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MAJOR RISK FACTORS OF BREAST CANCER IN SELECTED POPULATION OF BANGLADESH WITH SPECIAL REFERENCE TO DIETARY HABIT

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Abstract: *The cross sectional study was carried out among 70 breast cancer patients aged between 30-60 years admitted in National Institute of Cancer Research and Hospital and Delta Medical College and Hospital, Dhaka. The major risk factors of breast cancer on these cases were studied along with their dietary habits and nutritional status. The mean age (±Standard deviation) of the respondents was 45.4 (±8) year. In this study, about 53% patients were obese among the cancer patients. The study showed that the incidence of breast cancer was significantly ($p<0.05$) increasing with age; the rate of breast cancer was significantly ($p<0.05$) higher in heavier women and the habit of chewing betel leaf was significantly ($p<0.05$) increasing with age among breast cancer patients. The study also revealed that about 60% of patients never consumed cruciferous vegetables as well as about 50% citrus fruits. Dietary intake was analyzed in terms of food frequency per week. The study revealed that age and weight of the respondents were significant risk factors among Bangladeshi breast cancer patients.*

Keywords: *Breast Cancer, Dietary Habits, Nutritional Status.*

Introduction

Cancer is the leading cause of the deaths worldwide over 100 various types of the disease in economically developed countries and the second leading cause of death in developing countries[1]. The global burden of cancer has substantially increased due to aging and growth of the world population along with adoption of western diet, smoking & physical inactivity in developing countries. According to the GLOBOCAN 2008, developing world accounted for about 56% case & 64% deaths among 12.7 million cases of cancer and 7.6 million deaths due to cancer worldwide in 2008. Breast cancer is the most common malignancy among females accounting for 23% of the total cancer cases and 14% of the cancer deaths[2]. Breast cancer begins in the tissue of the breast, the milk producing glands or the ducts or lobules of breast [3].It has been found that more than one million women suffer from breast cancer annually worldwide and it ranks second to cervical cancer in developing regions [4, 5].In American women, new cases of breast cancer accounts for 32% and 15 % of cancer deaths among all cancer patients[5, 6].

In worldwide, almost 1.2 million cases are estimated as breast cancer annually. Recent research revealed that globally, a woman is diagnosed with breast cancer in every 3 minutes which turn into

1 million annually[7]. According to the world cancer report 2008, the incidence could go up by 50% i.e. 1.5 million by 2020.The report also points that breast cancer represents about 16% of cancer deaths globally[8]. Now days, it has become a matter of serious concern for Bangladesh due to increasing rate of breast cancer in the country. Although definite figures are not available in Bangladesh, according to the draft annual report 2005 of the National Institute of Cancer Research and Hospital, Dhaka, the percentage of top five cancers in females are cervix 24.6, breast 24.3, lungs 5.5, oral cavity 4.1 and ovary 3.8 respectively[9].There is some clear scientific evidence that are linked to several factors with breast cancer risk. These factors are called established risk factors for breast cancer include early menarche, late menopause, and age at the first full time pregnancy, previous breast disease, family history/genetic risk factors, postmenopausal obesity, lack of physical activity, and exposure to high dose radiation. Other risk factors have little or no scientific support include not breast feeding after pregnancy, use of postmenopausal estrogen replacement therapy, use of oral contraceptives, alcohol consumption, cigarette smoking and certain specific dietary intake patterns such as lower consumption of fruits and vegetables specially certain micronutrients such as vitamin C, folate and carotenoids, higher consumption of fats & red meats [10].

Materials and Methods

Study Design

A cross sectional study was carried out among the female breast cancer patients aged between 30-60 years admitted in National Institute of Cancer Research and Hospital and Delta Medical College and Hospital, Dhaka. The study was designed to find out the risk factors of breast cancer in selected age group prevailing in Bangladesh. The risk factors for the patient were assessed by socio-demographic, dietary, anthropometric, clinical parameters and reproductive history.

Sample size and Study Population

Sample size for the study was 70 (female). The study subjects were diagnosed cases of carcinoma breast admitted in. The respondents were selected purposively who was willing to give interview. The following formula was used to calculate the sample size:

$n=z^2\times p\,(1-p)/d^2$

Here,

n= required sample size

z=Standard normal deviate set at 1.96 corresponding to 95% confidence interval

p=prevalence rate which was taken from the draft annual report 2005 of the National Institute of Cancer Research and Hospital.

d=admissible error set at 0.1

Study Period

The study was carried out from August 2009 to November 2009.

