

Determination of Risk Factors of Breast Cancer Among Women in A Cancer Specialized Hospital in Dhaka City

Fatema Shahnaz Orin¹, Mahbubar Rahman², Tasmin Shahnaz³, Nijhum Dhar⁴, Najmul Islam⁵, Shyamal Chandra Banik⁶, Abu Obaida Rumi⁷, Sharmistha Roy⁸

¹Lecturer, Department of community medicine, Dhaka Central International Medical College

²Professor and Head, Department of community medicine, Dhaka Central International Medical College

³Associate professor, Department of Pharmacology, Ibn Sina Medical College

⁴Research Assistant, Department of English, East West University, Dhaka

⁵Registrar, Department of General Surgery, Dhaka National Medical College

⁶Associate professor, Department of Physiology, Dhaka National Medical College

⁷Research Assistant, Department of Bachelor of Business Administration, United International University

⁸Consultant, Department of Clinical Pathology, Ibn Sina Diagnostic and Consultation Center, Jatrabari

ABSTRACT

Background: Breast cancer is the most common cancer among women and one of the most important causes of death among them. Breast cancer is a multi-factorial disease and various factors contribute to its occurrence.

Objective: The objective of the study was to find out the association of risk factors of breast cancer among women in a selected cancer specialized hospital in Dhaka city.

Methodology: This was a case-control study conducted on breast cancer patients who had been admitted and diagnosed at the department of Oncology of Delta Medical College and Hospital within the defined period from January 2022 to December 2022. Following informed written consent, 108 healthy women and 108 breast cancer patients were included into the study. They were interviewed and information was recorded in the questionnaire. Ethical issues were maintained and the results of histological diagnosis were obtained to complete the data sheet and analyzed by SPSS,

Result: Total of 216 patients were interviewed with a minimum age of 20 and a maximum age of 82. The average age of the respondents was 45.88 years $\pm$ 2.79 years. The most common weight for the breast cancer patients was in the range of 40-50 kgs with frequency of 43(39.81%). The most common weight for the non breast cancer patients was in the range of 50-60 kgs with frequency of 43(39.81%). The difference was statistically significant ($p < .05$). 43.5% breast cancer patients used contraceptive pills and 59.26% had reported their children have been breastfed. 40.74% of the breast cancer patients had X-ray exposure and 55.56% of them did not do daily exercise. For the breast cancer patients, 73 of them have reported their husband had regular tobacco smoking habit (67.59%) compared to non smoking habit of only 35 respondents (32.41%). On the other hand, for non breast cancer patients, 75 of them have reported of no smoking habit of husband (69.44%) compared to only 33 (30.56%) of the husband's smoking habit. The difference was statistically significant ($p < .05$). 43.52% breast cancer patients had alcohol consumption habit. We found significant association of breast cancer with the number of children, contraceptive pill usage, X-ray exposure, husband's tobacco smoking habit, hormonal contraceptive pill usage.

Conclusion: Data of the present study confirmed a marked relationship between breast cancer and all the risk factors being identified in the study.

