RESEARCH ARTICLE

Editorial Process: Submission:07/08/2024 Acceptance:02/23/2025

Pathway of Healthcare for Breast Cancer among Women in an Eastern State of India: A Mixed Method Cross-Sectional Study

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Abstract

Objective: Breast cancer is the most common cancer among women, however the majority of them visit hospitals at the advanced stage. Knowledge of the pathway of care will aid in timely intervention and better prognosis. **Methods and analysis:** A mixed method cross-sectional study was conducted at AIIMS Patna among breast cancer patients. A total of 171 breast cancer patients were enrolled in this study. Piloted study tools were used. Descriptive analysis for quantitative part and manual thematic analysis for the qualitative part were performed. **Results:** Out of total 171 participants, the majority 88.9% (83.3-92.77%) had visited AIIMS Patna indirectly. About 60(20.6%) visited informal providers/quacks and 60(39.5%) of the study participants visited more than one hospital before arriving at AIIMS Patna. The place of residence, treatment delay, and stage of cancer were found to be the independent predictor for the pathway of healthcare for breast cancer. The reasons behind seeking delayed definitive care were identified under two major themes: presentation delay (Misunderstanding/difficulty in identifying symptoms, neglect of disease, lack of awareness about the disease, family support, financial constraints) and treatment delay (misdiagnosis, multiple referrals, dissatisfaction with the treatment, COVID-19 lockdown, informal providers/quacks). **Conclusion:** 9 out of 10 breast cancer patients had not come directly for definitive care and among them, 3 out of 5 had visited multiple healthcare providers. So, it is important to educate the public on breast cancer, make systematized referral pathways, to orient private sectors, and to have trained manpower for screening purposes.

Keywords: Mixed method study- Healthcare Pathway- Breast Cancer

Asian Pac J Cancer Prev, **26 (2)**, 505-513

Introduction

Cancer is one of the leading causes of death globally. One in six fatalities were reported to be due to cancer in 2020, making it among the top causes of death worldwide. Breast cancer is the most common cancer among women. In 2020, about 2.3 million women were affected by breast cancer, and an estimated 0.7 million deaths due to breast cancer were reported, globally. In India, out of 9.9 million total estimated new cancer cases in 2020 among women, around 24.6% cases are due to breast cancer [1, 2]. Breast cancer-related fatalities has been increasing quickly in developing regions when compared to industrialised ones, particularly among middle-aged and elderly people. Young and middle-aged people made up 69% of deaths in 1990 and 72% of deaths in 2019 [3].

Despite the high and increasing burden of breast cancers in India, most breast cancers are diagnosed definitively very late, at the advanced stage of the diseases. Literature from India have shown that more than two third of breast cancer cases present for definitive treatment at stage III or IV [4-6]. Screening of breast cancer is not a routine active phenomenon in India despite provision under NP-NCD program [7]. Low level of awareness about symptoms and risk factors of breast cancer, and lack of awareness and skill of performing the breast self-examination among women further hamper health seeking behaviour among women [8-10]. Psychosocial issues, such as dread of the screening process and worry of receiving a cancer diagnosis, lack of information, cultural norms, poor healthcare delivery system, and financial issues pose as obstacles in screening for breast cancer in India [11]. Lack of active screening helps no further in early detection and results in presentation at advanced stage of cancer for treatment. The delayed presentation at advanced stage results in delayed surgery which has been shown to be consistently associated with increase in mortality with hazard ratio for partial and complete

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mastectomy 1.08(1.03 to 1.13) [12].

Lack of information among others make it difficult for the women to navigate the complex healthcare delivery system for a definitive diagnosis and treatment once symptoms are detected [13]. Studies from Africa have shown as long as 5 years delay between onset of symptoms and reporting to a hospital system [14]. Misdiagnosed at the initial consultation, followed by referral delays, switching between treatment providers, distance from hospitals, lack of knowledge, financial limitations, and logistical problems make the pathway of breast cancer patient non-linear. Effective early therapy is hindered by a considerable patient delay and a provider delay in breast cancer management [15].

