Preventive Care in Nursing and Midwifery Journal
2021; 11(1): 11-19

Predicting the Quality of Life Based on Health-Promoting and Mindfulness Lifestyle in Pregnant Women with Obesity Referring to Comprehensive Health Centers in Arak City, Iran

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Received: 4 Dec 2020 **Accepted**: 28 Feb 2021

Abstract

Background: Obesity is one of the complications focused on by the health systems worldwide, and its social, psychological, and economic outcomes led it to be considered an epidemic and global threat to health.

Objectives: The present study aimed at predicting the quality of life (QoL), based on health-promoting and mindfulness lifestyle in pregnant women with obesity, referring to comprehensive health centers in Arak, Iran.

Methods: The present descriptive-correlational study was performed on all pregnant women with obesity, referring to comprehensive health centers in Arak, as the statistical population, from July to September 2019, of which 200 subjects were selected by the stratified cluster sampling method, based on inclusion and exclusion criteria. The sample size was determined using the Hooman formula. Data collection instruments included the World Health Organization QoL questionnaire (2004), the health-promoting lifestyle profile by Walker et al. (1987), and the mindful attention awareness scale by Brown and Ryan (2003). The Pearson correlation matrix and multiple linear regression test were used for data analysis using SPSS version 24; P-value was 0.05.

***Results*:** The results showed that the variables of health-promoting lifestyle (i e, nutrition 30.07±6.57, exercise 36.46±7.36, responsibility 23.21±4.80, stress management 3.63±16.26, interpersonal relationships 13.68±4.98, spiritual growth 18.69±3.31, and mindfulness 65.09±11.93) could explain QoL (92.28±13.52) in pregnant women with obesity (P<0.05).

Conclusion: The findings support the contribution of underlying psychological mechanisms to QoL. Therefore, considering these variables in preventive measures and designing more effective treatments can help researchers and therapists.

Keywords: quality of life, lifestyle, mindfulness, pregnant women, obesity

Introduction

The present study aimed at predicting the quality of life (QoL), based on health-promoting and mindfulness lifestyle, in pregnant women with obesity in Arak, Iran. According to the latest definition of the World Health Organization (WHO), health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity. Therefore, to assess individuals' health status, traditional health indicators, such as mortality and morbidity, should be considered, along with their perception of the quality of life [1]. The importance of QoL is such that experts are concentrated on care strategies to improve that [2]. Also, any dimension of QoL can significantly affect other related life aspects [3]. Obesity, one of the leading causes of death worldwide, requires various medical measures. Screening and managing female obesity are implemented through lifestyle

