

Differences in health related quality of life in a sample of Spanish menopausal women with and without obesity

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Abstract

Objective: To investigate whether body mass index, abdominal obesity or fat distribution in postmenopausal women influence their quality of Life.

Methods: A cross-sectional study was carried out on 250 postmenopausal women (age: 50–64 years), with intact uterus and ovaries, sexually active, and non-hormone therapy users. Various anthropometric measurements were considered and a specific health-related quality of life (HR-QoL) instrument, the Cervantes scale, was performed.

Results: Thirty-three women were not included as they refused to participate in the study, had chronic disease such as hypertension, diabetes type 2, depression or did not answer all the scale items, so 217 patients were evaluated. According with BMI values, 34% of women were obese, 46.1% were in overweight, 19.8% were in normal weight and there were not underweight women. Any consistent relation was found between BMI and global values of HR-QoL, but obese women were diagnosed with “high level of problems” in the “psychical domain” and in the “sexuality domain”. This difference in “sexuality domain” was also appreciated in women with abdominal obesity. Fat or lean mass was not correlated with HR-QoL.

Conclusion: In our study, obesity did not affect the global HR-QoL in Spanish postmenopausal women, but could have an influence on the psychical and sexual domains. Others anthropometric measurements are not associated with changes in HR-QoL. Additional research with HR-QoL specific and validated instruments and with a longitudinal design seems necessary to confirm our results.

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1. Introduction

Quality of life (QoL) has been defined by the World Health Organization as the “individual’s perceptions of their position in life in the context of the cultural and value systems in which they live and in relation to their goals, expectations, standards and concerns” [1]. Health is defined as a state of complete physical, mental and social well-being and not only merely the absence of disease or infirmity. Disease does not only affect the individual, physically and emotionally, it may also affect his economic capacity, and his religious and political values, so the multidimensionality of the QoL concept has been accepted. The term “health related QOL (HR-QoL)” is used to measure the effects of numerous disorders, short and long term disabilities and diseases in different populations and could be defined as the patients’ evaluation of the impact of a health condition and its treatment on daily life [2].

Transition through menopause causes physiological and psycho-social changes, which could affect HR-QoL [3]. The majority of cross-sectional and some longitudinal studies suggest that the perimenopause is associated with higher levels of somatic symptoms and multivariate analyses suggest that menopausal status may be related to impaired HR-QoL [4].

The prevalence of the overweight is rising in Western countries and weight gain in midlife is common among women. In Spain over 60% of women of more than 55 years are overweight or obese [5]. Obesity and overweight are known risk factors for diabetes, high blood pressure, heart disease, gallbladder disease, stroke and some forms of cancer. The effect of the menopause transition on body fat distribution is unclear, but some studies suggest that the menopause transition is associated with an accumulation of central fat and, in particular, intra-abdominal fat [6,7], which is associated with metabolic syndrome [8].

In a cross sectional study of women aged between 45 and 71 years, Coakley et al. [9] found that BMI was the single most important predictor of physical function and impaired ability to work, as well as the second most important predictor of vitality. Fine et al. [10], in a 4-year prospective observational study, using the Medical Outcomes Study Short-Form 36 Health Status Survey to measure HR-QoL found that weight gain was associated with decreased physical function and

vitality and increased bodily pain. Finally, Chedraui et al. [11] in a sample of postmenopausal Ecuadorian women that participated in a metabolic syndrome screening, found an impairment of QoL associated to age and related conditions such as abdominal obesity.

Various validated tools have been used to quantify the influence of the climacteric over the HR-QoL [12], among them a new questionnaire specific for Spanish menopausal women aged between 45 and 64 years were recently developed and validated in our country [13]. The Cervantes scale assesses 4 domains: menopause and health, psychical and sexual life and couple relationship. At the present, this instrument has not been used among postmenopausal women to check if there are any differences between obese and non-obese patients.

The objective of the research was to investigate whether body mass index, abdominal obesity or fat distribution in postmenopausal women influences their HR-QoL.

2. Methods

A cross-sectional study was carried out at the Central University Hospital of Asturias from February 2006 to January 2007 on over 250 postmenopausal Spanish women between 50 and 64 years, with intact uterus and ovaries, sexually active, and non-hormone therapy users. Thirty-three women were not included as they refused to participate in the study, had chronic disease like hypertension, diabetes type 2, depression or did not answer all the scale items, so 217 patients were evaluated.