KEYWORDS: Breast cancer, Risk factor, Dhaka city

ARTICLE DETAILS

Published On:
12 May 2025

Available on:
<https://ijpbms.com/>

INTRODUCTION

Breast cancer is a prevalent disease that affects millions of women worldwide, with significant physical, psychological, and social consequences. According to the World Health Organization, breast cancer is the most common cancer among women globally, with an estimated 2.3 million new cases diagnosed in 2020 alone.¹ In 2012, 1.67 million new cases of breast cancer were identified worldwide, accounting for 25% of all cancers.⁷ Although cancer exists anywhere in the world, its incidence rate is higher in developed countries, and the incidence rate of breast cancer varies greatly with race and ethnicity. The incidence rate of breast cancer varies among different parts of the world, varying from 27 per 100,000 in Middle Africa and East Asia to 92 per 100,000 in Northern America.² The incidence rate of breast cancer is estimated to reach 3.2 million by 2050. With increasing population age in developed countries, the incidence rate of breast cancer among older people is increasing.⁹ In 2017, approximately 252,710 new cases of invasive breast cancer and 6,341 cases of breast cancer in situ were diagnosed in the United States.³ Addressing breast cancer in Bangladesh is becoming tougher due to a lack of a central database, mass awareness and long-rooted socio-cultural and family traditions, according to experts. More than 13,000 women in Bangladesh are infected with breast cancer and over 7,000 die every year, according to data from the International Agency for Research on Cancer (IARC).⁴ A lack of awareness about breast cancer and its risk factors is one of

the major factors contributing to the high incidence of the disease in Bangladesh.⁵ Many women in the country are not properly informed about the early signs and symptoms of breast cancer, which can lead to a delayed diagnosis. Early detection and prevention are crucial for reducing the incidence and mortality of breast cancer.⁶

MATERIALS & METHOD

This was a case-control study conducted on breast cancer patients who had been admitted and diagnosed at the department of Oncology of Delta Medical College and Hospital within the defined period from January 2022 to December 2022. Following informed written consent, 108 healthy women and 108 breast cancer patients were included into the study. They were interviewed and information was recorded in the questionnaire. Ethical issues were maintained and the results of histological diagnosis were obtained to complete the data sheet and analyzed by SPSS (version 20.1). Purposive sampling was done according to availability of the patients.

RESULTS

It is observed that majority of the breast cancer patients were within the age range 50-59 and 40-49 years, where the frequencies of both were 35 each and the percentage was 32.41%. For the Non breast cancer patients, the majority of the cases were within the range of 30-39 years, where the frequency was 43 and the percentage was 39.81%. The difference was statistically significant ($p < .05$).

Table 1: Distribution of respondents by age

	Cases (n=108)		Controls(n=108)		
	Breast Cancer Patients		Non Breast Cancer Patients		P value
Age Range	Frequencies	Percentage	Frequencies	Percentage	
20-29	3	2.78%	16	14.81%	
30-39	16	14.81%	43	39.81%	
40-49	35	32.41%	17	15.74%	
50-59	35	32.41%	16	14.81%	0.001
60-69	15	13.89%	10	9.26%	
70-79	3	2.78%	6	5.56%	
80-89	1	0.93%	0	0.00%	
	108	100.00%	108	100.00%	

It was observed that most of the respondents were from Muslim with a major percentage of 87% for breast cancer patients and 80% for non breast cancer patients. It was followed by Hindu religion with a percentage of 5% and 9%

respectively. Then we had Buddhist (2% and 4%), Christian (2% and 5%) and other religions (4% and 2%) respectively. The difference was not statistically significant as $p > 0.05$. (Figure 1, Figure 2)

Determination of Risk Factors of Breast Cancer Among Women in A Cancer Specialized Hospital in Dhaka City