interventions, pharmacological and surgical treatments, and control of taking weight-gain promoting drugs any time possible. Special attention is paid to the role of these methods in weight loss, as well as their effect on obesity-related diseases, influencing woman's overall health, such as type 2 diabetes and hypertension, as well as reproductive health. With moderate weight-loss, women with obesity can achieve significant improvements in chronic medical conditions, fertility, pregnancy outcomes, and symptoms of pelvic floor disorders. In addition, as childbirth after bariatric surgery improves metabolic outcomes, maternal weight-loss also reduces the risk of metabolic disorders in children. Concerning the high cost and mortality rate due to obesity, emphasis on the role of lifestyle intervention, pharmacological management, and bariatric surgery is clinically important to reduce the impact of obesity on women's health [4]. According to a report by WHO, more than 1.9 billion (39%) of the adult population was overweight and more than 600 million (13%) obese. Despite many efforts to control obesity, the prevalence of overweight and obesity more than doubled from 2000 to 2018 worldwide [5]. Concerning the age group associated with obesity, young women of childbearing age are the ultra-high-risk group in the general population, characterized by gradual weight gain, increased prevalence of obesity, psychological-metabolic problems, and pregnancy. These women are at a higher risk of depressive disorders during pregnancy [6]. Considering the above, obesity during pregnancy is associated with gestational diabetes, preeclampsia, fetal growth restriction, and thromboembolic events [7]. Obesity during pregnancy was associated with macrosomia, shoulder dystocia, cephalopelvic disproportion, and an increased chance of cesarean section, according to study results [8]. In another study, women with obesity were more prone to poor uterine contractions, which led to a lack of progress in labor, increased prevalence of prolonged labor, and the need for oxytocin to increase uterine contractions [9]. High body mass index (BMI) during pregnancy leads to congenital anomalies, premature and post-term birth, and increased risk of delivering macrosomic babies [10]. Obesity and overweight in pregnancy are identified as BMI>29 and 26-29 kg/m^2, and women with BMI<19.8 and 19.8-26 kg/m^2 are considered underweight and normal weight, respectively [11]. The results of a study [12] showed that obesity and increased BMI in pregnancy were significantly associated with higher birth weight and increased gestational age. Therefore, lifestyle is a determining factor in prenatal care. In other words, inappropriate lifestyle, obesity, and neglect of health behaviors can lead to premature birth [13]. Besides, 80% of chronic diseases are directly related to risk factors, such as diabetes, hypertension, obesity, and smoking, 70% of which can be prevented by lifestyle modifications [14]. Lifestyle improvement programs place special emphasis on health-promoting lifestyles and modification of behaviors, such as nutrition, physical activity, health responsibility, stress management, support, and spiritual growth in pregnant women with obesity [15]. Thus, inappropriate lifestyle and neglect of health behaviors play a pivotal role in the emergence of metabolic risk factors [16]. QoL is one of the critical issues facing the contemporary world and a key issue in social policy development, including welfare, QoL improvement, meeting basic needs, growing and satisfying life, altruism, and self-sacrifice, in a community [17]. According to the latest definition of WHO, health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity. Therefore, to assess individuals' health status, traditional health indicators, such as mortality and morbidity, should be considered, along with their perception of QoL [1]. Also, any dimension of QoL can significantly affect other life aspects [3]. The importance of QoL is such that experts were concentrated on care strategies to improve it [2]. Physical, mental, and social health, as well as overall QoL, undergo major alterations during pregnancy [18]. Mindfulness is another variable attracted a lot of attention in recent decades regarding mental health. Human suffering has different forms, and psychotherapies always seek solutions to overcome them and promote human health [19]. Besides reducing the disease symptoms and outcomes, mindfulness can increase the effectiveness of treatment and help preventing suicide attempts repetition due to its underlying mechanisms, such as acceptance,

awareness raising, desensitization, living in the moment, and observation without judgment [20]. Mindfulness also improves symptoms of stress, anxiety, and QoL and increases self-confidence [21]. Given the importance of health in pregnant women with obesity and reduction of the burden of disease, as well as maternal and neonatal mortality, and also the scarcity of research on factors affecting QoL in Iran, the researcher aimed at addressing whether QoL can be predicted based on a health-promoting lifestyle in pregnant women with obesity?

Methods

The present descriptive-correlational study was performed on all pregnant women with obesity, referring to comprehensive health centers in Arak from July to September 2019. The cluster stratified sampling method was used to select subjects from 21 comprehensive health centers located in North, South, East, and West of the city based on inclusion and exclusion criteria. The sample size was determined 5-15 for each component using the Hooman formula (5q<n<15q), and a total of 12 components were examined in the present study. However, the sample size was determined 180, which considering the probability of dropouts, 245 subjects were enrolled in the study; finally, a total of 200 subjects were selected as the study samples based on the inclusion and exclusion criteria. Then, 23 subjects with a BMI of <30 kg/m2 were considered overweight and excluded from the study, and 22 subjects were either dropped out due to lack of cooperation or incomplete questionnaires. Inclusion criteria were: having at least a high school diploma, being >30 BMI <35, lack of a history of other diseases, lack of a history of complications and problems during pregnancy, lack of a history of mental illnesses based on a short structured clinical interview with mothers (conducted by a clinical psychologist to diagnose mental disorders), and willingness to participate in research. Exclusion criteria were: having psychiatric disorders, not answering all the questions, and being<30 BMI>35. Ethical principles were considered in the study; for this purpose, the study objectives were explained to all the participants and the questionnaires were used anonymously, and the participants were only assigned codes. Thus the confidentiality of their information was maintained, and collective analysis was performed. Research instruments included the World Health Organization (WHO) QoL questionnaire (2004), the health-promoting lifestyle profile by Walker et al. (1987), and the mindful attention awareness scale by Brown and Ryan (2003).

