

Impact Of Body Mass Index (BMI), Hip-Waist Circumference and Body Fat Percentage Among Pre and Post Menopausal Women

Shivani Chitransh¹, Rekha Shrivastava², Vandana Shrivastava³

¹Research Scholar, Barkatullah University, Bhopal

²Head and Professor, Govt. Girls Nodal P.G, College Vidisha, Bhopal

³Professor, M.L.B PG girls, College, Bhopal

Abstract

The goal of the current study was to evaluate the nutritional status of premenopausal and postmenopausal women. For the purpose of gathering data, purposeful random sampling was employed where 300 women were chosen as a sample in which 150 group are taken from premenopause women and 150 group from postmenopause. The age group of the women ranged from 40-60 years. Mandakni colony and Mahabali nagar were selected under the kolar tehsil, and Surendra Palace was selected under the huzur tehsil. The study was to assess BMI, waist hip ratio and body fat percentage in pre and postmenopausal women. All study participants had anthropometric measurements, including height and weight measurements, and body mass index (BMI) calculations using the formula $\text{Weight (kg)} / \text{Height}^2 \text{ (m)}$. Through the calculation of BMI, menopausal women's obesity was evaluated. The circumferences of the hips and waist were measured with precision, $\text{WHR} = \text{Waist Circumference (cm)} / \text{Hip Circumference (cm)}$ and using total body weight as a starting point, the skinfold measuring test calculate body fat percentage. It has been determined from the current study's findings that there is a statistically significant difference between obesity and the menopausal status of the chosen females and the indicators of obesity are higher in post-menopausal women than in pre-menopausal women.

Keywords- BMI, height, weight, waist hip ratio, body fat percentage, pre and post menopause women

Introduction

During the menopausal transition stage, women go through a number of physical, psychological, and social changes that could affect their quality of life. Because ovarian follicles gradually deteriorate with age and the ovaries gradually produce less estrogen, it is a natural process that every woman goes through. Menopausal women are also disturbed by obesity-related weight gain and expanding waistlines that result from redistributed fat in the body of androids. This is mostly caused by estrogen loss as well as other elements like aging naturally and a drop in physical activity. Women lose muscular mass as they age, which slows their metabolism and makes them acquire weight. With age, muscle mass decreases and fat mass rises. Therefore, the pace at which your body burns calories (metabolism) slows down as muscle mass declines. Lessen both in amount and quality of lean mass The accumulation of fat in the muscles is one of the primary indicators of menopause-related changes in body composition. The distribution and storage of fat depend on the hormone oestrogen. Before you reach menopause,

oestrogen causes fat to build up in your thighs, hips, and buttocks; but, after menopause, a decline in oestrogen hormones results in an overall increase in total body fat.

After the age of 40, American women are substantially more likely to be obese and prevalence increases at 65% between 40 and 59 years old, with women making up 73.8%. Obesity is more prevalent in post menopause women.

Numerous research on Chinese women's body composition changes throughout the menopause and suggested that both the increase in fat mass and the menopause are independent effects of an increase in abdominal fat older than 60,

Compared to pre-menopausal women, post-menopausal women exhibit a significant prevalence of overweight and obesity. However, information about the relationship rising obesity rates and menopause and the prevalence of obesity, diseases as diabetes, high blood pressure, and specific cancer kinds. An important risk factor for developing menopausal symptoms may also be obesity.

According to the International Classification of Diseases, the BMI values used to determine the body structure were separated into (WHO, 2000) Adult underweight, overweight, and obesity. They are: underweight (BMI<18.50), normal, and overweight range (18.50<BMI<24.99), overweight (25.00<BMI<29.99), Obesity types: Type I (30.00<BMI<34.99), Type II (35.00<BMI<39.99) and obesity III (BMI >40.00).

MATERIALS AND METHODS

A community based sample survey was carried out among pre and post menopause women where 300 women were chosen as a sample in which 150 group are taken from premenopause women and 150 group from postmenopause. The age group of the women ranged from 40-60 years. Mandakni colony and Mahabali nagar were selected under the kolar tehsil, and Surendra Palace was selected under the huzur tehsil.

The information gathered on sociodemographic characteristics and physical activity levels using a schedule questionnaire. A 24-hour dietary recall was used to get information about diet.

Tools

All study participants' heights and weights were recorded for anthropometric analysis. Body mass index (BMI) and obesity were computed using the formula:

Body Mass Index = Weight in KG/ Height in M²

The waist and hip circumferences were precisely measured, and the National Institute of Nutrition's (1999) formula for calculating the waist hip ratio was used.