Bihar is one of the states in Eastern part of India, and have one of the lowest literacy rates in India [16]. Every year more than 0.14 million cancer cases are registered with more than two third being in advanced cases [5]. Breast cancer is among the top three cancers in the state of Bihar.6 Studies on breast cancer from India have explored the risk factors, prevention, clinical features at presentation and various treatment modalities [4, 5]. Except a couple of studies on breast cancer, none have explored the delayed presentation and diagnosis, pathway of care, reasons for delayed presentation. With the establishment of All India Institute of Medical Sciences Patna (AIIMS Patna), a tertiary healthcare institution of national importance, women from various parts of Bihar come here for definitive management of breast cancer albeit in advanced stages. Knowledge on path of healthcare navigated by women with breast cancer and reasons for delayed presentation will not only help in strengthening the healthcare delivery system for appropriate and prompt care for breast cancer but also help in empowering the women to seek right healthcare at the earliest. This study was conducted to find the pathway of health care among breast cancer patients who have attended AIIMS Patna, to determine the proportion of patients who were aware of different aspects of prevention and control of breast cancer, to identify the reasons for seeking delayed definitive care for breast cancer and to identify the correlates of pathway of health care for breast cancer among breast cancer patients who have attended AIIMS Patna.

Materials and Methods

Study Design

The study adopted a concurrent parallel mixed-method cross-sectional design.

Theoretical framework

We designed this study based on "Model of Pathways to Treatment Framework" [17]. This framework details the appraisal of signs and symptoms of breast cancer, decision on seeking healthcare, diagnosis, and pre-treatment. For our study, final treatment was the one that the women received at AIIMS Patna. All four components were not presented separately, but we combined them together to form pathway of healthcare for breast cancer. Pathway of healthcare for our study is defined by the navigation of healthcare providers [formal – public/private/Indian system of medicine (AYUSH), informal – traditional healers/quacks] since appraisal of symptoms by the women till they arrive at AIIMS Patna. Direct pathway – women who travels directly to AIIMS Patna after appraisal of symptoms and Indirect – travels after attending another healthcare provider.

Study setting and duration

The study has been carried out at AIIMS Patna between December 2021 and October 2022. AIIMS Patna is one of the Institute of National Importance (INI) in India established in Patna, the Capital City of Bihar, India, and caters to the people of Bihar and neighbouring states.

Study participants

Diagnosed patients of Breast Cancer aged 18years and above who provided written informed consent were included. The patients were recruited from Department of Surgical Oncology and Radiation Oncology, AIIMS Patna. Recurrent and cancer in the opposite breast, and male breast cancer patients were excluded. Also, women who are not in stable condition and couldn't communicate were excluded from the study.

Sample size and technique

The sample size was calculated to be 171 using the Taro Yamane formula for the finite population of 299 and a margin of error of 5% [18]. Participants satisfying inclusion and exclusion criteria and giving written informed consent were enrolled till sample size was arrived at. In-depth interviews (IDI) were conducted till information saturation. A total of 10 IDIs were conducted among the patients with breast cancer. In-depth interviews were conducted purposively among patients based on the pathway of health care (one who visited AIIMS Patna directly [5 patients] and those who had a different first point of care before visiting AIIMS Patna [5 patients]) till information saturation. We could not do IDI for patient in early stage as all cases were in advanced stages.

Study tool

Qualitative part

The study tool for the qualitative part included a pilot-tested interview guide. The pilot testing was conducted among 8 patients with breast cancer in April 2022. The final interview guide for IDI was developed after making necessary changes based on the pilot testing. The information sought through in depth interview were about the reasons behind the delay in seeking definitive healthcare.

Quantitative part

The study tool for the quantitative part of the study was in the form of a semi-structured questionnaire with 4 section and was finalized after pre-testing which was carried out among 14 patients in April 2022. Section A included sociodemographic details, Section B included details about risk factors and comorbidities, Section C detailed the pathway of healthcare for breast cancer and Section D had questions related to awareness and different aspects of prevention and control of breast cancer. Total 16

questions pertaining to awareness on various aspects of prevention and control were taken for calculating the final scores. Each correct response was scored 1 and incorrect response was given a score 0, Score more than or equal to 8 is considered to have good awareness.

