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Diagnostic delay in breast cancer diagnosis: the role of health practitioners

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Abstract

Breast cancer is a significant health concern for women in Pakistan, with one in nine women facing a high lifetime risk of being diagnosed with the disease. Accessing timely and appropriate healthcare services for breast cancer patients can be challenging in Pakistan, and understanding the role of different health practitioners is essential to understand the functioning of the informal referral system. Therefore, this study aimed to explore the different aspects of patients' consultations with various health practitioners for diagnosing breast cancer symptoms. Data were collected from 168 breast cancer patients who had consulted local health practitioners before being diagnosed with breast cancer. Descriptive statistics, the Kruskal–Wallis H test, and post hoc tests were used to analyze the data. The study found that most patients consulted general practitioners (59.52%) and pir (56.55%) for their health-related concerns. Consultants referred most patients to diagnostic centers, while pir and hakim referred no patients. Patients visited pir and general practitioners the most, but the average number of visits to pir and hakim was higher than that to other health practitioners ($p < 0.05$). Moreover, pir (130 days) and hakim (120 days) had longer treatment periods than other health practitioners, with hakim charging the highest consultation fees [i.e., Pakistani rupees (PKR) 18,000] and patients incurring the highest travel expenses to visit pir ($p < 0.05$). Our study highlights the challenges faced by breast cancer patients in seeking timely and effective healthcare services. The absence of a formal referral system resulted in prolonged diagnosis times, extensive travel, and financial burdens on the patients. The findings suggest the need to improve general public awareness regarding breast cancer symptoms and establish an active cancer referral system to achieve early diagnosis, timely treatment, and improved quality of life for breast cancer patients, especially those with a lower socioeconomic status.

Keywords

Breast neoplasm; Traditional medicine practitioners; Diagnostic delay; Health personnel; Time factors; General practitioners

1. Introduction

The rapid rise of breast cancer cases and their detrimental impacts on patients and their families have drawn the attention of regional and global authorities over the past few years [1]. Every year, approximately 6 million women are diagnosed with this lethal disease, making this a worsening public health challenge each day [2]. Breast cancer caused 685,000 deaths in 2020, and 7.8 million women diagnosed over the past five years were alive with this disease, making it the world's most prevalent cancer [3]. Moreover, the breast cancer mortality rate in developed countries is decreasing, while developing countries contribute nearly 60% of global deaths [4].

Every ninth woman in Pakistan has a substantial lifetime risk of being diagnosed with breast cancer [5]. Moreover, the highest age-standardized incidence rate of breast cancer has put Pakistan first on the list of Asian countries [6]. Undoubtedly, breast cancer has significantly surged the death tolls in the country, mainly attributed to delayed referrals of patients to healthcare facilities and, ultimately, late diagnosis with advanced stages of breast cancer [7]. In addition, the healthcare system of Pakistan lacks a comprehensive breast cancer registry [8]. This makes the situation worse by indicating that annually reported data, including newly diagnosed cases and the number of deaths, are potentially underreported, which is likely to be relatively higher [8].

Pakistan's current health expenditure per capita per annum is the lowest [i.e., United States (US) $39.5] among all South Asian countries [9]. However, despite low healthcare expenditures, there are various obstacles to the early detection of breast cancer, including a lack of knowledge, socioeconomic status, longstanding cultural beliefs of consulting spiritual and traditional healers, focusing on home remedies, considering the breast as a secret organ and avoiding being examined by male doctors and the limited number of advanced medical facilities [10, 11, 12, 13]. Moreover, it is evident from the literature that Pakistani women use excessive alternative medicines, ignore painless lumps, and consult healthcare practitioners with delays [14]. Access to healthcare facilities is a major issue in most low- and middle-income countries (LMICs), such as Pakistan [10].

