

## The relationship between body weight and health-related quality of life of postmenopausal women attended at primary health care in Sarajevo Canton, Bosnia and Herzegovina

Amira Kurspahic Mujcic <sup>1,\*</sup> and Amra Mujcic <sup>2</sup>

<sup>1</sup> Department of Social Medicine, Faculty of Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina.

<sup>2</sup> Secondary Medical School, Sarajevo, Bosnia and Herzegovina.

World Journal of Advanced Research and Reviews, 2023, 19(03), 737–742

Publication history: Received on 29 July 2023; revised on 09 September 2023; accepted on 11 September 2023

Article DOI: <https://doi.org/10.30574/wjarr.2023.19.3.1822>

### Abstract

Postmenopausal women are particularly affected by obesity. Although it is well documented that obesity is strongly associated with morbidity and mortality, less is known about the impact of obesity on health-related quality of life (HRQoL). The aim of this study was to investigate the relationship between body weight and the physical and mental components of health-related quality of life of the postmenopausal women attended at primary health care in Sarajevo Canton, Bosnia and Herzegovina. This cross-sectional study evaluated 200 postmenopausal women in two groups of 100 each (i.e. overweight/ obese and normal weight). The respondents were supposed to fill out a questionnaire that included questions about their age, years since menopause and the SF-36 questionnaire. Women were weighed and measured, and BMI was calculated. The mean values for the mental component summary were significantly lower in the overweight/obese ( $59.08 \pm 21.86$ ) than in the normal weight group ( $67.05 \pm 19.02$ ) ( $p=0.006$ ). The mean values for the physical component summary were significantly lower in the overweight/obese ( $57.56 \pm 22.81$ ) than in the normal weight group ( $67.38 \pm 21.85$ ) ( $p=0.002$ ). There was not significant relationship between body weight and the physical and mental components of health-related quality of life. Identification of predicting factors of HRQoL, such as body mass index can help to improve the HRQoL, of these women allowing planning practical interventions.

**Key words:** Health Related Quality of Life; Postmenopausal Women; Overweight; Obesity

### 1. Introduction

Menopause is a unique stage of the female reproductive life cycle, a transition from reproductive to nonreproductive stage. Menopause is the last menstrual cycle. The postmenopausal period starts 1 year after the last menstrual cycle [1]. Postmenopausal period is among the most important phases of women's life. Nowadays, most women spend more than one-third of their lives in the postmenopausal stage [2].

Postmenopausal women have an increased tendency for gaining weight. The declines of endogenous estrogen, together with physical inactivity, are probably the major causes of this phenomenon. Postmenopausal overweight and obesity leads to increased rates of hypertension, diabetes mellitus, coronary artery disease, and all-cause mortality [3]. Obesity increases the number of visits to the doctor [4].

Obesity is also an important indicator for health-related quality of life (HRQoL). The term "health-related quality of life" could be defined as the patients' evaluation of the impact of a health condition and its treatment on daily life [5]. Health-related quality of life can be classified into physical and mental components, is both a predictor for future health status

\* Corresponding author: Amira Kurspahic Mujcic

and an outcome itself [6]. Factors that may contribute to differences in health and in perceived health status include education, age, sex, income psychosocial characteristics, housing and living environment [7].

Previous studies suggest a complex relationship between body mass index (BMI) and health-related quality of life. Several studies have shown that obese people have lower scores of HRQoL than normal-weight subjects [6,8]. Corica et al reported that obesity and hypertension were the main contributors to poor HRQoL[9].

Therefore, this study aimed to investigate the relationship between body weight and the physical and mental components of health-related quality of life of postmenopausal women attended at primary health care in Sarajevo Canton, Bosnia and Herzegovina.

---

## 2. Methods

### 2.1. Design and Sample

This cross-sectional study was carried out in family medicine outpatient departments of the Public Institution Primary Health Care Centre of Canton Sarajevo, Bosnia and Herzegovina (B&H) in the period January–June 2018.

The respondents were postmenopausal women who used health care services in the Primary Health Care Centre during the course of the study period. The respondents were divided into two groups: overweight/ obese (n=100) and normal weight (n=100).