Menopause status was established after 1 year of the last menstrual period and information on health status was obtained by medical history and physical examination. Trained personnel measured weight and height by using calibrated scales and a wall-mounted stadiometer, respectively, with the subject in a standing position wearing light clothes and no shoes. BMI was calculated as the weight in kilograms divided by the square of the height in meters and categorized as less than 20 kg/m² (underweight), 20–24.9 (normal weight), to 25–29.9 kg/m² (overweight) and 30 kg/m² or higher (obese). Waist circumference was measured with an anthropometric tape placed directly on the nar-

lowest point between the lower rib margin and the iliac crest in a plane that was perpendicular to the long axis of the body, while the subject stood balanced on both feet, approximately 20 cm apart, and with both arms hanging freely. Waist circumference equal to or greater than 80 cm was adopted to indicate abdominal adiposity according with the cutoff by European Group for the Study of Insulin Resistance because most available data suggest an increase in cardiovascular disease risk factors in Europeans (white people of European origin, regardless of where they live in the world) when the waist circumference rises above 80 cm in women [14]. Hip circumference was measured at the level of the widest circumference over the buttocks.

Body composition was evaluated by bioelectrical impedance analysis. Measurements were carried out with the subject lying in a supine position on a flat, non-conductive bed by using a multifrequency tetrapolar technique (QuadScan 4000; Bodystat, Douglas, United Kingdom). Two electrodes were placed on the right wrist with one just proximal to the third metacarpophalangeal joint (positive) and one on the wrist next to the ulnar head (negative). Two electrodes were placed on the right ankle with one just proximal to the third metatarsophalangeal joint (positive) and one between the medial and lateral malleoli (negative). Multifrequency currents were introduced from the positive leads and travelled throughout the body to the negative leads. Percentage body fat was calculated by using the manufacturer's software.

There are many instruments for assessing HR-QoL in postmenopausal women, but only a few good quality instruments cover a reasonable spectrum of typical symptoms, complaints and concerns of postmenopausal women. Most of them share the presence of marked inter- and intra-individual differences in the perception and evaluation of objective aspects of life or disease [15]. The Cervantes scale was considered for the present study due to it is a scale developed and validated for Spanish women aged between 45 and 64 years, which attempts to deal adequately with the relative importance of the menopausal symptoms, psychological and sexual problems and couple relationship in the HR-QoL. It is a 31 items self reported questionnaire including four domains: "menopause and health" with 15 items composed of vasomotor symptoms, health and ageing; "psychical domain" with nine

items, "sexuality" with four items and "couple relationship" with three items. It was ponderated by age group and educational level and it is short and easy to complete (about 7 min). The minimum score is 0 and the maximum score is 155 (from better to worse HR-QoL) and the scores can be compared to reference values in younger women and women of the same age. On the process of validation of the Cervantes scale for that age, mean value for global score was 50.73 (S.D. 23.89), for menopause and health was 25.1 (S.D. 12.83), for menopause and psychical domain was 10.81 (S.D. 8.30), for sexuality was 10.54 (S.D. 5.00) and for couple relationship was 3.91 (S.D. 4.17). Values above +2 S.D. over the reference score in women of the same age and education level were considered as "severe symptoms", values between +2 S.D. and +1 S.D. were considered as "high problem level", values between +1 S.D. and -1 S.D. were considered as "low-medium level of HR-QoL" and values below -1 S.D. were considered as "good level of HR-QoL".

Obesity in Spanish women between 50 and 64 years old is around 23% [5] so a sample size of 217 evaluable women with (74 women in experimental arm and 143 women in reference arm) provides a power of greater than 99% for analysis of variance at a 2-sided significance level of 0.05, assuming a mean global Cervantes scale score of 50.73 (S.D. 23.89) and a difference change equal to one half of an S.D.

