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Research Article

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COMPARISON OF ANTHROPOMETRIC MEASUREMENTS IN THE SELECTED POST-MENOPAUSAL WOMEN OSTEOPOROSIS AND CONTROL GROUPS.

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ABSTRACT

Anthropometry refers to the measurement of the human individual. An early tool of physical anthropology, it has been used for identification, for the purposes of understanding human physical variation, in paleoanthropologist and in various attempts to correlate physical with racial and psychological traits. Anthropometry involves the systematic measurement of the physical properties of the human body, primarily dimensional descriptors of body size and shapes. Menopause is a stage in life when a woman stops having her monthly period. It is a normal part of aging and marks the end of a woman's reproductive years. Menopause typically occurs in a woman's late 40s to early 50s. However, women who have their ovaries surgically removed undergo sudden menopause. Postmenopause is the time after a woman's menstrual periods have ceased completely. In the present study to analysis anthropometric measurements in post-menopausal women subjects assessed including weight, height and BMI.

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INTRODUCTION

Nutrition plays an important role in the physical, mental, and emotional development of the human beings. The Nutritional status of the young growing human beings reflect the diseases and disorders associated with old age susceptibility, especially post menopausal period in women, menopause is physiological phenomenon as that of attainment of puberty. Virtually, in case of menopause there is almost total absence of female hormone Oestrogen in the blood circulation. Oestrogen is the main climax hormone of the entire reproductive life span of a woman. Oestrogen tunes the women in varying magnitude from aggressive sexual activity as after puberty and the cessation of the same at the time of menopause (Albright *et al*, 1941).

In the modern scientifically advanced age, the innumerable diseases affecting the human beings are enormously on the increasing trend in the case of women the three most important serious diseases in order of importance are Coronary Heart Disease (CHD) uterine cancer post-menopause osteoporosis menopausal osteoporosis which is gaining attention among clinicians and nutritional experts to look into the epidemiology of the said diseases. Among the post-menopausal is one such risky-female gender oriented disease that is prevailing invariably among the two-third of the post-menopausal women population (Lloyd *et al*, 1993).

Women's health is of utmost importance at every stage of her life cycle. This is because several physiological changes take place from birth to old age necessitating careful nutritional monitoring. Also women have crucial role in the family as caretakers and income generators. It is important that women in the post-menopausal age should carry on normal activities without any inconveniences due to their hormonal changes. Thanjavur District of Tamil Nadu is predominantly agriculture oriented and economically quite backward. The investigator having observed women during several occasions felt the need to study the age related problem which would be stepping stone for further developmental activities. Post-menopausal osteoporosis becomes pathological and produces symptoms when there is only structural failure of bone (Mitchell *et al.*, 1945). Half of the bone mass of the skeleton may be dissipated in severe cases. This accounts for the mineral loss up to 3 pounds and the serum alkaline phosphatase level is slightly elevated (Stein *et al.*, 1955). Women above the age of 55 years are still in their economic activities and would suffer if frequently affected by health problems. For most of them their children would be adults and busy with their own responsibilities. Thus post-menopausal women would have to care for their own health and nutrition. Many of them approached the local government hospital for the problems of osteoporosis. Thus it was possible to attempt this study. In the present study to analysis of Anthropometric measurements in selected post-menopausal women osteoporosis and control groups.

METHODOLOGY

The methodology pertaining to study Anthropometric measurements in selected post-menopausal women osteoporosis and control groups was framed in accordance with the following objectives. To ascertain the socio-economic status of the selected post-menopausal women. To compare the nutritional status of the normal post-menopausal women with osteoporotic post-menopausal women. To assess the biochemical profile of the normal post-menopausal women with osteoporotic post-menopausal women.

Hypothesis

A hypothesis was set to guide the course of this research study. It is an assumption about population parameters of a probability distribution. A null hypothesis was formulated with the sole purpose of rejecting it. Based on the objectives of the study the hypothesis is given below. The nutritional status of post-menopausal women who have osteoporosis is the same as normal post-menopausal women. The methodology included. A. Selection of Area B. Selection of Subjects C. Formulation of Questionnaire D. Collection of Data E. Analysis and Interpretation of the Data.

Selection of Area

The investigator selected Thanjavur district for conducting the study. The study was conducted in the Raja Mirasudrar Government Medical College Hospital, Thanjavur. This area was selected as it was observed that there were many cases of osteoporosis coming to the hospital for treatment.

Sample Size

100 subjects in the age group of 55 to 65 years, both working and non working were selected. Convenience sampling method was used as the study involved an extensive data collection. None of the selected subjects were on any hormone replacement therapy. The subjects were categorized into 50 osteoporotic post-menopausal who came to the hospital for the first time and 50 normal post-menopausal women from the three nearby villages of Palayam, Perikarappankottai and Ammapettai in Thanjavur District. The selected normal 50 subjects were free from any other diseases like diabetes, hypertension, cardio vascular diseases and infections.

Formulation of Questionnaire

In order to collect information from the selected subjects a questionnaire was formulated. The questionnaire included questions recording with name, age, sex, marital status, educational status, Family income and expenditure pattern, Health status, Food habits and dietary practices, frequency of food consumption and nutrient Intake by the 24 hours food intake recall method, Nutritional assessment of subjects through anthropometric measures, clinical assessment and Diagnostic information pertaining to osteoporosis.

Collection of Data

The direct interview method was adopted as it makes possible face to face communication and inter-stimulation between the interviewer and the interviewee. The scope of enquiry is greatly enlarged by this method. The investigator collected details regarding name, age, sex, marital status, educational status, occupation and income levels. Family background and socio-economic details like type of family and facilities available in locality were noted. Food habits and dietary practices if every individual were gathered to obtain dietary pattern and nutrient intake. Health status of every individual was assessed to identify factors that caused the osteoporotic condition. This was done in consultation with Medical Officer on-duty at the hospital.

