RESEARCH ARTICLE

ANTHROPOMETRIC MEASUREMENTS IN POSTMENOPAUSAL WOMEN- A CROSS-SECTIONAL STUDY

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ABSTRACT

Introduction: Present study shows the changes in anthropometric measurements after post menopause. The aim of this study is to determine the anthropometric measurements in postmenopausal women it is a cross sectional study. **Method:** the sampling method is purposive sampling method the sample size was n=15 postmenopausal women .age between 45to65 first BMI was taken according to quatlet index formula, all anthropometric measurements was taken in standard method with the help of measuring tape, waist circumference, thigh , hip, arm, forearm, calf circumference was taken **Result:** demographic data was taken age, BMI, socioeconomic status was taken the according to student t test the result was taken mean was taken of all anthropometric measurements was taken in standard method with the help of measuring tape, waist circumference, thigh , hip, arm, forearm, calf circumference was taken the mean was taken in that mean values of all anthropometric measurements get increased in postmenopausal women. **Conclusion:** The values for all the anthropometric measurements were more in post menopausal women but their values started decreasing with age.

Citation: *Dr. Rudalee Nitin Husale and Dr. Shyam Devidas Ganvir.* **2020.** "Anthropometric measurements in postmenopausal women- a cross-sectional study", *International Journal of Current Research*, 12, (07), 12591-12594.

INTRODUCTION

Menopause is a natural part of the aging process in women and is defined as occurring 12 months after the last menstrual period and Marks the end of menstrual cycles. Menopause is a universal and physiological event in a women life occurring around the age of 50 yrsIn most developed countries. Ensiyehjenabi *et al.* conducted study in that menopause is caused by the aging of ovaries leading to a decline in the production of ovarian Gonadotropins, estrogen and progesterone. The deficiency of these hormones elicits various somatic, vasomotor, sexual, psychological and physiological symptoms that affect quality of life of women [Ensiyehjenabi, 2015] Frailty is a complex pathophysiological phenomenon that will impact a significant proportion of adults over the age of 50 and contributes to the risk of several adverse health outcomes. Postmenopausal women were categorized as follows; premature (30-39 yrs), early(40-45 yrs), normal (46-54 yrs) and late (55+yrs) menopause, Fabiane Aparecida) (2015) *et al.* Anthropometric is a noninvasive inexpensive and widely used tool for assessing the weight change and body measurement associated with advancing age.

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Several anthropometric indicators have been proposed to identify individual with cardiovascular risk associated with abdominal obesity, in which waist circumference and waist hip ratio have been most studied and recommended to this end. Anthropometry is a useful and easy to apply to assess nutritional status, functional decline, and chronic health condition. The changes in the body composition, because of advancing age are heterogenous and results of the reduction in the body water content ,bone mass ,muscle mass and or adipose tissue anthropometry facilitates the evaluation of the risks associated with reduced lean body mass, as well as of excess adiposity [Vera flizabethcloss, 2017].

NEED OF STUDY

The decline in estrogen associated with menopause has long been suspected to be the cause of multiple aspects of health determination in women, including loss of muscle mass and strength. Anthropometric measures have been studied due to their ability to identify certain health parameters, such as nutritional status, due to their relationship with diseases and with physical function status and all conditions such as obesity in postmenopausal women .and also helps to assess cardiac conditions and quality of life.

Research Question: What is the correlation between anthropometric measurements and postmenopausal women

HYPOTHESIS

Alternate hypothesis:

There is correlation between anthropometric measuresments and postmenopausal women

Null hypothesis:

There is no correlation between anthropometric measuresments and postmenopausal women

Aim: To determine the anthropometric measurements in postmenopausal women

Objectives

- To find out Waist circumference in postmenopausal women.
- To find out hip circumference in postmenopausal women
- To find out calf circumference in postmenopausal women.
- To find out arm circumference in postmenopausal women.
- To find out forearm circumference in postmenopausal women.
- To find out thigh circumference in postmenopausal women.