Other problems encompass fewer cancer specialty hospitals, a shortage of adequate medical facilities such as mammography, and a dearth of trained health personnel, including oncologists, radiologists, and nurses [15]. Moreover, the national health policy of Pakistan lacks effective training programs that can help combat cancer aptly [10]. According to World Bank statistics, one physician is available for every 1,000 people, indicating a significant difference in the physician-to-patient ratio [16]. In addition, most patients experience difficulties reaching diagnostic facilities in a timely manner owing to the lack of awareness and the absence of a referral system.

Understanding health practitioners' role is crucial to understanding the functionality of the informal referral system prevailing in society, which can help policymakers be well informed while devising future health interventions considering the ground realities. Therefore, this study was conducted to explore the different aspects of patients' consultations with different health practitioners to get diagnosed with their disease since the onset of initial or advanced symptoms of breast cancer.

2. Materials and methods

2.1. Study design and ethics approval

This exploratory study was conducted between August and December 2015, and ethics clearance was obtained from the Institutional Review Board, King Edward Medical University, Lahore/Mayo Hospital (No. 348/RC/KEMU).

2.2. Study setting

The study was conducted in two major public tertiary care hospitals, Mayo Hospital and Jinnah Hospital, Lahore, with operational departments of oncology, surgery, chemotherapy, and radiotherapy.

2.3. Participant recruitment

This study comprised female patients aged 18 years or older who were diagnosed with primary breast cancer at any stage and had been under treatment for at least three

months to a maximum of two years [11, 17]. However, patients with the onset of initial or advanced symptoms of breast cancer who visited directly to seek care at a diagnostic center without consulting a local health practitioner were excluded from the study [11].

2.4. Sample size and sampling technique

This study was part of a previously published study with a sample size of 200 breast cancer patients. However, based on the exclusion criteria of this study, only 168 patients were included. Therefore, the study recruited patients using a purposive sampling technique.

2.5. Study instrument development

Data were collected using a survey questionnaire containing closed- and open-ended questions, duly vetted by field experts and pretested before final use on ten breast cancer patients visiting the targeted study setting [11].

2.6. Data collection

The researcher conducted face-to-face interviews, ranging between 30 and 40 minutes in the respondent's native language, i.e., Urdu, Punjabi, and Saraiki.

2.7. Study measures

The first part of the study instrument collected patients' information regarding sociodemographics (i.e., age, education, marital status, husband's education, monthly household income, geographical location) and the stage of breast cancer. The second part of the questionnaire collected patient information regarding different aspects of health consultations by type of health practitioner, including the number of patients who visited health practitioners, the number of particular but different health practitioners visited by patients, patient visits per practitioner, time spent under treatment, consultation fees, traveling expense, distance covered (from home to healthcare facility), and successful patient referral for the receipt of a breast cancer diagnosis from the diagnostic center.

2.8. Diagnostic delay

The time interval between "the first consultation of patients with healthcare practitioners from the onset of initial symptoms of breast cancer" and "patient referral by healthcare practitioners to a diagnostic center for the receipt of a breast cancer diagnosis" was designated as a diagnostic delay [11].

2.9. Type of healthcare practitioner

Healthcare practitioners refer to spiritual healers, i.e., pir; traditional healers, i.e., hakim and homeopathic doctors; and formal healers, i.e., general practitioners and consultants.

2.10. Statistical analysis

The collected data were analyzed using Statistical Package for Social Sciences 25.00 (SPSS Inc., Chicago, IL, USA). Data were summarized using frequencies, percentages, medians, and interquartile ranges (IQRs). In addition, the Shapiro–Wilk test was applied to test the normality of the data. Based on the data distribution, Kruskal–Wallis H and

post hoc tests were performed to estimate the differences in different aspects of patients' health consultations by type of health practitioner.

3. Results

Table 1 shows that breast cancer patients had an average age of 45 years (IQR = 15). Moreover, the average monthly household income was Pakistani rupees (PKR) 15,250 (IQR = 18,500). Table 1 further shows that 85.12% of breast cancer patients were married, while 14.88% had other marital statuses, including widowed, separated, or single (14.88%). Of the 168 patients, 55.36% had stage III breast cancer, followed by stage IV (28.57%) and stage II (16.07%).