Anthropometric Measurements

Anthropometric provides the sample but best tool in the assessment of the nutritional status. Anthropometric measurements such as height and weight were recorded for all the selected subjects. The weight of the subjects were recorded with minimum clothing after removing the foot wear using the bathroom scale balance. In this types of balance readings correct to 0.5 kg can be obtained. Height was measured using a fibre glass tape fixed to the wall. The selected subjects was made to stand erect on the flood bare footed against the scale with the feet parallel, arms straight at the sides, buttocks, shoulders and back of the head touching the wall. A scale was gently on the head perpendicular to the wall and the height was measured using the tape correct to 0.1 cm (Jelliffe and Jelliffe, 1989).

Analysis and Interpretation of the Data

The data collected were classified, tabulated and analysed and results were interpreted.

RESULTS AND DISCUSSION

The result of the present study "A Comparative Study on Nutritional Status and Osteoporosis in Selected

Post-Menopausal Women of Thanjavur District”

General information about the selected subjects

For the present study 50 women suffering from osteoporosis and 50 normal women were selected from the

arediscussed under the following headings. rural areas of Thanjavur District. Age Distribution of the Selected Subjects.

TABLE 1 AGE DISTRIBUTION

Sl No	Age in years	Osteoporosis group		Control group	
		Number	Percentage	Number	Percentage
1	55-60	29	58	31	62
2	60-65	21	42	19	38

Table 1 indicates that majority of the selected subjects, 58 percent in the osteoporosis group and 62 percent in the control group were between 55-60 years of age, 42 percent of the osteoporosis group and 38 percent in the control group were belong to the age group of 60-65 years.

Osteoporosis is debilitating disease that is primarily age and gender related, afflicting more than 60 per cent of

women between the agers of 55 and 64 and even higher percentage with older age groups (Williams 1999).

Nutritional status of the selected subjects

Anthropetric Measurements of the Selected Subjects. Anthropetric measurements of the selected subjects are tabulated in Table II.

TABLE II ANTHROPETRIC MEASUREMENTS

Sl No	Anthropometric measurements	Osteoporosis group			Control group			“t” Value
		Number	%	Mean	Number	%	Mean	
I	Weight (Kg)							NS
1	50 – 55	23	46	55.43±	32	64	54.71±	1.09
2	55 - 60	24	48	4.00	18	36	2.99	
3	60 - 65	3	6	--	--	--	--	
II	Height (cm)							NS
1	150 – 155	17	34	158.20±	14	28	157.57±	0.87
2	155 - 160	23	46	3.86	26	52	2.99	
3	160 – 165	10	20	--	10	20	--	
4	165 – 170	--	--	--	--	--	--	
III	Body Mass Index	50	100	22.4	50	100	22.0	NS
								1.18

NS = Non significant

The above table indicates that 48 per cent of the subjects in the osteoporosis group and 36 per cent of the subjects in the control group were found between the weight range of 55-60 kg. Forty six per cent of the subjects in the osteoporosis group and 64 per cent of the subjects in the control group were between the weight range of 50 -55 kg. Only six per cent of the subjects in the osteoporosis group were above 60 kg weight.

The main weight of the subjects in osteoporosis group was 55.43± 4.00 kg and mean weight of the subjects in the control group was 54.71± 2.99 kg This mean weight was compared with standard weight of 50 kg (NCHS standard) using “t” Test. The calculated “t” value was 9.68 and 11.13 for both the osteoporosis and control groups respectively. Since the calculated value is higher than the table value. It

may be inferred that there is significant difference at one per cent level.

“t” Test as calculated to find whether there is any significant difference in the man weight of experimental and control groups. The “t” value was found to be 1.09 which is lower than the table value. Hence it may be inferred that there is no significant difference between osteoporosis and control groups.

The body weight has great influence on the bone density (Jacks, 1989). The progressive loss of height and weight due to the vertebral fracture is a characteristic feature of post menopausal osteoporosis (Joseph 1996).

Comparison of mean anthropometric measurements in the selected osteoporosis and control groups

From the table we understand that 46 per cent of the subjects in the osteoporosis group and 52 per cent of the subjects in the control group were in the height range of 155-160cm. Nearly 34 per cent of the subjects in the osteoporosis group and 28 per cent of subjects in the control group were in the height range of 150-155 cm. Only 20 per cent of the subjects in both group were between the range of 160-165 cm. The mean height of the subjects in the osteoporosis group was 158.20 ± 3.86 cm and mean height of the subjects in the control group was 157.57 ± 3.31 cm. The mean height was compared with the standard 164 cm, (NCHS standard) using “t” test. The calculated “t” value was 13.72 for both the osteoporosis and the control groups. Hence it may be concluded that there is a significant difference at one per cent level.

“t” test was used to find whether there is any significant difference in the mean heights of the osteoporosis and control groups. The “t” value was found to be 0.87 which was below the table value. Hence it may be inferred that there is no significant difference in the heights of the osteoporosis and control groups. Body mass index was not significantly different between the two groups (t-1.18) It was found to be within the normal range of 19-25 for women (22.4 and 22.0).

Loss of height may have been noted by the patient and the appearance of a thoracic kyphosis and an approximation of the rib margin to the iliac crests. The patient usually seems older than his or her years (Braunwald and Wilson 1985).

The results of the present study concluded that the majority of the selected subjects, that is, 58 per cent in the osteoporosis group and 62 per cent in the control group were between 55-60 years of age, 42 per cent in the osteoporosis

group and 38 per cent in the control group belonged to the age group of 60-65 years.

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