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THE ASSOCIATION BETWEEN BODY COMPOSITION AND QUALITY OF LIFE IN OVERWEIGHT AND OBESE WOMEN

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Abstract
This study aims to evaluate the correlation between body composition and quality of life in overweight and obese women over the age of 45. Quality of life was assessed using the QUALEFFO-41 questionnaire, and body composition was measured with the TANITA MC-780MA analyzer. Twenty-five participants were included in the study, and statistical analysis revealed a correlation between adipose tissue and quality of life in the women studied.

Introduction

Obesity is defined as an excessive accumulation of body fat, with multiple contributing factors including lifestyle, gender, eating habits, and more [1]. It is a significant risk factor for cardiovascular diseases and increased mortality and is more commonly found in women (with a prevalence of 10.8% in men compared to 14.9% in women) [2]. The peak prevalence is reported between the ages of 60 and 64 [3].
Historically, Body Mass Index (BMI) has been used to classify individuals as normal weight, overweight, or obese. However, technological advancements have introduced various devices capable of measuring not only BMI but also adipose tissue, muscle mass, and other components [4]. Body composition refers to the sum of different body compartments such as free fat mass, muscle mass, skeletal muscle mass, intracellular water, and extracellular water.
Adipose tissue can be classified into visceral adipose tissue (surrounding internal organs), which represents about 5–10%, and subcutaneous adipose tissue, which accounts for approximately 80% [5].
According to several studies, excess visceral fat is associated with a higher risk of mortality and increased cardiovascular risk [6, 7], particularly in women [8, 9].
A meta-analysis found that a 10% increase in adipose tissue is associated with a 1.11-fold increase in mortality risk among adults and a 0.92-fold increase in individuals over the age of 60 [10].

However, not only excess adipose tissue represents a mortality risk—low BMI values, below the normal range, also play a role. A low BMI, combined with low muscle mass, contributes to an increased risk of mortality [10 – 12].

Material-method

Twenty-five women were included in the study. Body composition was measured using the TANITA MC-780MA device, based on bioelectrical impedance analysis. Quality of life was assessed using the QUALEFFO-41 questionnaire, which consists of 41 items covering various domains such as daily activities, mental health, pain, household tasks, mobility, leisure activities, and general health status.

The maximum score a participant can obtain on this questionnaire is 100, indicating the worst possible quality of life, while the minimum score is 0, indicating the best quality of life.

Statistical analysis was performed using SPSS version 26. The Shapiro-Wilk test was used to determine the normality of data distribution, and the Pearson correlation test (Pearson's r) was applied to identify potential correlations between different quality of life domains and body composition parameters.

Results and discussions

Among the twenty-five women included in the study, eight (32%) had a BMI between 25 and 30, eleven (44%) had a BMI between 30 and 35, one participant (4%) had a BMI between 35 and 40, and the remaining five subjects (20%) had a BMI between 40 and 45.

Table 1. Body composition and results obtained from the Qualleffo-41 questionnaire

	Mean	SD	Min	Max	Std. Error
Age	49.3	1.9	47	53	0.38
BMI	33.4	4.9	27.5	43.3	0.98
Fat Mass (kg)	35.1	8.5	23.1	51.9	1.69
Pain	53.2	12.0	35	70	2.39
ADL (Activities of Daily Living)	13.8	5.4	6.25	25	1.08
Jobs Around the House	13.2	4.8	5	25	0.95
Mobility	15.9	6.0	10.71	28.57	1.19
Leisure, Social Activities	60	7.6	47.5	66.43	1.51

General Health Perception	60.3	12.6	41.67	75	2.51
Mental Function	49.7	8.0	33.33	61.11	1.69

For the "pain" variable, twenty-two women (88%) scored between 33 and 66, while three women (12%) scored between 66 and 100. Among those who scored between 33 and 66, seven participants (28%) had a BMI between 25 and 30, eleven (44%) had a BMI between 30 and 35, one (4%) had a BMI between 35 and 40, and two (8%) had a BMI between 40 and 45. The three women (12%) who scored between 66 and 100 all had a BMI between 40 and 45.

For the variables "ADL" (activities of daily living), "jobs around the house", and "mobility", all participants scored between 0 and 33. For the variable "leisure and social activities", all participants scored between 33 and 67.

Regarding the "general health perception" variable, seventeen women (68%) scored between 33 and 66.9, and eight women (32%) scored between 67 and 100. For the "mental function" variable, one woman (4%) scored between 0 and 33, while the remaining twenty-four women (96%) scored between 33 and 66.

As can be seen in the table below, there were positive correlations between the variable "pain" and the variables "ADL" ($r = .48$, $p = .01$), "jobs around the house" ($r = .39$, $p = .04$), "mobility" ($r = .71$, $p < .001$), "general health perception" ($r = .70$, $p < .001$), "mental function" ($r = .40$, $p = .04$), "fat mass" ($r = .76$, $p < .001$) and "BMI" ($r = .69$, $p < .001$), which may suggest that there is a link between the level of pain perceived by patients and the performance of daily activities or the perception of health status. Also, the positive correlations between the variable "pain" and the variables "fat mass" and "BMI" may suggest that with increased adipose tissue, subjects may experience more pain, which may be a cause of excessive weight exerted on the musculoskeletal system.

