



Socio-Demographic and Clinical Characteristics of Breast Cancer Patients at Ali Abad Teaching Hospital, Kabul, Afghanistan.

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ABSTRACT

Background

Breast cancer is the most common malignancy among women worldwide, yet systematically collected data from Afghanistan remain scarce. This study aimed to characterize socio-demographic profiles, stage at presentation, treatment patterns, and short-term outcomes of breast cancer patients treated at Ali Abad Teaching Hospital, Kabul.

Methods

In this retrospective hospital-based descriptive study medical records of 232 patients diagnosed between January 2023 and December 2024 were reviewed, supplemented by structured telephone interviews. Patient flow was documented, including numbers screened, excluded, and included. Outcomes were defined as *cured* (disease-free at last follow-up), *alive but not cured* (persistent/recurrent disease), and *death* (deceased due to breast cancer or related complications).

Results

The mean age was 44.1 years (SD = 11.5). Most were married (93.2%) and of poor socioeconomic status (84.2%). Advanced disease was common (T4: 35.8%; N1/N2: 77.9%). Mastectomy was the predominant surgical treatment (97.6%). At last follow-up, 22.4% were deceased, 71.6% alive with persistent disease, and 6% disease-free.

Conclusion

Breast cancer in Afghanistan often presents at younger ages and advanced stages, with poor status at last follow-up. These findings provide baseline descriptive evidence and highlight the need for awareness, early detection, and improved access to multidisciplinary care.

Keywords: Afghanistan, Breast cancer, Clinical Presentation, Early Detection of Cancer, Risk Factors

Introduction

According to the World Health Organization (WHO, 2022), breast cancer was diagnosed in approximately 2.3 million women globally, resulting in an estimated 670,000 deaths[1]. The disease affects women in all countries and at any age following puberty, although incidence rates increase substantially with advancing age. Global data highlight pronounced disparities in breast cancer burden across different levels of human development. In countries with a very high human development index (HDI), the lifetime risk of breast cancer is about 1 in 12 women, with 1 in 71 dying from the disease. Conversely, in countries with a low HDI, the lifetime risk is lower—approximately 1 in 27 women—yet the probability of death is higher, with 1 in 48 women succumbing to breast cancer [1].

Despite recent global advances in early detection and targeted therapies, breast cancer continues to represent a major public health concern, particularly in low- and middle-income countries. A considerable proportion of cases in these regions are diagnosed at advanced stages, resulting in poor survival outcomes and increased psychosocial distress among patients (Dalton et al., 2006). Socio-demographic factors—including age, marital status, education, and income—alongside clinical characteristics such as stage at diagnosis, significantly influence both clinical outcomes and quality of life (Kampshoff et al., 2016). In South Asia and Afghanistan, systematically collected data on the socio-demographic and clinical profiles of breast cancer patients

remain scarce. This lack of evidence **hinders** the development of targeted strategies for early detection, effective treatment, and psychosocial support. At Ali Abad Teaching Hospital in Kabul, Afghanistan, a major referral center, preliminary observations indicate that many patients present with advanced-stage disease, frequently associated with limited awareness of risk factors and restricted access to timely healthcare services.. However, comprehensive, context-specific data on patient characteristics are lacking. The absence of such information constrains healthcare providers and policymakers in designing evidence-based interventions, identifying vulnerable populations, and optimizing resource allocation [2-5].

Therefore, it is imperative to systematically investigate the socio-demographic and clinical characteristics of breast cancer patients at Ali Abad Teaching Hospital. This study aimed to provide baseline descriptive evidence on breast cancer patients treated at Ali Abad Teaching Hospital, Kabul, through a retrospective chart review.

Methods and Materials

Study Design

This study employed a retrospective hospital-based descriptive design to examine the demographic and clinical characteristics of breast cancer patients. Data were obtained from hospital medical records and supplemented by structured telephone interviews. Telephone interviews were conducted with patients or their family members to obtain missing demographic and outcome data, and verbal informed consent was obtained before each interview. This design was appropriate for describing the distribution of variables and their relationships at a single point in time. The study is reported following the STROBE guidelines for cross-sectional studies.

