Scientific journal of Research studies in Future Basic Sciences and medical sciences, 2024, Vol. 2, pp. 51-54

Scientific journal of Research studies
in Future Basic Sciences and medical sciences
www.journalhi.com/sci/

Investigation of Breast Cancer Risk Factors in Women

Dr Rahema Sadat [1]

1- Assistant professor of Surgery at Abu Ali Sina Balkhi Educational Seminary Hospital, Balkh, Afghanistan. Sodatrahima37@gmail.com

Abstract

Breast cancer is the leading cause of cancer-related mortality in women worldwide, with an annual increase rate of 2%. According to the 2016 statistics from the Ministry of Public Health, approximately 1,700 individuals die from breast cancer annually in the country. The varying incidence rates of this cancer across different regions of the world underscore the need for regional studies to clarify the role of contributing factors. This study examines the risk factors for breast cancer in women aged 30-65 in Mazar-e-Sharif, Afghanistan. In the spring of 2022, a case-control study was conducted on women with and without a history of breast cancer in Mazar-e-Sharif. Based on the records in the breast cancer diagnosis section of the Abu Ali Sina Balkhi Regional Hospital, 100 breast cancer cases were selected. Data analysis was performed using SPSS software. In this research, age, menopause history, history of abortion, and duration of breastfeeding were identified as factors influencing breast cancer risk. The findings showed a significant positive relationship between contraceptive use and breast cancer, while no association was found between smoking and breast cancer. A positive relationship between family history of breast cancer and increased breast cancer risk was observed, and no significant association was found between age and increased breast cancer risk.

Keywords: Smoking, age, contraceptive use, breastfeeding duration, abortion

1- Introduction

Breast cancer is one of the most prevalent cancers among women worldwide and is recognized as a leading cause of cancer-related mortality in women. In the city of Mazar-e-Sharif, as in many other regions, the rising incidence of this disease has raised serious public health concerns. Identifying and examining the risk factors for breast cancer can aid in its prevention and in reducing its incidence, ultimately enhancing women's quality of life (Karami & Mohammadi, 2019). Various factors may contribute to an increased risk of breast cancer, including genetic, hormonal, environmental, and lifestyle-related factors. Specifically, family history of breast cancer, age, marital status, level of physical activity, diet, and alcohol consumption are factors that significantly impact the risk of developing breast cancer (Ahmadi et al., 2018). Additionally, factors such as obesity and physical inactivity play a role in identifying patterns of breast cancer incidence (Smith, 2022).

In the past few decades, Asia has experienced rapid economic growth, resulting in increased life expectancy and decreased mortality rates. However, the incidence of breast cancer has doubled or tripled in countries like Japan, Korea, and Singapore, and has risen by more than 30% in China and India in recent years. While mortality rates have declined in many European and North American countries, mortality continues to rise in Asian countries (Lotfi et al., 2015, p. 357).

Every year, more than 193,000 cases of breast cancer are diagnosed, with an estimated 40,000 deaths annually. Breast cancer remains the leading cause of mortality among Western women aged 30 to 60. Due to limited cancer registry facilities in Afghanistan, especially for cancer, precise data on the incidence and prevalence of this disease and related mortality rates are lacking. However, reports indicate an upward trend in breast cancer prevalence.

Survival rates for breast cancer vary widely worldwide, from 80% or more in North America, Sweden, and Japan to around 60% in middle-income countries and below 40% in low-income countries. Studies have suggested that differences in tumor biology may contribute to survival disparities. Additionally, demographic factors such as race, lower socioeconomic status, lack of health insurance, and marital status are associated with lower survival rates, while clinical treatments and targeted interventions are linked to improved survival outcomes (Karimi et al., 2021, p. 37).

There is no specific cause for breast cancer; rather, a combination of genetic, hormonal, and possibly environmental factors contribute to its development. Breast cancer risk factors include genetic mutations in BRCA-1 and BRCA-2, advanced age, personal or family history of breast cancer, nulliparity, advanced maternal age at the birth of the first child, late menopause, obesity, a history of benign proliferative breast diseases, exposure to ionizing radiation between adolescence and age 30, and alcohol and cigarette use (Hayati et al., 2011, p. 32).

2- BREAST CANCER FACTORS: UNCONTROLLABLE AND NON-MODIFIABLE RISK FACTORS

Gender

Hormonal imbalances in the body are considered a significant factor in breast cancer, with gender being a

primary determinant. Women have substantially higher levels of estrogen and progesterone than men, making breast cancer much more common in women than in men. In fact, being female is arguably the primary risk factor for developing breast cancer. However, it is also possible, though rare, for men to develop breast cancer. Statistically, breast cancer occurrence is approximately 100 times more likely in women than in men (Islam, 2013).

