RESEARCH ARTICLE

ANTHROPOMETRICAL PROFILE OF THE SELECTED BREAST CANCER PATIENTS IN KERALA.

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Manuscript Info	Abstract
	Background: Cancer has become one of the ten leading causes of death in India. Breast cancer is the most common diagnosed malignancy in India, it ranks second to cervical cancer. In women, cancer of the breast is one of the most common incident cancer and cause of death from cancer. Anthropometric factors of weight, height, and body mass index (BMI) have been associated with breast cancer risk. **Objectives:** The present article aims to study the anthropometrical assessment of the selected breast cancer patient in Kerala. **Materials and Methods:** A hospital based Case control study was conducted at Kerala government hospitals. The anthropometrical measurement such as height, weight, body mass index (BMI), waist circumferences, hip circumferences, waist hip ratio and broka's index were recorded with the standard equipments and methodology. **Results:** It was observed that the patients had a statistically higher mean weight, body mass index, and waist and hip circumferences. It indicated that the result for 75% under the obesity category. It was observed that the risk of breast cancer increased with increasing levels of BMI. **Conclusion:** The results of the present study revealed a strong association of overweight and obesity with breast cancer in the Kerala population.

Introduction:-
In women, cancer of the breast is one of the most common incident cancer and cause of death from cancer. Anthropometric factors of weight, height, and body mass index (BMI) have been associated with breast cancer risk. Obesity leads to increased levels of fat tissue in the body that can store toxins and can serve as a continuous source of carcinogens. Body fat is an important locus of endogenous estrogen production and storage, and hence, could increase the risk of breast cancer [1].

Many studies have investigated the relationship between anthropometric characteristics, particularly height, weight and body mass index (BMI) and breast cancer risk throughout a woman's life. Most suggest that taller women are at increased risk of breast cancer irrespective of menopausal status. Weight and BMI, as markers of fat deposition, are associated with a decrease in breast cancer risk before menopause and with an increase after [2-5].

Obesity has a complex relation to risk of breast cancer. Higher body mass index (weight (kg)/height (m)^2) is associated with a lower risk of breast cancer before menopause and with an increased risk of cancer after menopause, especially among postmenopausal women [6,7].

The question of whether body fat distribution contributes further to the risk of breast cancer is of considerable interest. Greater upper or central body fat distribution, perhaps because of its relation with visceral adiposity, is associated with multiple hormonal and metabolic changes, including insulin resistance and hyperinsulinemia, decreases in sex hormone-binding globulin levels, and increases in androgen levels and the conversion of androgen to estrogen in adipose tissue[8,9,10]. Therefore, women with central adiposity may have a higher risk of breast cancer

than women whose fat is primarily distributed subcutaneously over the hips, buttocks, and lower extremities. In some case control studies, central obesity measured by either waist circumference or waist: hip circumference ratio has been associated with increased risk of breast cancer among postmenopausal women, whereas the association has been weak or equivocal among premenopausal women[11,12].

There is considerable evidence that free estrogen levels are raised in obese women, especially in those with abdominal (visceral) obesity. Also, there is an increase in the bio-available estrogen fraction which may promote tumor growth, either directly or by modulating steroid activity and has been implicated as a risk factor for breast cancer. Though a large number of women are affected with breast cancer, there is paucity of data on the association of anthropometry with breast cancer in the Kerala population Hence, we conducted a hospital-based case-control study to identify the association of overweight and obesity with breast cancer. The   present study aimed to assess the anthropometrical profile of the respondents affected with breast cancer.

Materials and Methods:-

The present study was a hospital-based matched case control study conducted in the year 2016. Seventy five newly diagnosed breast cancer patients (all consecutive cases) from the out-patient and hospital admissions of the Departments of Surgery/ Surgical Oncology at the Government hospital Kerala.

Interview schedule intended to collect the Anthropometrical data on the respondents such as Height, Weight, BMI, Waist circumference, Hip circumference, Waist To Hip Ratio, Broka's Index were assessed by standard methods. BMI was calculated by using the formula given by srilakshmi (1993).Height: Height is measured of nutritional status of community hence the height was measured using a stadiometer which was wall mounted. A stadiometer is a piece of medical equipment used for measuring. At it in usually constructed out of rules and sliding horizontal head piece which is adjusted to rest on the top of the head. Stadiometer are used in routine medical examinations and also clinical tests and experiments. The stadiometer that rolls up out of the way in its own compact cast, just like a steel tape measure it can be pulled down and read through the tap window instantly. The stadiometer has a measuring ranges. Body weight: Any accurate portable weighing machine was used for the study to take the weight of the Brest cancer patients. The subject was asked to stand straight on the balance and the weight was recorded in kg with an accuracy of 0.1kg.The weight of subjects was taken once during the study period BODY MASS INDEX: The condition of the patient was assessed by specifying the different degrees of the underweight expressed as the body mass index(BMI).the weight and height measures can be used to calculate the respondents BMI= Weight in (kg)/ Height in (m2) .this ratio is commonly used in evaluating obesity and underweight status in relation to risk factors. The procedure followed by srilakshmi (2002)was used by using the data on weight and height of the selected respondents and the . Body mass index was calculated using the standard formula. Accordingly, the nutritional status was defined as follows: i) BMI 20–24.9 (normal); ii) BMI 25–29.9 (overweight); and iii) BMI ≥ 30 (obesity). The waist circumferences It is most practical tool it was evaluated respondent abdominal fat before and during weight loss treatment. waist hip ratio It was predominant distribution of fat in an obese person upper part or lower part of the body it was calculated using the formula. The normal ratio Waist/hip = 0.7.Broka'sindexThe formula of Broka's index,   Height (cm)-100 = Ideal weight (kg)

