

# Nutrition and associated risk factors among breast cancer patients in Alappuzha

■ D. BHAGYA AND THAHIRA THAJU

Received: 23.11.2015; Revised: 07.04.2016; Accepted: 21.04.2016

■ **ABSTRACT** : The present study was undertaken in cancer patients with prior consent undergoing treatment in the Oncology Department of T.D. Medical College Hospital, Vandanam, Alappuzha. Hundred women undergoing treatment for breast cancer aged 30-90 years were selected by Judgmental sampling. Interview Schedule was used for collecting information on Demographic variables and Epidemiological variables. PG-Subjective Global Assessment tool was used to assess the malnutrition among the subjects. Results revealed higher incidence of breast cancer in Alappuzha and the main risk factors associated was found to be genetic factors, dietary factors and reproductive factors.

See end of the paper for authors' affiliations

**D. BHAGYA**

Department of Home Science, St.  
Joseph's College for Women,  
ALAPPUZHA (KERALA) INDIA  
Email : bhagyadp81@gmail.com

■ **KEY WORDS**: Breast cancer, Grades, Risk factors, Malnutrition, Alappuzha

■ **HOW TO CITE THIS PAPER** : Bhagya, D. and Thaju, Thahira and (2016). Nutrition and associated risk factors among breast cancer patients in Alappuzha. *Asian J. Home Sci.*, **11** (1) : 66-71, DOI: 10.15740/HAS/AJHS/11.1/66-71.

Cancer is a disease that has claimed the lives of millions and it's a disease having different form. It is estimated that there are nearly 2 to 2.5 million cancer cases at any given point of time in India (Kamath *et al.*, 2013). The twentieth century has often been called as the cancer century. This is because more than a hundred types of cancer have been discovered in this century, and secondly, because enormous medical efforts were made to fight all kinds of cancers all over the world (Colditz *et al.*, 2012).

Breast cancer in women is a major health burden. Breast cancer usually originates from ducts and lobules. The majority of breast cancers, almost 95 per cent are cancer tumors that develop in the milk ducts. Nearly 1.2 million women are diagnosed with breast cancer

annually worldwide (Jemal *et al.*, 2010). Breast cancer is the most common diagnosed malignancy in women worldwide (22%) and in India (18.5%) it ranks second to cervical cancer (Beiki *et al.*, 2012). Breast cancer had an incidence rate of 38.9 per 100,000, mortality rate of 12.4 per 100,000 and was responsible for 456,503 deaths globally (Ferlay *et al.*, 2014). In India the age standardized incidence rate of breast cancer varies between 9 to 32 per 1,00,000 women (Kamath *et al.*, 2013).

The reasons for varying incidence of breast cancer among women are not fully understood, which are likely to be explained by reproductive and lifestyle factors such as literacy, diet, age at menarche and menopause, Age at first delivery, abortion, family history of breast cancer,

use of contraceptives and mammographic density (Lodha *et al.*, 2010 and Elnaz *et al.*, 2013). The etiology of breast cancer is multifactorial and from descriptive epidemiological data it has clearly emerged that breast cancer is a disease of affluent societies and nutritional intervention has been identified to play a very important role in its prevention (Lelievre and Weaver, 2013).

Increase in cases of breast cancer in Kerala is indeed a matter of concern. Every third women who comes to oncology OP has breast cancer. Though the incidence of breast cancer is going up, the mortality rates are not high. Breast cancer is striking women in their thirties now (Kerala Social Welfare Department Women Repository, 2012). Less statistics is available on the incidence of breast cancer among women in Alappuzha. Breast cancer appears to have a complex etiology with interplay of reproductive, environmental and genetic factors. Although many of these factors are well defined, the interactions between them are to be further studied.