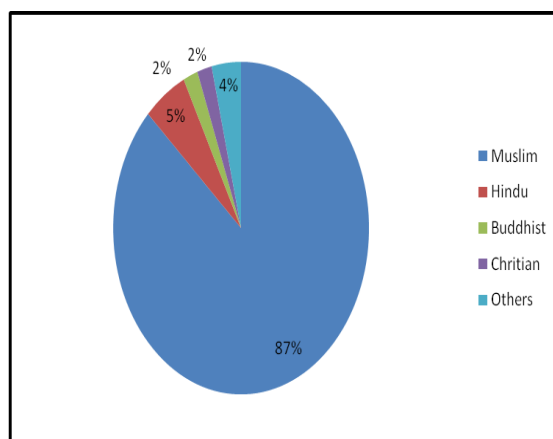


Figure 1: Religion of breast Cancer patient

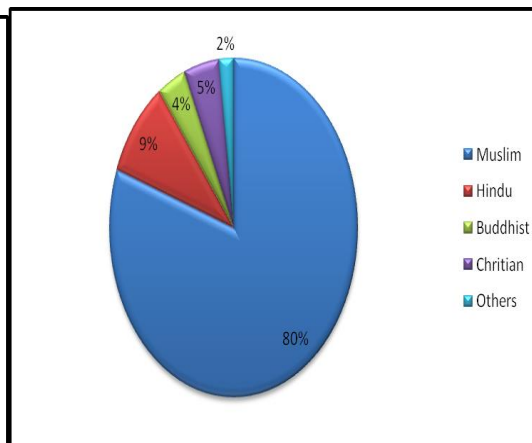


Figure 2: Religion of non breast cancer patients

It is observed that, out of the total 108 respondents of breast cancer patients, 45 of them were having 3 children (41.67%). It was followed by 33 of them who were having 2 children (30.56%). For non breast cancer patients, out of the total 108 respondents, 31 of them were having 2 children (28.7%). It was followed by 27 of them who were having three children (25.00%). The difference was statistically significant as $p < 0.05$. (Table 2)

Table 2: Distribution of respondents according to the number of children

	Cases (n=108)		Controls (n=108)		
	Breast Cancer Patients		Non Breast Cancer Patients		P value
No of Children	Frequencies	Percentage	Frequencies	Percentage	
One	7	6.48%	18	16.67%	
Two	33	30.56%	31	28.70%	
Three	45	41.67%	27	25.00%	0.001
Four or more	16	14.81%	11	10.19%	
No children	7	6.48%	21	19.44%	
	108	100.00%	108	100.00%	

Table 3 shows that, out of 108 participants of breast cancer patients, 64 (59.26%) had reported that their children were breastfed, while 31 (28.7%) reported their children were not breastfed. Out of 108 participants of non breast cancer patients, 48 (44.44%) had reported that their children were

breastfed, while 40 (37.04%) reported their children were not breastfed. In total, 33 participants reported having no children. The difference was statistically significant ($p < .05$). (Table 3)

Table 3: Distribution of respondents by breast feeding history

	Cases (n=108)		Controls (n=108)		
	Breast Cancer Patients		Non Breast Cancer Patients		P value
Children Breast Feeding or Not	Frequencies	Percentage	Frequencies	Percentage	
Yes	64	59.26%	48	44.44%	0.001
No	31	28.70%	40	37.04%	
No Children	13	12.04%	20	18.52%	
	108	100.00%	108	100.00%	

This data shows the frequency and percentage of respondents who used contraceptive pills. Of the 108 respondents having breast cancers, 61 (56.5%) reported not using contraceptive pills, whereas 47 (43.5%) used

contraceptive pills. For non breast cancer patients, 81 (75%) reported not using them, while 27 (25%) reported using them. The difference was statistically significant ($p < 0.05$). (Table 4)

Determination of Risk Factors of Breast Cancer Among Women in A Cancer Specialized Hospital in Dhaka City

Table 4: Distribution of respondents by usage of contraceptive pill

	Cases (n=108)		Controls (n=108)		P value
	Breast Cancer Patients		Non Breast Cancer Patients		
Contraceptive Pill Usage	Frequencies	Percentage	Frequencies	Percentage	
Yes	47	43.50%	27	25.00%	0.001
No	61	56.50%	81	75.00%	
	108	100.00%	108	100%	

For breast cancer patients, having exposure to X-ray was with frequency 44 (40.74%) and having no X-ray exposure was with frequency 64 (59.26%). For Non breast cancer

patients, not having X-ray exposure was highest 78 (72.22%) in contrast to X-ray exposure of 30 (27.27%). The difference was statistically significant as $p < 0.05$. (Table 5)