Both groups were compared to know if there were any differences in age, smoking, physical activity, chronic treatment or educational level and in order to considerate a potential confounding factors a multivariate analyses was performed. A variance analysis (ANOVA) was used to search differences on the global score and the four domains of the Cervantes scale among normal weight, overweight and obese postmenopausal women. Comparison of categorical data was performed with Chi square test and Likelihood ratio and a linear regression was carried out in order to correlate waist circumference, fat and lean percentages with HR-QoL scores. All analyses used SPSS statistical package (SPSS for Windows, 12.0; SPSS Inc.) and significance level was set at $p < 0.05$.

The study design was approved by the Asturia's Ethical Committee and the eligible women signed an informed consent form before entering the study.

3. Results

According with BMI values, 34% of women were obese, 46.1% were in overweight, 19.8 were in normal weight and there were not underweight women in the present sample. Age, different anthropometric values for the three groups and some possible confounding factors like age, educational levels, smoking, physical activity or chronic treatments are shown in Table 1. Both groups were similar and there were no statistical differences for these possible confounding factors. A multivariate analysis was performed in order to considerate of confounding factors and the results in relation to the potential interaction between confounding factors was not significant (Wilks Lambda = 0.203; $p = 0.963$).

When data were considered creating categories as good level of HR-QoL, low-medium level of HR-QoL, high problem level and severe symptoms any consistent relation was found between BMI and global values of HR-QoL (Fig. 1) and similar results were found

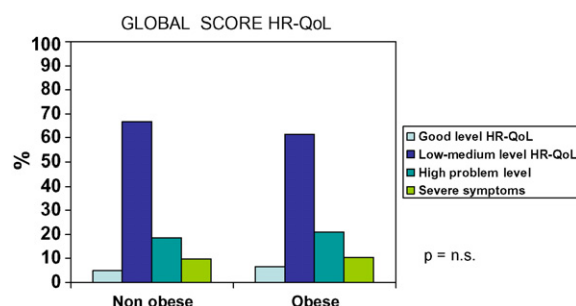


Fig. 1. Cervantes scale results according to obesity.

when the data were managed as a continuous variable (Table 2).

The evaluation of the four domains of the Cervantes scales was different if data were managed a continuous variable or creating categories. In the first case any differences between obese and non-obese were found, but some slight differences were found when the data were considered creating categories, so obese women were

Table 1

Mean values and standard deviation (S.D.) of age, anthropometric measurements and possible confounding factors

	Non-obese Mean S.D.				Obese Mean S.D.				<i>p</i>				
Age	55.4 ± 3.30				56 ± 3.36				ns				
Waist circumference (cm)	86.2 ± 7.29				101.6 ± 9.78				<0.001				
Waist–Hip ratio	0.82 ± 0.06				0.8 ± 0.69				<0.001				
Fat mass (Kg)	29.6 ± 7.05				40.0 ± 7.79				<0.001				
Fat percentage	43.6 ± 6.66				48.5 ± 6.78				<0.001				
Lean mass (Kg)	37.6 ± 4.72				42.6 ± 6.64				<0.001				
Lean percentage	56.4 ± 6.75				51.3 ± 7.05				<0.001				
Possible confounding factors									<i>p</i>				
Non-obese					Obese								
Yes		No		Yes		No							
<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%						
Smoking	20	14.2	121	85.8	9	11.8	67	88.2	n.s.				
Physical activity	59	41.8	82	58.2	35	46.1	41	53.9	n.s.				
Chronic treatment	40	28.4	101	71.6	23	30.3	53	69.7	n.s.				
Non-obese					Obese								
Elementary school		High school		College graduate		Elementary school		High school		College graduate			
<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>p</i>	
Educational levels	34	24.1	92	65.2	15	10.6	19	25	48	63.2	9	11.8	n.s.

Table 2
Mean values and S.D. for Cervantes global score

	Non-obese Mean S.D.	Obese Mean S.D.	<i>p</i>
Cervantes global score	62.6 ± 26.092	66.8 ± 25.181	n.s.
Menopause and health	30.9 ± 13.793	34.0 ± 14.051	n.s.
Psychical domain	14.3 ± 10.231	13.8 ± 8.906	n.s.
Sexuality	12.4 ± 5.242	13.4 ± 5.659	n.s.
Couple relationship	5.8 ± 5.295	5.5 ± 5.144	n.s.

diagnosed as “high level of problems” in the “psychical domain” and in the “sexuality domain” (Table 3). This difference in “sexuality domain” was also appreciated in women with abdominal obesity (abdominal circumference above 80 cm) as is shown in Table 4. The total fat mass, the fat mass percentage, the total lean mass and the lean mass percentage were not influences in Cervantes scale global score or any other domains (Table 5).

