SINDHUNIVERSITYRESEARCHJOURNAL(SCIENCE SERIES)

Determination of Nutritional Status of Postmenopausal Women

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Abstract: In this study the level of nutritional status of postmenopausal women was assessed. The data was collected from the participants on pretested semi structured questionnaire. A total of 264subjects of age 40 to 90 years were randomly selected and anthropometric measurements of the samples such as height and weight were measured for the calculation of Body Mass Index(BMI), while hip and waist were measured for calculation of Hip –Waist Ratio. History and clinical assessment was noted. Statistical Package for Social Sciences (SPSS) version 21 was used for the entry and analysis of the data. The mean age was found to be 57 ± 10.797 years and mean BMI was determined to be 29.570 ± 6.4226.Mean Hip and waist ratio was calculated as 1.071 ± 0.1361. A significant correlation between Hip-waist ratio, BMI, Waist circumference and height in meter square were calculated in the selected samples. The high prevalence of obesity and overweight are suggested in the current study. The provided evidences can be used for supporting to establishment and implementation of prevention further increase in obesity and related diseases and disorders.

Keywords: Nutritional status, Body mass index, Waist circumference, Postmenopausal Women.

1. INTRODUCTION

Anthropometric measurements are basic and very important for assessing level of nutritional and health status. Anthropometric measurements have relationship with life style, cultural, social and environmental conditions and genetic makeup. These measurements are also equally important and used commonly for evaluation of geriatric nutritional status such as obesity, overweight, loss of muscular mass and malnutrition. Anthropometric measurements are also useful for evaluation of prognosis in acute and chronic diseases (Villareal, *et al.,* 2005; Grinker, *et al.,* 2000; Foster, and Garibala, 2005). Some of the very important anthropometric measurements such as Body weight, body mass index (BMI) and waist circumference (WC) have been used for assessing abdominal fat and health status in all ages teen age through late adult life (Hajian-Tilaki 2013; Li, *et al.,* 2014). According to global classification for the obesity, risk of coronary heart disease is increasing with the increased waist circumference measurement. The measurement of waist to hip ratio in women is not only used as a measure for obesity but has been used as an indicator of serious health problems(Ying *et al.,* 2010).Menopause is the permanent cessation of menstruation and an indicator of change from the fertility to infertility. The reduced levels of estrogens and elevated circulating levels of gonadotropins hormones in menopause have major physiologic changes in female body including the composition and fat tissues distribution (Kavak, *et al.,* 2014). The change of body composition and fat tissues distribution is also associated with an increased risk of coronary heart disease, stroke, osteoporosis and fractures. It has been observed in some of the studies that the measurements waist circumference, waist–hip ratio and waist– height ratio, are far better than BMI to predict cardio vascular risk (Li, *et al.,* 2014).

2. MATERIAL ANDMETHOD

This is cross-sectional descriptive study and was conducted in Industrial area of District Jamshoro Sindh. For this study permission was granted by the Ethical Review Committee of the Sindh University, Jamshoro. Informed and written consent was sought for each subject prior to data collection. A female nurse collected all anthropometric measurement of all female subjects. The data was collected from the participants on pretested semi-structured questionnaire. The subjects were postmenopausal women from the age of 40 to 90 years and total numbers of subjects were 264. In this study anthropometric measurements, height and weight were measured for calculation of Body Mass Index (BMI), hip and waist circumference were measured for calculation of Hip –Waist Ratio as indicators of nutritional status.

Body Mass Index (BMI): Stadiometer (Holtain Ltd Crymych, UK) was used for measuring the height of the subjects. The height was measured after wearing socks when they stood and their heads in the Frankfort horizontal plane. The subjects were also measured for weight by using a portable scale (TANITA Model HA680, Lot No. 850721). For BMI calculation weight Kilogram divided by height in meter squared formula was used.

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Hip Waist Ratio calculation: For the calculation of Hip to Waist Ratio, the circumference of buttocks was measured by a Metal tape at the level of mid points between superior crest of iliac spine and lower rib and it was recorded after the ending of normal expiration. During the measurement time, subjects were standing in upright position and their feet were placed together with arms hanging free at the sides, whereas Hip Circumference was measured without any skin compression at mid-point below the waist (Skrzypczak, *et al.,* 2007; Obuchowski, 2006).

Statistical Analysis of the data: The data entry and analysis was done by using SPSS Statistical Package for Social Sciences Version 21. Mean ± SD were calculated for quantitative variables and frequencies and percentages were calculated for qualitative variables. Correlation between the variables was measured with p value $\leq$0.05 taken as significant.