The WHOQOL questionnaire was designed in 2004. It includes 26 items in four domains of physical health (seven items), psychological health (six items), social relationships (three items), and environment (two items), in addition to two items in the general health facet. The items are scored based on a five-point Likert scale (from strongly disagree [1] to strongly agree [5]; each domain score is measured by summing up the scores of related items, and higher scores indicate having a higher status in that particular domain [22]. The internal validity for all items of the WHOQOL, except social relationships (0.53), was above 0.70, and its reliability was also 0.89 using Cronbach's alpha coefficient, as reported in a study. The test-retest reliability of the instrument was significant at the level of 0.01 in all domains [23]. The validity of the instrument was also confirmed in a study by Nejat et al. (2006), using the interclass correlation coefficient. They also reported the reliability of 0.77 for physical health, 0.73 for psychological health, 0.55 for social relationships, and 0.84 for the environment, as well as 0.91 for the whole questionnaire, using Chronbach's alpha coefficient [24].

The health-promoting lifestyle profile by Walker et al. (1987)

This scale measures health-promoting behaviors in the six subscales of responsibility (nine items), physical activity-i e, having a regular exercise routine (eight items), nutrition-i e, following a healthy diet plan (nine items), spiritual growth-i e, feeling purposefulness and satisfaction (nine items), stress management-i e, identifying stressful sources and taking stress management measures (eight items), and interpersonal behavior (nine items). The scale includes 52 items scored based on a four-point Likert scale as never [1], sometimes [2], usually [3], and always [4]. The overall score of the health-promoting lifestyle profile ranges from 52 to 208; the score of each subscale was calculated separately. Therefore, the score range of responsibility, nutrition, spiritual growth, and interpersonal relationships subscales

was 0-36 and that of stress management and physical activity 0-32. Higher scores indicate healthier behaviors and lifestyles [25]. The health-promoting lifestyle profile has high reliability and validity and was assessed in many countries [26,27]. The reliability of the instrument using Cronbach's alpha was 0.94 for the whole scale and 0.88-0.90 for subscales in a study by Walker et al. [28]. In the study by Eskandari et al., Cronbach's alpha coefficient was 0.82 for the whole scale and 0.64-0.94 for the subscales [25].

The mindful attention awareness scale by Brown and Ryan (2003):

This 15-item scale was developed by Ryan and Brown (2003) to measure the level of awareness and attention to current daily life experiences. The items measure mindfulness based on a six-point Likert scale from almost always [1] to almost never [6] [29]. Internal consistency of the items was reported 0.80-0.87 in different studies using Cronbach's alpha coefficient [30,31]. Cronbach's alpha was 0.81 for the Persian version of the questionnaire on a population of 723 students [32].

For data analysis, descriptive statistics, such as mean and standard deviation (SD), and inferential statistics, such as Pearson correlation matrix and multiple regression test, were used. SPSS version 24 was used to analyze the data. P-value = 0.05 was considered the level of significance.

Results

Demographic information of the subjects, including the level of education, history of abortion, and the number of pregnancies, was reported. The mean age of the subjects was 29.10±4.45 years, ranged from 20 to 42. The frequency and percentage of the level of education, history of abortion, and the number of pregnancies in the study subjects are shown in Table 1.

Table 1: Frequency distribution of the study subjects in terms of the level of education, history of abortion, and number of pregnancies

Variable	Domain	Frequency	Frequency percentage
Level of education	High school diploma	102	51
	Bachelor's degree	95	47.5
	Master's degree	3	1.5
History of abortion	Yes	12	6
	No	188	94
Number of pregnancies	1	76	38
	2	107	53.5
	3	17	8.5

According to the results shown in Table 1, most subjects had a high school diploma. Moreover, 188 (94%) subjects had no history of abortion, and most of them experienced a second pregnancy (53.5%).