## ■ RESEARCH METHODS

The samples selected for the study were women belonging to age group 30-90 years undergoing treatment for breast cancer in the Oncology Department of T.D. Medical College Hospital situated at Vandanam, Alappuzha. 100 women with breast cancer were selected for the study by judgemental sampling, because the patients undergoing treatment of breast cancer were only selected from the oncology department. Interview schedule was used to collect the information on Demographic Variables such as Age, Religion, Marital status, Family Members, Food Habits, Genetic history and Epidemiological variables such as Disease, Types, Grade, Lateralization and Treatment. Nutritional status of the patients was assessed by Patient Generated-Subjective Global Assessment method (PG-SGA) (Patricia, 2010) in terms of weight changes, components of any stress, edema, ascites, subcutaneous fat, appetite change and GI symptoms. For the present study, the anthropometric measurements such as height, weight, and body mass index (BMI) were measured. BMI is expressed as weight in kg/ height in m<sup>2</sup>. Correlation between the food habits and breast disease was also analyzed with 2-tailed test with Pearson's correlation at (0.01 level). SPSS IBM 21 Version was used for statistical analysis of the data.

## ■ RESEARCH FINDINGS AND DISCUSSION

The findings of the present study as well as relevant discussion have been presented under following heads :

### Demographic variables :

Table 1 shows the incidence of breast cancer in women based on age. Majority of the subjects 36 per cent were in the age group 41-50 years followed by the age group 51-60 years 30 per cent. Obviously, the age group 81-90 years old occupied least per cent of incidence (1%). 14 per cent and 10 per cent were constituted by the age group 61-70 years and 31-40 years, respectively. Only 9 per cent constituted the age group of 71-80 years. It was found that the incidence of breast cancer was high in the age group 41-60 years. Studies revealed that the probability of breast cancer increases with age, but breast cancer tends to be more aggressive in younger people (Howlader *et al.*, 2014). From the study it was found that the incidence of breast cancer was higher among the middle age group.

Age group (years)	No. of respondents	In percentage (%)
31 – 40	10	10
41 – 50	36	36
51 – 60	30	30
61 – 70	14	14
71 – 80	9	9
81 – 90	1	1
Total	100	100

Table 2 shows Religion wise distribution of cancer patients. In the study Hindus constituted the majority 52 per cent followed by Muslims 34 per cent and Christians 14 per cent. The findings of the present study revealed that Hindus and Muslims were having more risk than Christians.

Religion	No. of respondents	In Percentage (%)
Hindus	52	52
Muslims	34	34
Christians	14	14
Total	100	100

Fig. 1 shows the distribution of the subjects based on their total monthly income according to HUDCO (Housing Urban Development Co-operation, 2009) classification. The Fig.1 shows that 30 per cent of the

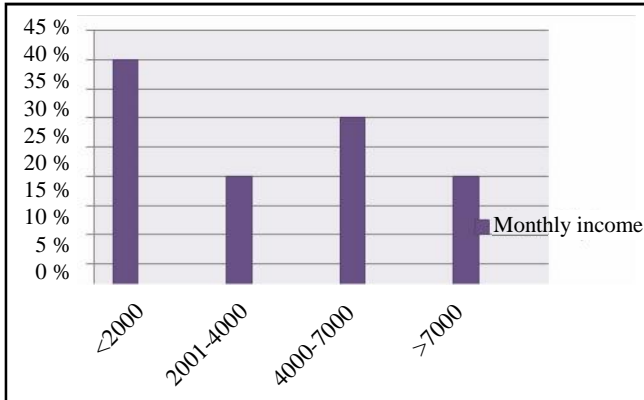


Fig. 1 : Distribution based on monthly income of the cancer subjects

samples enjoyed a total monthly income between Rs. 4000 – 7000, 20 per cent of the samples were having income between Rs. 2000 – 4000 and 40 per cent were having income below Rs.2000.Only 10 per cent had a total monthly income above Rs. 7000. Here in this study all the subjects were belonging to BPL and it was noticed that due to their financial background they were sticking towards the government facilities.

