women rated their quality of life as moderate and their body image concern as low. In previous studies, quality of life in pregnant women was found at a moderate level.[29,30] According to the results of this study, the most important predictor of quality of life among pregnant women was body image. Also, a negative and significant association was observed between

body image and quality of life. Consistent with the present study, which found a positive and significant association between mindful eating and quality of life. The study also found a negative and significant association between body image, eating behaviors, and quality of life among married and fat women.[31] Rezaei, *et al.*,[24] have indicated that pregnancy can affect women's body image and reduce their quality of life. Besides, in a study by Türk KE, *et al.*,[32] Gardikiotis, *et al.*,[33] and Bagheri, *et al.*,[34] the body image and QOL of women who had mastectomy were negatively affected. These studies also showed that women who had mastectomy experienced stress, persistent psychological distress, and body image disturbance.[32-34]

In this study, pregnant women reported low body image concerns. Based on the study by Doncumbe, *et al.*,[35] body image was reasonably stable across pregnancy. Women who started with more significant body concerns maintained them over time, consistent with the results of this study.[35] Also, Loth, *et al.*,[36] demonstrated that pregnant women experienced body satisfaction despite weight gain. However, body image disturbance and body image dissatisfaction are common during pregnancy, according to the previous studies.[10,17,37]

The results of this study revealed that BMI was the most significant predictor of pregnant women's body image and body dissatisfaction, meaning that those with higher BMI had greater body image disturbance and body dissatisfaction. Similarly, other related studies have shown that pregnant women experience body image disturbance and body dissatisfaction due to mental and physical changes and a marked increase in body weight and fat mass.[38-40] Erkaya, *et al.*,[41] indicated a positive relationship between BMI and how pregnant women perceive their body and body image. Besides, Boscaglia, *et al.*,[42] demonstrated that pregnant women had positive evaluations of their body image and body satisfaction despite the weight gain during pregnancy and falling further from the cultural ideal of beauty. Senobari, *et al.*,[43] showed no association between BMI, body image concern, and sexual functioning. Nevertheless, in this study, BMI was one of the disturbance factors in body image

and body dissatisfaction in pregnant women. The inconsistency of these findings may be attributed to the different methods (study designs, cultural and social factors, sampling place, and the age of pregnant participants) applied in these studies.

According to bivariate analyses, there was a positive and significant association between economic status and pregnant women's body image. In contrast, according to regression analyses, economic status was not a predictor of body image in pregnant women. These results differed from the previous studies. For example, studies by Clark, *et al.*, You, *et al.*, and Sutherland, *et al.*, showed a significant association between economic status and body image, meaning that those with better economic status have more facilities for better nutrition. Therefore, women with better economic status pay more attention to their appearance.[44-46] In contrast, Kops, *et al.*,[47] showed that an increase in economic status leads to more significant body image disturbance. Similarly, Nikniaz, *et al.,* and Inanir, *et al.*, showed no significant association between body image and economic status.[4,48] Disparity between the results of studies may be linked to contextual sociocultural and methodological factors.

This study findings also revealed that pregnancy status was one of the predictors of participants' body image. It refers to the understanding that pregnant women with an unintended pregnancy may have a higher likelihood of experiencing body image disturbance than those with an intended pregnancy. Garrusi, *et al.*,[49] suggested that pregnant women with an unintended pregnancy had a lower level of appearance satisfaction. However, in a study by Rahmanian, *et al.*,[10] no significant association was found between body image and pregnancy status. Body image dissatisfaction among pregnant women appears to be due to psychological and mental problems, pregnancy concerns, mental conflict, lack of self-care, and lack of husband's support.[10]

Although this study provided valuable findings on body image and quality of life, there are still limitations. First, data were collected using self-reported questionnaires, leading to a reporting bias. Second, information on weight and height were self-reported by participants, which may have affected the study's results. Therefore, further studies will need to be performed to address these limitations. Furthermore, this study was conducted in a western city of Iran, and these results may not be generalizable to other geographical areas. Hence, it is recommended that further studies be carried out in different parts of the country with different beliefs and cultures.

Conclusion

In this study, pregnant women rated their quality of life as moderate and their body image concern as low. Moreover, the predictors of body image concern were vi-

tality, BMI, general health, and intended pregnancy. Body image score was found to be the most important predictor of quality of life in pregnant women. Identifying risk factors influencing the quality of life and body image among pregnant women can assist the prenatal care team and to conduct required interventions and planning for retaining the risk group's health.

Abbreviations

BICI: Body Image Concern Inventory; BMI: Body Mass Index; QOL: Quality of life; WHO: World Health Organization; HRQOL: Health-Related Quality of life; ANOVA: Analysis of Variance; SD: Standard Deviation; BICI: Body Image Concern Inventory; SF-12: 12-Item Short Form Survey.

Ethics Approval and Consent to Participate

This study was approved by the Ethics Committee of Ilam University of Medical Sciences after approving in the Faculty Research council (Reference NO: IR, MEDILAM, REC,1397,142). All pregnant women in this study were participated voluntarily and completed the informed consent form.

Competing Interest

The author declares that there are no significant competing financial, professional, or personal interests that might have affected the performance or presentation of the work described in this manuscript.

Availability of Data and Materials

The data are not publicly available owing to their containing information that could compromise the study's participant privacy and consent. However, the data supporting this study's results were made available by the corresponding author upon reasonable request.

Authors' Contribution

AA and ZRF were involved in conceptualizing the study design and contributed to data collection. YV analyzed the data. All of the authors were involved in manuscript writing and final approval of the manuscript.

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