WHR= Waist Circumference (cm)/ Hip Circumference (cm)

Using total body weight as a starting point, the skinfold measuring test calculates your body fat percentage.

Analysis of data:

With the help of the studied literature, percentage, standard deviation and significance of differences measurements were computed and discussed.

RESULTS AND DISCUSSION

Table 1. represents the classification of BMI of pre and post menopause women. The distribution of Body Mass Index (BMI) categories among pre- and post-menopausal women is shown in the table. 3 percent of the participants in the pre-menopause group are underweight, 50 percent are in the normal weight range, 24 percent are in risk of becoming fat, 11 percent have obesity of grade I, and 4 percent have obesity of grade II. While only 4% of post-menopausal women are underweight, 13% have a normal BMI, 19% are at risk of becoming obese, 28% have obesity grade I, and 36% have obesity grade II, just 4% are underweight and 13% have a normal BMI.

Table1.
Distribution of Body Mass Index (BMI)

		pre- menopause		post- menopause	
		Frequency	Percentage	Frequency	Percentage
Below 18.5	Under Weight	9	3%	6	4%
18.6 - 22.9	Normal	72	50%	19	13%
23- 24.9	At risk of obesity	33	24%	28	19%
25- 29.9	Obesity Grade I	23	11%	42	28%
Over 30	Obesity Grade II	13	4%	55	36%
Total	Total	150	100	150	100

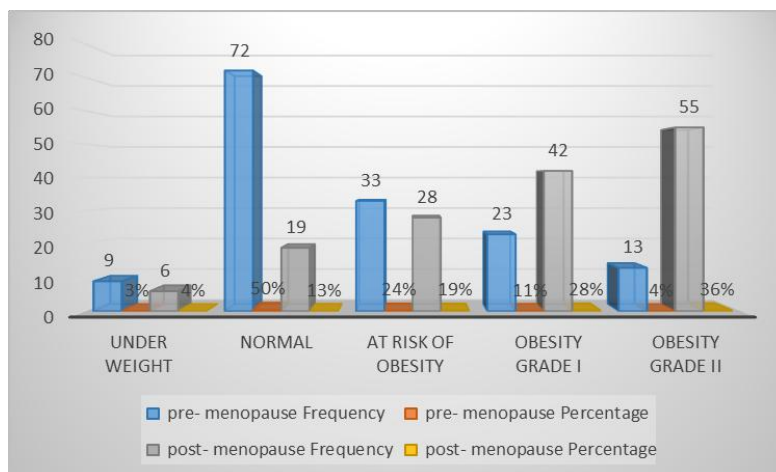


Table 2. represent the distribution of a parameter in pre- and post-menopausal women. The parameter is divided into two categories: "Upto 0.8" and "Above 0.8". Sixty-four percent of pre-menopausal women fell in the "Above 0.8" range and 36 percent in the "Upto 0.8" range. Post-menopausal women, on the other hand, display 23% within the "Upto 0.8" range and 77% within the "Above 0.8" range. This reveals that the parameter distributions of the two groups differ, which may point to a change following menopause.

Table. 2
Distribution of Waist Hip Ratio (WHR)

	pre- menopause		post- menopause	
	Frequency	Percentage	Frequency	Percentage
Upto 0.8	54	36%	34	23%
Above 0.8	96	64%	116	77%
Total	150	100	150	100

