




The Prediction of Quality of Life Based on Self-esteem, Mental Health and Sleep Quality Variables in Obese and Overweight Girl Students

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Abstract

Background: Obesity of children and adolescents has many different detrimental effects on body image, self-esteem (SE), depression and social isolation that are effective on their mental and social health.

Objectives: The purpose of this study was to predict the quality of life (QOL) of obese and overweight girl students in Kermanshah city based on self-esteem, mental health and sleep quality variables.

Methods: The research is a descriptive-analytical study that 419 obese and overweight girl students were selected using multi-stage cluster sampling and simple random sampling. For collection of needed data, several questionnaires including demographic, Rosenberg self-esteem, Goldberg general health, Pittsburgh sleep quality questionnaires and quality of life questionnaire related to word health organization were used. The BMI estimation method of the centers for disease control was used to determine overweight and obesity. Obtained data were analyzed using regression analysis in SPSS (Ver. 19) software environment.

Results: The result of simple linear regression analysis showed that self-esteem, sleep quality and mental health variables, predict 0.11, 0.20, and 0.25 of the variance of total score for QOL, respectively. Multiple regression results indicated that mental health and sleep of quality variables had a significant effect on all dimensions and overall QOL scores ($P < 0.01$) simultaneously. The increasing effect of self-esteem on the dimensions of social relationships ($P < 0.005$), environmental health ($P < 0.01$) and overall QOL score ($P < 0.01$) was significant. According to obtained results, QOL has a direct and significant correlation with self-esteem ($P < 0.01$) mental health ($P < 0.001$) and, sleep quality ($P < 0.001$).

Conclusions: Based on the obtained results, it can be concluded that mental health is the most important and influential factor on the quality of life of obese adolescent girls. The results of this study indicated that a planning is need to promote girls' mental health.

Keywords: Quality of Sleep, Self-esteem, Mental Health, Quality of Life, Obesity

1. Background

The world health organization (WHO) has introduced overweight and obesity as one of the major health problems in many countries of the world, which is causing or exacerbating many diseases and leads to decline in QOL (1). In the last decade, children and adolescents have been affected by overweight and obesity, and also related problems of it, so that the rate of obesity in children and adolescents has been reported two to three times, respectively (2). Overweight and obesity among Iranian teenagers is also considered as one of the major health problems. As overweight and obesity is currently one of the most common nutritional diseases in Iranian adolescents, especially

among girls. For children, overweight is defined as the body mass index (BMI) between 85th to 95th percentile, while obesity is as a BMI at or above the 95th percentile for children of the same age and sex (1). The prevalence of obesity among Iranian teenage girls was reported 23.1% and 8.3%, respectively (3). Overweight and obesity are a major risk factor for cardiovascular, hypertension, type 2 diabetes, various types of cancers and so on. Obesity of children and adolescents is not limited to physical health and has many different detrimental effects including negative body image, SE, depression and social isolation, that's effective on their mental and social health (2). QOL is one of the important aspects of each person's life, which can't be mea-

sured by clinical and physiological measurements, and has a multidimensional structure that includes physical, social and emotional well-being performance (1, 2). In recent studies, the QOL associated with health in obese children has a reverse correlation with the degree of obesity, and even the score of QOL associated with health in obese children is similar to that in cancer patients (4). The effect of physiological and psychological changes in puberty age is important on adolescent self-esteem. Self-esteem is a valuable feeling that a person has towards himself (5). The results of similar studies indicate that there is a relationship between SE and QOL. In addition, self-esteem and QOL decrease with increasing BMI (2). The results of previous studies show that Decreasing SE causes anxiety, psychopathy, and inefficient feeling in life (6).

poor SE has a significant relationship with hurt in all areas of QOL in obese adolescents (7). Mental health is one of the other variables that affect the QOL. Mental health is a condition of the well-being that a person knows about his or her abilities and can cope with the stresses of life. People with good mental health are able to achieve optimal social and psychological performance (8). The results of similar studies indicate that there is a significant relationship between lower mental health and overweight. Obese children and adolescents have lower health-related quality of life, and they have the potential to become anxious and depressed (2).

Adolescent health is one of the main concerns of public health and sleep habits play an important role in it. Based on the results of previous studies, lack of proper sleep increases mood and behavioral problems (9). In adolescents, less sleep health pattern reduces emotional, social, school, and psychosocial performance and generally decrease the QOL (10).