4. Discussion

Most women care not only about living long lives, but also about living healthy lives, free of disability, disease, and unpleasant symptoms that prevent the enjoyment of, and involvement in, meaningful relationships, work, and recreation. Biological changes associated with menopause and ageing process, and other concomitant psychological and social changes, such as children living at home, the birth of grandchildren and marital tensions, or declining health or death of parents can deteriorate these goals.

The rate of obesity is high among postmenopausal women in western countries. A study of weight change and well-being over a 2-year period among mid-aged women found that only half the women maintained their weight within 2.25 kg, and one-third gained more than this amount in a 2-year period [16]. The effect of the menopause transition on body fat distribution

Table 3
Difference in Cervantes scale results between obese and non-obese menopausal women

	Non-obese		Obese		Chi square	<i>p</i>
	<i>n</i>	%	<i>n</i>	%		
Cervantes scale global score						
Good level HR-QoL	7	4.9	5	6.6	0.246	ns
Low-medium level HR-QoL	94	66.7	47	61.8	0.505	ns
High level of problems	26	18.5	16	21.1	0.216	ns
Severe symptoms	14	9.9	8	10.5	0.019	ns
Menopause and health						
Good level HR-QoL	12	8.6	2	2.6	2.828	ns
Low-medium level HR-QoL	86	60.9	43	56.6	0.399	ns
High level of problems	36	25.6	24	31.6	0.903	ns
Severe symptoms	7	4.9	7	9.2	1.475	ns
Psychical domain						
Good level HR-QoL	10	7.1	6	7.9	0.047	ns
Low-medium level HR-QoL	99	68.7	52	68.4	0.075	ns
High level of problems	13	9.3	14	18.4	3.838	0.05
Severe symptoms	19	14.9	4	5.3	3.514	ns
Sexuality						
Good level HR-QoL	12	8.5	8	10.5	0.24	ns
Low-medium level HR-QoL	85	60.3	30	39.5	8.585	0.003
High level of problems	37	26.2	33	43.4	6.67	0.009
Severe symptoms	7	5	5	6.6	0.246	ns
Couple relationship						
Good level HR-QoL	4	2.8	4	5.3	0.819	ns
Low-medium level HR-QoL	95	67.4	51	67.1	0.002	ns
High level of problems	19	13.5	6	7.9	1.509	ns
Severe symptoms	23	16.3	15	19.7	0.401	ns

Table 4

Difference in Cervantes scale result between women with and without abdominal obesity Cervantes scale global score

	Cervantes scale global score				Chi square	p
	n	%	n	%		
Non-abdominal obesity abdominal obesity						
Good level HR-QoL	3	9.7	9	4.8	1.191	ns
Low-medium level HR-QoL	18	58	123	66.2	0.759	ns
High level of problems	7	22.6	35	18.8	0.241	ns
Severe symptoms	3	9.7	19	10.2	0.008	ns
Menopause and health						
Good level HR-QoL	3	9.7	11	5.9	0.624	ns
Low-medium level HR-QoL	17	54.8	112	60.2	0.319	ns
High level of problems	11	35.5	49	26.3	1.11	ns
Severe symptoms	0	0	14	7.6	2.494	ns
Psychical domain						
Good level HR-QoL	2	6.5	14	7.5	0.083	ns
Low-medium level HR-QoL	19	61.3	128	68.8	0.689	ns
High level of problems	6	19.3	21	11.3	1.586	ns
Severe symptoms	4	12.9	23	12.4	0.007	ns
Sexuality						
Good level HR-QoL	1	3.2	19	10.3	1.551	ns
Low-medium level HR-QoL	21	67.7	94	50.5	3.157	ns
High level of problems	5	16.1	65	34.9	4.306	0.037
Severe symptoms	4	13	8	4.3	3.764	ns
Couple relationship						
Good level HR-QoL	0	0	8	4.3	1.384	ns
Low-Medium level HR-QoL	22	71	124	66.7	0.223	ns
High level of problems	3	9.7	22	11.8	0.121	ns
Severe symptoms	6	19.3	32	17.2	0.085	ns

