

# The relationship between obesity and health-related quality of life of office workers

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**Abstract.** [Purpose] This study aimed to understand how office workers' obesity, anxiety and health-related quality of life (HRQOL) affect each other. [Subjects] The study was conducted from February 1 of 2013 to March 31 of 2014 and targeted a total of 143 office workers working in Seoul, Republic of Korea. [Methods] The study collected data using both an assessment tool and questionnaire in order to learn the subjects' obesity index, anxiety and HRQOL. [Results] The study revealed a significant difference in the total scores in regard to how the obesity index influences anxiety, mental HRQOL and total HRQOL. The more overweight and the heavier the subjects were, the more severe was the anxiety observed, which resulted in decreased scores for mental HRQOL and total HRQOL. Obesity turned out to be significantly correlated with anxiety, mental HRQOL and total HRQOL, and in terms of how much anxiety the subjects felt, there was a significant correlation with the total scores for physical HRQOL, mental HRQOL and total HRQOL. [Conclusion] The present study found that overweight and obese office workers are more anxious than office workers with normal weights, as the former have a lower mental HRQOL. It also suggests that overweight and obese office workers should improve their mental HRQOL through professional workout programs, which would help with their obesity problem. The study also suggests that subsequent research should be carried out to observe the results of any such workout programs applied in the future.

**Key words:** Health-related quality of life, Obesity, Office workers

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## INTRODUCTION

The growth of the economy and development of industry have led people to be more interested in not only their working environment but also their well-being. In the past, workers mostly were injured in industrial accidents, but today, they are more exposed to work-related chronic illnesses. That being the case, an increasing number of people understand the need for improved ideas on how to keep workers

in good shape, which would then help them to prevent diseases<sup>1)</sup>. Obesity, in particular, stands out as one of the major public-health problems in the modern world; it excessively increases body fat, eventually causing high blood pressure, hyperlipidemia, diabetes, cardiovascular disorders, muscular skeletal diseases, and several types of malignant tumors<sup>2)</sup>. Male officers workers rarely do exercise, which has resulted in a greater likelihood of contracting adult diseases or becoming overweight. In addition, through comparison with other occupational clusters, it was realized that all sorts of stress, overwork and other factors put male office workers at a higher risk of suffering from the conditions that might cause adult diseases<sup>3)</sup>.

Modern society has been emphasizing that maintenance of not only physical and psychosocial protection but also a proper quality of life is one of the significant rights that humans must be guaranteed<sup>4)</sup>. What is being even more

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underlined is that health-related quality of life (HRQOL), as a factor that is immediately related to the well-being of an individual, should be regarded as physical, emotional and social well-being that can be influenced by either a disease or the treatment of a disease. In particular, it is also known that HRQOL has an important effect on depression and mental anxiety<sup>5</sup>). Lately, physical and mental conditions are often being checked and measured, which shows how many attempts are being made to evaluate HRQOL<sup>6</sup>). In light of this, the present confirms that the HRQOL of workers can be a significant indicator for the general quality of the workers' health conditions, as well as how they are doing at work<sup>7</sup>).

Many previous studies have discussed how obesity affects an individual's well-being, but few of them have looked into both office workers' HRQOL and the influence of obesity on it. In addition, multiple studies have corroborated the theory that obesity is one of the factors that bring about depression, and yet not many of those studies have investigated how obesity works in connection with anxiety.

Consequently, this study evaluated the office workers' obesity index, anxiety and HRQOL, which led to a better understanding of how each of them influences each other. The findings of this research support the necessity of obesity control through professional workout programs.

## SUBJECTS AND METHODS

This study was conducted from February 1 of 2013 to March 31 of 2014 and targeted 143 office workers in Seoul, Republic of Korea. The researchers performing this study provided the subjects with accurate explanations of the study's aims, of how the subjects would participate in the research, and of how the research would proceed. Afterwards, an assessment tool and questionnaire were used to gather data on the obesity index, anxiety and HRQOL of the workers who had agreed to participate in the research. All details of this study's research plan were submitted to the Science Research Council of Inje University, which gave its approval to the study. The questionnaire and assessment tool administered to the subjects are described below.

