

**BREAST CANCER IN RELATION WITH VEGETERIAN AND NON
VEGETERIAN DIET**

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ABSTRACT

Objective: To evaluate the diet as a risk factor of breast cancer among the breast cancer patients in comparison with gender matched healthy controls.

Study design: retrospective case control study

Place and Duration: Physiology department, University of Sindh, Jamshoro from 14 october 2021 to 14 May 2022

Methodology:Total 200 breast cancer patients were approached at NIMRA, Jamshoro and they were interviewed about their diet taking routinely from past 5- years. For comparison, 200 age and gender matched, apparently healthy controls recruited and interviewed, similarly about their dietary patterns in past 05-years. Patients of other carcinomas and male gender were not included in this study. Vegetarians were categorized on the basis of never consumed any chicken, egg, meat or fish. Similarly non-vegetarians were categorized on the basis of eating meat, fish, chicken and eggs. The data analyzed on SPSS version 23.0.

Results: Mean age of the breast cancer patients was 49.76 ± 6.7 years. Mean of the age, age of menarche, total years of breast feeding and parity were compared in breast cancer and healthy controls by applying independent t-test . It revealed significant difference of the age of menarche and total years of breast feeding in two groups but no significant difference found about age and parity. In breast cancer patients, 44.25% were non-vegetarian. In control group 19.50% were vegetarian but in breast cancer patient only 5.75% found vegetarian. Odds of breast cancer were 4.92 times more in non-vegetarian patients and the frequently used non-vegetarian food was chicken in breast cancer patients. Among 122 controls taking non-vegetarian diet, most frequently consumed food was fish (55.74%).

Conclusion: It is concluded that non-vegetarian diet, specifically farmed chicken can be considered as the risk factor for breast cancer.

Keywords: Breast cancer, vegetarian diet, non vegetrerian diet

Introduction:

Breast cancer is one of the most common cancersamidthe women and is the leading cause of mortality in women.^{1,2}Incidence of breast carcinoma has been observed as continuously rising, in spite ofclinical, epidemiologic research work in addition to laboratory research since decades.. Incidence of breast cancer has been seen as one in every twenty women world-wide while in high GDP countries, the burden is one in eight women. A population based approach is required to decline the occurrence of breast cancer by identifying the populace at risk. Decreasing the exposure to changeable etiological factors may prevent from breast cancer and this way may contribute to decreasing the mortality rate in women due to breast cancer.³Amid the women, the prevalence of breast cancer in Pakistanis 14.5 percent. ⁴For the prevention of this cancer, dietary intervention and educating the people about the importance of diet in controlling cancer, may play the crucial role. Nowadays research is exploring the role of nutrition in identifying the etiology of cancer. ⁵ Someresearch studies propose a possible connectionof survival in breast cancer patients with healthy plant based diet containing low fat. Such foods are well-known to makelittledietetic acid along withbetter quality of life with good physical health amid the breast cancer survivors ⁶ According to recent research,utilization of supplementary balanced diets enriched with fiber, fruits as well as vegetables in comparison to processed meats containing larger proportion of fat, might possibly modifythe circulating levels of estrogen. ^{7,8}

Globally, the plant-based diet might play an important role as the disease modifying tool intended for improving the management strategies for various diseases. Meanwhile, the effect of vegetarian diet on breast, gastrointestinal and prostatic cancers has been systematically researched, with for the most part published supporting data to far. As a result the vegetarian diet is thought to prevent from aforementioned carcinoma and it has been suggested that controlling the nutritional habits and giving the supplements may be used as first line of medical treatment.⁹

By studying the composition of chemical agents present in vegetables and fruits, it has been revealed that these chemical agents are anti-carcinogenic with anti-inflammatory mechanisms. On the other hand, by studying the epidemiologic relationship between vegetarian diet and breast cancer risk has shaped sketchy results.¹⁰

Role of dietary habits, obesity, tobacco smoking, physical activity as well as breastfeeding on breast cancer risk has been explored in previous research. The strong evidence for consequence on prognosis of breast cancer was established for overweight, obesity and physical activity. In contrast, the alliance between dietary habits or definite nutritional components and prognosis of breast cancer is inconsistent. On the other hand, it is suggested that dietetic fat appear to augment mortality rate, but diet rich in fiber is protective.¹¹ Studies about the association of dietary patterns with breast cancer are sparse in literature. This study was designed to evaluate the diet as a risk factor of breast cancer among the breast cancer patients in comparison with gender matched healthy controls.