MATERIALS AND METHODOLOGY

MATERIAL

1Stadiometer
2 Measuring tape
3 Weighing machine

Study Design: Cross- sectional study.

Study Setting: The study was carried out in Tertiary Care Hospital of Ahmednagar District.

Duration of Study: 3 months

Sample size– 15

The sample size was calculated using openepisoftware ,open source calculator available online.

Sampling Method: purposive sampling method

Outcome measures: Hip circumference, Calf and Thigh circumference, Arm and Forearm circumference, waist circumference
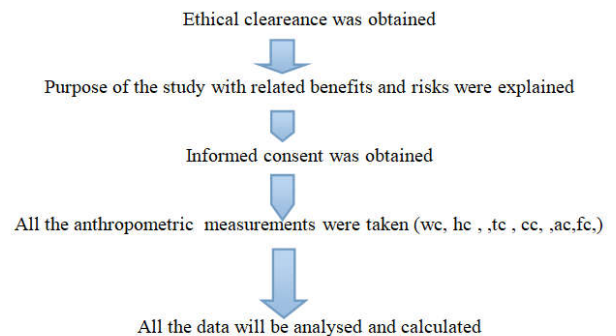
INCLUSION CRITERIA

- Age 45-65 years
- Naturally induced postmenopausal women.
- All the womens working and housewife

EXCLUSION CRITERIA

- Premature menopause
- Mild cognitive impairments
- Recent fractures of upper limb and lower limb
- Recent heart surgeries
- Angina pectoris or myocardial infarction

FLOW CHART

Procedure

Ethical cleareance was obtained

Purpose of the study with related benefits and risks were explained

Informed consent was obtained

All the anthropometric measurements were taken (wc, hc , ,tc , cc, ,ac,fc,)

All the data will be analysed and calculated

After obtaining clearance from the ethical committee ,participants were recruited through flyers through flyers distribution in the hospital. The subjects will be selected from Ahmednagar District informed consents will be signed before prior of participation. Instructions will be given to the participants about studies and its benefits risk in their own language and informed consent will be taken from them. Subjects will be selected based on inclusion criteria and the assessment Performa will be filled. The weight of each participants while wearing minimal clothing was measured using electronic scale to the nearest point 1kg. The standing height was measured using a wall mounted stadiometer to the nearest point 1cm. while the participants occiput, back, and bare heel where touching the stadiometer . The BMI was calculated using quetelet formula index. BMI= weight in kg by height in (meter) ^{2}. The circumference were obtained using a flexible inelastic tape with a maximum of 1.80m with 0.1m of accuracy

- **Arm circumference**: with the subject standing erect and arms hanging at the sides with hands facing the thigh, a horizontal measure midway between the acromion and olecranon processes.
- **Hip circumference:** with the subject standing erect and feet together ,a horizontal measure is taken at the maximal circumference of buttocks .
- **Calf circumference:** with the subject standing erect feet apart 20cm a horizontal measure taken at the level of the maximum circumference between the knee and the ankle, perpendicular to the long axis
- **Forearm circumference:** with the subject standing ,arms hanging downward but slightly away from the trunk and palms facing anteriorly ,a measure is taken perpendicular to the long axis at the maximal circumference.
- **Waist circumference:** waist circumference is measured with the subject standing arms at the sides ,feet together and abdomen is relaxed ,a horizontal measure is taken directly above the iliac crest as a method to enhance standardization.

- **Thigh circumference:** with the subject standing ,legs slightly apart ,a horizontal measure is taken at the maximal circumference of the thigh below the gluteal fold.

Statistical Analysis

Statistical analysis was performed using the SPSS software, version 16.0 (SPSS, Inc., Chicago, IL). Data were expressed as mean ± standard deviation (SD). The results were analyzed by using student t test .

Table no 1.

Sr. no	(n=15)	Mean
1	Age	52.2
2	Height	160.2
3	Weight	45.7
4	BMI	25
5	Socioeconomic data	Grade4

Table no 2.