The SF-36 Health Status Scale tool that the study used to assess HRQOL was originally developed by Ware and Sherbourne. It consists of a total of 36 questions, and its eight sub-domains cover physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional, and mental health. In addition, these sub-domains can be further categorized as either "physical health" (which would include the perception of physical functioning, role physical, bodily pain, general health, and changes in health) or "mental health" (which includes vitality, social functioning, role emotional, and mental health)<sup>8</sup>).

The workers' anxiety status was gauged by using the State-Trait Anxiety Inventory (STAI-KYZ), which aims to evaluate an individual's feelings. The test was designed by Spielberger and was translated into Korean and standardized by Han Deok-Woong. In the test, anxiety is regarded as either state anxiety or trait anxiety, and total anxiety is evaluated after each of the sub-anxieties is scored. As a questionnaire that leads a patient to report how anxious he/she feels, the test consists of 20 questions in total, and each

**Table 1.** General characteristics of the subjects (n=143)

Characteristics	Category	Number (%)
Gender	Male	131 (91.6)
	Female	12 (8.4)
Age	20–29	1 (0.7)
	30–39	54 (37.8)
	40–49	46 (32.2)
	50–59	23 (16.1)
	Over 60	19 (13.3)
Height	150–159 cm	6 (4.2)
	160–169 cm	47 (32.9)
	170–179 cm	79 (55.2)
	Over 180 cm	11 (7)
Weight	50–59 kg	13 (9.1)
	60–69 kg	36 (25.2)
	70–79 kg	57 (39.9)
	80–89 kg	25 (17.5)
	Over 90 kg	12 (8.4)
Years of work	Under 5	9 (6.3)
	5–9	56 (39.2)
	10–19	38 (26.6)
	20–29	27 (18.9)
	Over 30	13 (9.1)

of them accounts for four points. On a scale of 20 to 80, the more points the patient gets, the higher the level of the patient's anxiety<sup>9</sup>).

The degree of obesity was evaluated with the body mass index (BMI) of the subject, which was calculated using the height and weight, which were self-reported. In regards to the body mass index classification, the present study follows the standards established by the Korean Society for the Study of Obesity, according to which an individual with a BMI of 22.9 kg/m<sup>2</sup> or less is determined to have a normal weight. If a subject's BMI is 23.0–24.9 kg/m<sup>2</sup>, the subject is considered to be overweight, and a subject with a BMI of 25 kg/m<sup>2</sup> or more is categorized as obese<sup>10</sup>).

The data were analyzed using SPSS 18.0. A t-test and ANOVA were used to understand to what extent the subjects' obesity index would affect anxiety and HRQOL. To carry out the ex-post analysis, the study utilized the group classification by Duncan. Pearson correlation analysis was employed to figure out the relations among the obesity index, anxiety and HRQOL. The significance level for the statistical significance test was set to 0.05.

## RESULTS

Of the 143 office workers, there were 131 (91.6%) males and 12 (8.4%) females. The 30–49 age group was dominant (70%), while 29.4% of the subjects were 50 years or older. Half of the subjects (55.2%) were 170–179 cm tall, and the 70–79 kg weight group was most common, with 39.9% of the subjects falling into it. The largest percentage of the subjects had been working for five to nine years, 26.6% of

**Table 2.** Comparison of anxiety and, health-related quality of life (HRQOL) according to BMI (n=143)

Category	BMI <sup>b</sup>			
	Underweight	Normal	Overweight	Obese
Anxiety**	35.1 (9.6) <sup>a</sup>	33.6 (8.8)	42.5 (9.6)	40.7 (9.6)
Physical HRQOL	54.9 (3.1)	54.3 (5.3)	50.8 (4.8)	51.8 (4.6)
Mental HRQOL**	47.7 (6.1)	50.2 (7.2)	45.3 (6.8)	42.4 (9.1)
Total HRQOL**	51.3 (3.6)	52.3 (4.7)	48.0 (5.3)	47.2 (5.0)

