

A Comparison of BMI, Waist Hip Ratio and Blood Pressure in Pre and Post-Menopausal Women of Anand District, Gujarat

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Abstract

Introduction: Menopause means the cessation of menstrual activity. The climacteric is the peri-menopausal period of functional ovarian involution characterized by the occurrence of somatic and psychological signs and symptoms associated with changes in the endocrine system. The population of post-menopausal women is increasing. The average life expectancy for women in developed countries is 80 years to 85 years, and in developing countries 65 years to 70 years. Menopause is accompanied by increased risk of cardiovascular morbidity. Withdrawal of protective effect of estrogen has been documented to produce changes in lipid and glucose metabolism, body weight and fat distribution, vascular resistance and host of other mechanisms.

Aim: Examination of changes of Body Mass Index, weight, Blood Pressure and Waist Hip Ratio in pre- and post-menopausal women.

Study Design: Comparative observational Study.

Method: 100 Women are selected. 50 Pre-menopausal women. (Age: 35-45) and 50 Post-menopausal women. (Age:50-60). Outcome Measurement: Body Mass Index, Waist-Hip Ratio and Blood pressure.

Procedure: 100 Women of instead having pre-menopausal and post menopausal will be randomly selected from An and district informed consent will obtained from them. We will use BMI, Blood Pressure, and Waist-Hip Ratio measure.

Result: Post menopausal women had higher BMI, had a higher waist and hip circumference as compared with the pre-menopausal women. Blood pressure is elevated slight among post-menopausal women when compared with Pre-menopausal women. Shows that there is significance difference between premenopausal and post-menopausal women.

Conclusion: The present study shows a higher Body Mass Index, Waist-Hip ratio and Blood Pressure in postmenopausal women compared to premenopausal women implying they are at risk of cardiovascular disease and obesity.

Keywords: Pre-menopausal, post-menopausal, Body Mass Index, Waist-Hip ratio, Blood Pressure.

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Introduction

World Health Organization (WHO) defined natural menopause as the "permanent cessation of menstruation resulting from the loss of ovarian follicular activity"⁽¹⁾ 12 months of consecutive amenorrhea is recognized to occur in natural menopause. Pre menopause is the years leading up to the last period, when the levels of reproductive

hormones are already becoming lower and more erratic, and the effects of hormone withdrawal may be present. Post-menopause is defined formally as the time after which a women has experienced 12 consecutive month of amenorrhea (without periods.) Menopause is accompanied by increased risk of cardiovascular morbidity and period of heightened hormonal variability and is associated with greater risk of osteoporosis, greater sexual dysfunction, depressive symptoms, and substantial psychosocial impairment. There is a combined contribution of obesity, physical inactivity and changed estrogen level which increase the disease risk of menopausal women².

Diana R. Kerwin, y, et al "The Cross - Sectional Relationship Between Body Mass Index, Waist-Hip Ratio and Cognitive Performance in Post menopausal Women Enrolled in the Women's Health Initiative" conclude that Increasing BMI is associated with poorer cognitive function in women with smaller WHR. Higher WHR, estimating central fat mass, is associated with higher cognitive function in this cross-sectional study august 2010³.

Arpita Mandal et al "Obesity indices and blood pressure in pre-menopausal and post-menopausal bengali women from Kolkata: a comparative study" conclude that Post-menopausal women have greater propensity for obesity and hypertension. These conditions can be monitored and intervened in order to reduce cardiovascular risk in this population. june 2015⁴.

Very few researches has been done for the cardiovascular indices of pre and post-menopausal women. None of the study hence compare and measure BMI, WHR, and BP in pre and postmenopausal women.

So the aim of this study was "To compare changes of Body Mass Index(BMI), Blood Pressure and Waist Hip Ratio(W/H ratio) in Pre and post-menopausal women".

Method

Sample Size: 100 Women were selected. 50 Premenopausal women (group A). (Age: 35-45). 50 Post menopausal women (group B). (Age: 50-60). Study Design: Comparative Observational Study. Place of study: Anand , Gujarat

Inclusion criteria

Willing to participate, Women who have pre menopausal symptoms, no lactating, of hormonal contraceptive at least 1 year, Post-menopausal were at least one year amenorrhea naturally.

Exclusion criteria

Subject suffer with severe cardiovascular conditions, if subject haemo-dynamically unstable and any recent illness.

Procedure

Subjects were randomly selected from Anand district of Gujarat. According to inclusion and exclusion criteria subjects allocated in pre and post-menopausal group. Inform consent was taken from subjects. General demographic data, menstruation history, psychological history, BMI, waist-hip ratio, blood pressure was assessed by assessment format.

Height and weight of the participants were measured. Standard weighing scale was used for measuring weight and Stadiometer was used for measuring height. Then BMI calculated with standard format.

Waist circumference was measured at the midpoint between the inferior margin of last rib and the top of iliac crest. Hip circumference was measured at the largest posterior extension of the buttocks.

Blood pressure was measured with standard sphygmomanometer.

Outcome Measures

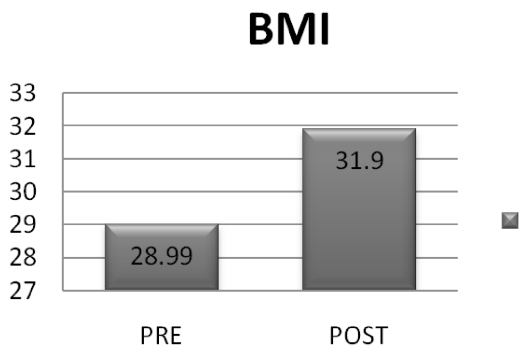
The BMI, W/H ratio, and Blood Pressure were measured of each subject in each group.