The mean and standard deviation of the study participants were 33.04 and 3.68, respectively (Table 2).

Table 2: Mean ± Standard Deviation of BMI in the study participants

Variable	Number	BMI	
		Mean	SD
BMI	400	33.04	3.68

According to Table 3, the mean±SD of QoL and mindfulness for the study subjects was 92.28±13.52 and 65.09±11.93, respectively. The mean±SD of the subscales of the health-promoting lifestyle profile were: 30.07±6.57 for nutrition, 36.64±7.36 for physical activity, 23.21±4.80 for responsibility, 16.26±3.63 for stress management, 13.68±4.98 for interpersonal relationships, 18.69±3.31 for spiritual growth, and 1358±23.01 for the overall lifestyle. One of the essential assumptions for regression analysis is to assess the normality of data. The results of the Kolmogorov-Smirnov test showed normality of data in QoL, mindfulness, and the subscales of health-promoting lifestyle, with a significance level of >0.05.

The regression analysis was utilized to predict QoL based on mindfulness and subscales of the health-promoting lifestyle profile.

Table 3: Mean and Standard Deviation of the Quality of Life Coping Strategies (Problem- and Emotion-focused) and Spiritual Health (Religious and Existential)

Component		Mean	SD	Min	Max
	Quality of life	92.28	13.52	125	63
	Mindfulness	65.09	11.93	85	24
Health-promoting lifestyle	Nutrition	30.07	6.57	44	15
	Physical activity	36.64	7.36	52	20
	Responsibility	23.21	4.80	32	11
	Stress management	16.26	3.63	37	8
	Interpersonal relationships	13.68	4.98	30	8
	Spiritual growth	18.69	3.31	24	10
	Total score	138.52	23.01	198	86

According to Table 4, lifestyle (P<0.000, β=0.521) had a significant and direct effect on the mindfulness of pregnant women with obesity and could explain 2.7% of the variance of this variable. Emotion-focused coping strategy (P <0.169, β = 0.078) had no significant and direct effects on the mindfulness of pregnant women with obesity. Also, the problem-focused coping strategy (P <0.047, β = 0.30) had a significant and direct effect on the mindfulness of such women and could explain 1.6% of the variance of this variable. Spiritual health (P <0.301, β = 0.078) had no significant effects on the mindfulness of pregnant women with obesity. Also, the effect of mindfulness (P<0.121, β=-0.136) was insignificant on QoL, but the effect of problem-focused coping strategy (P <0.042, β = -0.156) was significant on it and could explain 2.4% of the variance of this variable. Emotion-focused coping strategy (P <0.010, β = -0.174) had a significant and direct effect on the mindfulness of pregnant women with obesity and could explain 3% of the variance of this variable. Spiritual health had a significant and direct effect on QoL (P<0.012, β=-0.236) and could explain 5.5% of the variance of this variable.

Table 4: Unstandardized and standard regression coefficients of the path models of the effect of health-promoting lifestyle, coping strategies, and spiritual health on the quality of life, mediated by mindfulness, in pregnant women with obesity

Item	Path Model	Standard Coefficient	Standard Error	Critical t-value	P-value	Coefficient of Determination
1	**Mindfulness lifestyle**	0.521	0.670	5.193	0.000	0.271
2	**Mindfulness emotion-focused coping strategies**	-0.078	0.071	-1.377	0.169	0.006
3	**Mindfulness problem-focused coping strategies**	0.130	0.191	1.983	0.047	0.016
4	**Mindfulness spiritual health**	0.078	0.193	1.034	0.301	0.006
5	**Mindfulness quality of life**	0.136	0.007	1.551	0.121	0.018
6	**Quality of life lifestyle**	0.141	0.055	1.299	0.194	0.019
7	**Quality of life problem-focused coping strategies**	0.156	0.017	2.038	0.042	0.024
8	**Quality of life emotion-focused coping strategies**	-0.174	0.006	-2.289	0.010	0.030
9	**Quality of life spiritual health**	0.236	0.018	2.513	0.012	0.052

Discussion

The results of the study showed that mindfulness could predict QoL. This finding was accepted and confirmed and was also in line with the results of a study on the effects of mindfulness training on QoL in pregnant women with diabetes, like some other studies [33-36].