Participants and Setting

The study was conducted at Ali Abad Teaching Hospital, Kabul. Included all patients diagnosed with primary breast cancer between January 2023 and December 2024. Inclusion criteria included documented diagnosis of primary breast cancer, complete demographic/clinical data, at least one follow-up. Exclusion criteria included incomplete records, duplicates, and secondary breast cancers. Of 266 records screened, 23 were excluded due to incomplete data, 4 were duplicates, and 7 were secondary breast cancers, leaving 232 eligible patients.

Data Collection

Extracted from hospital records and telephone interviews. Variables included demographics, tumor characteristics, and treatment status (Table 1).

Table 1. Summary of Demographic, Clinical, and Outcome Variables Assessed in the Study

Category	Variables
Demographic	Age, sex, weight, height, marital status, ethnicity, socioeconomic status, geographic location
	Tumor characteristics (size, stage, TNM classification), treatment modalities (surgery, chemotherapy), risk factors (family history)
Clinical	Treatment status :cured (disease-free at last follow-up), alive but not cured (persistent/recurrent disease), and death (deceased due to breast cancer or related complications)
Outcome	

Data Analysis

Data were compiled and analyzed using the Statistical Package for the Social Sciences (SPSS) version 22. Data entry, cleaning, and validation were performed to ensure accuracy and consistency. Continuous variables such as age and tumor size were summarized using measures of central tendency (mean or median) and dispersion (standard deviation or interquartile range), depending on distribution. Categorical variables such as sex, marital status, and ethnicity were summarized as frequencies and percentages. Results were presented in tables and figures, and findings were interpreted in relation to existing literature and study objectives.

Ethical Considerations

This observational study utilized secondary data from medical records, with strict adherence to ethical principles throughout the research process. Ethical approval was obtained from the Scientific Research Committee of Kabul University of Medical Sciences prior to study initiation, (Protocol No.13, Agenda30,dated18/9/1403). The study protocol, including objectives, methodology, and data protection measures, was reviewed and approved. Patient anonymity was ensured by removing or coding personal identifiers such as names, addresses, and national identification numbers during data collection and analysis. Data were used exclusively for the purposes outlined in the research protocol and were not shared with unauthorized parties. Findings were reported transparently and objectively, ensuring evidence-based and unbiased interpretation.

Results

This study analyzed the socio-demographic and clinical characteristics of 232 breast cancer patients treated at Ali Abad Teaching Hospital. The findings are presented below, with key distributions summarized in Tables 2–4.

Demographic Characteristics

The mean age of patients was 42.9 years (SD = 12.1), ranging from 14 to 90 years. Mean weight was 63.7 kg (SD = 14.1), and mean height was 154.3 cm (SD = 6.9). The majority of patients were female (98.7%), with only 1.3% male. Most patients were married (90.1%), and the predominant ethnic groups were Pashton (38.4%) and Tajik (35.3%). Patients originated from 30 provinces, with the highest representation from Kabul (27.6%) and Nangarhar (8.6%). A large proportion (87.5%) reported no family history of breast cancer. Socioeconomic status was predominantly poor (84.1%), with only 5.6% reporting good status (Table 2).

Table 2. Demographic Characteristics of Breast Cancer Patients (N = 232)

Variable	Category	n	%
Sex	Female	229	98.7
	Male	3	1.3
Marital status	Married	209	90.1
	Single	21	9
	Widowed	2	0.9
Ethnicity	Pashtun	89	38.4
	Tajik	82	35.3
	Hazara	38	16.4
	Uzbek	13	5.6
Province of origin	Other	10	4.3
	Kabul	64	27.6

Table 2 (Continued).