Results:-

Totally 75   participants affected with breast cancer were studied. The cases and controls were selected from Governmental Hospital, Kerala. The participants were interviewed with the help of a structured questionnaire and the information regarding age, religion, education, residence, diet, and history of breast cancer in family, reproductive factors, family planning and habits were obtained. All the study participants were between25 to 69 years of age group. The distribution of breast cancer patients and controls according to their mean anthropometric measurements is depicted in Table 1. It was observed that the patients had a statistically higher mean weight as compared to the controls . The patients and controls had no significant difference with respect to their mean height. The mean BMI and waist hip ratio were also found to be significantly higher in patients as compared to the controls. It was observed that 75%of the patients controls were obese according to their BMI. It was observed that the risk of breast cancer increased within creasing levels of BMI and waist hip ratio

Table 1: Mean anthropometric assessments of breast cancer patients control group

Measurements	Mean value(n= 75)
Weight (kg)	158.69
Height(cm)	58.58
BMI(kg/m2)	30.0
Waist hip circumferences	0.8

Table-2 Body mass index of the respondents

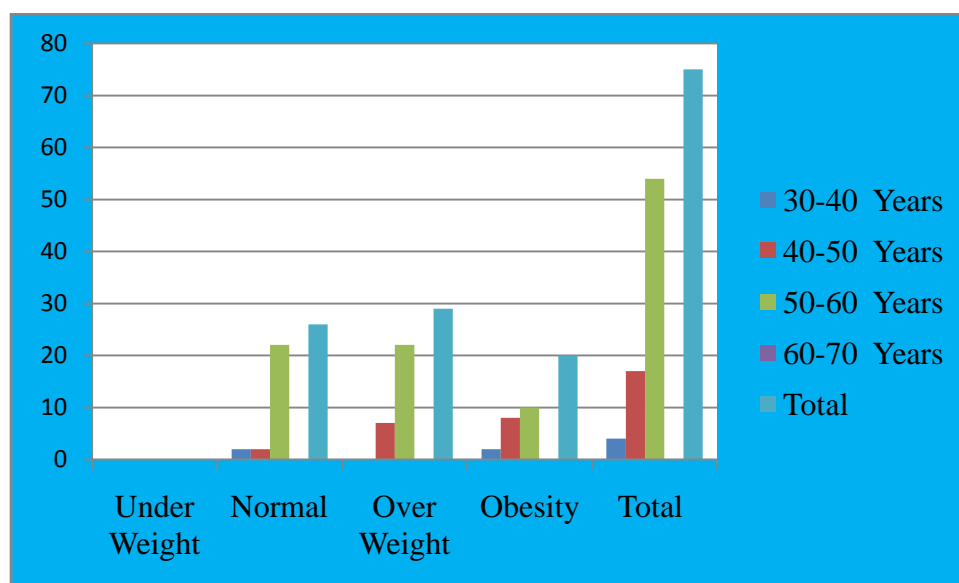| Body Mass Index (BMI)	Percentage (N=75)
Under weight	0
Normal	34
Overweight	39
Obesity	27
Total	**100**

The table results denoted that the higher percentage (39) of the respondents were overweight. The table concluded that the overweight was common among the breast cancer patients.

Statistical analysis:-

The statistical tools used to test the hypothesis namely there is no association between the age onset of cancer and Body mass Index. The test was carried out by using Chi-square technique. The results of the analysis indicated that there is a significant association between the age onset and body mass index at 1% level of significance.

ASSOCIATION BETWEEN AGE ONSET OF CANCER AND BODY MASS INDEX (BMI)

Age/ BMI	Under Weight	Normal	Over Weight	Obesity	Total	χ^2
30-40 Years	0	2	0	2	4	9.86**
40-50 Years	0	2	7	8	17	(Significant
50-60 Years	0	22	22	10	54	at 1 percent
60-70 Years	0	0	0	0	0	level)
Total	0	26	29	20	75	

Conclusion:-

The study found that the association between the Body Mass Index and the age onset of cancer. The mean weight, Body Mass Index values were higher in the study population. The increased weight might be a risk factor for cancer incidence.

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