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Analytical study of patients with breast cancer reporting late to Regional Cancer Centre, Allahabad and its association with sociodemographic profile in Indian women

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***Abstract:*-- Breast cancer poses a major threat to public health attributing to the fact that for every two women newly diagnosed with breast cancer, one woman dies of it in India. To explore factors associated with delay in seeking referral for cancer treatment among breast cancer patients and evaluate the association between late presentation of the breast cancer and sociodemographic profile. This analytical study design has been conducted at RCC from January 2015 to January 2016.Total patients enrolled in the study was 376 women. Data were collected and recorded using a structured interview technique by the doctors. 31% (n=117) of patients reported ≤3 months and 69% (n=259) of patients have reported 3 months to RCC. Out of 259 patients, 67% and 33% were attributed to patient delay and system delay respectively. The most common reason of patient delay and system delay were usage of alternative medicines (33%) and delay in sanctioning money through government schemes (33%) respectively. Family history, educational background, economic status, occupation, religion, personal history of breast disease, stage grouping and pattern of presentation were significantly associated with late reporting to RCC ($p < 0.05$). Significant numbers of women with breast cancer in Allahabad experience reported late to RCC due to poor awareness and misconceptions of the disease. Interactive and comprehensive public health strategy should be implemented for annihilation of barriers.**

***IndexTerms*- breast cancer, patient delay, public health, system delay.**

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I. INTRODUCTION

Breast cancer is the most common cancer in women around the world.The incidence and mortality rates vary globally. Breast cancer is the most common noncutaneous cancer in U.S. women, with an estimated 61,000 cases of in situ disease and 246,660 cases of invasive disease in 2016[1].Thus, fewer than one of six U.S. women diagnosed with breast cancer die of the disease. India is facing unparalleled increase in numberof breast cancer caseswithanestimated1.5 lakh (over 10 per cent of all cancers) new cases during 2016 is the number one cancer overall having recently surpassed cervical cancer [2]. There is a rapid change in the trend of developing breast cancer towardsyoungerwomen[3].

Unlike in developed nations, India has no high level structured programs for breast cancer screening and this leads todelay in diagnosing and treating the disease. This is due to lack of effective protocols, low awareness, misconceptions or minimal access to healthcare facilities.

Early stage invasive breast cancer can be treated successfully and the survival outcomes are appreciable if the disease is identified and diagnosed timely. Nevertheless, such scenarios are rare in Indian subcontinent due to discrepancies in health care system.

Better outcome can be achieved by creating awareness and imparting knowledge about the disease among people by health care professionals at community level. Clinicians should strive hard to figure out the reasons for late presentation of the disease and solvingthe issues can change the present scenario

II. OBJECTIVES

The study design has set the following objectives:

1. To explore factors associated with delay in seeking referral for cancer treatment among breast cancer patients
2. To evaluate the association between late presentation of the breast cancer and sociodemographic profile in Indian women.

III. MATERIAL AND METHODS

A. Study Area:

This retrospective study was conducted at Regional Cancer Centre, Allahabad, India in the Department of Radiation Oncology. The institute is recognized by Ministry of Health and Family Welfare, Department of Science and Technology, and Department of Atomic Energy of Regulatory Board, Government of India as research institute.

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Vol 2, Issue 7, July 2017

The institute provides comprehensive facilities for diagnosis, treatment and patient monitoring under one roof.

B. Study design:

The analytical study design is a retrospective study. Total patients enrolled in the study were 376 women presented to Department of Radiation Oncology during January 2015-January 2016.Detailed case history including sociodemographic profile, histopathology, grade, treatment modalities, stage and age at the time of presentation and other important variables were taken.The reasons for delay were asked and recorded. Duration of late reporting was stratified as < 3 months and > 3 months. Reasons associated with delay > 3 months were considered in the study. .Delay in breast cancer presentation was classified as Patient delay (PD) and system delay (SD). PD was defined as the duration from appearance of symptom, to the first consultation and arriving at the definitive diagnosis [4]. SD was defined as duration between diagnoses to the start of definitive treatment[4].

