

To find out anthropometric measurement of menopausal women with special emphasis on BMI

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ABSTRACT

The objectives of the present research were to assess the anthropometric measurement of menopausal women with special emphasis BMI. The study was carried out in Hanumangarh District of Rajasthan State. Two hundred women were selected by random purposive sampling method. Information regarding to the anthropometric measurement were collected with the help of Questionnaire cum interview method. BMI was calculated for each subject by dividing their weight (kg) by height (m)². Result revealed that the overall 33 per cent and 17.5 per cent menopausal women were suffering from grade I and II obesity whereas 17 per cent pre menopausal and 11 per cent post menopausal women were suffering from low weight category and only 6-3 per cent per and post menopausal women were belonged to chronic energy deficiency grade I category, respectively. None of the subjects were belong to CED II and CED III category. Pre menopausal women shows a better picture in comparison to BMI of post menopausal women is there were only 12 women having II grade obesity while in post menopausal group 23 women having II grade obesity. The mean height of pre menopausal group were found 152.75 ± 3.25 and in post menopausal group 155.03 ± 4.5 per cent to their standard Height. It is evident that there is no more difference between height of pre and post menopausal women. The mean weight of pre menopausal group were found 64.05 ± 14.37 and in post menopausal group 67.76 ± 14.41 per cent to their standard weight. The mean BMI of pre and post menopausal women was 26.62 ± 3.89 and 27.4 ± 4.43 , respectively.

Key Words : Menopause, Anthropometric, BMI, Women

INTRODUCTION

The world Health organization data have indicated that 45% of women in the UK had a BMI < 30 kg/m² in 2000 this fell to 37.5% in 2010. The percentage of obese adults, both men and women, in the UK has been steadily increasing. In the UK. The prevalence of obesity (BMI > 30 kg/m²) is between 24.7% and 24.9% of adults (WHO, 2012). Obesity was 42.1% among the study participants. Increased WHR and waist circumference were 82.1% and 77.1% (Rana Singhe *et al.*, 2017). The mean of weight and BMI were 71.5 ± 9.4 kg and 27.5 ± 3.9 kg /m², respectively (Mansour *et al.*, 2014). The Pre menopausal women were body weight and BMI 61.1 ± 6.8 kg. and 23.3 ± 2.3 kg/m² (karine *et al.*, 2014).

According to Indian menopause society, India has a large population which has already crossed the one billion

mark with 71 million people over 60 years of age and the number of menopausal women about 443 million. It is estimated that in the years 2026, the menopausal population in India will be 103\$ million. The average age of Indian menopausal women is 53 year. The change in hormone levels during the perimenopause and menopause, particularly the decline in level of estrogen can cause acute menopausal symptoms. Goncalves *et al.* (2016) reported that the classified as 78(30.8%) as overweight and 89 (35.2)% as obese. The average BMI was $28.1 \text{ kg/m}^2 \pm 5.6$. Weight gain is a common occurrence during menopause.

Women's health is a global concern now a day. Mean age was 50.3 ± 5.3 years, about 75.5% were b/w 45-50 years. Eight five point one percent had more than 2 children and 72.6% had history of abortion. Mean age at menopause 44.65 ± 6.4 years, range 32.58 years. Mean

BMI was 25 ± 4.2 and 43.4% were overweight or obese (Tasnim *et al.*, 2017). Goyal *et al.* (2017) revealed that 115(57.5%) rural postmenopausal women and 90(45.0%) urban women had normal BMI and 33(16.5%) rural and 18(9.0%) urban women were underweight whereas 34(17.0%) rural women and 56 (28.0%) urban women were overweight. Eleven (5.5%) and 15(7.5%) rural and urban women respectively were in pre obese group. Obesity was seen in only 7(3.5%) rural women and in 21(10.5%) urban women.

To keep in mind the find out anthropometric measurement in menopausal women, the present study was conducted.

Objectives:

1. To assess the anthropometric measurement among menopausal women.
2. To find out the BMI status of women.

METHODOLOGY

The present study was conducted in Hanumangarh District of Rajasthan state. Two hundred women were selected as the sample of study. Two variable was taken i.e. dependent and independent variable. A woman was taken as dependent variable and BMI was taken as dependent variable. Information regarding to anthropometric measurement were collected with the help of questionnaire cum interview method. The body mass index is used as a reliable indicator of nutritional status and the size of body fat stores in adult population. The B.M.I. indicates both fat and lean tissue (James *et al.*, 1988). It was calculated for each subject by dividing their weight (kg) by height (m)². The value obtained were

interpreted as per the seven classes of B.M.I with their of presumptive diagnosis suggested by James *et al.* (1988) and recommended by NIN (1991).

