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AWARENESS OF RISK FACTORS FOR BREAST CANCER, SELF-BREAST EXAMINATION AND ITS ASSOCIATED FACTORS IN SKARDU, GILGIT BALTISTAN: A COMMUNITY BASED SURVEY

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Article Info

Abstract

Background: Breast cancer (BC) is a leading cause of cancer-related morbidity and mortality among women in Pakistan, with one in nine at lifetime risk. Early detection through breast self-examination (BSE) is critical, yet its practice depends on adequate awareness of risk factors, which remains poorly characterized in rural regions like Skardu, Gilgit-Baltistan.

Objective: This study assessed the awareness of BC risk factors and BSE practices and identified associated sociodemographic factors among women aged ≥15 years in Skardu.

Methods: A community-based cross-sectional survey was conducted from November 2022 to June 2023. Using multistage stratified random sampling, 412 women were enrolled. Data were collected via a structured questionnaire assessing sociodemographic, medical history, and awareness of BC risk factors and BSE. Descriptive statistics and chi-square tests were used for analysis.

Results: Awareness was critically low: 73.8% (n=304) could not name a familial risk factor, and only 4.6% (n=19) knew the correct BSE procedure. High awareness of BC risk factors was significantly associated with higher perceived income ($p=0.051$), personal history of BC ($p=0.044$), and contraceptive type ($p=0.007$). Awareness of BSE was linked to marital status, education level, breastfeeding history, and family history of BC ($p<0.05$).

Conclusion: There is a profound deficit in knowledge regarding BC risk factors and BSE among women in Skardu. Targeted, culturally sensitive awareness campaigns and educational interventions are urgently needed to promote early detection practices in this region.

Keywords:
Breast cancer; Breast self-examination; Risk factors; Awareness; Skardu; Pakistan; Women's health.

Introduction

Breast cancer (BC) constitutes a major and growing public health challenge in Pakistan, which bears the highest incidence rate in Asia (1-3). It is estimated that one in every nine Pakistani women is at risk of developing BC in her lifetime (4). A critical factor in the country's high BC mortality is late-stage diagnosis, often stemming from low awareness of risk factors, symptoms, and the importance of early detection methods such as breast self-examination (BSE) (5-7).

While clinical breast examination and mammography are effective screening tools, BSE remains a vital, accessible, and low-cost first step for early detection, particularly in low-resource settings (8, 9). It empowers women to notice changes in their own breasts and seek timely medical consultation (10, 11). However, the practice of BSE is intrinsically linked to an individual's knowledge of BC, its warning signs, and associated risk factors (12-14).

Existing research from urban centers in Pakistan, such as Karachi and Quetta, indicates suboptimal levels of BC awareness and BSE practice among women and students (15-19). However, there is a paucity of data from remote, mountainous regions like Gilgit-Baltistan, where geographic isolation, cultural norms, and potentially limited health infrastructure may create unique barriers to health information and behavior (15, 20).

This study, therefore, aimed to assess the awareness of conventional BC risk factors and BSE practices among women of reproductive age (≥15 years) in District Skardu, Gilgit-Baltistan. A secondary objective was to identify the sociodemographic factors associated with this awareness. The findings are intended to inform the development of targeted, context-specific health education programs to bridge this knowledge gap and promote early detection behaviors in this underserved population.

Methodology

A community-based cross-sectional study was conducted in District Skardu, Gilgit-Baltistan, from November 2022 to June 2023. The study population consisted of female residents aged 15 years and above. A multistage stratified random sampling technique was employed to select participants. First, two union councils were randomly selected from the district, followed by the convenient selection of four tehsils. Eligible women were then systematically sampled from household lists within these areas. The sample size was calculated using OpenEpi software, version 3.01. Assuming a 50% anticipated frequency of breast cancer awareness (due to absence of prior local data), a 95% confidence level, a 5% margin of error, and a total female population of 214,848 for Skardu district, the initial minimum sample size was 384. This was inflated by 10% to account for potential non-response, yielding a final sample of 412 participants.