Data collection and Statistical Analysis

The information collected was entered in Microsoft Excel 2019. The descriptive and inferential statistical analysis was performed using IBM SPSS version 20.0. Appropriate descriptive statistical representations were created for categories. Univariate and Multivariate binomial Logistic regression was used to identify the correlates of pathway of healthcare for breast cancer. For all statistical purposes, the p-value of <0.05 was considered statistically significant.

An electronic voice recorder was used to capture all interview audio for in-depth interviews (IDI). All interviews were transcribed manually into Microsoft Word 2019 in the language of interaction and then translated to English. The transcripts were analysed manually using thematic systemic text condensation technique. The codes, themes, and domains were identified for the reasons behind the delay in seeking definitive healthcare for breast cancer. Non-verbal reactions were noted. We adopted the "Grounded Theory" approach for content analysis of IDIs.

Ethical consideration

The study has been approved by Institute Ethics Committee, AIIMS Patna. [Ref no: AIIMS/Pat/IEC/PGTh/July20/33]

Results

Table S1 shows majority of the study participants were aged 50 to 59 years (52, 30.4%), resided in rural area (137, 80.2%), with no formal education (73, 42.7%), married (152, 88.2%) home maker (158, 92.4%), belonged to middle class (48, 31.6%), had two living children (55, 32.2%).

Less than 10% of the participants reported to have known risk factors of breast cancer like non-practice of exclusive breast feeding (10.6%), use of OCP (9.4%), receipt of HRT (2.9%), Family history of breast cancer (4.7%), and consumption of tobacco (2.3%). Lump was the 1st symptom noticed by more than 80% of the women. Nearly three quarter of the women had advanced breast cancer (Stage 3 and 4). None had breast cancer in stage 1. [Table 1] Only 16% of the patients had good awareness regarding prevention and control of breast cancer.

Pathway of healthcare for breast cancer

Majority 152(88.9%) of the patients had visited AIIMS Patna indirectly. More than half, 167 (57.4%) visited private sector before visiting AIIMS Patna. Interestingly, nearly one fifth (20.6%) had visited informal quacks [traditional healers] for care of breast cancers. More than half of the patients had two or more healthcare providers before coming to AIIMS Patna. [Table 2] [Figure 1 and 2]

Correlates of pathway of healthcare

Table 3 shows predictors of pathway of healthcare

Table 1. Risk Factor and Disease Characteristics of the Study Participants (N=171)

Variable	Category	N	%
Age in years at Menarche (Mean, SD)	13.0 (1.1)		
Attained Menopause	Yes	109	63.7
	No	62	36.3
Exclusive breastfeeding practices	Present	153	89.4
	Absent	18	10.6
Usage of Oral contraceptive pills ever	Yes	16	9.4
	No	155	90.6
Received Hormonal Replacement therapy ever	Yes	5	2.9
	No	166	97.1
Family history of breast cancer	Yes	8	4.7
	No	163	95.3
Consumption of tobacco products	Yes	4	2.3
	No	167	97.7
1st symptom noticed by the patient	Painless lump	139	81.3
	Painful lump	23	13.5
	Pain breast	2	1.2
	Nipple discharge	2	1.2
	Nipple retraction	3	1.8
	Not aware of any symptom	2	1.2
*Stage of breast cancer	Stage 2	45	26.3
	Stage 3	90	52.6
	Stage 4	36	21.1