<sup>a</sup>Values are means (SD). <sup>b</sup>BMI: body mass index. \*p<0.05, \*\*p<0.01

**Table 3.** The relationships between BMI, anxiety, and health-related quality of life (HRQOL) (n=143)

		BMI	Anxiety	Physical HRQOL	Mental HRQOL	Total HRQOL
BMI <sup>a</sup>	Correlation coefficient	1	0.3**	-0.1	-0.3**	-0.3**
Anxiety	Correlation coefficient		1	-0.2**	-0.7**	-0.7**
Physical HRQOL	Correlation coefficient			1	0.1	0.5**
Mental HRQOL	Correlation coefficient				1	0.9**
Total HRQOL	Correlation coefficient					1

<sup>a</sup> BMI: body mass index. \*p<0.05, \*\*p<0.01

the total had 10–19 years of experience, and 18.9% of the subjects had been working for 20–29 years (Table 1).

There was a significant difference in the total scores for anxiety, mental HRQOL and total HRQOL in connection with the obesity index ( $p < 0.05$ ). The more overweight and the heavier the subjects were, the lower were the total scores for mental HRQOL as well as total HRQOL. Despite this, no significant difference was discovered in physical HRQOL (Table 2). According to the study's findings from the correlations among obesity, anxiety and HRQOL, obesity showed a significant correlation ( $p < 0.05$ ) with anxiety ( $r = 0.3$ ), mental HRQOL ( $r = -0.3$ ) and total HRQOL ( $r = -0.3$ ). Anxiety was likewise verified to be significantly related ( $p < 0.05$ ) to physical HRQOL ( $r = -0.2$ ), mental HRQOL ( $r = -0.7$ ) and total HRQOL ( $r = -0.7$ ) (Table 3).

## DISCUSSION

Workers become stressed out due to heavy workloads, and this is what tempts workers into frequent alcohol consumption and eating out, which eventually brings about a nutritional imbalance. Many workers end up becoming obese and getting a variety of adult diseases as a result<sup>11</sup>. At this moment, obesity is being studied from every possible angle<sup>12</sup>. The research studies that have discussed the relationship between occupation and obesity have reported that, for women, full-time homemakers are much more likely to become obese, while in the case of men, office workers are exposed to a greater chance of becoming overweight<sup>13</sup>. However, these studies failed to analyze office workers' perceptions of well-being and quality of life, as they only discussed the results in connection with hazardous occupational clusters. It was for this reason that this study tried to look into the mental factors that may be connected to obesity in office workers.

The findings of this study were categorized on a BMI

basis, which revealed that the overweight and obese group exhibited a significant difference in anxiety and mental HRQOL in comparison with the normal weight group. The overweight and obese group, however, did not display a significant difference in physical HRQOL. Many studies deny that obesity should be classified as a mental disease, and yet the findings of those studies actually argue that obesity has an influence on such things as depression, anxiety, and self-esteem<sup>14</sup>. However, many of the studies mentioned above targeted mostly female subjects, and there has not been a research study that has discussed the greater danger of becoming obese for office workers. In light of that, this study should be considered academically significant, as it analyzed office workers' mental health factors and mental HRQOL, which could both be affected by obesity.

No one can resolve any problem caused by obesity unless he/she develops appropriate dietary habits or exercises. However, the office workers were observed to have an even lower quality of life in relation to mental issues, as they seemed to care less about physical problems. After all, the workers believed that they become obese only because of the stress they are subjected to. This belief of the workers led this study to conclude that the workers should try to enhance their mental quality of life through professional workout programs that would help them with their obesity<sup>15</sup>. Considering how helpful workout programs would be in improving the mental quality of life and anxiety of obese office workers, the present study suggests that subsequent research should investigate how a program developed by a specially trained therapist could work to counter obesity. In this study, the proportion of males was overly high, so subsequent research should increase the proportion of female workers.

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