Table 1. Demographic and medical characteristics of breast cancer patients (n = 168).

Demographic and Medical Characteristics		N (%)	Median (IQR)
Age (in years)		-	45.00 (15.00)
Education (in years)		-	0.00 (8.00)
Husband's education (in years)		-	8.00 (6.25)
Monthly household income (in PKR)		-	15,250.00 (18,500.00)
Marital status	Married	143 (85.12)	-
	Others (widowed, separated, single)	25 (14.88)	-
Geographical location	Urban	80 (47.62)	-
	Rural	88 (52.38)	-
Stage of breast cancer	Stage II	27 (16.07)	-
	Stage III	93 (55.36)	-
	Stage IV	48 (28.57)	-

Table 2 depicts that most patients consulted general practitioners (59.52%) and pir (56.55%) for their health-related concerns. However, Pir and hakim referred no patients for breast cancer diagnosis. In addition, consultants' successful referrals were relatively higher (73.21%) than those of general practitioners (53.78%).

Table 2. Health consultations by type of health practitioner (n = 168).

Types of Health Practitioners	Number of Patients Visited Health Practitioners	Successful Patient Referral for the Diagnosis of Breast Cancer
	N (%)	N (%)
Pir	95 (56.55)	0 (0.00)
Hakim	35 (20.83)	0 (0.00)
Homeopathic doctor	22 (13.10)	2 (8.00)
General practitioner	100 (59.52)	64 (53.78)
Consultant	46 (27.38)	41 (73.21)

Of all health practitioners, several pir (185) and general practitioners (119) were visited the most by breast cancer patients (Table 3). However, the average visits of patients to pir (median = 6, IQR = 3) and hakim (median = 4, IQR = 5) were higher than those who consulted other health practitioners, which was also statistically significant ($p < 0.05$). Table 3 further delineates that patients remained under a lengthier treatment period with pir and hakim for an average duration of 130 and 120 days, respectively. Moreover, the consultation fees of hakim were the highest (median = PKR 18,000, IQR = PKR 38,000) among all health practitioners. Furthermore, breast cancer patients have borne the highest travel expenses and visited far-off places to visit pir when compared with other health

practitioners. All the study results were statistically significant and were further confirmed using post hoc tests, which showed the same significant results as mentioned in the footer of Table 3.

Table 3. Differences in health consultations by type of health practitioner (n=168)

Factors Related to Health Consultations	Type of Health Practitioners Visited	Number of Particular but Different Health Practitioners Visited	Median (IQR)	*p value* *
Patient's visit	Pir	185	6.00 (3.00)	0.001 *
	Hakim	37	4.00 (5.00)	
	Homeopathic doctor	25	2.00 (2.50)	
	General practitioner	119	1.00 (1.00)	
	Consultant	56	2.00 (1.50)	
Duration of treatment (in days)	Pir	185	130.00 (115.00)	0.001 *
	Hakim	37	120.00 (180.00)	
	Homeopathic doctor	25	30.00 (66.00)	
	General practitioner	119	30.00 (53.00)	
	Consultant	56	15.00 (23.00)	
Consultation fees (in PKR)	Pir	185	800.00 (1800.00)	0.001 *
	Hakim	37	18,000.00 (38,000.00)	
	Homeopathic doctor	25	400.00 (810.00)	
	General practitioner	119	400.00 (524.00)	
	Consultant	56	1,500.00 (2,200.00)	
Travel expenses (in PKR)	Pir	185	1,360.00 (3,725.00)	0.001 *
	Hakim	37	1,200.00 (1,750.00)	
	Homeopathic doctor	25	120.00 (380.00)	
	General practitioner	119	250.00 (420.00)	
	Consultant	56	400.00 (900.00)	
Distance covered to visit health practitioner (in km)	Pir	185	22.00 (35.00)	0.006 *
	Hakim	37	16.00 (35.00)	
	Homeopathic doctor	25	8.00 (12.50)	
	General practitioner	119	12.00 (11.00)	
	Consultant	56	17.00 (15.00)	

* Factors related to health consultations are compared by health practitioners using the Kruskal–Wallis H test.
** Significant at $p < 0.05$.