3.   **RESULTS**

In the present study mean of all factors are calculated. Age calculated as 56.99 ± 10.79, BMI was determined as 29.57 ± 6.42, Hip waist ratio was 1.071± 0.13 **(Table 1).** Minimum Hip to west ratio was 0.4 and maximum 2.5. In the samples most of the women were at high risk were about99%. BMI: 2% underweight, 21% normal, 30% overweight, 28% obesity stage 1, 14% Stage II and 5% extremely obese respectively. **(Table 2).**There was significant correlation between Hip-waist ratio, BMI, Waist circumference and height. Correlation is significant at the 0.01 level (2-tailed) **(Table 3).** Also strong perfect negative association found. Occasional nutritional supplement was received by 15.95%, while only 0.8% exercised regularly. ∗∗Correlation is significant at the 0.01 level (2-tailed). **(Table-4).**

Table 1: Determination of Age Bmi& Hip Waist Ratio of Postmenopausal Women

Variable	Mean	Std. Deviation	Std. Error	Range	Confidence Interval	
					Lower Bound	Upper Bound
Age	56.99	10.797	0.665	50	55.68	58.30
BMI	29.570	6.4226	0.3953	36	28.792	30.349
Waist Hip Ratio	1.071	0.1361	0.0084	2.1	1.055	1.088

Table 2: Shows the analysis of correlation between BMI and waist hip ratio of postmenopausal women

Variable	Test of Significance	Waist	BMI	Hip Waist Ratio
Waist Circumference	Pearson Correlation	1	.048	-.469**
	Sig. (2-tailed)		.433	.000
	N	264	264	264
BMI	Pearson correlation	.048	1	.016
	Sig. (2-tailed)	.433		.801
	N	264	264	264
Hip Waist Ratio	Pearson correlation	-.469**	.016	1
	Sig. (2-tailed)	.000	.801	
	N	264	264	264

Table 3: Analysis of Bmi and Hip Waist Ratio Categories of Postmenopausal Women

	Under Weight	Over weight	Normal weight	Obesity Stage I	Obesity Stage II	Obesity Stage II
BMI Categories	5 (1.9%)	56 (21.2%)	79 (29.9%)	73 (27.7%)	38 (14.4%)	13 (4.9%)
Waist Hip Ratio Categories	Minimum	Maximum	Mean	Std. Deviation	Low Risk	High Risk
	1	3	2.99	0.123	1 (0.4%)	263 (99.6%)

**.Correlation is significant at the 0.01 level (2-tailed)

Table 4: Correlation Between HIP Waist Ratio, Waist Circumference and Height in Meter Square of Postmenopausal Women

Variables	Test of Significance	Hip Waist Ratio	Waist	Ht in M
Hip Waist Ratio	Pearson Correlation	1	-.469**	.057
	Sig. (2-tailed)		.000	.355
	N	264	264	264
Waist Circumference	Pearson Correlation	-.469**	1	-.044
	Sig. (2-tailed)	.000		.479
	N	264	264	264
Ht in M Square	Pearson Correlation	.057	-.44	1
	Sig. (2-tailed)	.355	.479	
	N	264	264	264

**.Correlation is significant at the 0.01 level (2-tailed)

4.   DISCUSSION

Assessment of anthropometric measurement of postmenopausal women is crucial to put a check on their health status. The current study suggests that there is very high prevalence of obesity in the postmenopausal women of District Jamshoro Sindh. Other contemporary studies have also documented similar findings, as same findings were given by the study done in Cameron (Han *et al.,* 1995). The excessive body fat is known fact as a risk factor for many chronic disease conditions like hyperlipidemia, cardiovascular diseases, hypertension and diabetes (Han, *et al.,* 2002). The BMI and WHR are different measures which provide almost same information. For assessment of intra-abdominal mass waist circumference is an authentic and practical method of measurement. (Pouliot *et al.,* 1994). Therefore recommendations have been made for using it to identify people who need prevention and reduction of cardiovascular risk (Zhu, *et al.,* 2002; Clinical Guidelines on the Identification (1998). In developed countries it has been observed that there is negative relationship of education and obesity as lower the level of education the higher the prevalence of obesity but it is opposite in developing countries (Lean, *et al.,* 1995). Increase in body weight of the women has reached epidemic level globally (Wang, *et al.,* 2007). Occurrence of menopause in middle age is usually associated with weight gain (The North American Menopause Society; Dubnov-Raz, Pines, Berry, 2007). In United States high prevalence of overweight and obesity has also been observed. (Flegal, *et al.,* 2010). It is important to consider different factors and conditions which may be involved to increase the body weight of women if overweight is associated menopause and these are decrease in hormones, sedentary life style, psychotic changes like mood changes and depression, heredity and pattern of eating ((The North American Menopause Society; Henriques, *et al.,* 2010).

5.   CONCLUSION

This survey provides information regarding increased prevalence of obesity in women of postmenopausal age group. The waist circumference measurement method has also been found an important measure of central obesity. Based on BMI and Hip Waist Ratio a high prevalence of obese and overweight postmenopausal women are suggested. The study provides evidences for supporting the establishment and implementation of intervention to prevent further increase in obesity and related diseases and disorders.

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