Variable	Category	n	%
	Nangarhar	20	8.6
	Parwan	14	6.0
	Badakhshan	13	5.6
	Other provinces (<10)	121	52.2
	Positive	29	12.5
Family history	Negative	203	87.5
Socioeconomic status	Poor	195	84.1
	Intermediate	24	10.3
	Good	13	5.6

Family history refers to first-degree relatives with breast cancer.
Socioeconomic status was classified using hospital records and patient self-report.

Clinical Characteristics

Tumors were located in the right breast in 50.0% of cases, the left breast in 47.4%, and bilaterally in 2.6%. Among the 232 patients, 81.9% already had a confirmed histopathological diagnosis of breast cancer at the time of admission, while 14.2% presented with breast masses and were subsequently diagnosed during this hospital visit. The remaining 3.9% presented with other symptoms (e.g., nipple discharge, skin changes, or pain) that led to a breast cancer diagnosis. Mastectomy was the most common definitive surgical procedure (60.3%), followed by breast-conserving surgery (17.2%) and diagnostic biopsy (22.4%). Advanced tumor size was prevalent, with 44.0% classified as T4 and 31.9% as T2. Lymph node involvement was frequent, with N1 (41.8%) and N2 (37.1%) being the most common. Metastasis was absent in 65.5% of patients (M0), while 34.5% had distant metastasis (M1) (Table 3)

Table 3. Clinical Characteristics of Breast Cancer Patients (N = 232)

Variable	Category	n	%
Tumor location	Right breast	116	50.0
	Left breast	110	47.4
	Bilateral	6	2.6
Surgery type	Mastectomy	140	60.3
	Biopsy	52	22.4
	Breast-conserving	40	17.2
Tumor size (TNM)	T1	12	5.1
	T2	73	31.5
	T3	19	8.2
	T4	100	43.1
	Unknown T	28	12.1
Lymph node status (TNM)	N0	19	8.2
	N1	97	41.8
	N2	86	37.1
	N3	30	12.9

Table 3 (Continued).

Variable	Category	n	%
Metastasis (TNM)	M0 (no metastasis)	152	65.5
	M1 (metastasis)	80	34.5
TNM classification follows AJCC 8th edition guidelines. T1–T4: tumor size/extent; N0–N3: lymph node involvement; M0/M1: absence/presence of distant metastasis. Biopsy refers to diagnostic procedures only; mastectomy and breast-conserving surgery are definitive therapeutic procedures.			

Patient Outcomes

Patient outcomes revealed that 71.6% of patients were alive but not cured, 22.4% died, and only 6.0% were reported as cured (Table 4).

Table 4. Patient Outcomes (N = 232)

Outcome	N	%
Cured	14	6.0
Alive but not cured	166	71.6
Death	52	22.4

Cured = disease-free at last follow-up. “Alive but not cured” = persistent or recurrent disease. “Death” = mortality due to breast cancer or related complications.

Discussion

This study provides a comprehensive overview of the socio-demographic and clinical characteristics of breast cancer patients treated at Ali Abad Teaching Hospital, Kabul. By situating these findings within regional and global literature, important differences and similarities emerge that have implications for public health strategies, clinical practice, and future research.

The mean age at diagnosis in this cohort was 42.9 years, substantially younger than the average age reported in Western countries, where breast cancer typically presents around 60 years of age [6]. This earlier onset is consistent with reports from other low- and middle-income countries (LMICs) in South Asia and the Middle East, where mean ages at diagnosis often fall between the early and late 40s [7]. For example, studies from Iran and India reported mean ages of 48.4 [7] and 46.9 years, respectively [8]. These differences may reflect population demographics, genetic predispositions, reproductive patterns, and environmental exposures. The younger age profile observed in Afghanistan underscores the need for awareness campaigns and screening programs targeting younger women, as well as research into region-specific risk factors.