When discussing the variable "fat mass" it is interesting to mention that the strongest positive correlation was recorded between this variable and the variable "health status" (excluding the variable "BMI" which is directly related to "fat mass" anyway). This may lead us to believe that people with a lot of fat mass also register the worst quality of life when it comes to the variable "general health perception" ($r = .79$, $p < .001$). A strong positive correlation was also recorded between the variable "fat mass" and the variable "mobility" ($r = .79$, $p < .001$), this may suggest that people with higher adipose tissue recorded a higher score (which suggests a lower quality of life in this aspect) compared to subjects who recorded a lower value of adipose tissue. The same can be said about the variable "BMI" and the variable "mobility" ($r = .78$, $p < .001$) knowing that there is a link between BMI and fat mass. Also, there was a positive

correlation between "BMI" and "mental health" ($r = .70$, $p < .001$); as well as between "BMI" and "general health perception" ($r = .60$, $p = .002$).

Adipose tissue, especially visceral, which accumulates around internal organs, is associated with increased risks for various chronic conditions, such as cardiovascular disease, type 2 diabetes, hypertension, and metabolic syndrome [13 – 16]. These conditions directly affect quality of life, leading to decreased mobility, chronic fatigue, and generally poor health, limiting daily activities and reducing independence. The greatest risk factor for cardiovascular disease among women remains obesity, which is the number one cause of death from cardiovascular disease [3]. The risk of suffering from mental illness is also much higher among obese women [17].

Table 2. Pearson correlations for the variables of the Qualleffo-41 quality of life questionnaire, BMI and Fat Mass

		Pain	ADL	JAH	Mobility	LSA	GHP	MF	FatMass	BMI
Pain		1	.478*	.397*	.717**	.368	.740**	.403*	.767**	.694**
	p		.016	.049	.000	.071	.000	.046	.000	.000
ADL		.478*	1	-.010	.282	.534**	.377	.343	.385	.417*
	p	.016		.962	.172	.006	.064	.094	.057	.038
JAH		.397*	-.010	1	.195	-.087	.324	-.016	.226	.155
	P	.049	.962		.350	.679	.114	.938	.277	.460
Mobility		.717**	.282	.195	1	.195	.593**	.666**	.790**	.789**
	P	.000	.172	.350		.349	.002	.000	.000	.000
LSA		.368	.534**	-.087	.195	1	.556**	.343	.586**	.420*
	P	.071	.006	.679	.349		.004	.094	.002	.036
GHP		.740**	.377	.324	.593**	.556**	1	.504*	.793**	.600**
	P	.000	.064	.114	.002	.004		.010	.000	.002
MF		.403*	.343	-.016	.666**	.343	.504*	1	.651**	.707**
	P	.046	.094	.938	.000	.094	.010		.000	.000
FatMass		.767**	.385	.226	.790**	.586**	.793**	.651**	1	.828**
	P	.000	.057	.277	.000	.002	.000	.000		.000
BMI		.694**	.417*	.155	.789**	.420*	.600**	.707**	.828**	1
	P	.000	.038	.460	.000	.036	.002	.000	.000	

Note. ADL = Activities of Daily Living, JAH = Jobs Around the House, LSA = Leisure, Social Activities, GHP = General Health Perception, MF = Mental Function, BMI = Body Mass Index.

*. Correlation is significant at the 0.05 level

**. Correlation is significant at the 0.01 level

Overweight or obese women often face social stigma and discrimination, which can contribute to poor mental health. Body stigma can lead to feelings of shame, anxiety, and depression, which can have a significant impact on self-confidence and self-esteem. These emotional problems can create a vicious cycle, where women feel isolated or unable to adopt healthy behaviors, which makes the situation worse. Excess body fat can limit mobility and the ability to participate in physical activities, leading to a more sedentary lifestyle. Overweight women may experience discomfort during exercise and may be less motivated to engage in activities that improve cardiovascular health and overall well-being [18]. This inactivity can worsen existing health conditions and contribute to an overall decrease in quality of life [19].

In overweight or obese women, excess body fat can disrupt hormonal balance, which can lead to fertility problems, polycystic ovary syndrome (PCOS), and difficulty getting pregnant [20]. Additionally, excess body fat is linked to higher levels of estrogen, which can increase the risk of certain cancers, such as breast cancer and endometrial cancer.

The impact on body image is a major concern among overweight or obese women, influencing not only their emotional state but also how they relate to others. Social and professional relationships can suffer due to discrimination or self-imposed isolation. Additionally, negative body image can lead to destructive eating behaviors or other unhealthy coping mechanisms [21].

Women who are overweight or obese may experience higher health care costs due to treatments for obesity-related conditions. Costs may also include treatments for mobility issues or bariatric surgery, if necessary. This can affect quality of life financially and emotionally, especially in the context of a health care system that may not always be accessible or equitable.

Conclusion

From this study, it can be seen that there is a correlation between adipose tissue, BMI and quality of life, but we cannot say whether this also suggests a cause-and-effect relationship. However, based on other studies mentioned above, we can say that excess adipose tissue can contribute to a decrease in quality of life.

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