Data was collected using a pre-tested, structured questionnaire administered in person by the principal investigator. The instrument comprised five sections: (1) sociodemographic characteristics, (2) personal and family history of cancer, (3) history of contraceptive use, (4) knowledge, attitude and practice of breast self-examination (BSE) and (5) awareness of conventional breast cancer risk factors. Prior to main data collection, a pilot study was conducted on 10% of the sample (n=41) to assess the questionnaire's clarity

and reliability, which yielded a Cronbach's alpha of 0.645. Written informed consent was obtained from all participants before interview.

Data analysis was performed using the Statistical Package for the Social Sciences (SPSS), version 26. Descriptive statistics were computed for all variables, with categorical data presented as frequencies and percentages. Composite scores for awareness of breast cancer risk factors and BSE were calculated and dichotomized into "low" and "high" categories based on median splits for analytical purposes. Associations between sociodemographic variables (independent variables) and awareness levels (dependent variables) were assessed using the Chi-square test of independence. A p-value of less than 0.05 was considered statistically significant. Ethical approval for the study was obtained from the Institutional Review Board of the Pakistan Institute of Community Ophthalmology, Khyber Medical University, Peshawar.

Results

A total of 412 women participated in the study, with a mean age of 28.4 years (SD ± 10.2). The majority were young, aged 15-25 years (52.9%, n=218), unmarried (52.4%, n=216), and had attained higher education (51.7%, n=213). Nearly half of the participants (47.1%, n=194) reported having no personal source of income. A very small proportion reported a personal history of breast cancer (2.4%, n=10) or a family history of the disease (3.9%, n=16). The sociodemographic and medical characteristics of the participants are summarized in Table 1.

Table 1. Sociodemographic and Medical Characteristics of Study Participants (N=412)

Characteristic	Category	Frequency n (%)
Age (years)	15-25	218 (52.9)
	26-35	99 (24.0)
	36-45	40 (9.7)
	≥46	55 (13.4)
Marital Status	Married	181 (43.9)
	Unmarried	216 (52.4)
	Widowed/Divorced	15 (3.6)
Education Level	Uneducated	46 (11.2)
	Primary	44 (10.7)
	Secondary	109 (26.5)

	Higher Education	213 (51.7)
Personal History of BC	Yes	10 (2.4)
	No	402 (97.6)
Family History of BC	Yes	16 (3.9)
	No	396 (96.1)

Overall awareness was found to be critically low. More than half of the participants (51.5%, n=212) had low awareness regarding established risk factors for breast cancer. A striking 73.8% (n=304) could not identify any risk factor associated with family history (e.g., genetic predisposition). Similarly, 76.0% (n=313) were unaware of modifiable personal risk factors, such as never having breastfed a child, which was correctly identified by only 10.2% (n=42) of respondents.

Knowledge and practice of Breast Self-Examination (BSE) were markedly deficient. Nearly two-thirds of women (65.3%, n=269) had low overall awareness of BSE. Only 4.6% (n=19) knew the correct procedure for performing BSE. While awareness of specific symptoms was higher for example 58.0% (n=239) knew BC could cause a sudden change in breast size, this knowledge did not translate to understanding of the screening method itself (Table 2).

Table 2. Awareness of Breast Cancer Symptoms and Breast Self-Examination (N=412)

Awareness Item	**Yes, n (%)**	**No, n (%)**
BC can form a painless lump in the breast.	177 (43.0)	235 (57.0)
BC may cause fluid discharge/bleeding from the nipple.	157 (38.1)	255 (61.9)
BC may cause a wound around the nipple.	200 (48.5)	212 (51.5)
BC can create skin redness of the breast.	215 (52.2)	197 (47.8)
BC may cause a sudden change in breast size.	239 (58.0)	173 (42.0)
BC may cause a sudden change in breast shape.	206 (50.0)	206 (50.0)
Knows the correct BSE procedure.	19 (4.6)	393 (95.4)

Chi-square analysis revealed several significant associations between sociodemographic factors and awareness levels. Higher awareness of breast cancer risk factors was significantly associated with a higher perceived level of income (p=0.051), having a personal history of breast cancer (p=0.044), and the type of contraceptive used (p=0.007).