Quality of life as one of the major consequences of chronic diseases has been the focus of researchers and clinical professionals. Obesity has negative consequences on the physical and psychological aspects of quality of life. Studies show that obese women are significantly impaired in most aspects of quality of life compared to women with normal weight and enjoy less vitality, physical and psychological health than obese men, thus identifying factors affecting the quality of life of obese teenage girls is important. Few studies have been done on the psychological factors affecting the QOL of obese adolescents in Iran. So far, the effect of premature variables on QOL and its dimensions has not been reported in previous studies in Iran.

The present study is part of a larger study in which, for the first time in Iran, based on a systematic review, psychological and nutritional variables affecting the quality of life of obese and overweight students were identified and an educational package to intervene accordingly was

drafted. It seems that based on the results of the present study and other similar studies, interventions can be made to improve the quality of life of children and adolescents.

2. Objectives

The aim of this study was to predict the QOL of obese and overweight girls in Kermanshah city, Iran based on sleep, self-esteem and mental health variables of them.

3. Methods

3.1. Study Design

The present study is a descriptive-analytical study that the statistical population of it included girl students with secondary education in Kermanshah in the 2017 - 2018 academic year. The prevalence of overweight and obesity among Iranian adolescent girls was reported to be 23.1% and 8.3%, respectively (3), and the sample size for this study 414 people was estimated according to Cochran formula.

Two regions randomly were selected through a two-stage cluster sampling method from the three areas. Then from each selected district, eight schools were selected randomly. Then, through convenience sampling, overweight and obese students who had the inclusion criteria were selected.

3.2. Data Collection

After selecting the obese and overweight students who were admitted to the study, their height and weight were measured by health experts. Weight of the participants was measured with minimum coverage and no shoes by a CAMRY scale (EB9320 model) with a precision of 100g. Also, the height of the selected people was measured using a wall model height gauge with a precision of 1 mm according to the standard method.

Individuals with any disease or situation affecting the weight or height (such as cancer or severe heart, kidney, liver, nervous, gastrointestinal, endocrine, rheumatism, skeletal and thyroiditis disorders), those who took any supplements or drugs that affected the weight or height status, and those who were on a particular diet were excluded from this study.

Body mass index (BMI) was calculated by dividing the weight (kg) by height (m^2). The BMI percentiles of centers for disease control (CDC) was used to determine overweight and obesity. Overweight was defined as the body mass index (BMI) between 85th to 95th percentile, while obesity was assumed a BMI at or above the 95th percentile.

Experts provided explanations to the selected students on how to complete the questionnaire and Goldberg General Health Questionnaire (including 28 questions) was used to measure the mental health. This questionnaire consists of four subscales including physical dimensions, stress, social function and depression dimensions. For each of the responses provided by the participants, a score of 0 to 3 was given based on the Likert scale. The minimum and maximum score in this questionnaire is 0 and 8 respectively and higher scores means worse mental health. So far, the reliability of the questionnaire is reported to be in the range of 0.78 to 0.95 in previous studies (11). In this study, the reliability of this test was calculated by Cronbach's alpha, to be equal to 83%.

Rosenberg's Self-esteem Questionnaire consists of ten items, which is a one-factor tool and it is two-options (I agree and disagree) (12). In this questionnaire, in this research, the reliability of this test was obtained equal to 82% by Cronbach's alpha. The minimum and maximum score in this questionnaire was -1 and 1, respectively.

Pittsburgh's sleep quality questionnaire has 19 questions and is scored in a Likert scale of 4 degrees from 0 to 3. The questionnaire has 7 sub-scales, including (1) Sleep quality (2) Effect in falling asleep (3) Sleep duration (4) Sleep efficiency and adequacy (5) Sleep disorders (6) Sleeping drug use (7) Daily functional disorders. The aggregate scores of the above-mentioned seven factors constitute the overall score of the individual's sleep quality, ranging from 0 to 21, and a score of more than 6 indicates the undesirable quality of sleep (13). In this study, reliability of this questionnaire was obtained by Cronbach's alpha equal to 75%.

The QOL questionnaire is related to WHO that it has 26 questions and 4 sub-scales, including physical health, mental health, social relationships and the environment health. In this tool, the higher score indicates better QOL. For each question, the score of 1 to 5 is assigned (14). In this research, the reliability of this questionnaire was obtained by Cronbach's Alpha equal to 92%. The minimum and maximum score in this questionnaire was 25 and 125, respectively.