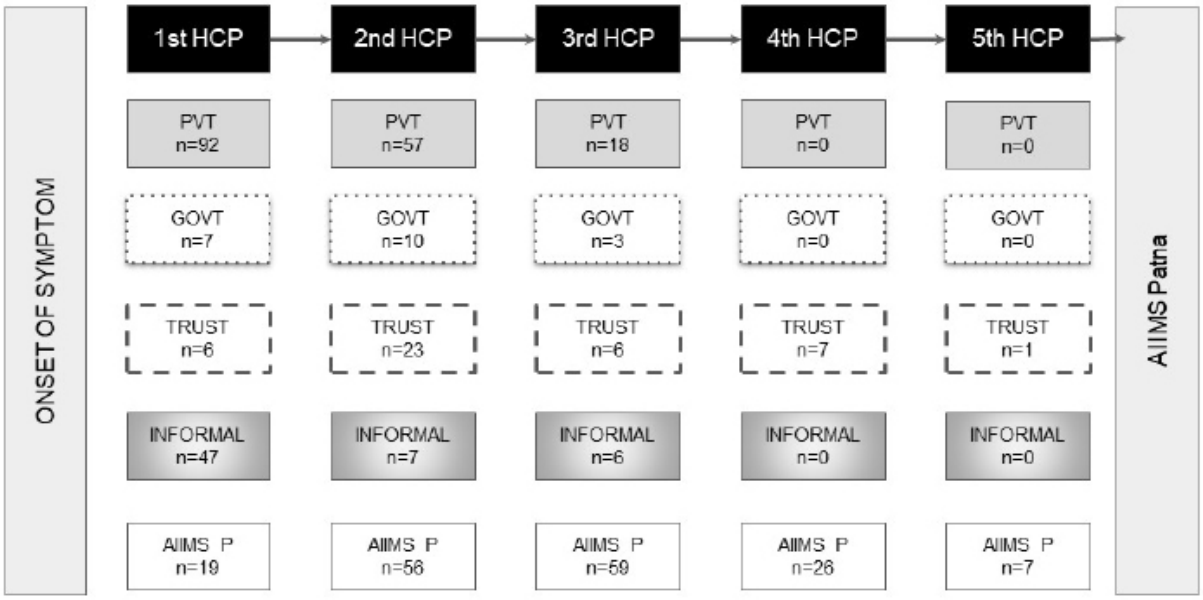

Figure 1. Pathway of Healthcare among the Study Participants (N=171)

Table 2. Pathway of Healthcare for Breast Cancer among the Study Participants (N=171)

Variable	Category	N	%
Pathway of healthcare	Indirect pathway	152	88.9
	Direct pathway	19	11.1
Type of healthcare providers (HCP) (Multiple response)	Informal quacks	60	20.6
	Government hospitals	21	7.2
	Private hospitals	167	57.4
	Trust hospitals	43	14.8
Number of HCP visited before arriving at AIIMS Patna	0	19	11.1
	1	60	35.1
	2	60	35.1
	3	24	14
	4	7	4.1
	5	1	0.6

for breast cancer among the study participant. Age of the patient, the place of residence; treatment delay and stage of cancer to be significant predictor for the pathway of healthcare on univariate logistic regression analysis, whereas on performing multivariate logistic regression analysis, the place of residence [Adjusted Odd's 4.0; 95%CI (1.3-13.1)], treatment delay [Adjusted Odd's 4.2; 95%CI (1.8-19.6)] and stage of cancer [Adjusted Odd's 3.4; 95%CI (1.2-9.4)] were found to be the independent correlates for the pathway of healthcare for breast cancer among the study participants

Reasons for delayed healthcare

A total of 10 IDIs were conducted. All women who participated in the in-depth interview were above 30 years of age and in advanced stage of cancer, the majority of the participants (8 out of 10) were from rural areas, had no formal education. A time gap of one month is considered as delay in our study. The analysis of in-depth interview transcripts showed two main themes as the reasons for seeking delayed definitive care for breast cancer: Presentation delay and treatment delay. Presentation delay is defined as time gap of more than one month between appraisal of symptom and seeking healthcare from a healthcare provider. Treatment delay is defined as time gap of more than one month between contacting a healthcare provider and initiation of treatment.

Presentation delay

i) Misunderstanding/Difficulty in identifying symptoms

Unawareness was the commonest of reasons expressed by participants in delayed healthcare seeking for breast cancer. All the participants self-identified their symptoms. Only one out of the ten participants related the symptom to breast cancer whereas others misinterpreted the symptoms as a trivial one, though 90% of participants had a typical symptom of a breast lump. Some participants had difficulty identifying due to the atypical nature of symptoms like itching, pain over the breast, etc., Some felt that the symptoms were not aggravated enough at the initial stage to call it serious. None of the participants practiced breast self-examination.