C. Eligibility Criteria

The eligibility criteria for recruiting patients was set in the study.

- ***Inclusion Criteria:***

a) Female sex
b) Age > 18 years
c) Histologically proven invasive breast carcinoma
d) Karnofsky performance status (KPS) > 70
e) All stage groups according to AJCC 2010.

- ***Exclusion Criteria:***

a) Male sex
b) Age < 18 years
c) Histologically unproven cases
d) Psychologically unstable
e) Unwilling to participate in the study.

D. Data collection:

A mandatory work up of each patient included in the study was carried out. Detailed case history including clinical symptoms, duration, parity, menstrual history, residence, occupation, education, economic status, previous treatment history, tumor pathology, staging, personal, family history, and other variables essential for the study were taken and documented. Stage grouping of the disease was as per AJCC 2010 guidelines. All the imaging modalities, histopathological work up hemogram and basic blood profile reports were also considered.

E. ***Data analysis***

Statistical analysis was performed using SPSS, Version14.Chi square test was used to analyze the data statistically. The significant level was determined at p value <0.05.

IV. RESULTS

The proportion of breast cancer cases reported to Regional Cancer Centre, Allahabad were 18.6%. It is the 2nd most common cancer among females as per the hospital based cancer registry. The registry depicted the trend shift towards younger women and the most common age group presented with breast cancer was 40-49 years (27%). The mean age at diagnosis was 47 years. The statistics depicted 54% and 46% of cases were observed in <50 years and >50 years respectively [Fig.1]. The socio-demographic variables including education, occupation, menstrual history, treatment modalities, residence, marital status, breast feeding, parity, religion etc. were taken and recorded [Table1].

Out of 376 women, 31% (117 cases) and 69% (259 cases) were reported < 3 months and > 3 months respectively. The delay was classified as patient delay (PD) and system delay (SD) in breast cancer. Details regarding the delay were asked and recorded. Factors associated for Delay > 3 months were considered in the study. Among 259 cases, 67% and 33% were classified as PD and SD respectively. The most common reason for PD and SD was usage of alternative medicines (33%) and delay in sanctioning money through government schemes (33%) [Fig.2(a) and 2(b)].

In the present study, the socio-demographic variables such as age groups, parity, associated co-morbidities, menopausal status and breast feeding did not show any statistical difference ($p<0.05$). The cohort representing delay > 3 months depicted 76.6 %womenreported in stage III , 65% have painless lumps in breast, 72% were premenopausal, 77% tumor found on right breast, 86% were farmers ,45% has personal history of breast disease, 37% with family history, 84% from rural background and 75% falls in poor-low socio economic strata. Family history, education, economic status, occupation, religion, personal history of breast disease, stage grouping and pattern of presentation were significantly associated with late reporting to Regional Cancer Centre ($p < 0.05$). The statistical analysis of socio-demographic variables were calculated and enumerated. (Table2).

Knowledge about the breast cancer management were assessed and tabulated [Table 3(a) and 3(b)]. Among 376 women, 8.2% women knew about mammography and 4.3% women performed this imaging modality before the diagnosis of breast cancer malignancy

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Vol 2, Issue 7, July 2017

Table 1: Socio-demographic Variables of the study participants.