3.3. Data Analysis

SPSS software (Ver. 19) was used to analyze the extracted data using descriptive statistics and simple, multiple, and stepwise regression tests.

4. Results

In this study, 419 female students with an average age of 16.10 ± 0.89 years were studied. 58.5% of students with a BMI higher than 85% and less than 95% (overweight) and

41.5% of students with body mass equal to more than 95% (obese).

The descriptive findings of the study are presented in Table 1. The total score related to variables of SE, public health, sleep quality and QOL were obtained 0.37 ± 0.56 , 32.37 ± 11.78 , 6.05 ± 2.69 and 82.27 ± 14.47 , respectively.

Table 1. The Average Score of Studied Variables for Participants

Variables	Mean	Standard Deviation (S.E)
Self-esteem (SE)		
Total score	0.37	0.56
Mental health		
Physical Scale	7.26	3.46
Social function scale	10.38	3.98
Depression Scale	6.78	6.29
Stress Scale	7.96	5.2
Total score	32.37	11.78
Sleep quality		
Total score	6.05	2.69
Quality of life (QOL)		
Physical Health Scale	25.74	4.88
Mental Health Scale	19.87	4.71
Social relations scale	7.48	1.80
Environmental Health Scale	17.29	5.55
Total score	82.27	14.47

The preliminary analysis was carried out to ensure to follow of the assumptions of normality and linearity of the correlations. Values of variance inflation factor (VIF) in all models show that there is no linear relationship between variables ($VIF < 1.5$). The scatter chart indicates the normalization of the data.

The results showed that self-esteem has a direct and significant effect on the QOL of students, and with each score increase in self-esteem scores, QOL scores have increased by 0.107 units. There is a significant indirect and relationship between quality of sleep and mental health with QOL, and mental health has the most indirect relation. With each unit increasing mental health scores (mental health reduction), the QOL decreased by 0.505 and with each unit increasing the quality of sleep (reducing the quality of sleep), the QOL decreased by 0.451 units. Also, self-esteem, sleep quality and mental health variables, predict 0.11, 0.20, and 0.25 of the variance of total score for QOL, respectively (Table 2).

The results of Table 3 showed that the effect of self-esteem on the components of physical health and mental health related to QOL was not significant ($P > 0.05$). But the

Table 2. Simple Regression Analysis to Predict Quality of Life Based on Variables of Self-esteem, Public Health and Quality of Sleep

Variables	Coefficients			Goodness of Fit Indexes		
	Standard β	Non-Standard β	P	Determination Coefficient	Justified Determination Coefficient	Assumption
Self-esteem	0.107	0.570	0.029	0.011	0.009	×
Public health	-0.505	-0.620	< 0.001	0.255	0.253	✓
Quality of sleep	-0.451	-2.424	< 0.001	0.204	0.202	✓

effect of self-esteem on components of social relationships, environmental health and overall QOL was significant ($P < 0.001$). Mental health and the quality of sleep have a significant effect on all dimensions and overall QOL ($P < 0.001$).

Based on the results presented in Table 4, mental health variable is the first variable entered into the model and has the highest correlation with QOL. All three variables are significant in the model and each of the variables has increased the coefficient of determination.

The obtained results indicate that all three variables can simultaneously explain 30% of the changes in the QOL of obese and overweight students.

5. Discussion

The results of this study showed that sleep quality has a direct and significant effect on all aspects of the QOL of students. The findings of this study are consistent with the results of Zang et al. and Pavia et al. (9,10). Based on results of Zang et al. study, indicated that decreased sleep quality was associated with an increased probability of mood disorders, anxiety, and physical health (9). In the Pavia et al. study, the QOL associated with health in the physical and mental dimensions with deprivation of appropriate sleep is reduced.

Poor sleep health is associated with a variety of diseases (10). In explaining these findings, sleep is one of the basic human needs that is needed to maintain energy and physical well-being. During sleep, hormones such as norepinephrine, serotonin and growth hormone are released, and chemical changes and increased cellular nutrition are performed and prepare the body for reactivation (15). People with sleep disorders, in addition to fatigue, have defects in cell retention, difficulty in thinking and learning, increasing stress and reducing the quality of daily functioning. In addition, sleep deprivation causes hormonal, behavioral, and physical impairment and reduces the quality of life of a person (16). The results of this study showed that correlation between self-esteem with physical and mental health dimensions was not significant, but there was a significant relationship with the dimensions of so-

cial relationships and environmental health and the overall QOL.