"The small swelling initially was barely feelable. I thought it was some usual thing like a wound or something, later the pain started which was absent first" (a patient in their 50s)

"When I kept my hand, I felt a lump. Then I waited for 10-15 days thinking that it might be an insect bite. I thought it will resolve on its own. But it did not happen." (a patient in their 50s)

The main challenges faced by the patients were difficulty in identifying the symptoms and misinterpreting them as simple which made them seek delayed definitive care for breast cancer.

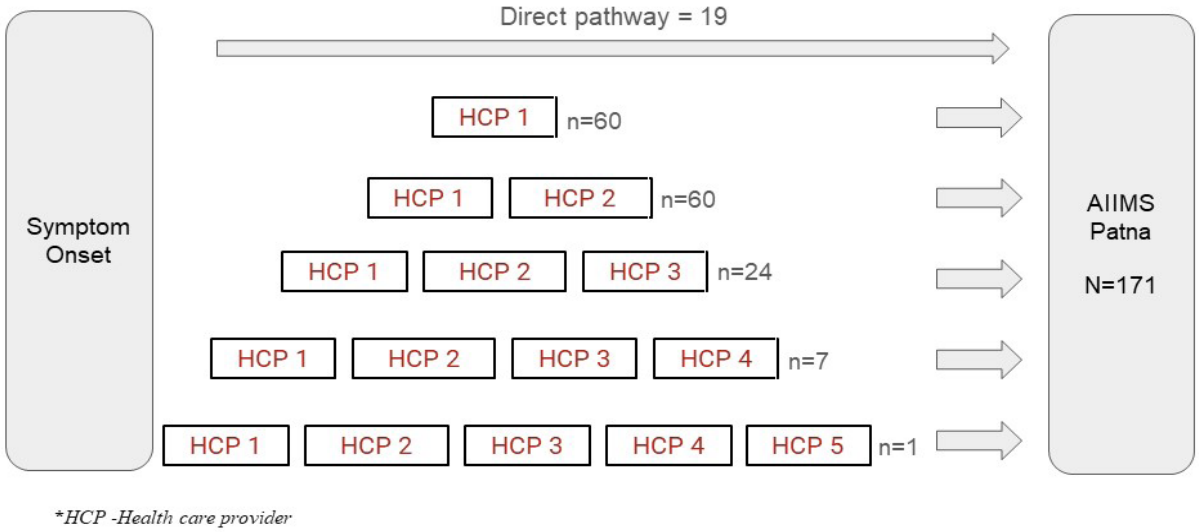

Figure 2. Total Number of Healthcare Providers Visited by the Study Participants before Reaching AIIMS Patna (N=171)

Table 3. Predictors of Pathway of Healthcare for Breast Cancer among the Study Participants (N=171)

Variables	Category	Indirect pathway n (%)	Direct pathway n (%)	Crude odds ratio (95% CI)	Adjusted odds ratio (95% CI)	P value
Age (in years)	< 40 years	30 (96.8)	1 (3.2)	1	1	0.068
	≥ 40 years	122 (87.1)	18 (12.9)	4.4 (0.5-34.4)	7.4 (0.9-63.1)	
Place of residence	Rural	125 (91.2)	12 (8.8)	1	1	0.018
	Urban	7 (20.6)	27 (79.4)	2.7 (0.9-7.5)	4.0 (1.3-13.1)	
Education	No formal education	66 (90.4)	7 (9.6)	0.6 (0.18-1.9)	-	
	Up to class 10th	52 (89.7)	6 (10.3)	0.4 (0.19-2.19)	-	
	More than class 10th	34 (85.0)	6 (15)	1	-	
Stage of cancer	Early	35 (77.8)	10 (22.2)	3.7 (1.4-9.9)	3.4 (1.2-9.4)	0.022
	Advanced	117 (92.9)	9 (7.1)	1	1	
Presentation delay	Absent	97 (87.4)	14 (12.6)	1.5 (0.5-4.6)	0.87 (0.2-3.1)	0.821
	Present	55 (91.7)	5 (8.3)	1	1	
Treatment delay	Absent	90 (84.1)	17 (15.9)	5.3 (1.2-24.2)	4.2 (1.8-19.6)	0.014
	Present	57 (96.6)	2 (3.4)	1	1	
Overall delay	Absent	29 (82.9)	6 (17.1)	1.9 (0.7-5.9)	1.3 (0.3-5.0)	0.682
	Present	123 (90.4)	13 (9.6)	1	1	

Nagelkerke R^2, 0.173

ii)Neglect of disease

Patients who identified the symptoms either neglected it or thought the symptom would resolve on their own as they were unaware of the severity of the disease and the complications. The increase in the intensity of signs and symptoms like an increase in the size of the existing lump, an increase in pain, and the formation of a new lump or swelling in the breast or armpit triggered the participants to seek help.