Result

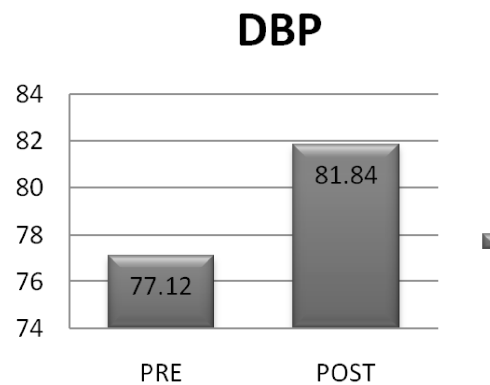
Table 1: Comparison of Antropometric Parameter in Both Groups

Parameter	Pre-menopausal	Post-menopausal
BMI	28.99±3.62	31.89±2.43
W/H Ratio	0.83±0.056	0.86±0.050

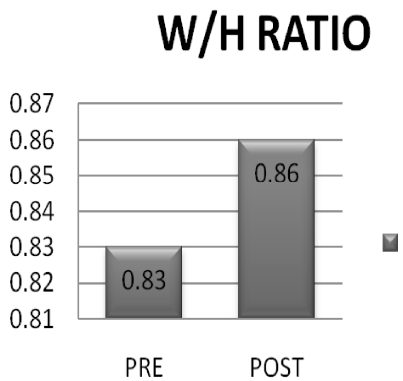
Post menopausal women had higher BMI when compared with the pre-menopausal. The post menopausal women had higher waist and hip circumference than pre-menopausal women.



Comparison of body mass index (BMI) of (group A) pre - menopausal women and (group B) Post - menopausal women



Comparison of diastolic blood pressure(DBP) of (group A) pre - menopausal women and (group B) Post - menopausal women



Comparison of waist hip ration of (group A) pre - menopausal women and (group B) Post - menopausal women

The result shows that there is significance difference in bmi, w/h ratio, and blood pressure between premenopausal and post-menopausal.

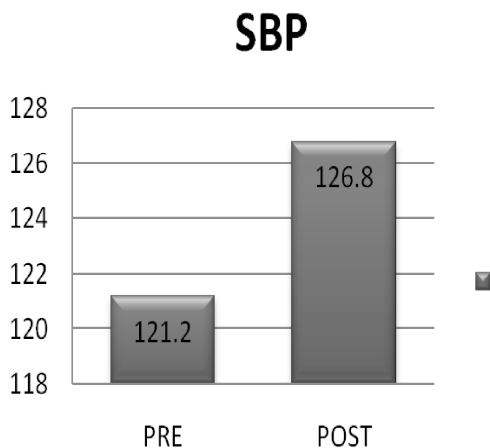
Discussion

During the transition period from pre menopause to post menopause, most of the women experience loss of lean mass, gain in weight, fat mass and central obesity. The BMI of the pre menopausal women was 56% higher and in post-menopausal women it was 98% higher and it is also in the obesity range if compare with normal BMI. The WHR of the premenopausal women was 40% higher and in post-menopausal women was 60% higher in compare to normal WHR. More fat deposition around the abdomen in the reproductive age present as greater WHR. In this study post-menopausal women were with elevated blood pressure suggested that BP after menopause appear to be more due to increased BMI. In our study, systolic and diastolic blood pressure were not significantly different in the two group. But a significantly higher proportion of post-menopausal women were hypertensive compared to pre-menopausal women. The result of present study shows that the BMI, WHR and BP were elevated among postmenopausal women and the association between BMI, WHR and BP were studied.

Table 2: Comparison of Crdiovascular Parameter in Both Groups

Parameter	Pre-menopausal	Post-menopausal
SBP	121.2±5.01	126.88±6.78
DBP	77.12±5.40	81.84±4.86

Blood pressure is elevated slight among postmenopausal womenwhen compared with Pre -menopausal women.



Comparison of systolic blood pressure (SBP) of (group A) pre menopausal women and (groupB)post menopausal women

L. N. Achie et al found in their study that menopausal women had a higher waist circumference as compared with the pre menopausal women. 5 only 73.86% of the post-menopausal women had BMI ≥ 25 kg/m² whereas the prevalence of central obesity was 79%. However there was a significant positive correlation observed between waist circumference and the body mass index. Which is similar to our study.

There is significance difference in BMI, W/H Ratio, and Blood pressure between Pre menopausal and Post-Menopausal women. These findings suggest that obesity is prevalent among the menopausal women while the waist circumference can be a better measure in assessing obesity and thus cardiovascular risk among menopausal women.

The result of present study also shows that BMI is little higher in pre-menopausal group. They are also become at risk of cardiovascular and other risk obesity. So this group also need right time counselling to prevent risk.

Due to lesser amount of estradiol post-menopausal changes in BMI, W/H Ratio and BP can be justifiable but considering cardiovascular adverse effect this population need right time fitness counselling and incorporate regular exercise for better physical fitness and quality of life.

Conclusion

The present study shows a higher BMI, W/H ratio and Blood Pressure in post menopausal women compared to pre menopausal women implying

they are at risk of cardiovascular and other risk disease and obesity. So measures should be taken to tackle the risk and to decrease the mortality in this group of population.

Reference

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