Inclusion criteria were women between the age of 50 and 60 years in postmenopausal phase who have a medical record in the Primary Health Care Centre of the Sarajevo Canton and those who were willing to give consent for participation in the study. Exclusion criteria: women who had attained unnatural menopause as a result of a surgical hysterectomy, radiotherapy, or chemotherapy; women with the missing periods in the last 12 months due to other physiological conditions other than menopause; women who were known case of systemic diseases, thyroid disorders and/or any genital pathology; women on medication such as antidepressants, anxiolytics, antipsychotic drugs and on any hormone replacement therapy.

A verbal informed consent was obtained from all individual participants included in this study.

### 2.2. Data Collection

The respondents were supposed to fill out a questionnaire that included questions about their age, years since menopause and the SF-36 questionnaire. The respondents answered the questionnaire while they were waiting for the appointment

Women were weighed and measured, and BMI was calculated. Weight was measured with the women in light clothing, to the nearest 0.1 kg. Standing height was recorded without shoes to the nearest 0.1 cm. The BMI was calculated as weight (kg) divided by height in square meters (m<sup>2</sup>). The BMI categories were defined according to the World Health Organization criteria: normal weight (18.5 < BMI < 24.9), overweight (BMI ≥ 25–29.9) and obese (BMI ≥ 30) [10].

Systolic and diastolic blood pressure (the average of two measurements assessed with at least a 2-minute interval) were measured in Primary Health Care Centre during respondents' visits.

The SF-36 questionnaire was used to measure the physical (physical component summary) and mental (mental component summary) components of health-related quality of life [11].

The SF-36 Health Survey includes one multiitem scale measuring each of the eight health concepts: physical functioning (10 items), physical role limitations (four items), bodily pain (two items), general health perceptions (five items), energy/vitality (four items), social functioning (two items), emotional role limitations (three items) and mental health (five items). Items and scales were constructed using the Likert method of summated ratings. Answers to each question were scored (some items need to be recoded). These scores were summed to produce raw scale scores for each health concept which were then transformed to a 0 – 100 scale. Higher scores indicate better health.

Scoring algorithms were then applied to produce the two summary scores: physical and mental component summary. The physical component summary score was derived from four health concepts: physical functioning, physical role limitations, bodily pain and general health perceptions. Mental component summary score was derived from four health

concepts: energy/vitality, social functioning, emotional role limitations and mental health. All scale questions refer to a four-week period.

### 2.3. Statistical analysis

Statistical analyses were performed using the Statistical Package for Social Sciences software (IBM, version 23.0).

Continuous data were presented as mean and standard deviation (SD) and compared using Student t-test. Using Pearson's chi-squared test, we assessed the relationship between BMI, systolic and diastolic blood pressure and self-reported mental and physical health in obese and normal weight postmenopausal women.

Differences were considered statistically significant at  $p < 0.05$ .

## 3. Results

The study evaluated 200 postmenopausal women in two groups of 100 each (i.e. overweight/ obese and normal weight).

Mean age of overweight/obese and normal weight women was  $57.28 \pm 3.98$  years and  $55.69 \pm 4.23$  years, respectively ( $p=0.007$ ).

Overweight/obese women enrolled in this study were  $7.62 \pm 4.64$  years since menopause, whereas normal weight women were  $5.92 \pm 4.55$  years since menopause ( $p=0.010$ ).

Overweight/obese women have had significantly higher values of systolic ( $p=0.005$ ) and diastolic blood pressure ( $p=0.002$ ) than normal weight women (Table 1).

**Table 1** Age, years since menopause, systolic and diastolic blood pressure in overweight/obese and normal weight postmenopausal women

Variables	Overweight/obese	Normal weight	p
Age (years) $\pm$ SD	$57.28 \pm 3.98$	$55.69 \pm 4.23$	0.007
Years since menopause (years) $\pm$ SD	$7.62 \pm 4.64$	$5.92 \pm 4.55$	0.010
Systolic blood pressure (mm Hg) + SD	$131.19 \pm 17.64$	$125.2 \pm 11.89$	0.005
Diastolic blood pressure (mm Hg) + SD	$83.85 \pm 9.09$	$80.2 \pm 6.96$	0.002

SD, standard deviation

SF-36 questionnaire showed that there was significant difference in the quality of life between two groups.