Dietary Assessment

To assess the dietary habits before their admission to hospital each subject was interviewed on food consumption pattern by using food frequency method.

Data Collection Instrument

A pre-tested questionnaire was used to collect data.

Data Collection Method

In this study, personal interview method was used for collecting data. Questions were asked passively and cautiously not to influence or embrace the respondents. All the section of data was recorded on the day of collection.

Data Analysis

The data set was first checked then entered into the computer from the numerical codes on the form and edited if there was any discrepancy (double entry, wrong entry). The frequency distribution of the entire variable was checked by using SPSS (Statistical Package for Social Science) software for Windows version 12. It gave overall information about the variable. Results were expressed as mean±SD (Standard Deviation) and / or number (%) as appropriate. The statistical significance of differences between mean values was assessed by using T-test; Chi-square test was done where appropriate. Values were considered as significant at p value of <0.05.

Results

Table 1: Nutritional status of the study subjects by BMI

BMI	Number	Percentage
Normal	8	11.4
Underweight	25	35.7
Obese I	27	38.6
Obese II	9	12.9

Extremely obese	1	1.4

(Source: Physical status, WHO-1995)

Table 1 shows the nutritional status of the study subjects by Body Mass Index. From the table, 11.4% cancer patients were normal, 35.7% were underweight, 38.6% were obese I, 12.9% were obese II and only 1.4% were extremely obese. The result showed that about 53% of cancer patients were obese.

Table 2: Mean age of the study subject having breast cancer

Age in year	Age in years Mean±SD	P value
< 45	38±4	0.00
≥ 45	51 ± 5	

Table 2 shows mean age of the study subject having breast cancer aged below 45 years and for 45 and above. The mean age was (38±4) for aged below 45 years and (51±5) for 45 and above. The result showed that breast cancer was significantly increased with age.

Table-3: Weight in relation to age among the study subjects

Age in year	Weight(kg) Mean±SD	P value
< 45	55±10	0.03
≥ 45	61 ± 12	

Table-3 shows the mean (± Standard deviation) weight in relation to age among the study subjects. The mean weight was (55±10) for aged below 45 years and (61±12) for 45 and above. The result showed that the rate of breast cancer was significantly ($p<0.05$) higher in heavier women.

Table 4: Chewing of betel leaf in relation to age among the study subjects

Age in year	Chewing of betel leaf				P value
	Yes		No		
	Number	Percentage	Number	Percentage	
< 45	5	15	28	85	0.01
≥ 45	17	46	20	54	

Table 4 shows the habit of chewing betel leaf in relation to age among the respondents. From the table, 15% of cancer patients aged below 45years had the habit of chewing betel leaf compare to 46% of 45 and above. The result showed that the habit of chewing of betel leaf is significantly increasing with age among cancer patients.

Table 5: Distribution of the study subjects by frequency of consuming food items in a week

Food Groups	**Daily** %	**1-3 days/week** %	**4-6 days/week** %	**Never** %
Cereal(rice)	100	0	0	0
Sugar	0	30	22	48
Roots & Tubers	0	50	33	17
Pulses	0	49	27	24
Leafy Vegetables	0	73	14	13
Cruciferous Vegetables	0	36	4	60
Non-cruciferous Vegetables	2	31	65	2
Fish	0	28	72	0
Meat	0	29	8	33
Egg	2	39	2	27
Milk & Milk Products	2	30	4	64
Citrus Fruits	0	17	3	50
Non-citrus Fruits	0	61	10	29
Cookies	4	24	32	40
Fried Foods	0	20	15	65
Fats & Oils	100	0	0	0

Table 5 shows Distribution of the study subjects by frequency of consuming food items intake in a week. It was observed in this study that frequency intake of non-cruciferous vegetables was the highest (65%) compare to cruciferous (4%) and leafy vegetables (14%) at 4-6 days/week. The cancer patients consumed most of the vegetables as curry with fish rather than fried or mixed vegetables. Fish consumption was the highest (72%) compare to meat (8%), egg (2%), milk and

milk products (4%) at 4-6 days/ week. Intake of vitamin C rich fruits was the lowest (3%) compare to non citrus fruits (10%) at 4-6 days/ week. Intake of cookies was highest (32%) compare to fried foods (15%) at 4-6 days/ week. It was also observed that the consumption of cereals and fats and oils were 100% among breast cancer patients. The important finding was about 60% of cancer patients never consumed cruciferous vegetables and about 50% never consumed citrus fruits.