Determinants	*Frequency*	*%*
AGE		
<50	205	55
>50	171	45
FAMILY HISTORY OF BREAST CANCER		
Yes	19	5
No	357	95
MARITAL STATUS		
Married	289	77
Unmarried	11	3
Widow	56	15
Divorcee	20	5
EDUCATIONAL BACKGROUND		
No formal education	218	58
Primary education only	75	20
Completed schooling	52	14
Higher education	31	8
ECONOMIC STATUS		
Poor-low	211	56
Middle – high	165	44
LIVING AREA		
Rural	185	
Urban	191	
OCCUPATION		
Employed	4512	
Peasant /farmer	191 51	49
Business	29 8	51
Home maker / dependant	111 29	
ASSOCIATED COMORBIDITIES		
Yes	104	28
❖ **Non communicable**	83	
a) Diabetes	23	
b) Hypertension	25	
c) Both diabetic & hypertensive	11	
d) Depression	7	
e) Anxiety	13	
f) Cardiothoracic disease	4	
❖ **Communicable**	21	
• Tuberculosis	15	
• Hepatitis	3	
• Typhoid	2	
• HIV+ve	1	
No	272	72
BREAST FED		
Yes	365	97
✓ 6months	39	
✓ 1 year	97	
✓ 1-2 years	214	
✓ >2 years	15	
No	11	3
RELIGION		
Hindus	217	58
Muslims	117	31
Christians	31	8
Others	11	3
MENOPAUSAL STATUS		
Premenopausal	115	30.5
Perimenopausal	67	18
Post menopausal	139	37
Post Hysterectomy	55	14.5
PERSONAL HISTORY OF ANY BREAST DISEASE		
Yes	62	16
No	314	84
RESIDENTIAL STATUS		
Along with family members	197	52
With relatives	84	22
Separated / alone	29	8
Old age homes	66	18
STAGE GROUPING		
0	0	0
I	0	0
II A	11	3
II B	25	7
III A	79	21
III B	154	41
III C	58	15
IV	49	13
HAVING CHILDREN		
Yes	311	83
No	65	17
BMI		
Underweight	46	12
Normal	164	44
Overweight	67	18
Obese	99	26
DISTRIBUTION OF THE TUMOR		
Right breast	254	68
Left breast	113	30
Bilateral	9	2
PATTERN OF PRESENTATION		
Presenting directly and being diagnosed in the RCC	185	50.3
Diagnosed outside and referred to the RCC for further management	69	18.4
Diagnosed outside, and referred to RCC with incomplete treatment.	122	31.3

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Vol 2, Issue 7, July 2017

Table 2.Association between variables and late presentation of the disease.