**Epidemiological variables :**

Fig. 2 shows the Grades of cancer predominant in the cancer subjects. Majority 50 per cent of the patients were having Grade II cancer. Grade III was shown by 24 per cent of patients, Grade IV constituted 15 per cent of cancer and only 11 per cent were having Grade I cancer. A study which depicts that early stage breast cancer is associated with high survival rates than late stage cancer (American Cancer Society, 2015). From the study we could find that most of the women were

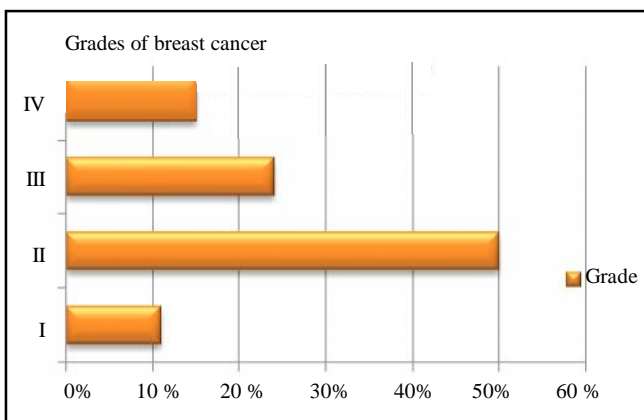


Fig. 2 : Stages of cancer or the Grades of cancer

aware of cancer only on Grade II stage which may be due to ignorance, lack of knowledge, carelessness or lack of screening. Grade IV constituted 15 per cent which points that when they were aware of the condition most of them were following the treatment regularly.

**Treatment undergone in the selected patients :**

Table 3 shows that 48 per cent were undergoing radiation treatment, 25 per cent were having chemotherapy and 27 per cent were undergoing surgery. Majority of the patients were undergoing radiation therapy.

Mode of treatment	No. of respondents in percentage (%)
Surgery	27
Chemotherapy	25
Radiology	48
Total	100

**Lateralization in Breast cancer :**

Table 4 shows that majority of the patients 60 per cent were having cancer on the left side and 34 per cent were having cancer on the right side. Only 6 per cent were having cancer on both the sides. In a study it was reported that breast cancer final occurred most often in the left breast in patients with simultaneous bilateral disease (Tulinius *et al.*, 1990).

Lateralization of cancer	No. of respondents in percentage (%)
Left	60
Right	34
Both	6
Total	100

**Marker types in breast cancer :**

Table 5 depicts that in majority of patients (52 %) Her 2 neu was the marker of breast cancer, 43 per cent had BRCA and 5 per cent had HPR marker. In a study carried out by (Thompson *et al.*, 2005) mutations in genes other than BRCA1 and BRCA2 may be associated

Marker type	No. of respondent in percentage (%)
Her 2 neu	52
BRCA	43
HPR	5
Total	100

with a high risk of breast cancer especially in young women. From the study the common markers of breast cancer was found to be Her 2 neu and BRCA.

**Detection of the lump in cancer patients :**

Fig. 3 depicts that majority of the patients 85 per cent were having a lump in their breast as early symptom, and only 15 per cent were not detected with the lump. According to recent studies lump is a noticeable symptom of breast cancer. More than 80 per cent of breast cancer cases are discovered with a lump (Merck Manual of Diagnosis and Therapy, 2003).

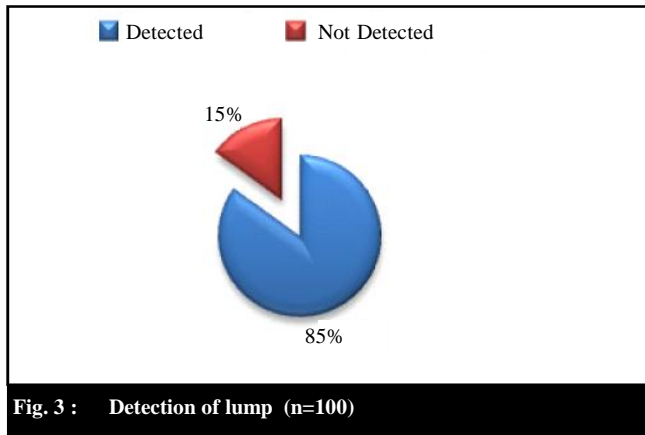


Fig. 3 : Detection of lump (n=100)

**Family history of the selected breast cancer patients:**

Detailed study made regarding the family history of breast carcinoma (Table 6) shows that majority, 69 per cent of the patients had negative family history of breast carcinoma. 31 per cent of subjects were having a positive family history of breast cancer. Many epidemiologic studies have suggested that the family history of breast cancer increases a women’s risk of developing breast cancer (Gramling *et al.*, 2010).