Table 5: Distribution of respondents by X-ray exposure

	Cases (n=108)		Controls (n=108)		P value
	Breast Cancer Patients		Non Breast Cancer Patients		
X-ray Exposure	Frequencies BC	Percentage	Frequencies	Percentage	
Yes	44	40.74%	30	27.27%	0.01
No	64	59.26%	78	72.22%	
	108	100.00%	108	100.00%	

For the breast cancer patients, 73 of them have reported their husband had regular tobacco smoking habit (67.59%) compared to non smoking habit of only 35 respondents (32.41%). On the other hand, for non breast cancer patients,

75 of them have reported of no smoking habit of husband (69.44%) compared to only 33 (30.56%) of the husband's smoking habit. The difference was statistically significant ($p < 0.05$). (Table 6)

Table 6: Distribution of the respondents according to husband's tobacco smoking habit

	Cases (n=108)		Controls (n=108)		P value
	Breast Cancer Patients		Non Breast Cancer Patients		
Husband`s Tobacco Smoking habit	Frequencies	Percentage	Frequencies	Percentage	
Yes	73	67.59%	33	30.56%	0.001
No	35	32.41%	75	69.44%	
	108	100.00%	108	100.00%	

The Table above shows that for breast cancer patients, most of the respondents did not do daily exercise with a frequency of 60 (55.56%) with a contrast to doing daily exercise with frequency 48 (44.44%). For non breast cancer

patients, doing no daily exercise with highest frequency 80 (74.07%) followed by doing regular exercise with a frequency of 28 (25.93%). The difference was statistically significant as $p < 0.05$. (Table 7)

Table 7: Distribution of the respondents according to Daily Exercise

	Cases (n=108)		Controls (n=108)		P value
	Breast Cancer Patients		Non Breast Cancer Patients		
Daily Exercise	Frequencies	Percentage	Frequencies	Percentage	
Yes	48	44.44%	28	25.93%	0.001
No	60	55.56%	80	74.07%	
	108	100.00%	108	100.00%	

From the above table, we can see that, for the breast cancer patients, having no alcohol consumption was the higher number, 61 (56.48%), whereas the alcohol consumption number was 47 (43.52%). For, non breast cancer patients,

having no alcohol consumption were the higher number, 93 (86.11%), whereas the alcohol consumption number was 15 (13.89%). The difference was statistically significant as $p < 0.05$. (Table 8)

Determination of Risk Factors of Breast Cancer Among Women in A Cancer Specialized Hospital in Dhaka City

Table 8: Distribution of respondents according to alcohol consumption

	Cases (n=108)		Controls (n=108)		P value
	Breast Cancer Patients		Non Breast Cancer Patients		
Alcohol Consumption	Frequencies	Percentage	Frequencies	Percentage	
Yes	47	43.52%	15	13.89%	
No	61	56.48%	93	86.11%	0.001
	108	100.00%	108	100.00%	

The figure shows the frequency and percentage of respondents' weight in kilograms. The data ranged from 30 kg to 100 kg, with a total of 216 respondents. The most common weight for the breast cancer patients was in the range of 40-50 kgs with frequency of 43(39.81%), followed by weight range of 50-60 Kgs with a frequency of 41

(37.96%). The most common weight for the non breast cancer patients was in the range of 50-60 kgs with frequency of 43(39.81%), followed by weight range of 40-50 Kgs with a frequency of 23 (21.30%). The difference was statistically significant ($p < .05$). (Table 9)

Table 9: Distribution of respondents by weight

	Cases (n=108)		Controls (n=108)		P value
	Breast Cancer Patients		Non Breast Cancer Patients		
Weight (Kg)	Frequencies	Percentage	Frequencies	Percentage	
30-40	4	3.70%	10	9.26%	
40-50	43	39.81%	23	21.30%	
50-60	41	37.96%	43	39.81%	
60-70	4	3.70%	10	9.26%	0.001
70-80	10	9.26%	17	15.74%	
80-90	5	4.63%	5	4.63%	
90-100	1	0.93%	0	0.00%	
	108	100.00%	108	100.00%	