Anthropometric characteristics in this cohort (mean weight 63.7 kg; mean height 154.3 cm) were broadly comparable to regional data, such as Iranian cohorts reporting averages of 66.1 kg and 158.1 cm [7]. These measures likely reflect general population characteristics and may be influenced by socioeconomic and nutritional status.

As expected, breast cancer was overwhelmingly a disease of women, with 98.7% of cases occurring in females and only 1.3% in males. This aligns with global epidemiology, where male breast cancer accounts for approximately 1% of cases [9, 10]. While rare, male breast cancer remains clinically significant and warrants inclusion in awareness and diagnostic strategies.

The majority of patients were married (90.1%), reflecting local demographic and cultural patterns. Although marital status is not a direct risk factor, evidence suggests that married individuals may experience better survival outcomes, potentially due to social support and greater healthcare engagement [11].

A positive family history was reported in 12.5% of patients, consistent with global estimates that 10–15% of breast cancer cases are familial [12]. The predominance of sporadic cases highlights the importance of population-wide screening and prevention strategies, rather than focusing solely on high-risk families.

Tumor laterality showed a slight predominance of right-sided tumors (50.0%) compared to left-sided (47.4%), with bilateral disease in 2.6%. This distribution is consistent with prior studies reporting near-equal laterality, with some suggesting a minor right-sided predominance [13, 14]. The clinical relevance of laterality remains limited, as prognosis is more strongly determined by tumor size, grade, and nodal status.

Late-stage presentation was a defining feature of this cohort. Nearly half of patients (44.0%) had T4 tumors, and lymph node involvement was common (N1: 41.8%; N2: 37.1%). In contrast, large multicenter studies from India reported that two-thirds of patients were diagnosed at early stages (I–II) [15]. The predominance of advanced disease in Afghanistan likely reflects limited awareness, delayed presentation, and restricted access to diagnostic services.

Surgical management was dominated by mastectomy (60.3%), with breast-conserving surgery (17.2%) and biopsy (22.4%) performed less frequently. This contrasts with trends in high-income countries, where breast-conserving surgery and reconstructive procedures have become increasingly common [16]. The high mastectomy rate in this cohort may be explained by advanced stage at diagnosis, limited reconstructive services, and patient or provider preferences.

The burden of advanced disease was further reflected in high rates of metastasis (M1: 34.5%) and poor outcomes. Overall, only 6.0% of patients were cured, while 71.6% remained alive with persistent or recurrent disease and 22.4% had died. These outcomes are markedly worse than those reported in populations with earlier detection, where survival rates exceed 95% for Stage I–II diseases [15]. The findings highlight the urgent need for improved screening, early detection, and access to comprehensive oncologic care in Afghanistan.

This study has several limitations. First, the retrospective design relied on hospital records and telephone interviews, which may be subject to incomplete documentation and recall bias, introducing potential information bias. Second, the single-center referral population may not represent breast cancer patients across Afghanistan, and selection bias may have occurred as this was a single tertiary referral center. Third, detailed information on molecular subtypes, systemic therapy, and long-term follow-up was unavailable, restricting the ability to assess prognostic factors comprehensively. Despite these limitations, the study provides valuable baseline descriptive evidence on breast cancer in Afghanistan.

Conclusions

This retrospective descriptive study provides baseline evidence on the socio-demographic and clinical characteristics of breast cancer patients treated at Ali Abad Teaching Hospital, Kabul. The findings suggest that breast cancer in this population often presents at a

younger age and at more advanced stages, with mastectomy as the predominant surgical approach. At last follow-up, most patients remained alive with persistent disease, while a smaller proportion were disease-free or deceased. These outcomes reflect status at last contact rather than formal survival estimates, and should be interpreted cautiously given incomplete follow-up and limited cause-of-death verification.