This finding is consistent with Griffiths study that there is significant relation between quality of life and self-esteem in obesity persons (17).

In explaining these findings, it can be said that self-esteem is an aspect of self-concept and a valuable sense that a person has towards himself. This feeling stems from the sum of thoughts, feelings, emotions and experiences throughout life (5).

Self-esteem is the core of individual psychological structures and supports the person against psychological pressures. A person who has high self-esteem is easily able to encounter external pressure events without the experience of negative arousal (18).

The health of youth and adolescents is entirely related to the health behaviors they are taking. One of the most important factors in their behavior is self-esteem. If a person is defeated in self-esteem, in life, he (she) will face anxiety, psychological instability, and feelings of inefficiency (19). The results of this study showed that there is a significant and negative correlation between mental health and all aspects of QOL and overall QOL score. Increasing mental health improves the QOL of obese and overweight teenagers, and it can be said that mental health is a strong predictor of QOL. Children's obesity is not only limited to their physical health problems, but also leads to increased mood disorders and poor mental health (2).

Similar to the present study, the results of previous studies showed that psychological well-being is the most important factor affecting on the QOL of obese persons in both physical and psychological dimensions. In addition, there is a significant correlation between mental stress with physical and mental disorder in QOL (20). Depression and stress affect factors such as diet, increasing emotional exertion and decreasing exercise. The previous study showed that people with higher psychological well-being have more physical health (2).

The results of this study indicated that all the variables studied had an impact on the quality of life of obese and overweight students. Among them, mental health is the most important and powerful factor affecting the qual-

Table 3. The Results of Multiple Regression Analysis with Simultaneous Approach to Predict Quality of Life and Its Dimensions Based on Self-esteem, Mental Health and Sleep Quality

Variables	Coefficients			Goodness of Fit Indexes	
	Standard Coefficients	Non-Standard Coefficients	P	Determination Coefficient	Justified Determination Coefficient
Physical health				0.328	0.323
Self-esteem	0.069	0.125	0.087		
Mental health	-0.367	-0.125	< 0.001		
Sleep quality	-0.276	-0.500	< 0.001		
Mental health				0.362	0.358
Self-esteem	0.071	0.123	0.073		
Mental health	-0.453	-0.181	< 0.001		
Sleep quality	-0.211	-0.371	< 0.001		
Social relations				0.110	0.104
Self-esteem	0.131	0.088	0.005		
Mental health	-0.135	-0.021	0.016		
Sleep quality	-0.209	-0.140	< 0.001		
Environmental health				0.114	0.108
Self-esteem	0.107	0.219	0.022		
Mental health	-0.192	-0.091	< 0.001		
Sleep quality	-0.171	-0.353	0.002		
Total score				0.309	0.304
Self-esteem	0.104	0.553	0.012		
Mental health	-0.362	-0.455	< 0.001		
Sleep quality	-0.254	-1.364	< 0.001		

Table 4. Multiple Regression Analysis Using Step-by-Step Method

The Dependent Variable	Steps	The Coefficient of Determination	The Independent Variable	Non-Standard β	Standard β	P
QOL (overall)	1	0.255	Mental health	-0.620	-0.505	< 0.001
	2	0.298	Mental health	-0.452	-0.368	< 0.001
			Quality of sleep	-1.331	-0.248	< 0.001
	3	0.309	Mental health	-0.455	-0.362	< 0.001
			Quality of sleep	-1.364	-0.354	< 0.001
			Self-esteem	-0.553	0.104	0.012

ity of life of obese adolescent girls. Obesity, in addition to its widespread physical consequences, also has significant psychological consequences. When being evaluated, obese people feel upset and shameful for their obesity. These factors, along with the experience of anxiety, depression, distorted body image, and low self-esteem; impaired emotional well-being; reduced life expectancy as well as poor body satisfaction and psychological adjustment, can lead to ineffective psychological functions and thus reduce the psychological dimensions of quality of life. Therefore,

psychological interventions to improve the quality of life of this group of women are recommended. One of the main limitations of this study is the caution in generalizing the findings of this article to other student communities. In the present study, the sample group consisted of Kermanshah secondary school girl students, but no comparison was made between the two groups of obese and overweight girls and boys.

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Footnotes

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