Methodology:

This retrospective case control study was carried at the Physiology department, University of Sindh, Jamshoro, from 14 October 2021 to 14 May 2022. Total 200 breast cancer patients were

approached at NIMRA, Jamshoro and they were interviewed about their diet taking routinely from past 5- years. For comparison, 200 age and gender matched ,apparently healthy controls recruited and interviewed similarly about their dietary patterns in past 05-years. Sampling technique was non non-probability consecutive sampling. Patients of other carcinomas and male gender were not included in this study.

Vegetarians were categorized on the basis of never consumed any chicken, egg, meat or fish. Similarly non-vegetarians were categorized on the basis of eating meat, fish, chicken and eggs. The data analyzed on SPSS version 23.0

Results:

Mean age of the breast cancer patients (n=200) was 49.76 ± 6.7 years. Mean of the age , age of menarche , total years of breast feeding and parity were compared in two groups (breast cancer=Yes and Breast cancer =No) by applying independent t-test . It revealed significant difference of age, age of menarche and total years of breast feeding in two groups but no significant difference found about parity.(**Table 1**)

In breast cancer patients (n=200), 44.25% were nonvegetarian as compared to 33.50% in controls. In control group 19.50% were vegetarian but in breast cancer patient only 5.75% found vegetarian. (**Figure 1**)

Odds of breast cancer were 4.92 times more in non-vegetarian patients, (**Table 2**) and the frequently used non-vegetarian food was chicken in breast cancer patients (79.66%). Among 122 controls taking non-vegetarian diet, most frequently consumed food was fish (55.74%) (**Figure 2**)

Table 1: Difference of age, age of menarche, years of breast feeding and parity in breast cancer patients and normal comparative group with no breast cancer (n=200)

	BREAST CANCER		<i>p</i> - VALUE
	Yes (n=200) Mean±SD	No (n=200) Mean±SD	
Age (in Years)	53.19±10.3	51.43±8.1	0.06
Age of menarche (in years)	10.0±3.0	13.5±1.3	<0.01**
total years of breast feeding	4.71±3.3	9.64±4.3	<0.01**
Parity	6±2	7±2	<0.10

** shows highly significant statistically

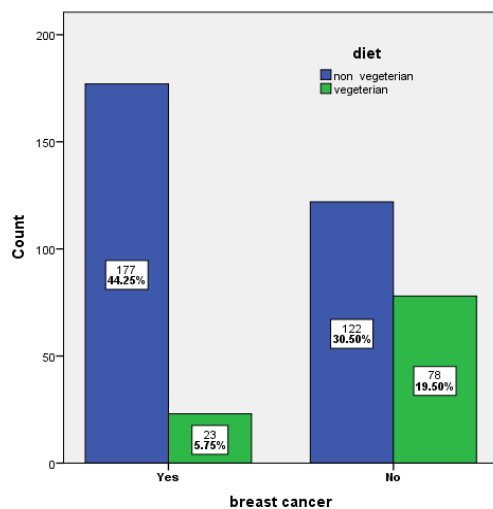


Figure No.1: Consumption of vegetarian and non vegetarian diet in breast cancer (n=200) and controls(n=200)

Table No. 2: Association of Breast cancer with non-vegetarian diet

Diet	Breast cancer		Total	OR [CI 95%]	X ²	p- value
	Yes	No				
Non-vegetarian	177(88.5%)	122(61.0%)	299(74.8%)	4.92[2.92- 8.26]	40.06	<0.01 **
Vegetarian	23(11.5%)	78(39.0%)	101(25.3%)			
Total	200(100%)	200(100%)	400(100%)			

** shows statistically significant

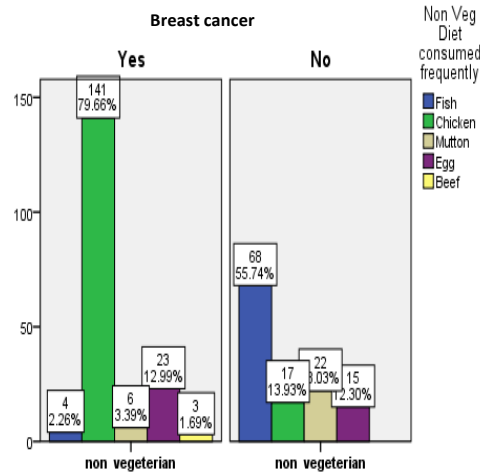


Figure No. 2: Frequency of non-vegetarian diet in breast cancer patients

Discussion:

Breast cancer is one of the most frequently occurring cancers in women and its early identification and going for initial prevention is strategy that is very cost-effective. Lifestyle education encompassing control, low fatty food, alcohol avoidance, regular exercise and plant source diet rich in fiber, is being suggested as a key step in scheduled patient visits.¹²

This study was intended to explore the relationship of diet with risk of breast cancer. In present study, in breast cancer patients most frequent diet was non-vegetarian specifically chicken as compared to fish red meat, egg and mutton. While, in healthy controls, most frequent diet was non-vegetarian but most frequently taken was fish as compared to chicken and mutton. As compared to breast cancer, more proportion was vegetarian in healthy controls.

Subsequent consumption of vegetarian food has turned out to be more and more popular and various research studies support that being vegetarian is linked to decrease in the risk of cancer

overall. Nevertheless, for specific cancer sites, the evidence is inadequate. Future research assessing cancer risk in cohorts with large number of vegetarians is required to provide more precise estimates of the associations.¹³

Cancer is now considered as lifestyle disorder for the reason that of it is found linked to consumption of various food types and body mass index. Foods supposed to be leading to carcinoma include white flour, refined sugar, hydrogenated oil, canned foods genetically customized foods, farmed fish, salted pickles, grilled red meat, smoked foods, soda and carbonated beverages. American Institute of Cancer Research (AICR) reported that people are acquired to skip to vegetarian diet with performance of physical activity for dropping risk of cancer. Normal weight diminishes growth of cancer. Consuming the whole grains, fruits, vegetables, beans and avoiding red meat may help in combating the cancer.¹⁴

In present study , probability of breast cancer were 4.92 times more in non-vegetarian patients and the frequently used non-vegetarian food was chicken in breast cancer patients while non-vegetarian food used frequently in controls having no breast cancer was fish.

It was supported by Farvid, M.S., et al.¹⁵ who revealed that total vegetable utilization was connected with 27 percent lesser risk of breast cancer. Asma Kazemi, et al.¹⁶ also identified decreased risks of breast cancer with augmented intake of vegetarian foods and there was a positive association between consuming red meat and breast cancer. It was explained that red and processed meat is rich in iron, estrogen is administered to cattle and mutagens produced during cooking that lead to increase in risk of breast cancer.¹⁷

Similar to present study, eighteen years follow-up study by Dunneram Y et al.¹⁸ revealed that higher utilization of processed red meat was positively related with risk of breast and endometrial

carcinoma. Consumption of tomatoes as well as dried fruit in higher quantities were inversely proportional to risk of breast and endometrial cancers. Present study is also supported by Chlebowski RT, et al.¹⁹ that rates of survival improved by decreasing the intake of high fat food, grains, vegetables and fruits. In contrast to the findings of present study, one study carried on indian population revealed no evidence of any difference in the risk of breast cancer between vegetarians and non-vegetarians with odds ratio of 1.09 with 95percent confidence interval.²⁰

Park SJ, and coauthor²¹ carried a follow-up research on 241 Korean women diagnosed with breast cancer on medication and revealed that occurrence of recurrent breast cancer was allied with no childbirth experience (OR=2.29, $p=.010$), smaller amount of vegetable consumption (OR=0.71, $p=.008$). Similarly a prospective follow-up research carried in UK by Watling CZ, et al.¹³, found that being a low meat-eater, fish-eater, or vegetarian was associated with a lower risk of all cancer, which may be a result of dietary factors or some other risk factors like smoking. People eating meats in negligible amount and eating vegetables frequently, had lesser chances of getting gastrointestinal and breast cancers. Follow-up for 11.4 years, identified 54,961 incident cancers, including 7,537 postmenopausal breast cancer concluded that vegetrain diet is better option to control the incidence of almost all types of cancers.

Conclusion: It is concluded that non-vegetarian diet, specifically farmed chicken can be considered as the risk factor for breast cancer.

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