DISCUSSION

It is observed that majority of the breast cancer patients is under the age range 50-59 and 40-49 years in the current study. The risk of breast cancer begins to increase after age 40 and becomes more significant as women get older. In fact, about two-thirds of all invasive breast cancers are found in women age 55 or older which is found in similar studies.⁷ We have also observed higher breast cancer occurrence with increased weight and obesity. Obesity has been identified as a risk factor for breast cancer, particularly in postmenopausal women. Excess body fat can lead to higher levels of estrogen⁸, a hormone that can promote the growth of some types of breast cancer. This is because fat cells can produce estrogen, and the more fat cells a person has, the more estrogen they may produce. In addition, obesity is associated with chronic low-grade inflammation, which can contribute to the development of cancer.⁹ Use of hormonal contraceptives, including the birth control pill, may be associated with a slightly increased risk of breast cancer.¹⁰ However, the overall risk of breast cancer associated with hormonal contraceptives is considered to be small, and the benefits of using these contraceptives generally outweigh the risks. Breastfeeding has been shown to have a protective effect against breast cancer. Women who breastfeed their children are thought to have a lower

risk of developing breast cancer than women who do not breastfeed. Studies have found that the longer a woman breastfeeds, the greater the reduction in breast cancer risk.¹¹ For example, one study found that women who breastfed for at least 12 months had a 4.3% lower risk of developing breast cancer compared to women who did not breastfeed.¹² In present study, we have found that most of the breast cancer patients (59.26%) children were breastfed. This can be explained by the inherent nature of this region's culture as well as the nature and time consideration of breast feeding differs from person to person. In our study, we have found low rate of daily exercise among the breast cancer patients. Only 44.4% of the respondents have been doing regular daily exercise. Regular exercise has been found to be associated with a reduced risk of breast cancer. Several studies have shown that women who engage in regular physical activity, such as daily exercise, have a lower risk of developing breast cancer compared to women who are less active.¹³ For the breast cancer patients, 73 of them have reported their husband's regular tobacco smoking habit (67.59%) compared to non smoking habit of only 35 respondents (32.41%). There is some evidence to suggest that exposure to secondhand smoke from a husband's tobacco smoking may be associated with an increased risk of breast cancer in women. Several studies have shown that

Determination of Risk Factors of Breast Cancer Among Women in A Cancer Specialized Hospital in Dhaka City

women who are regularly exposed to secondhand smoke from a partner or spouse who smokes have a higher risk of breast cancer compared to women who are not exposed. The exact mechanisms by which secondhand smoke may increase the risk of breast cancer are not fully understood, but it is believed to be due to the harmful chemicals in cigarette smoke that can damage DNA and lead to the development of cancer.¹⁴ It is observed that, out of the total 108 respondents of breast cancer patients, 45 of them are having 3 children (41.67%). It is followed by 33 of them who are having 2 children (30.56%). Sixteen of the respondents have four or more children (14.81%). The relationship between the number of children and breast cancer risk is not straightforward. For example, the protective effect of having children may be less pronounced in women who have their first child at an older age or who have a family history of breast cancer. Additionally, women who have multiple pregnancies within a short period of time may have a higher risk of certain types of breast cancer.

CONCLUSION

X-ray exposure, husband's tobacco smoking habit, and alcohol consumption habit, history of breastfeeding, exercise, and number of children are the most dominant risk factors of breast cancers found in present study. Where most of the risk factors considered in this study increase the risk of breast cancer only regular exercise and having more children reduces the risk of breast cancer.

ACKNOWLEDGEMENTS

The authors are grateful to the entire staff of department of oncology at Delta Medical College Hospital, Dhaka during the study period.

CONFLICT OF INTEREST

Authors declare no conflict of Interest.