The study highlights important gaps in breast cancer management in Afghanistan. While the results cannot establish determinants or generalize to the national population due to referral bias and single-center design, they suggest the need for improved awareness, earlier detection, and expanded access to multidisciplinary care. The potential recommendation for screening programs targeting younger women should be considered cautiously, as this study did not evaluate screening effectiveness or establish an appropriate screening age. Strengthening diagnostic capacity, integrating breast cancer screening into national health programs, and developing cancer registries may help address these challenges. Future prospective, multicenter studies with standardized staging, molecular profiling, and long-term follow-up are essential to better understand prognostic factors and guide policy interventions.

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Conflicting interest

The authors declare that they have no conflicting interest.

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References

1. World Health Organization (WHO). Breast cancer fact sheet. 2022.
2. Wijeratne DT, Gunasekera S, Booth CM, Promod H, Jalink M, Jayarajah U, et al. Demographic, tumour, and treatment characteristics of female patients with breast cancer in Sri Lanka: results from a hospital-based cancer registry. *BMC Cancer*. 2021;21(1):1175.
3. Islam D, Islam MS, Dorin SI, Jesmin. Prevalence of breast cancer subtypes among different ethnicities and Bangladeshi women: demographic, clinicopathological, and integrated cancer informatics analysis. *Cancer Inform*. 2023;22:11769351221148584.
4. Freeman JQ, Sheade J, Zhao F, Olopade OI, Nanda R, Huo D. Demographic and clinical characteristics associated with familiarity, interest, and use of integrative therapies among patients with breast cancer. *Integr Cancer Ther*. 2023;22:15347354231185122.
5. Konieczny M, Cipora E, Sygit K, Fal A. Quality of life of women with breast cancer and socio-demographic factors. *Asian Pac J Cancer Prev*. 2020;21(1):185.

6. DeSantis CE, Ma J, Gaudet MM, Newman LA, Miller KD, Goding Sauer A, et al. Breast cancer statistics, 2019. *CA Cancer J Clin.* 2019;69(6):438-451.
7. Harirchi I, Karbakhsh M, Kashefi A, Momtahan AJ. Breast cancer in Iran: results of a multi-center study. *Asian Pac J Cancer Prev.* 2004;5(1):24-27.
8. Sandhu D, Sandhu S, Karwasra R, Marwah S. Profile of breast cancer patients at a tertiary care hospital in North India. *Indian J Cancer.* 2010;47(1):16-22.
9. Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin.* 2018;68(6):394-424.
10. options over a 12-year analysis. *Breast Cancer Res Treat.* 2019;173(2):267-2
11. Giordano SH. Breast cancer in men. *N Engl J Med.* 2018;378(24):2311-2320.
12. Aizer AA, Chen MH, McCarthy EP, Mendu ML, Koo S, Wilhite TJ, et al. Marital status and survival in patients with cancer. *J Clin Oncol.* 2013;31(31):3869-3876.
13. Bhagat TS, Gulati G, Bhagat R, Gupta S. Epidemiology, risk factors, and advances in the management of breast cancer. *Santosh Univ J Health Sci.* 2024;10(1):97-104.
14. Siotos C, McColl M, Psoter K, Gilmore RC, Sebai ME, Broderick KP, et al. Tumor site and breast cancer prognosis. *Clin Breast Cancer.* 2018;18(5):e1045-e1052.
15. Schlosser S, Molho RB, Karminsky N, Barsuk D, Goldberg Y, Friedman E, et al. Abstract P2-09-16: Clinicopathological features and outcome of breast cancer in CHEK2 germline mutation carriers. *Cancer Res.* 2022;82(4 Suppl):P2-09-16.
16. Reddy VA, Sarin R, Panda D, Hanitha R, Jain J, Chatterjee S, et al. A multicentric retrospective study into the epidemiological distribution of breast cancer patients in India. *J Cancer Res Ther.* 2023;19(Suppl 2):S869-S876.
17. Jonczyk MM, Jean J, Graham R, Chatterjee A. Surgical trends in breast cancer: a rise in novel operative treatment