The mean values for the mental component summary (MCS) were significantly lower in the overweight/obese ( $59.08 \pm 21.86$ ) than in the normal weight group ( $67.05 \pm 19.02$ ) ( $p=0.006$ ). There was 8-point difference between overweight/obese and normal weight groups.

The mean values for the physical component summary (PCS) were significantly lower in the overweight/obese ( $57.56 \pm 22.81$ ) than in the normal weight group ( $67.38 \pm 21.85$ ) ( $p=0.002$ ). There was 10-point difference between overweight/obese and normal weight groups (Table 2).

There was not significant relationship between body weight and the mental ( $p=0.727$ ,  $p=0.509$ ) and physical ( $p=0.906$ ,  $p=0.090$ ) components of health-related quality of life in overweight/obese and normal weight postmenopausal women, respectively.

In addition, a significant relationship was observed between systolic blood pressure and mental ( $p=0.003$ ,  $p=0.000$ ) and physical ( $p=0.000$ ,  $p=0.011$ ) components of health-related quality of life in overweight/obese and normal weight postmenopausal women, respectively and between diastolic blood pressure and mental ( $p=0.005$ ,  $p=0.002$ ) component of health-related quality of life in overweight/obese and normal weight postmenopausal women, respectively (Table 3).

**Table 2** SF-36 questionnaire general results

Variables	Overweight/obese		Normal weight		p
	Mean	Standard deviation	Mean	Standard deviation	
Mental component summary	59.08	21.86	67.05	19.02	0.006
Physical component summary	57.56	22.81	67.38	21.85	0.002

**Table 3** Pearson correlation between BMI, systolic and diastolic blood pressure and self-reported mental and physical health in overweight/obese and normal weight postmenopausal women

Indicator	Mental component summary	Physical component summary
Overweight/ obese		
BMI (kg/m <sup>2</sup> )	p=0.727 (0.035)	p=0.906 (-0.012)
Systolic blood pressure	p=0.003 (-0.294)	p=0.000 (-0.342)
Diastolic blood pressure	p=0.005 (-0.279)	p=0.000 (0.380)
Normal weight		
BMI (kg/m <sup>2</sup> )	p=0.509 (-0.067)	p=0.090 (-0.170)
Systolic blood pressure	p=0.000 (-0.426)	p=0.011 (-0.253)
Diastolic blood pressure	p=0.002 (-0.305)	p=0.174 (0.137)

#### 4. Discussion

This study explored the relationship between body weight and the physical and mental components of health-related quality of life of postmenopausal women attended at primary health care in Sarajevo Canton, Bosnia and Herzegovina.

In this study, we not found significant relationship between body weight and the physical and mental components of health-related quality of life. A number of studies have examined the relationship between BMI and the physical and mental components of health-related quality of life. Some suggest that the relationship may be different for physical and mental components of health-related quality of life but some results are inconsistent.

Müller-Nordhorn et al. found that BMI was inversely associated with physical SF-12 summary score [12]. In a cross sectional study of women aged between 45 and 71 years, Coakley et al. found that BMI was the single most important predictor of reduced physical component of HRQoL [13]. Lynch et al. found that women with extreme obesity had at least 6 times the risk of poor self-reported physical health as women of normal weight [14].

The literature is less consistent in reporting an association between BMI and mental component of HRQoL. In several studies, obesity was related to the physical but not to the mental component of HRQoL. Doll et al. found that presence of obesity was associated with a significant deterioration in physical but not emotional well-being [6]. Similarly, de Zwaan found that BMI was not associated with mental component of HRQoL [15]. On the other hand, the results of the study conducted by Apple et al. have shown an association between obesity and the mental component of HRQoL, whereas the association was often much weaker compared to the physical component [16].

In this study, overweight/obese had lower scores than normal weight on both the PCS and the MCS. This finding is consistent with the findings of many previous studies [12]. In contrast to the findings from previous studies, Ul-Haq et al. found that mental component summary was higher in overweight than normal weight individuals [17]. Zhu et al. found that obese people had poor physical function but good mental health condition [18]. In some cultures overweight

is still accepted as a symbol of a happy life [19]. Also as the prevalence of overweight increases, perceptions may be changing such that being overweight is perceived as normal. Overeating may console some individuals, especially those who are socioeconomically deprived [20].