Discussion

The aim of the study was to find out the major risk factors related to breast cancer in selected population of Bangladesh with special reference to dietary habit. A total of 70 cases took part in this study and the mean age (±Standard deviation) was 45.4 (±8) year. From the study it is found that weight gain was significantly higher in women aged 45 and above compare to aged below 45 years (table-2). Several studies showed that the weight gain among adult female had been associated with a greater risk for postmenopausal breast cancer than premenopausal breast cancer[11,12,13,14,15].The present study shows that the habit of chewing of betel leaf is significantly increasing with age among breast cancer patient (table-3). Most of the people of Bangladesh generally use tobacco products such as raw tobacco leaf, Jarda, Kimam, etc with betel leaf, betel nuts and slaked lime. These tobacco products with betel leaf may be have an effect on older aged breast cancer patients. Several investigators examined particular international and intercultural dietary differences and proposed that diets that are low in fat and high in fruits, vegetables, fiber, and complex carbohydrates might lower risk for breast cancer[16, 17]. It was observed in this study that the consumption of cruciferous vegetables (4%) was the lowest among all vegetables (non-cruciferous 65%, leafy vegetables 14%) at 4-6 days/week. Although they consumed non-cuciferous vegetables frequently, they consumed most of the vegetables as curry with fish rather than fried or mixed vegetables. Various researches have been proven the benefits of eating a diet high in cruciferous vegetables (broccoli, cauliflower, Brussels sprouts and cabbage) which contain compounds isothiocyanates, glucosinolates and indole-3-carbinol which act as anticarcinogen and can reduce breast cancer risk [18]. In one study it is found that isothiocyanates, have the power to make changes on a genetic level. They can activate some genes that fight cancer and switch off others that fuel tumors[19].In another study it is shown that glucosinolates which give cruciferous vegetables their bitter taste, stimulated the body to produce enzymes that helped prevent breast cancer[20]. Researcher in Texas revealed that indole-3-C could block a receptor site in breast cancer cells, causing a 90% reduction in stimulating further cancerous activity. It was assumed here that the basis of this reduction was indole-3-C's ability to occupy sites by estrogen. Further investigations have confirmed this[21]. In the present study it is observed that about 60% of breast

cancer patients never consumed cruciferous vegetables (table-5). From the previous studies it can be said that cruciferous vegetables may be played an important role as risk factor among breast cancer patients in this study. It is found in this present study the consumption of citrus fruits was lowest (3%) compare to non citrus fruits (10%) at 4-6 days/week among breast cancer patients. Vitamin C is found in citrus fruits and juices which act as antioxidant. Antioxidants inhibit or reduce oxidation damage caused by free radicals, thus preventing some cell damage and can reduce breast cancer risk. In the present study it is observed that about 50% of breast cancer patients never consumed citrus fruits (table-5). From the previous studies it can be said that citrus fruits may be play an important role as risk factor among breast cancer patients in my study. Fish consumption was the highest (72%) compare to meat (8%), egg (2%), milk and milk products (4%) at 4-5 days/ week. Intake of vitamin C rich fruits was the lowest (3%) compare to non citrus fruits (10%) at 4-5 days/ week. Intake of cookies was highest (32%) compare to fried foods (7%) at 1-3 days/ week. It was also observed that the consumption of cereals and fats and oils were 100% among breast cancer patients (table-5). The study suggests that age and weight of the study subjects were significant risk factors for cancer among breast cancer patients.

Conclusion

The study suggests that age and weight of the respondents were significant risk factors among breast cancer patients. The study also revealed that the percentage of patients, never consumed cruciferous vegetables about 60% and citrus fruits about 50%, cruciferous vegetables contain compounds isothiocyanates, glucosinolates and indole-3-carbinol which act as anti-carcinogen and can reduce breast cancer risk. So, less consumption of cruciferous vegetables and citrus fruits may be play important roles as risk factor among breast cancer patients in my study.

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