remains unclear but some studies suggest that early postmenopausal status is associated with a preferential increase in intra-abdominal fat [6] and Lynch et al. found that postmenopausal women have greater total and abdominal adiposity and lower energy expenditure during rest and physical activity [17]. Obesity has been associated with compromised HR-QoL and psychological well-being due to constraint on physical ability [18] and increased reported bodily pain [19]. A recent study of 175 postmenopausal women divided into a low group ($<220 \text{ ms}^2$) and a high group ($>220 \text{ ms}^2$) found an association of postmenopausal reduced sympathovagal activity with higher body fat content and this autonomic depression could be a crucial risk factor in undermining the health and HR-QoL [20]. Sower et al. [21] found a positive correlation between FSH changes and fat mass measured by bioelectrical impedance and in some research, fat mass measured by dual-energy X-

ray absorptiometry was related to decreased well being [22]. Contrary to these data in our sample, no positive correlation between fat or lean mass and HR-QoL was found.

In Spain the age of presentation of menopause is around 49 years old and 74% of the postmenopausal women present climacteric symptoms [23]. On the other hand, more than 60% of Spanish women aged over 55 presented a BMI higher than 25 and at the present no studies have been performed in our country to know if the obesity was related with HR-QoL in postmenopausal women.

We are conscious of the limitations of a cross-sectional study of HR-QoL and anthropometric factors, and the difficulties involved in the interpretation of our data. Others possible implications for data evaluation are the fact that samples were taken from a menopause clinic and that the women who are not

Table 5
Coefficient of correlation (*r*) for the association of Cervantes scale score and fat and lean mass

	<i>r</i>	<i>p</i>
Cervantes scale global score		
Fat mass (kg)	0.054	ns
Fat mass (%)	0.049	ns
Lean mass (kg)	0.022	ns
Lean mass (%)	0.048	ns
Menopause and health		
Fat mass (kg)	0.125	ns
Fat mass (%)	0.004	ns
Lean mass (kg)	0.086	ns
Lean mass (%)	0.004	ns
Psychical domain		
Fat mass (kg)	0.029	ns
Fat mass (%)	0.003	ns
Lean mass (kg)	0.025	ns
Lean mass (%)	0.002	ns
Sexuality		
Fat mass (kg)	0.055	ns
Fat mass (%)	0.011	ns
Lean mass (kg)	0.109	ns
Lean mass (%)	0.01	ns
Couple relationship		
Fat mass (kg)	0.035	ns
Fat mass (%)	0.015	ns
Lean mass (kg)	0.027	ns
Lean mass (%)	0.032	ns

in a couple, sexually active or with chronic disease were not admitted to the study. Considering these limitations, our data suggested a true lack of association between obesity and HR-QoL but obese women appear to have “high level of problems” in “physical domains” with more frequency. These results may agree with other studies that have shown different degrees of depression, anxiety, anger, distress and low levels of social support in obese postmenopausal women [24].

Obesity could affect several aspects of sexuality in women [25] and a recent study found that obesity is associated with lack of enjoyment of sexual activity, lack of sexual desire, difficulties with sexual performance, and avoidance of sexual encounters, especially in women [26]. In accordance with that data, in the present study a higher percentage of sexuality problems (lack of sexual desire, low frequency of sexual encounters and lack of enjoyment of sexual activity) was

found in obese women and when abdominal obesity was present, however, it is not possible to tell whether obesity leads to sexual dissatisfaction or whether sexual dissatisfaction leads to obesity. More studies with specific and validated scales for evaluating female sexual dysfunction and a longitudinal design could answer this question.

5. Conclusion

In our study, obesity did not affect the global HR-QoL in Spanish postmenopausal women, but could have an influence on the psychical and sexual domains. Others anthropometric measurements are not associated with changes in HR-QoL. Additional research with HR-QoL specific and validated instruments and with a longitudinal design seems necessary to confirm our results.

Conflict of interest

Authors have not any financial and personal relationships with other people or organisations that could inappropriately influence (bias) their work.

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