Short Communication

RISK OF BREAST CANCER IN OBESE WOMEN: A CASE-CONTROL STUDY
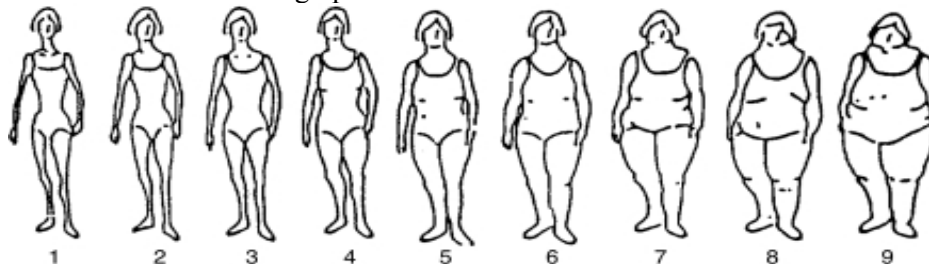## Lodha S Rama[1], Nandeshwar Sunil[2], Pal K D[3]

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INTRODUCTION

In world more than one million new patients suffer from breast cancer annually. In developed countries, breast cancer is the most common malignancy diagnosed in women and in developing regions Breast cancer ranks second to cervical cancer. Although anthropometric characteristics have been evaluated as possible determinants of breast cancer risk, overall, the evidence suggests that the risk of breast cancer increase in those women who was overweight, for instance ranging from (OR of 2.1; 95% CI of 1.1-3.9).[1] Similarly a recent study from India indicated that increased body mass index, waist size and hip size were risk factors for breast cancer both in pre- and postmenopausal women.[2] Currently, in India, the incidence of breast cancer has steadily increased over the years and as many as 100,000 new patients are being detected every year & (24.9%) incidence in Bhopal.[3] Obesity is a risk factor for the occurrence and the recurrence of breast cancer in women. Demographic and

Height (without shoes in cm) and weight was measure in light clothing (in kg) of each subject was measured using inched tap & weighing machine. Body mass index (kg/m²) was grouped into three categories, namely lean weight (BMI≤ 25), overweight (25<BMI<30) and obese (BMI≥ 30) (WHO, 1998) and visual obesity nine different body sizes (pictogram).

DATA ANALYSIS

Data analysis was performed by using Minitab 16 software. The test calculates Chi-square for linear trend, the associated P value and the odds ratio. Calculate the Pearson correlation in between Age, body mass index and visual obesity.

RESULT

reproductive characteristics were collected and controlled as potential confounders.

MATERIAL METHODS

Case–control study was conducted in 2008–2009 at the Bhopal city, Madhya Pradesh, India. All the breast cancer cases registered in Population based Cancer Registry Department of Pathology Gandhi Medical College, Bhopal from January 2006 to Decembers 2008 (n=465). The controls (n=215) were women without cancer (those accompanying Breast cancer patients were excluded), neighbourhood of the breast cancer patients and matching factors was age (±2 years), socioeconomic status and religion. Male breast cancer patients, patients from outside Bhopal city and controls women patient of breast cancer were not include in this study. In-person interview of each case and control was taken, using a pre-tested structured questionnaire Included height & weight measures. Body mass index calculate and visual obesity measures by pictogram.

The total numbers of registered cases in year 2006 to 2008 were 465. In this study 226 (48.6%) cases were completely approachable and rest of cases 239 (51.39%) are not found due to incomplete addresses, wrong addresses, Migrate from city or death of patients. Out of 226 cases only 215 cases are agree for interview & rest of 11 cases not given consent for interview.

Age of cases range from 28 to 78 years old (mean ± SD = 51.06 ±10.8, median of age =51 years), and age of the controls ranged from 28 to 78 years (means = 50.98 ±10.7, median of age = 50 years). 35.81% cases and controls were in age group >55 years and 5.11% cases and controls were in the age group <35 years. Majority of cases belong to Hindus religion ie 68.3% and 69.3% controls, 24.2% case and 23.7% were Muslims. Maximum

subject 107 (49.5%) have income 905-1899 Rs/- per capita (upper middle) and followed by 25.1% cases and controls were belong to 570-949 Rs/- per capita income (Middle class).

Table 1: Distribution of cases & controls according to Obesity

Risk Factor	Cases (%) (N=215)	Controls (%) (N=215)	Odds ratio	Chi square	P value
Body Mass index					
Normal	14(6.5)	34(15.8)	1.00	12.14	0.000
Over weight	186 (86.5)	176(81.8)	2.57		
Obese (>30.00)	15(6.9)	3(1.4)		12.14	
Visual Obesity/ body size					
4	3 (1.4)	14 (6.5)	1.00	16.3	0.000
5	55 (25.5)	56 (26.04)	4.58		
6	88 (40.9)	112 (52.09)	3.67		
7	69 (32.09)	33 (15.3)	9.76		

*Chi-square linear trend

Table 2: Pearson correlation

Risk Factor	Cases (P Value) (N=215)	controls (P value) (N=215)
BMI Vs Age	0.000(0.996)	0.091(0.180)
VO Vs Age	0.038(0.579)	0.080(0.242)
BMI vs VO	0.658(0.000) **	0.600(0.000) **

Body mass index =BMI

Visual obesity = VO

In this study the range of BMI (25 - 29.99) 86.5% of cases and 81.8% in controls. There was a statistical significant (P =0.000). Visual obesity figures no 7 (32.09% of cases and 15.3% in controls). There was a statistically significant difference to visual obesity (P =0.000) [Table 1]. Calculate Pearson Correlation in between age, Body Mass Index and visual obesity in cases & controls. There was significant correlation in between BMI & visual obesity in case and control (P value = 0.000) (Table 2).

DISCUSSION

It is well known that excess weight is associated with increased incidence of particular diseases and certain cancers and those associations of overweight and obesity-related morbidity may differ among racial and ethnic groups.[4] Overweight and obesity are common health conditions and their prevalence is increasing globally. The World Health Organization recently called for the continuous monitoring of BMI to assess the trends in obesity in populations across time. In this study although the result of this study with a small sample size could not be generalized, the findings indicated that obesity was a risk factor for developing breast cancer women in Bhopal. The over weight women showed about twofold (OR=2.57) and obese women twelfth fold (OR=12.14) risk of breast cancer & it was highly statistically significant [p=0.000].The finding of other study that related to body mass index in over weight (BMI of 25 to 29.9) women 1.75 risk (95% CI 1.02–3.02) and 2.32 time (95% CI, 1.33–4.03) risk in those women who have BMI 30 or higher and it was statistically significant.[5] In this study the risk of breast cancer is directly proportional to visual obesity. The Visual obesity in pictogram 5, 6& 7 shows four(Or=4.58), three(Or=3.67) & nine (Or=9.76)fold risk of breast cancer & it was highly statistically significant [p=0.000]. This study has significant similarity to other study of visual obesity and increase the risk of breast cancer.[6]

CONCLUSION

The overall conclusion of this study is that the risk of breast cancer is associated with obesity. Indeed, this requires encouraging the women to do more exercise and follow healthy diets.

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