General awareness of breast cancer (symptoms and nature) was strongly associated with higher education levels ($p<0.001$), professional occupation ($p=0.027$), higher perceived income ($p<0.001$), and having a family history of breast cancer ($p=0.002$).

Awareness of BSE was significantly linked to marital status ($p=0.039$), education level ($p=0.001$), breastfeeding history ($p=0.036$), and having a family history of breast cancer ($p=0.031$). Detailed results of the inferential analysis are presented in Table 3.

Table 3. Factors Associated with Awareness of Breast Cancer and Self-Examination (Chi-square test)

Independent Variable	**Awareness of BC Risk Factors** (p-value)	**General BC Awareness** (p-value)	**BSE Awareness** (p-value)
Age	0.180	0.120	0.121
Education Level	0.084	**<0.001***	**0.001***
Occupation	0.289	**0.027***	-
Perceived Income	**0.051***	**<0.001***	-
Personal BC History	**0.044***	-	-
Family BC History	-	**0.002***	**0.031***
Marital Status	-	-	**0.039***
Breastfeeding History	-	-	**0.036***
Contraceptive Type	**0.007***	-	-

*Statistically significant ($p < 0.05$)

Discussion

This study provides a critical snapshot of the profound knowledge deficit regarding breast cancer (BC) risk factors and self-examination practices among women in Skardu, Gilgit-Baltistan. The findings reveal alarmingly low awareness levels, with only 4.6% of participants knowing the correct Breast Self-Examination (BSE) procedure and a vast majority (73.8%) unable to identify a single familial risk factor for BC.

The extremely low procedural knowledge of BSE (4.6%) is more severe than figures reported in studies from other regions of Pakistan, such as Karachi, where 33.1% of college students reported practicing BSE (15). This disparity may be attributed to Skardu's geographic remoteness, which likely limits access to mass media campaigns and formal health education programs more readily available in urban centers. Our findings align more closely with studies from rural Ethiopia and India, where knowledge gaps are similarly pronounced due to socioeconomic and infrastructural barriers (21, 22). The high recognition of certain symptoms (e.g., change in breast size: 58.0%) compared to abysmal knowledge of preventive practice suggests that public messaging in the region, if any, may be focused on late-stage signs rather than early detection strategies.

The significant association between higher education levels and greater BC awareness ($p<0.001$) is consistent with the global evidence base (23, 24). Education empowers individuals with literacy and critical thinking skills necessary to access and comprehend health information. Furthermore, the strong link between a family history of BC and higher awareness of both the disease and BSE ($p=0.002$ and $p=0.031$, respectively) underscores the powerful role of personal experience as a catalyst for health-seeking information, a phenomenon observed in studies from Brazil and Ghana (25, 26).

Interestingly, economic factors played a nuanced role. While perceived income level was associated with general BC awareness, it showed only borderline significance ($p=0.051$) for awareness of risk factors. This suggests that in this setting, economic security may facilitate access to information channels but does not automatically translate to detailed knowledge of etiology. The finding that women with a personal history of BC had significantly higher awareness of risk factors ($p=0.044$) highlights a missed opportunity for preventive education; the healthcare encounter following diagnosis is a critical "teachable moment" that should be leveraged more effectively.

Several limitations must be considered. The cross-sectional design precludes establishing causal relationships. The use of a close-ended questionnaire may not capture the depth of cultural beliefs or misconceptions influencing behavior. Furthermore, as the sample was restricted to Skardu district, the findings may not be generalizable to all of Gilgit-Baltistan or Pakistan, though they likely reflect challenges in similar remote, underserved communities.

Conclusion

This study concludes that there exists a critical gap in knowledge concerning breast cancer risk factors and self-examination techniques among women in Skardu, Pakistan. Key determinants of this knowledge gap include lower educational attainment, lack of personal or familial experience with BC, and socioeconomic status. The near-total lack of understanding of BSE procedure is particularly concerning, as it represents a lost opportunity for a simple, cost-free method of early detection.

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