REFERENCES

- I. Arnold, M., Morgan, E., Rumgay, H., Mafra, A., Singh, D., Laversanne, M., ... & Soerjomataram, I. (2022). Current and future burden of breast cancer: Global statistics for 2020 and 2040. *The Breast*, 66, 15-23.
- II. Hortobagyi, G. N., de la Garza Salazar, J., Pritchard, K., Amadori, D., Haidinger, R., Hudis, C. A., ... & ABREAST Investigators. (2005). The global breast cancer burden: variations in epidemiology and survival. *Clinical breast cancer*, 6(5), 391-401.
- III. Keren, Y., Magnezi, R., Carmon, M., & Amitai, Y. (2020). Investigation of the association between drinking water habits and the occurrence of women breast cancer. *International Journal of Environmental Research and Public Health*, 17(20), 7692.
- IV. Ghaffari, H., Tavakoli, A., Nafissi, N., Farahmand, M., Ghorbani, S., Moochani, S. S. & Monavari, S. H. (2021). Human cytomegalovirus and Epstein-Barr virus infections in breast cancer: A molecular study on Iranian women. *Breast Disease*, 40(4), 227-233.
- V. Sarker, R., Islam, M. S., Moonajilin, M. S., Rahman, M., Gesesew, H. A., & Ward, P. R. (2022). Knowledge of breast cancer and breast self-examination practices and its barriers among university female students in Bangladesh: Findings from a cross-sectional study. *Plos one*, 17(6), e0270417.
- VI. Kolak, A., Kamińska, M., Sygit, K., Budny, A., Surdyka, D., Kukielka-Budny, B., & Burdan, F. (2017). Primary and secondary prevention of breast cancer. *Annals of Agricultural and environmental Medicine*, 24(4).
- VII. Luna-More, S., Gonzalez, B., Acedo, C., Rodrigo, I., & Luna, C. (1994). Invasive micropapillary carcinoma of the breast: a new special type of invasive mammary carcinoma. *Pathology-Research and Practice*, 190(7), 668-674.
- VIII. Byers, T., & Sedjo, R. L. (2015). Body fatness as a cause of cancer: epidemiologic clues to biologic mechanisms. *Endocr Relat Cancer*, 22(3), R125-34.
- IX. Pietrzyk, L., Torres, A., Maciejewski, R., & Torres, K. (2015). Obesity and obese-related chronic low-grade inflammation in promotion of colorectal cancer development. *Asian Pacific Journal of Cancer Prevention*, 16(10), 4161-4168.
- X. Brinton, L. A., Hoover, R., Szklo, M., & FRAUMENI Jr, J. F. (1982). Oral contraceptives and breast cancer. *International journal of epidemiology*, 11(4), 316-322.
- XI. Enger, S. M., Ross, R. K., Paganini-Hill, A., & Bernstein, L. (1998). Breastfeeding experience and breast cancer risk among postmenopausal women. *Cancer epidemiology, biomarkers & prevention: a publication of the American Association for Cancer Research, cosponsored by the American Society of Preventive Oncology*, 7(5), 365-369.
- XII. Jernstrom, H., Lubinski, J., Lynch, H. T., Ghadirian, P., Neuhausen, S., Isaacs, C., & Narod, S. A. (2004). Breast-feeding and the risk of breast cancer in BRCA1 and BRCA2 mutation carriers. *Journal of the National Cancer Institute*, 96(14), 1094-1098.
- XIII. McTiernan, A., Kooperberg, C., White, E., Wilcox, S., Coates, R., Adams-Campbell, L. L. & Ockene, J. (2003). Recreational physical activity and the risk of breast cancer in postmenopausal women: the

Determination of Risk Factors of Breast Cancer Among Women in A Cancer Specialized Hospital in Dhaka City

Women's Health Initiative Cohort Study. *Jama*, 290(10), 1331-1336.

Cohort

XIV.

Sudhakar, A. (2009). History of cancer, ancient and modern treatment methods. *Journal of cancer science & therapy*, 1(2).