Table 6 : Familial history of breast cancer patients	
History of carcinoma	No. of respondents in percentage (%)
Present	31
Absent	69
Total	100

**Reproductive risk factors :**

It was observed from Fig. 4 that majority (47 %) of patient’s attained menarche below 13 years, followed by 23 per cent who attained menarche above 15 years. 30 per cent of the total patients had menarche between 14-15 years. From the study the age at menarche was

also found to be a risk factor for the incidence of breast cancer. Several studies have depicted that early age at menarche is reported to be associated with an increased risk of breast cancer (Kaur *et al.*, 2011). In addition age at menarche is influenced by childhood nutritional status and also by socio-economic status (Talamini *et al.*, 1996).

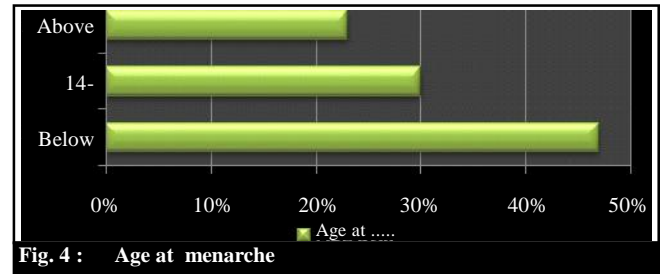


Fig. 4 : Age at menarche

**Use of oral contraceptives :**

Table 7 furnishes the oral contraceptive usage among the subjects which showed that 59 per cent were using the oral contraceptives and 41 per cent were not using them. Oral contraceptives use has a relation with the breast cancer subtypes (Althuis *et al.*, 2003). From the study it was found that the usage of oral contraceptive was a risk factor in the incidence of breast cancer. The use of oral contraceptives was found to be high among women in Alappuzha with cancer which indicates its risk in the incidence of breast cancer.

Table 7 : Use of oral contraceptives	
Oral contraceptives	No: of respondents in percentage (%)
Used	59
Not used	41
Total	100

**Food habits :**

The food habits of cancer patient shows that majority (81 %) were Non- vegetarians, 14 per cent were Ovo-vegetarians and only 5 per cent were vegetarians. The study shows that the consumption of non- vegetarian foods is a risk factor associated with breast cancer. A study showed that the high fat might raise the value of circulating estrogen which can stimulate the growth of malignant cells in breast tissue (Sandin, 2007). The Correlation between the food habits and breast disease was analyzed with Pearson’s correlation 2-tailed test at (0.01 level), the significance value (.281\*\*) indicates that there is a strong highly significant correlation between the variables, which indicates the non-

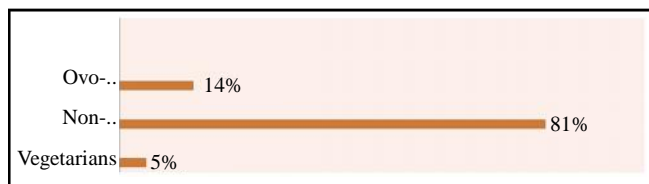


Fig. 5 : Food habits of subjects

vegetarians had a higher risk of incidence of breast disease.

**Assessment of Malnutrition :**

Table 8 furnishes the BMI based classification of the target group which classifies that 91 per cent were having normal weight, 7 per cent were in the underweight category and only 2 per cent were overweight. There were no obese women suffering from cancer. This shows that based on BMI most of them were in good nutritional status. The reason for the ideal weight may be due to the proper attention and medicines and non-restriction in the food intake based on their choice and intake of food supplements.

BMI standards	No. of respondents in percentage
<18.5(under weight)	7%
18.5-25(normal)	91%
25-30(over weight)	2%
>30(obese)	-
Total	100

**Assessment using PG-SGA :**

Table 9 depicts that the patients were not malnourished. Here majority (73 %) was well nourished (A) and 27 per cent were having suspected malnourishment (B). The American Cancer Society estimated that there were 12 million new cancers diagnosed worldwide in the year 2007, with the number expected to more than double in the next 50 years. The amount of malnutrition in patients with cancer at first referral varies by the site and the stage of disease (Pressoir *et al.*, 2010). In another study Long-term weight gain (*i.e.*, weight gain since age 20) has been related to higher risk of postmenopausal breast cancer, but a lower risk of premenopausal breast cancer. The effect of weight change in middle adulthood is unclear (Emaus *et al.*, 2014).