Meta-analysis of the association between body mass index and health-related quality of life by the SF-36 shown that the relationship between BMI and HRQoL varies depending on whether obesity is present in isolation (termed “healthy” obesity) or is associated with comorbid conditions such as hypertension, diabetes, and hyperlipidemia certain comorbidities [17]. In this study, overweight/obese women have had significantly higher values of systolic and diastolic blood pressure than normal weight women have.

There was evidence to suggest that high blood pressure may mediate the association between being overweight and HRQoL (that is, being overweight causes the long-term condition such as hypertension, which in turn causes a reduction in HRQoL) [21]. Wang et al. found that hypertension markedly impairs quality of life in terms of both physical and mental health [22]. In this study, mean systolic blood pressure, were statistically significantly associated with mental and physical health in overweight/obese and normal weight postmenopausal women; mean diastolic blood pressure was statistically significantly associated with mental health in overweight/obese and normal weight postmenopausal women. The findings suggest that people with hypertension represent a vulnerable population, and it is important to prevent and treat comorbidity of hypertension.

---

## 5. Conclusion

This study has some limitations. We are conscious of the limitations of a cross sectional study of HRQoL. Samples were taken from Primary Health Care Centre. Women on medication such as anxiolytics, antidepressants and antipsychotic drugs were not admitted to the study. Some studies have shown different degrees of depression, anxiety, anger and distress in obese postmenopausal women. Considering these limitations, our data suggested a true lack of association between body weight and HRQoL.

In conclusion, this study provides an insight on HRQoL in normal weight and overweight/ obese postmenopausal women. Overweight/obesity, as a nutritional status, appears to have little impact on the subjective perception of physical and mental health in postmenopausal women. However, assessment of quality of life in postmenopausal women shows lower scores in the realm of both physical and mental health in overweight/ obese by comparison to normal weight women.

Overweight/ obese women have had significantly higher values of systolic and diastolic blood pressure than normal weight women have. Mean systolic blood pressure, were statistically significantly associated with self-reported mental and physical health in overweight/ obese and normal weight postmenopausal women.

Identification of predicting factors of HRQoL, such as body mass index can help to improve the HRQoL, of these women allowing planning practical interventions.

Further research is needed to explore this relationship between body weight and the physical and mental components of health-related quality of life; particularly in comparison with underweight postmenopausal women and obese postmenopausal women, where a few papers have identified these women as having a worse HRQoL than their obese postmenopausal counterparts. Other measures of central adiposity (waist circumference, waist-hip ratio) are recommended as useful supplemental measures to BMI in future studies.

---

## Compliance with ethical standards

### *Acknowledgments*

The authors would like to thank the participants who involved in this study.

### *Disclosure of conflict of interest*

The authors declare that they have no competing interests.

### *Statement of informed consent*

Informed consent was obtained from all individual participants included in this study.