1.1. Age

Age is one of the most significant factors in breast cancer risk. Most cases of breast cancer occur in women over the age of 50. The risk of developing breast cancer increases with age for both men and women, with most male breast cancer cases occurring in those over 60. Data indicates that out of every eight invasive breast cancer cases in women, only one is found in those under 45, while roughly two-thirds of cases occur in women over 55. Thus, advancing age is one of the most prevalent risk factors for breast cancer (Baitchev et al., 2001, p. 135).

1.2. Genetic Risk Factors

Genetic predisposition is a major and primary factor in breast cancer. Approximately 5 to 10% of breast cancer cases in both women and men result from hereditary factors, meaning mutated genes are passed down from parents to their children. Among the most well-known gene mutations associated with increased breast cancer risk are BRCA1 and BRCA2.

1.3. Family History of Breast Cancer

You may have heard that a family history of certain cancers increases the risk for others in the family, and this is especially true for breast cancer. If female blood relatives in your family have had breast cancer, your risk of developing the disease rises. Specifically, if a first-degree relative—such as a mother, daughter, or sister—has had breast cancer, a woman's risk doubles. The risk further escalates with the number of affected close relatives. For example, if two first-degree relatives have had breast cancer, the likelihood of developing the disease is about three times higher. Thus, family history is an undeniable factor in breast cancer risk (Wiese et al., 2019).

1.4. Race and Ethnicity

Statistics indicate that white women are more likely to develop breast cancer than African American women. However, the mortality rate from breast cancer is higher among African American women, who also face a higher likelihood of developing more aggressive tumors than white women, which may account for the higher death rate, although the exact reasons remain unclear. Research suggests that Asian, Hispanic, and Native American women are at lower risk for breast cancer and also have lower mortality rates from the disease. These observations highlight race and ethnicity as notable factors in breast cancer risk (https://drmoussazadeh.com).

1.5. Different Types of Breast Cancer

The most common types of breast cancer include:

- Invasive Ductal Carcinoma (IDC): In this type of breast cancer, cancerous cells form within the milk ducts. Over time, these cells spread beyond the duct, reaching other parts of the breast tissue. They can even move outside the breast and affect other areas of the body.
- Invasive Lobular Carcinoma (ILC): This type of cancer originates in the lobules (glands responsible for milk production) and then spreads to other parts of the breast and potentially beyond.
- Other, less common types of breast cancer include Paget's disease of the breast, medullary carcinoma, mucinous carcinoma, and inflammatory breast cancer (https://abidipharma.com/health-items/breast-cancer).

1.6. Breast Cancer Treatment Methods

Upon noticing symptoms, it's essential to consult a specialist. If breast cancer is diagnosed, the treatment regimen will begin, tailored to the type and stage of the cancer. Early detection (in initial stages) facilitates more effective treatment. Treatment methods include:

- Surgery: One approach is surgically removing the cancerous mass.
- Chemotherapy: In chemotherapy, medications are administered orally or intravenously to kill cancer cells and reduce the size of the tumor (Hugh, 2009).
- Hormone Therapy: This method blocks female hormones that the cancer cells require, preventing their access to these hormones.
- Biotherapy or Biological Therapy: This approach strengthens the immune system to help it combat cancer.

2. RESEARCH METHODOLOGY

In the spring of 2022, a case-control study was conducted on women with and without a history of breast cancer in the city of Mazar-e-Sharif. Based on data recorded in the Breast Cancer Diagnosis Unit at Abu Ali Sina Balkhi Regional Hospital, 100 women diagnosed with breast cancer were selected. Data were collected through face-to-face interviews, which took over six months to complete. Data analysis was performed using SPSS software. To uphold ethical considerations, verbal consent for interviews was obtained from all participants, individual information was kept confidential, and results were reported without any identifying information.

3. FINDINGS

The findings of this research are presented in the following four tables, which include the age of the respondents, breast-related risk factors, hereditary and genetic risk factors, and lifestyle-related risk factors.

Table 1 age of respondents

age	frequency	percentage
۳۰-۲۰	۲۰	٪۲۰
۴۰-۳۰	۳۸	٪۳۸
۵۰-۴۰	۲۲	٪۲۲
۶۰-۵۰	۲۰	٪۲۰
total	۱۰۰	٪۱۰۰

Source: research findings

Table 2 risk factors related to breast

Risk factors	frequency	percentage
History of chest pain	49	49%
History of malignant disease	31	31%
A history of not covering the breast	20	20%
	100	100%

Source: research findings

Table 3 hereditary and genetic risk factors

Risk factors	frequency	percentage
Family history of breast cancer	28	28%
Family history of breast cancer	34	34%
Family history of breast cancer in males	20	20%
Personal and family history of cancers	10	10%
Family history and putative mutations	8	8%
	100	100%

Source: research findings

Table 4 risk factors related to lifestyle

Risk factors	frequency	percentage
Direct consumption of tobacco	30	30%
Indirect smoking	16	16%
Consumption of alcoholic beverages	21	21%
obesity	28	28%
Undesirable physical activity	10	10%
Adverse nutrition	5	5%
	100	100%

Source: research findings

In the present study, 100 participants were included, distributed by age as follows: 20 individuals (20%) were aged 20-30, 38 individuals (38%) were aged 30-40, 22 individuals (22%) were aged 40-50, and 20 individuals (20%) were aged 50-60. The findings indicated that most high-prevalence risk factors among women aged 20-55 are lifestyle-related. With appropriate education and supportive environments, these factors can be modified, potentially mitigating their negative effects.