Sr. no	Objectives	Mean
1	Calf circumference	31.14286
2	Thigh circumference	55.5
3	Arm circumference	33.93333
4	Forearm circumference	25.86667
5	Waist circumference	96.4
6	Hip circumference	102
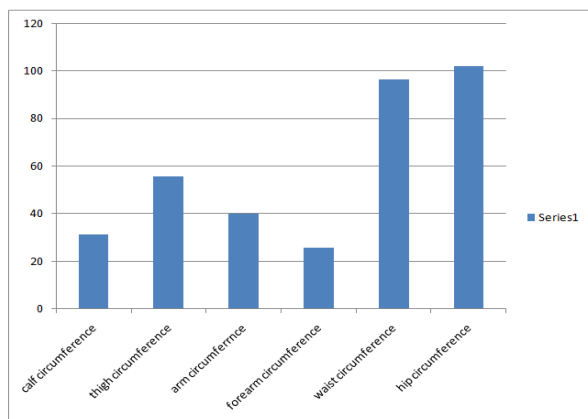
Graph no 1. Mean values of objectives

RESULTS

In this study 15 participated was participated ,the mean age was 52.5,demographic data of the participants are depicted in table no 1 ,demographic data of the study participants n= 15,in demographic data socioeconomic status, age, height, weight, BMI, socioeconomic data was taken .in demographic data mean age is 52.2,height is 160.2, height is 160.2, weight is 45.7,mean BMI is 25. The mean value of calf circumference is 31.14286, mean value of thigh circumference is 55.4, mean value of arm circumference is 33.93, the mean value of forearm circumference is 25.86667, mean value of waist circumference is 96.4 , mean value of hip circumference is 102 and all the values were statistically significant (p=0.05).For data analysis student unpaired t were used.

DISCUSSION

In present study found that the calf circumference, thigh circumference, arm circumference, forarm circumference, waist circumference, hip circumference in postmenopausal women increased because of weight gain is a major health concern for women at midlife .the fall in estrogen at menopause favors fat accumulation . other factors that may contribute to obesity in women include a low level of activity ,obesity is frequent in postmenopausal period and this conditions may lead to a decrease in quality of life of women..the hot flushes ,joint pain, sleep disorder, depressive mood, irritability ,fatigue and libido decrease as the most common symptoms may arise and can prevail until post menopause. Satinderkaur *et al* study performed on postmenopausal women he found that The post-menopausal women had more weight as compared to their pre-menopausal counterparts. In post-menopausal, upper arm circumference decreased from 28.79 cm at 40- 44.99 years to 27.64 cm at 45-50years. It again increased at 55-59.99 years and further decreased to 27.29 cm. While in pre- menopausal women its value increased with age In post-menopausal women, waist circumference increased from 84.76 to 91.35 cm during 40-60 years and then it started decreasing from 60years onwards Hip circumference increased from 102.68 cm to 104.32 cm during 40-50 years in post-menopausal women, then increased and further, decreased to 100.68 cm 60 year onwards The post-menopausal women had greater thigh circumference than their counter parts with statistically significant differences. The differences between the circumferences Many studies have investigated that woman in their forties and early fifties were expected to gain weight. Railap *et al* was conducted study in that study she found that calf circumference was similarly associated with fat mass and lean mass in postmenopausal women. The values for all the anthropometric measurements were more in post menopausal women but their values started decreasing with age. All these symptoms affect the quality of life .in a cross sectional population based study shown that earlier age at first childbirth and higher parity are risk factors for obesity in later life.

Conclusion

This study concluded that the values for all the anthropometric measurementswere more in post menopausal women but their values started decreasing with age.

Conflict of interest: Author has no conflict of interest

Funding sources: No funding sources was given.

Key points:

Menopausal women attributed the weight gain to hormonal changes that occur during menopause or during mid-life transition. Change in life style, reduced physical activity, diet andphysiology of the individual could also be responsible for weight gain or having greater valuesfor height, weight and circumferences.

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