Table 9 : Assessment of malnutrition using PG-SGA

Scores of assessment	No. of frequency in percentage (%)
Well nourished (A)	73
Suspected Malnourishment (B)	27
Malnutrition (C)	-
Total	100

**Conclusion:**

From the study it was found that the incidence of breast cancer is alarmingly high in women of Alappuzha district. The main risk factors associated was found to be genetic factors, dietary factors and reproductive factors. The nutritional status of assessed by PG-SGA tool shows that there is no weight and appetite changes but they were having discomforts, which may be due to modern medical facilities and intake of food supplements. Majority were in the category of suspected malnutrition. While many of the risk factor of breast cancer among women in Alappuzha were found to be consistent with established risk factors, some were not. In the rapidly changing social order in Kerala, with upwardly more women increasingly opting for later marriages and fewer or even no children, many of the risk factors that were hitherto thought to be modifiable, are slowly becoming non-modifiable. In this scenario the best option for intervention would be to increase awareness among women regarding the early diagnosis and treatment of breast cancer.

**Acknowledgement :**

We whole heartedly acknowledge the co-operation rendered by breast cancer subjects and their relatives throughout the study.

Authors' affiliations:

THAHIRA THAJU, Department of Home Science, St. Joseph's College for Women, ALAPPUZHA (KERALA) INDIA

**REFERENCES**

Althuis, M.D., Brogan, D.R., Coates, R.J., Daling, J.R., Gammon, M.D., Malone, K.E., Schoenberg, J.B. and Brinton, L.A. (2003). Hormonal content and potency of oral contraceptives and breast cancer risk among young women. *British J. Cancer*, **88** : 50 – 57.

American Cancer Society (2007). Cancer Global facts and figures. *American Cancer Society*. Atlanta.

American Cancer Society (2015). Cancer facts and figures. *American Cancer Society*. Atlanta.