"It was my fault, I was not serious about the symptoms, If I would have told my family, they would have taken me to the doctor earlier." (a patient in their 50s)

"First, I thought it must be a regular swelling, will get resolved on its own slowly. So, I ignored it." (a patient in their 30s)

"As there was no pain, I took some treatment locally which had some effect on the lump after that I ignored the lump for many months and took home medicines only." (a patient in their 40s)

The timely visit to healthcare is hindered by the ignorance of the symptoms by the patients which postponed their visit to the hospital.

iii) Lack of awareness regarding the disease

Almost all the participants were unaware of the signs, symptoms, and screening for breast cancer before visiting the hospital. Only 1 out of 10 participants had prior knowledge regarding the disease.

"Until I came here, I had no idea regarding the disease and this is serious, If I had known about it prior, I would have never taken risk, never gone to a local doctor. Directly I would have come to AIIMS and started treatment." (a patient in their 40s)

"I did not know that this small swelling could be

cancer. If I had some prior information, I would have been more careful, I had no idea or experiences about this before, after coming to the hospital, I came to know that this was cancer." (a patient in their 50s)

iv) Support from family

Family priorities have been reported to affect their health seeking behaviour. On many occasions no family member was available to accompany them to hospital. Few patients expressed inadequate family support leading to delay in seeking healthcare and on few occasions' postponement of scheduled hospital visit.

"My husband has to work. My children are also working. Since starting I come alone from my village for treatment. I have been running alone since last 8 months and it took time." (a patient in their 50s)

"Everyone at home is going out for work, so they could not take me to the hospital immediately, we have to wait till there was someone at home and arrange money to come to AIIMS Patna" (a patient in their 40s)

v) Financial constraints

Financial inadequacy acted as a barrier for seeking delayed healthcare. Most participants had only one earning member in the family which was insufficient to address the healthcare expenses. So, they had to borrow or wait till they arrange money or they had to search of healthcare at lesser cost. Cost played a role in making them move from private to a public sector hospital or a trust hospital.

"We had some money problems in the home because of which I continued drugs for 2-3 months and then stopped" (a patient in their 30s)

"Financial problem was a huge one. We had to sell land for all these treatments. The main reason is money. We ran to many places and hospitals because someone will say some place, that treatment there is cheap. Even to this hospital, we came for the same reason" (a patient in their 50s)

"After my husband passed away due to blood cancer, my family has only one son who is earning. So, money was a problem. I told my son about my symptoms. But he told everything will be ok. It's only mild pain. It will go on its own. We had no money." (a patient in their 50s)

"If my husband was employed, I could have visited the right doctors. The doctor told me that if I had shown up 6 months earlier, I would have been treated without surgery." (a patient in their 40s)

Treatment delay

i) Negligence/delayed confirmed diagnosis

Lack of timely and correct diagnosis led to delay in seeking healthcare from appropriate provider and timely initiation. About 60% of participants were treated empirically with pain killers for the symptoms without examination or investigation for confirmation of diagnosis. Trapped by visited traditional healers who prescribed herbal powders/ointments for breast lump or self-medication further delayed the diagnosis and subsequent initiation of treatment.

"10 days after the appearance of swelling, mild pain started. 3-4 days later I went to a doctor. But the doctor I visited did not say it was breast cancer. So, 2 months got wasted here and there within which disease worsened" (a patient in their 40s)

"We approached a doctor in Darbhanga who told us it was cancer & the disease had spread. There was no facility for treatment there, so the doctor referred me to AIIMS Patna. The previous doctor we visited did not say this was cancer" (a patient in their 30s)

ii) Multiple referrals

Patients who had visited AIIMS Pana indirectly reported visiting more than one healthcare provider during illness due to accessibility, affordability, wrong diagnosis, or failure in treatment procedures. Lack of appropriate referral pathways led to delays in many cases as the patients ends up visiting multiple facilities due to inappropriate care.