Table۵ Pearson correlation coefficient test

		Having breast cancer	age	Family history of cancer	Age of menopause	Age at first birth	Spontaneous abortion	History and use of contraceptives	cigarette	Breastfeeding period
Having breast cancer	Pearson Correlation	۱	۰.۷۲	۰.۶۱	۰.۸۲	.۳۵	۰.۶۴	۰.۲۱	۰.۲۱	۰.۷۵
	Sig. (۲-tailed)		۰.۰۴۳	۰.۶۸۴	۰.۰۱۹	۰.۰۰۸	۰.۸۸۰	۰.۰۱۹	۰.۰۰۸	۰.۸۸۰
	N	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲
age	Pearson Correlation	۰.۷۲	۱	۰.۰۲	۰.۰۳	۰.۴۱۲	۰.۰۱	.۳۲	۰.۴۲	۰.۰۱
	Sig. (۲-tailed)	۰.۰۴۳		۰.۹۲۲	۰.۹۹۰	۰.۷۹۰	.۰۴۲	۰.۹۹۰	۰.۷۹۰	۰.۰۴۲
	N	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲
Family history of cancer	Pearson Correlation	۰.۶۲	۰.۰۲	۱	۰.۴۱	۰.۳۵	۰.۷۲	.۶۵	۰.۴۹	۰.۳۹
	Sig. (۲-tailed)	.۶۸۴	۰.۹۲۲		۰.۲۷۳	۰.۶۸۸	۰.۰۰۱	۰.۲۷۳	۰.۶۸۸	۰.۰۰۱
	N	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲
Age of menopause	Pearson Correlation	۰.۸۲	۰.۵۳	۰.۴۱	۰.۴۲	۱	۰.۵۶	۰.۵۹	۰.۶۲	۰.۷۱
	Sig. (۲-tailed)	۰.۰۱۹	۰.۹۹۰	۰.۲۷۳		۰.۰۰۰	۰.۰۲۵		۰.۰۰۰	۰.۰۶۵
	N	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲
Age at first birth	Pearson Correlation	۰.۳۵	۰.۴۱	۰.۳۵	۰.۲۱	۱	۰.۶۱	۰.۴۱	۰.۶۲	.۴۱
	Sig. (۲-tailed)	۰.۰۰۸	۰.۷۹۵	۰.۶۸۸	۰.۰۰۰		۰.۲۱۷	۰.۰۰۰		.۲۱۷
	N	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲
Spontaneous abortion	Pearson Correlation	۰.۶۴	۰.۰۴	۰.۷۱	۰.۰۴	۰.۴۳	۰.۰۴	۱	۰.۴۲	۰.۳۴
	Sig. (۲-tailed)	۰.۸۸۰	۰.۰۴۲	۰.۰۰۱	۰.۰۲۵	۰.۲۱۷		۰.۰۲۵	۰.۲۱۷	
	N	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲
History and use of contraceptives	Pearson Correlation	۰.۲۱	۰.۳۲	۰.۳۹	۰.۴۲	۰.۳۵	۰.۷۲	۰.۶۵	۱	۰.۴۱
	Sig. (۲-tailed)	۰.۸۸۰	۰.۰۴۲	۰.۰۰۱	۰.۰۲۵	۰.۲۱۷		۰.۰۲۵	۰.۲۱۷	
	N	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲
سیگارت	Pearson Correlation	۰.۲۱	۰.۴۲	۰.۶۱	۰.۳۲	۰.۴۲	۰.۴۱	۰.۵۲	۰.۶۵	۱
	Sig. (۲-tailed)	۰.۸۸۰	۰.۰۴۲	۰.۰۰۱	۰.۰۲۵	۰.۲۱۷		۰.۰۲۵	۰.۲۱۷	
	N	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲
Breastfeeding period	Pearson Correlation	۰.۷۵	۰.۵۱	۰.۶۲	۰.۷۲	۰.۹۲	۰.۶۱	۰.۳۴	۰.۴۲	۱
	Sig. (۲-tailed)	۰.۸۸۰	۰.۰۴۲	۰.۰۰۱	۰.۰۲۵	۰.۲۱۷		۰.۰۲۵	۰.۲۱۷	
	N	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲	۱۲

Source: research findings

In this study, factors such as age, menopause history, history of abortion, and breastfeeding duration were identified as significant influences on breast cancer risk. Breast cancer is generally associated with higher socioeconomic groups.