- Beiki, O., Hall, P., Ebbon, A. and Moradi, T. (2012).** Breast Cancer incidence among 4.7 million women in relation to social and ethnic background : a population based cohort study. *Breast Cancer Res.*, 14 : R5.
- Colditz, G.A., Wolin, K.Y. and Gehlert, S. (2012).** Applying what we know to accelerate cancer prevention. *Science Translational Medicine*, 4(27): 127rv4.
- Elnaz Asghari, Mina Hossein Zadeh et al. (2013).** Risk factors for breast cancer in women. *J. Breast Cancer* : 236-243.
- Emaus, M.J., van Gils, C.H., Bakker, M.F., Bisschop, C.N., Monninkhof, E.M., Bueno-de-Mesquita, H.B., Travier, N., Berentzen, T.L., Overvad, K., Tjønneland, A., Romieu, I., Rinaldi, S., Chajes, V., Gunter, M.J., Clavel-Chapelon, F., Fagherazzi, G., Mesrine, S., Chang-Claude, J., Kaaks, R., Boeing, H., Aleksandrova, K., Trichopoulou, A., Naska, A., Orfanos, P., Palli, D., Agnoli, C., Tumino, R., Vineis, P., Mattiello, A., Braaten, T., Borch, K.B., Lund, E., Menéndez, V., Sánchez, M.J., Navarro, C., Barricarte, A., Amiano, P., Sund, M., Andersson, A., Borgquist, S., Olsson, A., Khaw, K.T., Wareham, N., Travis, R.C., Riboli, E., Peeters, P.H. and May, A.M. (2014).** Weight Change in middle adulthood and breast cancer risk in the EPIC-PANACEA study. *Internat. J. Cancer*, 135(12):2887-2899.
- Ferlay, J., Soerjomataram, I., Dikshit, R., Eser, S., Mathers, C., Rebelo, M., Parkin, D.M., Forman, D. and Bray, F. (2014).** Cancer incidence and mortality world wide: sources, methods and major patterns in GLOBOCAN 2012. *Internat. J. Cancer*, 136 (5) : E359-86
- Ginsburg, O.M. and Love, R.R. (2011).** Breast Cancer: A Neglected disease for the majority of affected women worldwide. *Breast J.*, 17 : 289-295.
- Gramling, R., Lash, T.L., Rothman, K.J., Cabral, H.J., Silliman R., Roberts, M., Marcia, L., Stefanick, M.L., Harrigan, R., Bertoia, M.L. and Eaton, C.B. (2010).** Family history of later- onset breast cancer; breast healthy behaviour and invasive breast cancer among postmenopausal women: a cohort study. *Breast Cancer Res.*, 12: R82.
- Howlader, N., Noone, A.M., Krapcho, M., Garshell, J., Miller, D., Altekruse, S.F., Kosary, C.L., Yu, M., Ruhl, J., Tatalovich, Z., Mariotto, A., Lewis, D.R., Chen, H.S., Feuer, E.J. and Cronin, K.A. (eds).** *SEER Cancer Statistics Review, 1975–2011*, National Cancer Institute.
- HUDCO (2009). Ministry of Housing and Urban Poverty Alleviation Government of India.
- Jemal, A., Siegel, R., Xu, J. and Ward, E. (2010).** Cancer Statistics. *Cancer J. Clinicians*, 10 (60) : 277-300.
- Kamath, Ramachandra, Kamaleswar, S.M., Lena, A. and Sanal, T.S. (2013).** A study on risk factors of breast cancer among patients attending the Tertiary care Hospital in Udipi District. *Indian J. Community Medicine*, 38(2): 95-99.
- Kaur, N., Attam, A., Saha, S. and Bhargava, S.K. (2011).** Breast cancer risk factor profile in Indian women, *JIMSA*, 24(4) 163-165.
- Kerala Social Welfare Department Women Repository (2012). Breast cancer in women.
- Lelievre, S.A. and Weaver, C.M. (2013).** Global nutrition research: Nutrition and breast cancer prevention as a model. *Nutrition Rev.*, 71(11): 742-752.
- Lodha, S.R., Nandeshwara, S. and Pal, K.D. (2010).** Risk of breast cancer in obese women. A case control study. *Nat. J. Community Med.*, 1 : 166-7.
- Merck Manual of Diagnosis and Therapy (2003).** Breast Disorders: Breast Cancer. Retrieved 2008-02-05.
- Patricia Fuhrman, M. (2010).** Nutrition support for oncology patients . *Clinical nutrition for Oncology Patients* .In: Marrian M, Roberts S. eds. US. Jones and Bartlett : 32.
- Pressoir, M., Desne, S., Berchery, D., Rossignol, G., Poiree, B., Meslier, M., Traversier, S., Vittot, M., Simon, M., Gekiere, J.P., Meuric, J., Serot, F., Falewee, M.N., Rodrigues, I., Senesse, P., Vasson, M.P., Chelle, F., Maget, B., Atoun, S. and Bachmann, P. (2010).** Prevalence, risk factors and clinical implications of malnutrition in French Comprehensive Cancer centres. *British J. Cancer*, 102(6) : 966-971.
- Sandin, M. (2007).** Dietary fat and breast cancer risk in Swedish women's life style and health cohort. *British J. Cancer*, 97:1570-1576.
- Talamini , R., Franceschi, S., Lav Vecchia, C., Negri, E., Borsa, L., Montella, M., Falcini, F., Conti, E. and Rossi, C. (1996).** The role of reproductive and menstrual factors in cancer of the breast before and after menopause. *European J. Cancer*, : 303 - 310.
- Thompson, D., Antoniou, A.C., Jenkins, M., Marsh, A., Chen, X., Wayne, T., Tesoriero, A., Milne, R., Spurdle, A., Thorstenson, Y., Southey and Giles, G.G. (2005).** ATM variants and breast cancer risk. *Human Mutation*, 25(6): 594-595.
- Tulinius, H., Sigvaldason, H. and Olafsdottir, G. (1990).** Left and right sided breast cancer. *Pathological Res. Practice*, 186 (1): 92-94.