RESULTS AND DISCUSSION

In the present study the overall 33 percent and 17.5 percent menopausal women were suffering from grade I and II obesity whereas 17 per cent pre menopausal and 11 percent post menopausal women were suffering from low weight category and only 6-3 per cent pre and post menopausal women were belonged to chronic energy deficiency grade I category, respectively. None of the subjects were belong to CED II and CED III category. Pre menopausal women shows a better picture in n comparison to BMI of post menopausal women as there were only 12 women having II grade obesity while in post menopausal group 23 women having II grade obesity (Table 1 and Fig. 1).

The mean height of pre menopausal group were found 152.75 ± 3.25 and in post menopausal group 155.03 ± 4.5 per cent to their standard Height. It is evident that there is no more difference between height of pre and post menopausal women. The mean weight of pre menopausal group were found 64.05 ± 14.37 and in post menopausal group 67.76 ± 14.41 per cent to their standard weight. The Mean BMI of pre and post menopausal women was 26.62 ± 3.89 and 27.46 ± 4.43 , respectively (Table 2).

Conclusion:

It was concluded that the mean weight of post menopausal women was higher than premenopausal women. There is no more difference between height and

Table 1 : Percentage distribution of women by age and grades of Malnutrition

Parameters	Grades of Malnutrition	Pre Menopausal (N = 100)	Post Menopausal (N = 100)	Overall (N = 200)
Body Mass Index				
<16	CED III	-	-	-
16.0-17.0	CED II	-	-	-
17.0-18.5	CED I	6	3	3.9(9)
18.5-20.0	Low weight	17	11	14.0(28)
20.0-25.0	Normal	30	32	31.0(62)
25.0-30.0	I obese grade	35	31	33.0(66)
>30.0	II obese grade	12	23	17.5(35)

ICMR (2004) - Body weight suggested for reference women values quoted by Jelliffe (1966).

BMI Categories- James *et al.* (1988) and recommended by NIN (1991)

McLaren (1976)- Weight categories.

ICMR (1984)- Height suggested for reference women.

Table 2 : Mean ± SD of anthropometric measurement and indices percentage of standard values of women by their age	Age of women in years (45-55 years)		Overall (N = 200)
	Pre Menopausal women (N = 100)	Post Menopausal women (N = 100)	
	Weight (kg)	64.05 ± 14.37	
Height (cm)	152.75 ± 3.25	155.03 ± 4.5	152.06 ± 6.61
BMI	26.62 ± 3.89	27.46 ± 4.43	27.03 ± 4.18

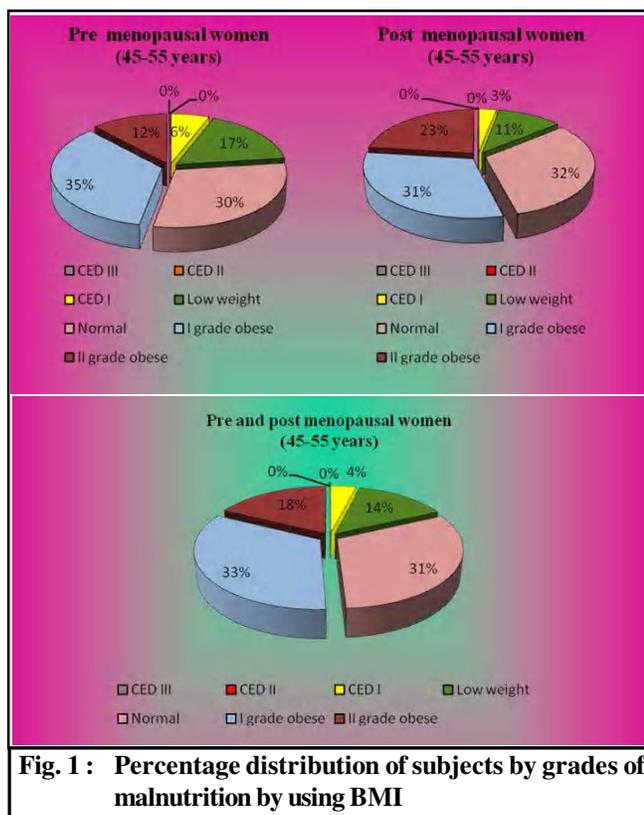


Fig. 1 : Percentage distribution of subjects by grades of malnutrition by using BMI

BMI of pre and post menopausal women. Among women enrolled in the study 32% were categorized as being obese (BMI ≥ 30 kg/m²) at base line (Gallicchio *et al.*, 2013). The waist circumference of post menopausal women was larger than that of pre-menopausal women (Park *et al.* 2012). In a study from Ghana menopause was associated with increased accumulation of fat leading to an increase in weight. (Jacob *et al.*, 2012). Goncalves *et al.* (2016) reported that the classified as 78(30.8%) as overweight and 89(35.2)% as obese. The average BMI was 28.1 kg/m² ±5.6. The frequency of overweight and obesity among the study population was 33% with an average BMI of 28.1 kg/m² ±5.6 (Martinazzo *et al.*, 2013). Mahajan *et al.* (2012) showed that 27% were overweight and 12% were obese and only 3.0% were underweight. Singh *et al.* (2012) reported that 32.73% of participants

were overweight and obesity was seen in 30.65% of women. Masoni *et al.* (2014) conducted that normal BMI in 23% women and a higher percentage of overweight and obese women *i.e.* 40.5% and 36.5%, respectively.