## References

- [1] Meeta M, Digumarti L, Agarwal N, Vaze N, Shah R, Malik S. Clinical Practice Guidelines on Menopause: An Executive Summary and Recommendations: Indian Menopause Society 2019-2020. *J Midlife Health*. 2020;11(2):55-95.
- [2] Pertyńska-Marczewska M, Pertyński T. Postmenopausal women in gynecological care. *Prz Menopauzalny*. 2021;20(2):88-98.
- [3] Dubnov G, Brzezinski A, Berry EM. Weight control and the management of obesity after menopause: the role of physical activity. *Maturitas*. 2003;44(2):89-101.
- [4] Kurspahic-Mujcic A, Mujcic A. Physical activity, body mass index and health services utilization. *Homo Sporticus* 2020;22(2):11-6.
- [5] Acquadro C, Berzon R, Dubois D, Leidy NK, Marquis P, Revicki D, Rothman M; PRO Harmonization Group. Incorporating the patient's perspective into drug development and communication: an ad hoc task force report of the Patient-Reported Outcomes (PRO) Harmonization Group meeting at the Food and Drug Administration, February 16, 2001. *Value Health*. 2003;6(5):522-31.
- [6] Doll HA, Petersen SE, Stewart-Brown SL. Obesity and physical and emotional well-being: associations between body mass index, chronic illness, and the physical and mental components of the SF-36 questionnaire. *Obes Res*. 2000;8(2):160-70.
- [7] Kurspahic-Mujcic A, Mujcic A. The relationship between education and self-reported mental and physical health. *Med Glas (Zenica)*. 2019;16(1):102-7.
- [8] Fontaine KR, Barofsky I. Obesity and health-related quality of life. *Obes Rev*. 2001;2(3):173-82.
- [9] Corica F, Corsonello A, Apolone G, Mannucci E, Lucchetti M, Bonfiglio C, Melchionda N, Marchesini G. Metabolic syndrome, psychological status and quality of life in obesity: the QUOVADIS Study. *Int J Obes (Lond)*. 2008;32(1):185-91.
- [10] World Health Organization Expert Committee. WHO Technical Report Series. Geneva: 1995.
- [11] Ware JE, Kosinski M, Keller SD. SF-36 Physical and mental health summary scales: a user manual and interpretation guide. Boston (MA): The Health Institute, New England Medical Center, 1994.
- [12] Müller-Nordhorn J, Muckelbauer R, Englert H, Grittner U, Berger H, Sonntag F, Völler H, Prugger C, Wegscheider K, Katus HA, Willich SN. Longitudinal association between body mass index and health-related quality of life. *PLoS One*. 2014;9(3):e93071.
- [13] Coakley EH, Kawachi I, Manson JE, Speizer FE, Willet WC, Colditz GA. Lower levels of physical functioning are associated with higher body weight among middle-aged and older women. *Int J Obes Relat Metab Disord*. 1998;22(10):958-65.
- [14] Lynch CP, McTigue KM, Bost JE, Tinker LF, Vitolins M, Adams-Campbell L, Sarto GE, Hays-Grudo J, Manson JE, Kuller LH. Excess weight and physical health-related quality of life in postmenopausal women of diverse racial/ethnic backgrounds. *J Womens Health (Larchmt)*. 2010;19(8):1449-58.
- [15] de Zwaan M, Petersen I, Kaerber M, Burgmer R, Nolting B, Legenbauer T, Benecke A, Herpertz S. Obesity and quality of life: a controlled study of normal-weight and obese individuals. *Psychosomatics*. 2009;50(5):474-82.
- [16] Apple R, Samuels LR, Fonnesbeck C, Schlundt D, Mulvaney S, Hargreaves M, Crenshaw D, Wallston KA, Heerman WJ. Body mass index and health-related quality of life. *Obes Sci Pract*. 2018;4(5):417-26.
- [17] Ul-Haq Z, Mackay DF, Fenwick E, Pell JP. Meta-analysis of the association between body mass index and health-related quality of life among adults, assessed by the SF-36. *Obesity (Silver Spring)*. 2013;21(3):e322-7.
- [18] Zhu YB, Luo XX, Wang Q. Study on the relationship between body mass index and health-related quality of life in middle-aged or older Chinese adults. *Zhonghua Liu Xing Bing Xue Za Zhi*. 2009;30(7):687-91.
- [19] Huang IC, Frangakis C, Wu AW. The relationship of excess body weight and health-related quality of life: evidence from a population study in Taiwan. *Int J Obes (Lond)*. 2006;30(8):1250-9.
- [20] Crisp AH, McGuinness B. Jolly fat: relation between obesity and psychoneurosis in general population. *Br Med J*. 1976;1(6000):7-9.
- [21] Kearns B, Ara R, Young T, Relton C. Association between body mass index and health-related quality of life, and the impact of self-reported long-term conditions - cross-sectional study from the south Yorkshire cohort dataset. *BMC Public Health*. 2013;13:1009.
- [22] Wang R, Zhao Y, He X, Ma X, Yan X, Sun Y, Liu W, Gu Z, Zhao J, He J. Impact of hypertension on health-related quality of life in a population-based study in Shanghai, China. *Public Health*. 2009;123(8):534-9.