"We went to a local doctor for treatment, the doctor did not say anything about the disease. He told us to go to a nearby district where we have been told that this was cancer, then the surgery was done in a private hospital. After surgery, we went to the government hospital located in a metropolitan city for chemotherapy. we went to many places for treatment." (a patient in their 40s)

iii) Dissatisfaction with the treatment

The long-term treatment and no appreciation of for improvement in signs and symptoms resulted in patients' dissatisfaction. Few participants were identified as advanced stage cancer which made them unfit for certain modalities of treatment.

"Actually, after treatment, I am not well. Many chemotherapy sessions made me feel worse. Even cancer has not reduced in size yet. Chemotherapy is making me very weak" (a patient in their 50s)

"I was given drugs which I continued for one and a half months. But there was no relief" (a patient in their 40s)

iv) COVID-19 lockdown

Most healthcare facilities were dedicated to COVID-19 particularly, which in turn delayed these patients in getting timely treatment. Restricted movement of people due to lockdown delayed hospital for diagnosis and treatment. The clinical stage of the disease advanced due to the inaccessibility of healthcare during the COVID-19 pandemic country-wide lockdown. Each visit mandated RT-PCR testing for COVID-19.

I doubted cancer from starting. When I came to the hospital all investigations were done first. Then they planned surgery. But COVID-19 happened. Surgery got postponed. After the lockdown now the disease has increased a lot. They are saying it reached 4th stage where surgery is not possible. I have to be in chemotherapy only. (a patient in their 50s)

v) Visit to traditional/Informal healthcare providers

Many patients at one point or another have visited informal providers/quacks due to suggestions from relatives, lack of awareness, dissatisfaction over the

healthcare facility or the treatment provided, belief in alternative medicine

"It was a small lump. It wasn't much of an issue earlier I was told to undertake homeopathic treatment and it would resolve but it did not happen and the lump was increasing so we came here" (a patient in their 50s)

Discussion

The present study is a cross-sectional study with a mixed-method approach. The quantitative part helped in finding the pathway of health care, the factors affecting it, and the level of awareness about the prevention and control of breast cancer disease. The qualitative part explored the reason for the delay in seeking definitive healthcare for breast cancer through in-depth interviews. The present study was conducted in a hospital setting. Other available studies have also been conducted in the hospital setting [19-22]. The estimated prevalence of breast cancer for one year in India is around 1.1 lakh. Due to the sparse distribution of cases and restricted movement during the COVID-19 pandemic, a hospital-based study was chosen over the community study. However, a community-based study would have given a much clear picture regarding the pathway of healthcare and awareness about the prevention and control of breast cancer.

In this study, about 84.2% of study participants had poor awareness regarding various aspects of the prevention and control of breast cancer. The awareness was assessed after the presentation at the hospital so the patient was expected to have basic knowledge about the disease yet a significant number of participants were found to have poor awareness. Most patients in this study were in the age group of 40 to 60 years and had no formal education and were from rural areas of Bihar which might be a reason for this poor awareness A study done by Dey et al. [23] reported that nearly 54% of study participants were aware of various aspects of breast cancer and the majority 59.5% had low awareness. In a study conducted by Yusof et al. [24] it was reported that the awareness about breast cancer is significantly high (99.1%). This difference in awareness might be due to the educational level and age group of the participants other. According to Grosse et al. [25] education initiatives aimed at raising awareness of breast cancer should focus on educating women with lower levels of education.

In this study, the majority of the participants (81.3%) had a painless lump as the first noticed symptom, 52.6% were in stage III breast cancer. In the present study, the study participants who visited AIIMS Patna indirectly were 88.9%. The majority of the participants had visited the private sector (53.8%) as their first healthcare provider followed by informal providers/quacks and around 60.5% visited more than one healthcare provider before reaching AIIMS Patna. It was found that women in this study visited different healthcare providers before seeking definitive healthcare which might be due to a lack of awareness and improper referrals. The type of first point of contact was based on the location of the facility, financial reasons, and suggestions from friends/family members. Faith healers and alternate medicine practitioners are much more accessible for the patients to visit. Some women in the study had difficulty identifying the symptoms or ignored the symptoms until it aggravated.