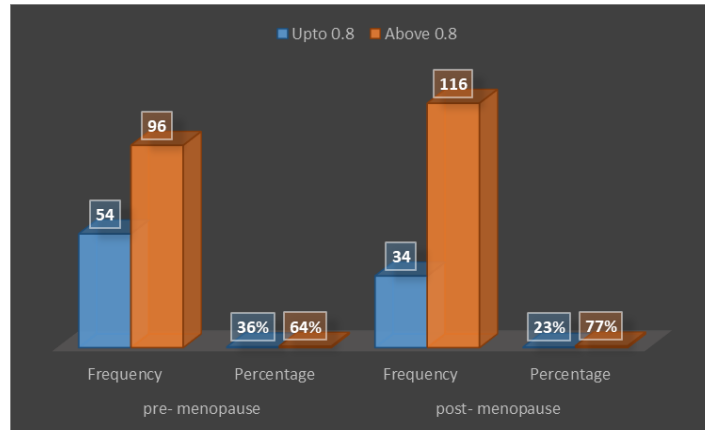


Table. 3 shows the body fat percentage distribution in pre- and post-menopausal women. The fitness category (21%-25%), which includes 51% of the pre-menopause group's members, is followed by the Average category (25%-32%) at 27% in terms of body fat percentage distribution for pre-menopausal and post-menopausal people. Less than 1% of individuals are categorized as athletes (16% in the range of 14%–21%, vs 1% who are categorized as obese (more than 32%)). 61% of post-menopausal people have obesity, which affects them more than any other group. The group is made up of 7% athletes and 8% fitness. It is notable that 3% of post-menopausal individuals fall within the Essential range (10%–14%).

Table. 3
Distribution of Body Fat %

	pre- menopause		post- menopause	
	Frequency	Percentage	Frequency	Percentage
10% -14% (Essential)	7	5%	5	3%
14% - 21% (Athletes)	24	16%	10	7%
21% - 25% (Fitness)	76	51%	12	8%
25% - 32% (Average)	41	27%	32	21%
above 32% (Obese)	2	1%	91	61%
Total	150	100	150	100

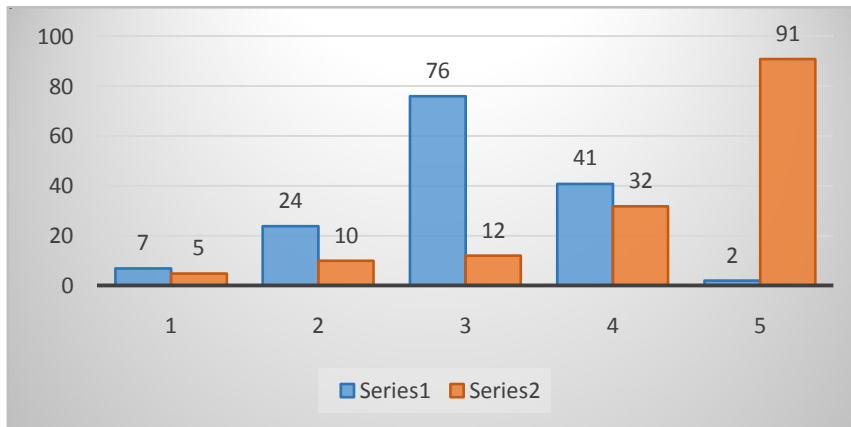


Table. 4 compares the weight, height, and BMI of pre- and post-menopausal women where post-menopausal women are often heavier and have higher BMIs, but they are also slightly taller. The standard deviation numbers however indicate that there is a significant individual variance in these parameters for both groups.

Table. 4
Mean and standard deviation (BMI, Height and Weight)

	Pre-menopause		Post-menopause	
	Mean	Std. Deviation	Mean	Std. Deviation
BMI	26.76	2.151	28.56	2.789
HEIGHT	160.93	138.293	168.23	142.342
WEIGHT	61.66	5.713	68.93	6.789

Table. 5 compares the health of pre- and post-menopausal women in terms of many health-related factors. In the pre-menopausal group, the mean body fat percentage is 0.82 with a standard deviation of 0.840, while in the post-menopausal group. It is slightly higher at 0.89 with a standard deviation of 0.995. Additionally, the pre-menopausal group has a lower mean waist-to-hip ratio (WHR) of 21.86 with a standard deviation of 2.030, whereas the post-menopausal group exhibits a higher mean WHR of 29.43 with a standard deviation of 3.327, suggesting potential changes in body composition with menopause.

Table.5
Mean and standard deviation (Body Fat percentage and WHR)

	Pre-menopause		Post-menopause	
	Mean	Std. Deviation	Mean	Std. Deviation
Body fat %	0.82	0.840	0.89	0.995
WHR	21.86	2.030	29.43	3.327

Conclusion:

According to this study, post-menopausal women are more likely to be obese than pre-menopausal women, and they are also more likely to engage in unhealthy lifestyle habits that raise body mass index, waist-hip ratio, and body fat percentage. There is a significant relationship between obesity and the chosen female menopausal status where post-menopausal women have greater obesity indicators than pre-menopausal women. Women are more likely to be obese, which increases their chance of developing major health conditions such as osteoarthritis, type 2 diabetes, coronary heart disease, and hypertension. This is why women need to know about healthy eating habits and lifestyle options where exercise is just as important as diet.

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