REFERENCES

Gallicchio, L., Miller, R.S., Kiefer, J., Greene, T., Zacur, A.H. and flaws, J.A. (2013). Change in Body Mass Index, weight and hot Flashes: A longitudinal Analysis from the midlife women’s Health Study. *J. Womens Health*, **23** (3): 231-237.

Giolo De, C.F., De Souza, S.R., Iannetta, R., Marque, Miguet S.V., Marliere, N.A., Nonino Borges, C.B. Marchini, J.S. and Iannetta, O. (2012). Analysis of bone microarchitecture related to anthropometry in Climateric women. *Nut. Hosp.*, **27**(2): 612-616.

Goncalves, T.T.J., Silveria, F.M., Campos, C.C.M. and Costa, R.H.L. (2016) overweight and obesity and factors associated with menopause. *Ciencia. Saude Coletiva*, **21** : 4.

Goyal, A., Mishra, N. and Dwivedi, S.(2017). Nutritional status and health seeking behaviour of postmenopausal women:a cross sectional study in North India. *Internat. J. Community Med. Public Health*, **4** : 4644-4649.

Jacob, S., Keddey, R.S. and Agbemafl, I. (2012). Determinants of Menopausal Symptomts among Ghanaian Women. *Curr. Res. J. Biological Sci.*, **4**(4):507-512.

James, W.P.T., Ferro-Luzzi, A. and Water Low, J.C. (1988) The definition of chronic energy deficiency in adults. *Eur. J. Hum. Nutr.*, **42** : 969.

Karine, D., Denis, P., Remi, R.L., Irene, S., Martin, B., Jean-Marc, L. and Eric, D. (2014).Effects of the menopausal Transition on Dietary Intake and Appetite. A MONET Group Study. *Eur. J. Clin. Nutr.*, **68**(2):271-276.

Mahajan, N., Aggarwal, M. and Bagga, A. (2012). Health issues of menopausal women in North India, **3**(2):84-87.

Mansour, A., Ahadi, Z., Qorbani, M. and Hosseini, S.(2014). Association between dietary intake and seasonal variation in postmenopausal women. *J. Diabetes Disord*,

13 : 52.

- Martinazzo, J., Zemolin, G.P., Spinelli, R.B., Zanardo, V.P.S. and Ceni, G.C. (2013). The economic burden of obesity. *Cienc.Saude Colete*, **118**(11) : 3349-3356.
- Masoni, A.M., Menoyo, I., Bocanera, R., Pezzotto, S.M. and Morosono, M.E.(2014). Hypovitaminosis D and associated Risk factors in Postmenopausal women. *Health*, **6**:1180-1190.
- McLaren, D.S. (1976) Nutritional assessment in McLaren, D.S. and Burman, B. (Eds). Textbook of Pediatric Nutrition Churchill Livingstone, New York.
- ICMR (1984) Recommended Dietary intake for Indians Reprint. Indian Council of Medical Research, New Delhi. P.53.
- Nutrition News (1991) Maternal body mass index and birth weight c.f. Naidu, A.N., Neila, J. and Pralhad Rao, N. Nutrition News 12:1. Hyderabad.
- Park, J.K., Lim, H.Y., Kim, S.G, Kim, J.H., Lim, H.G and Shin, J. (2012). Changes in body fat distribution through menopause increase blood pressure independently of total body fat in middle aged women. The Korean National Health and Nutrition Examination survey 2007-2010. *Hypertension Res.*, **36** : 444-449.
- Ranasinghe, C., Shettigur, P.G and Garg, M.(2017).dietary intake, Physical activity and body mass index among postmenopausal women. *J. Mid life Health*, **8**(4):163-169.
- Singh, B., Sahu, M., Yadav, S. and Harris, KK. (2012). Incidence of obesity among the pre menopausal and post menopausal working women of Raipur District. *World J. Sci. Tech.*, **2**(6):83-86.
- Tasnim, S., Hoque, F.and Nazmeen, S. (2017). Medico-social profile of women experiencing menopausal syndrome attending a Periurban Hospital. *J. Bangladesh College Physician & Surgeon*, **35** : 4.
- World Health Organization. Obesity and overweight. *Fact sheet no 311*. WHO:2012.