Based on the study results, the following pairwise comparisons were conducted to analyze patients' visits for health consultations, duration of treatment, consultation fees, travel expenses, and distance covered to visit the health practitioner. The findings indicate significant differences between the various health practitioners. For patients' visits for health consultations, significant differences were found between general practitioners and both hakim ($p < 0.001$) and pir ($p < 0.001$), as well as consultants and both pir ($p < 0.001$) and hakim ($p < 0.001$), and homeopathic doctors and both pir ($p < 0.001$) and hakim ($p = 0.006$). Regarding the duration of treatment, significant differences were found between consultants and both pir ($p < 0.001$) and hakim ($p < 0.001$), as well as homeopathic doctors ($p = 0.034$); general practitioners and both pir ($p < 0.001$) and hakim ($p < 0.001$), as well as homeopathic doctors ($p = 0.032$); homeopathic doctors with both pir ($p = 0.020$) and hakim ($p = 0.034$). For the consultation fees, significant differences were found between general practitioners and both pir ($p = 0.001$) and hakim ($p < 0.001$), as well as consultants ($p < 0.001$); hakim and both pir ($p < 0.001$), and homeopathic doctor ($p < 0.001$), as well as consultants ($p < 0.001$). Regarding travel expenses, significant differences were

found between homeopathic doctors and both pir ($p < 0.001$) and hakim ($p < 0.001$), as well as general practitioners and both pir ($p < 0.001$) and hakim ($p < 0.001$). Finally, regarding the distance covered to visit the health practitioner, a significant difference was found between homeopathic doctors and pir ($p = 0.040$).

4. Discussion

Our study found that most breast cancer patients were married and diagnosed at advanced stages with lower socioeconomic status. General practitioners were the most commonly consulted health practitioners, while pir and hakim referred to no patients. Consultants referred more patients for breast cancer diagnosis than general practitioners. Patients visited pir and general practitioners the most, but pir and hakim had longer treatment periods, with an average of almost four months each. Hakim charged the highest consultation fees, while patients incurred the highest travel expenses visiting pir. These results were statistically significant.

Our findings are based on quantitative data, increasing the study variables' conceptual understanding by focusing on women with breast cancer. In addition, we used inferential statistics to measure the differences in various aspects of patients' consultations with health practitioners to diagnose their breast cancer since the onset of symptoms, which enabled us to infer a few claims by confirming the study hypothesis. However, our study recruited breast cancer patients exclusively visiting public healthcare facilities; hence, our results may have generalizability concerns regarding patients who seek medical care from private healthcare facilities.

Our study's results are supported by an Indian study that included 100 participants in determining the delay in breast cancer diagnosis caused by healthcare providers [18]. The study highlighted that healthcare providers, including nonregistered doctors and quacks, were significantly associated with a delayed breast cancer diagnosis. The delay was 67.5 days in rural patients, 53.7 days in urban patients, 60.6 days among uneducated patients, and 49.5 days among educated patients [18]. Another Nigerian study assessed the duration of patients presenting to the hospital and the time to treatment initiation for breast cancer and reported that 17.5% of patients were seeking treatment from alternative healthcare providers before reaching the healthcare facility; 26.4% of patients visited a healthcare facility within a month, while 45.3% of patients visited a healthcare facility three months after noticing the symptoms. In addition, 17% of patients delayed a month for diagnosis, whereas 73.4% delayed for more than three months after the first hospital visit. The role of alternative healthcare providers was significantly associated with a delay of more than three months in most cases ($p = 0.017$) [19].