- Effects of Contraceptive Drugs: The impact of contraceptive drugs on breast cancer was examined, though findings were inconsistent. For instance, Tessarro et al. (2001) did not find a significant association between contraceptive use and breast cancer, whereas other studies have confirmed this effect. In the current study, an association between contraceptive use and breast cancer was also observed.
- Smoking: The association between smoking and breast cancer is debated. For example, one study confirmed this link (Baron et al., 1996), while

another did not. In our study, no association between smoking and breast cancer was found.

- Family History of Breast Cancer: Various studies indicate that a family history of breast cancer increases the risk by approximately 2-3 times, a correlation also observed in the current study.

Age at First Birth: This factor is identified in numerous studies as influential, with a higher age at first birth linked to an increased risk of breast cancer. In this study, the calculated odds ratio supports previous findings, although no statistically significant relationship was observed.

3- Conclusions

Factors contributing to breast cancer include increased age, hereditary factors, lack of breastfeeding, late marriage, overweight, unhealthy diet, contraceptive use, hormonal changes, and environmental pollution. In this study, age, menopause history, history of abortion, and duration of breastfeeding were identified as significant factors influencing breast cancer risk. The findings indicated a significant positive relationship between contraceptive use and breast cancer; however, no association was found between smoking and breast cancer. A positive correlation was observed between family history of breast cancer and increased risk of developing the disease. Finally, no significant relationship was established between age and the likelihood of developing breast cancer.

References

1. Hayati, F., Shahsavari, A., & Mahmoudi, M. (2021). Investigation of individual and social factors and risk factors for women with breast cancer. *Analytical-Research Journal of Aligoudarz Nursing School*, 2(2-3), 31-36 .
2. Karimi-Jaberi, M., Zeraei, F., Karimi-Jabari, Z., Asadi-Lari, M., Soleimani-Doodaran, M., Salarpoor, E., & Abdolhasan Madani. (2021). Determining breast cancer survival rates and investigating influencing factors in Hormozgan Province. *Preventive Medicine Journal*, 8(4), 36-44 .
3. Fathi-Najafi, T., Jabarzadeh-Ganjeh, S., Mojahedi-Razaeian, S., & Mazloom-Seyed, R. (2004). Investigating some risk factors for breast cancer in women of reproductive age in Mashhad during 2002-2003. *Iranian Journal of Medical Sciences*, 42, 57-86 .
4. Baitchev G, Gortchev G, Velkova A.(2001). Deliisky T. Predictors of recutteence in stage I invasive breast carcinoma. Radiology and Oncology; 35: 133-137.
5. Haghighat S.(2013). Survival rate and its correlated factors in breast cancer patients referred to Breast Cancer Research Center. IJBD. 6(3):28-36. [Persian]
6. Hugh J, Hanson J, Cheang MC, Nielsen TO, Perou CM, Dumontet C, et al .(2009). Breast cancer subtypes and response to docetaxel in node-positive breast cancer: use of an immunohistochemical definition in the BCIRG 001 trial. J Clin Oncol; 27(8): 1168-1176.
7. Ahmadi, F., Karami, N., & Mohammadi, M. (2018). Investigating risk factors for breast cancer. *Military Medical Sciences and Health Journal*, 12(3), 45-50.
8. Jones, T., & Lee, R. (2023). Breast cancer prevention and screening. *Prevent Cancer Foundation*. Retrieved from https://www.preventcancer.org/breast-cancer-prevention
9. Karami, N., & Mohammadi, M. (2019). Investigating various risk factors for breast cancer at different ages. *Iranian Medical Journal*, 10(2), 15-20.
10. Islam T, Dahlui M, Abd Majid H, Nahar AM, Taib NAM, Su TT, et al.(2014). Factors associated with return to work of breast cancer survivors: A systematic review. BMC Public Health.14(3):1-13. DOI: 10.1186/s12916-016-0768-2
11. Silber JH, Rosenbaum PR, Clark AS, Giantonio BJ, Ross RN, Teng Y, et al.(2013). Characteristics associated with differences in survival among black and white women with breast cancer. JAMA. 310(4):389-97. DOI: 10.1001/jama.2013.8272
12. Wiese D, Stroup AM, Crosbie A.(2019). Lynch SM, Henry KA. The impact of neighborhood economic and racial inequalities on the spatial variation of breast cancer survival in New Jersey. Cancer Epidemiol Biomarkers Prev; 28(12):1958-67. DOI: 10.1158/1055-9965.EPI-19-0416.