Kuo and Au, in a study on the relationship between mindfulness and anxiety in pregnant women, showed a significant and negative relationship between mindfulness and anxiety. In other words, as mindfulness increases, anxiety decreases in pregnant women. Since mood disorders cause a variety of problems in the physical and mental health of pregnant women, it is suggested to consider mindfulness training in dealing with emotional affairs and training in emotional regulation skills to set treatment priorities and psychological skills training. Given the mindfulness concept, the quality of benefiting from this cognitive construct can be considered as an effective factor in QoL. The results of a study entitled "The Effect of Mindfulness on Perceived Stress and Concerns During Pregnancy" showed that mindfulness training could reduce perceived stress and anxiety in pregnant women experiencing unintended pregnancies by 95%. Therefore, this method can be recommended to reduce perceived stress and anxiety in pregnant women experiencing unintended pregnancies [37].

The present study results also showed that among the subscales of health-promoting lifestyle, only the responsibility could predict QoL in pregnant women with obesity. A great emphasis is put on health-promoting lifestyle and modification of behaviors, such as nutrition, physical activity, responsibility, stress management, and spiritual growth, in lifestyle modification programs [15]. Cannella et al., showed that among the subscales of health-promoting lifestyle, responsibility and self-actualization had the highest and physical activity the lowest mean scores in pregnant women. They also indicated that maternal level of education and occupational status of the mother and her spouse were the factors affecting health-promoting lifestyle [38]. However, 80% of chronic diseases are directly correlated with risk factors such as diabetes, hypertension, obesity, and smoking, and 70% can be prevented by lifestyle changes [14]. The results of a study entitled "The Role of Enabling Factors and Health-promoting Behaviors in Predicting the Quality of Life" indicated that enabling factors and health-promoting behaviors are the strongest predictors of QoL [39]. Therefore, an appropriate and effective educational program can be developed by identifying the factors affecting QoL and mental health. Women with obesity have a higher risk of depressive disorders during pregnancy [6].

Other studies also showed that spiritual growth and physical activity got the highest and lowest scores among the subscales of health-promoting lifestyle. The mean score of the health-promoting behaviors was at the desired level. Among the demographic variables, only occupational status had a significant relationship with health-promoting behaviors. The results showed the desired level of health-promoting behaviors in such a particular population of pregnant women [40]. The results of a study also showed that the subscales of nutrition, physical activity, and spiritual growth have an adverse effect on depression. In addition, among QoL subscales, stress management and interpersonal relationships had a direct effect on depression. The results also highlighted that physical activity during pregnancy can improve QoL in pregnant women [41]. In another study, investigating QoL in pregnant women, the lowest scores were given to vitality and physical function, and unintended pregnancy, maternal age, and gestational age were introduced as factors influencing QoL. However, since the subjects are mostly women who are in a sensitive and active period of life that various factors can affect different aspects of life, strives to control and modify lifestyle, maintain health, and improve QoL in such women with obesity seems essential [42].

Conclusion

One of the strengths of the present study was the concurrent evaluation of physical and mental issues through which both obesity and mindfulness were investigated. Given this necessity, it seems that such research can consider humans as a whole rather than one-dimensionally and lead to more conclusive results in real life. The study also had some limitations; hence, the results should be generalized with more cautions. One of the limitations was that the research

variables were measured only using self-report scales. Hence, the use of other methods such as interviews is suggested in future studies. Also, the study was performed only on pregnant women with obesity. It is suggested to include various populations in future studies. Moreover, the cross sectional design of the study limited any causal interpretation of the results.

Acknowledgments
The article was an excerpt from the doctoral dissertation of Islamic Azad University, Najafabad Branch (ethical code: IR.IAU.FALA.REC.1399.019).

Conflict of interest
The authors declared no conflicts of interest.

Funding:
This study was funded by the Vice Chancellor for Research and Technology Islamic Azad University, Najafabad, Isfahan, Iran.

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