Other studies have also reported patients visiting more than one healthcare provider and approaching traditional healers for the treatment of cancer. Similarly in the study done by Kumar et al. [21], it was shown that 96.3% of patients had a lump in the breast and 55.1% had stage III breast cancer, the patients who visited indirectly to the regional cancer institute were 97.8% and around 70.6% patients had private sector as the first point of care which was higher than the current study. In another study by Grosse Frie et al. [13] 57% had stage III breast cancer and showed that the public sector was the first point of care for 73.7% of participants and around 24.2% visited traditional healers. The study done by Moodley et al. [22] showed that 27% of participants had the public sector as their first healthcare provide In another study by Mburu et al. [19] the patients went to traditional healers, and faith healers due to the belief that disease happened due to unnatural powers.

Among the reasons behind seeking delayed definitive care for breast cancer: Lack of awareness led to misinterpretation of symptoms to a trivial one and in turn caused delay in presentation to the healthcare facility. Poor appraisal of symptoms played a vital role in patients' pathway of healthcare. Correct identification of symptoms helps in timely help seeking which in turn would to better outcome. Similar findings have been reported by other studies as well [20, 22]. Denying the symptoms, ignoring it, waiting till the symptoms got aggravated contributed for the delay, similar results have been shown in other studies [26, 27]. Hesitancy in disclosing the symptoms with the family members, knowledge about the disease and advice from relatives to approach alternate medicine practitioners all these played a significant role in the patient's pathway in seeking healthcare at the right time. Some participants even quoted saying that family obligations and other priorities made them pay less attention towards their health and other studies have reported the same [19, 22, 28]. Approaching informal health care providers and faith healers were also mentioned as one of the reasons for the delay which is supported by other studies [19, 20].

The strength of the study is that it adopted a mixed method cross-sectional approach wherein the quantitative part explored the pathway of care for breast cancer, factors affecting it, and awareness about different aspects of prevention and control of breast cancer; the qualitative part helped in identifying the reasons behind seeking delayed definitive care for breast cancer. The limitations being a hospital-based study, the results may not be generalizable, and also the patient was recruited from a single tertiary care hospital. The level of awareness was assessed after the presentation at the hospital so patients might be sensitized with information regarding the disease. Recall bias might have played a role but being a major incident, this is less likely.

Conclusion and recommendations

Four out of every five patients had visited AIIMS Patna indirectly, and more than half of all patients

had visited two or more healthcare providers before attending AIIMS Patna. Nearly 85% of the patients had poor awareness of risk factors, prevention and control of breast cancer. Mis/non appraisal of signs and symptoms, negligence of disease, lack of knowledge on service availability for appropriate care, poor support from family, financial constraints, mis/delayed diagnosis, improper referrals, COVID-19 pandemic, and futile belief on traditional/informal practitioners/quack for breast cancer management were identified as the reasons behind delayed definitive healthcare for breast cancers.

Community level health workers like ASHA, ANM, Anganwadi workers should sensitize the community on various aspects of prevention and control of cancer including breast cancer. Women should be empowered and provided with health information on service availability for breast cancer screening and management under the NP-NCD (National programme for prevention and control of non-communicable diseases) program by peripheral health workers. Dispelling false beliefs about the disease and information on various health schemes like Ayushman Bharat will prevent financial hardships, and at the same time enable them for seeking appropriate healthcare in a timely manner. The healthcare delivery system should also be strengthened to make systematized referral pathways for appropriate and time management of breast cancers.

Author Contribution Statement

AR, BNN conceptualized and designed the study, AR collected the data, AR, RR analysed and interpreted the results, AR, BNN prepared the initial manuscript. All authors reviewed the results and approved the final version of the manuscript

Acknowledgements

Approval

The study has been approved as student thesis by Institute Research Committee and Institute Ethics Committee, AIIMS Patna. [Ref no: AIIMS/Pat/IEC/PGTh/July20/33]

Conflict of Interest

None.

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