A Ghanaian study recruited 1,184 women diagnosed with breast cancer to determine their associated factors for delayed diagnosis [20]. Most women were less educated and sought healthcare services with a delay since the onset of symptoms, preferably visiting healthcare providers other than doctors and nurses and using herbal remedies for cures [20]. On the other hand, an Indian study's results contradict our findings, highlighting that most breast cancer patients (70.6%) visited a general practitioner before reaching a cancer hospital. Moreover, 50.6% of patients visited one, while 33.5% visited two healthcare providers before reaching the specialized cancer hospital [21].

Various factors prevent patients from seeking proper and timely healthcare services from the onset of their breast cancer symptoms. Many studies have reported different reasons, including but not limited to low literacy rates in the local communities, ignoring potential symptoms of breast cancer, and belief in herbal and spiritual healing [11, 22]. The community's strong belief in herbal and spiritual treatment and their preference for visiting spiritual and traditional healers can be attributed to various factors, including

lack of awareness, fear of surgery, belief in the effectiveness of spiritual medicine, misconception about evil spirit attacks, successful treatment stories of nonconventional healers, and recommendations from family members [11]. In addition, spiritual healing is a preferred option for many people, especially in Muslim countries, due to their strong religious beliefs and belief that the holy script can remedy their illnesses [23]. Furthermore, studies have reported that people often turn to nonconventional healers due to the deep-rooted cultural significance these healers hold in their communities [24].

Moreover, a qualitative study interviewed 23 breast cancer patients using a semistructured interview guide to determine the perspectives of patients, their families, and healthcare providers regarding late diagnosis [25]. Interviews revealed many prospects, such as a lack of awareness about risk factors and symptoms, myths about the disease and treatment, not being hopeful of conventional treatment, fear of allopathic treatment, financial hardships, seeking care from traditional healers, using spiritual medicines, and competing priorities.

It is evident from the literature that the findings from developed countries slightly varied from those in developing countries among breast cancer patients regarding presentation and diagnostic delay. For example, a US-based study reported that many young women with breast cancer visited healthcare facilities even after 90 days of noticing initial symptoms during the self-breast examination, mainly influenced by a lack of financial resources [26].

Based on the scrutinized reasons, the roots of seeking treatment from traditional healers cannot be denied, especially in the population of LMICs, which may be due to family pressure, the level of trust in the healer, perceived benefits, hesitation to seek modern treatment and fear of undergoing the ineffective healthcare system [27]. On the other hand, patient-related factors comprising low literacy, lack of awareness, limited financial resources, use of alternative medicine, and shyness contribute to a patient's late presentation to a healthcare facility [28]. Various studies also reported that for several reasons, most patients visiting a general practitioner could not be successfully referred to diagnostics facilities [29, 30]. Undoubtedly, the healthcare system of developing countries such as Pakistan also plays a significant role in causing unaffordable diagnostic delays owing to the lack of trained doctors in primary healthcare facilities, a lack of female doctors for patients who are averted from seeking medical care from male doctors, the absence of screening facilities, and long distances from home to healthcare facilities [31, 32, 33].

5. Conclusions

In conclusion, our study highlights the absence of a formal referral system for breast cancer patients, leading to prolonged diagnosis times, extensive travel, and financial burdens on the patients. The findings demonstrate that general practitioners are the most commonly consulted health practitioners, but consultants refer more patients for breast cancer diagnosis. Additionally, pir and hakim were visited by patients, but they had longer treatment periods and higher consultation and travel expenses. Given these results, improving general public awareness regarding breast cancer symptoms and instituting an active cancer referral system is crucial to achieving an early diagnosis, timely treatment, and improved quality of life for breast cancer patients, particularly those with lower socioeconomic status.

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supervision, KMG; project administration, KMG, RA, and IHK. All authors have read and agreed to the published version of the manuscript.

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Consent to participate: We confirm that the data used in this study were obtained after obtaining written informed consent from the patients.

Data availability: The data supporting this study's findings are available from Raheel upon reasonable request.

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