Factors	≤3 months (n= 117)	>3 months (n=259)	Significance at p<0.05
AGE			
<50 years	72 (35%)	133 (65%)	Not significant
>50 years	45 (26%)	126 (74%)	
FAMILY HISTORY			
Yes	12 (63%)	7 (37%)	significant at p<0 .05
No	105 (29%)	252 (71%)	
MARITAL STATUS			
Married	80 (28%)	209 (72%)	The result is significant at p<0.05.
Unmarried	5 (45%)	6 (55%)	
Widow	21 (37.5%)	35 (62.5%)	
Divorcee	11 (55%)	9 (45%)	
EDUCATIONAL BACKGROUND			
No formal education	41 (19%)	177 (81%)	
Primary education only	24 (32%)	51 (68%)	The result is significant at p<0.05.
Completed schooling	30 (58%)	22 (42%)	
22 (71%)	9 (29%)		
ECONOMIC STATUS			
Poor-low	53 (25%)	158 (75%)	The result is significant at p<0 .05.
Middle – high	64 (39%)	101 (61%)	
LIVING AREA			
RURAL	29 (16%)	156 (84%)	The result is significant at p<0.05.
URBAN	88 (46%)	103 (54%)	
OCCUPATION			
Employed	29 (64%)	16 (36%)	The result is significant at p<0 .05
Peasant /farmer	27 (14%)	164 (86%)	
Business	13 (45%)	16 (55%)	
Home maker / dependant	48 (43%)	63 (57%)	
BREAST FED			
Yes	112 (31%)	253 (69%)	The result is *not* significant at p<0 .05.
No	5 (45%)	6 (55%)	
RELIGION			
Hindus	51 (23.5%)	166 (76.5%)	The result is significant at p<0 .05.
Muslims	37 (31.6%)	80 (68.4%)	
Christians	22 (71%)	9 (29%)	
Others	7 (63.6%)	4 (36.4%)	
MENOPAUSAL STATUS			
Premenopausal	32 (28%)	83 (72%)	The result is *not* significant at p<0.05.
Perimenopausal	23 (34.3%)	44 (65.7%)	
Post menopausal	43 (31%)	96 (69%)	
Post Hysterectomy	19 (34.5%)	36 (65.5%)	
PERSONAL HISTORY OF ANY BREAST DISEASE			
Yes	34 (55%)	28 (45%)	The result is significant at p<0.05.
No	83 (26.4%)	231 (73.6%)	
Associated co-morbidities			
Yes	38 (36.5%)	66 (63.5%)	The result is *not* significant at p<0 .05
No	79 (29%)	193 (71%)	
RESIDENTIAL STATUS			
Along with family members	51 (26%)	146 (74%)	The result is significant at p<0 .05.
With relatives	41 (49%)	43 (51%)	
Separated / alone	8 (27.5%)	21 (72.5%)	
Old age homes	17 (25.8%)	49 (74.2%)	
STAGE GROUPING			
0	0	0	The result is significant at p<0.05.
I	0	0	
II	32 (89%)	4 (11%)	
III	68 (23.4%)	223 (76.6%)	
IV	17 (34.7%)	32 (65.3%)	
HAVING CHILDREN			
Yes	95 (31%)	216 (69%)	The result is *not* significant at p<0.05.
No	22 (34%)	43 (66%)	
BMI			
Underweight	22 (48%)	24 (52%)	The result is significant at p<0 .05.
Normal	59 (36%)	105 (64%)	
Overweight	18 (27%)	49 (73%)	
Obese	18 (18%)	81 (82%)	
DISTRIBUTION OF THE TUMOR			
Right breast	59 (23%)	195 (77%)	The result is significant at p<0 .05.
Left breast	56	57	

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	(49.5%)	(50.5%)	
Bilateral	2 (22%)	7 (78%)	
PATTERN OF PRESENTATION			
Presenting directly and being diagnosed in the RCC	42 (22.7%)	143 (77.3%)	The result is significant at $p<0.05$.
Diagnosed outside and referred to the RCC for further management	38 (55%)	31 (45%)	
Diagnosed outside, and referred to RCC with incomplete treatment.	37 (30.3%)	85 (69.7%)	
SYMPTOLOGY EXPERIENCE			
Painless lumps	87 (35%)	160 (65%)	The result is significant at $p<0.05$.
Others	30 (23%)	99 (77%)	

Table 3 (a): Assessment of knowledge on breast cancer disease- occurrence

KNOWLEDGE ON BREAST CANCER OCCURRENCE	YES	%	NO	%
Painless lump points to breast cancer usually	155	41	221	59
Breast cancer is one of the commonestcancers in women	286	76	90	24
Breast cancer occurs in both young &old.	109	29	267	71
Breast cancer can occur in men	45	12	331	88
Breast feeding reduces the risk.	254	68	122	32

Table 3 (b): Assessment of knowledge on breast cancer disease- management

KNOWLEDGE ON BREAST CANCER DISEASE:DIAGNOSISAND TREATMENT	YES	%	NO	%
Mammography is painful	219	58	157	42
Early diagnosis improves outcome	268	71	108	29
Needle biopsies lead to metastasis	289	77	87	23
Breast cancer treatmentis similar in all patients	234	62	142	38
Breast cancer treatment (radiotherapy/chemotherapy/surgery) further deteriorate the health	257	68	119	32
The fate of the disease cannot be changed despite treating	311	83	65	17
Breast cancer is treated in hospital.	179	48	197	52
Breast cancer is largely genetic	291	77	85	23

Fig.1:Illustrating percentage of patients in < 50 years and > 50 years age.

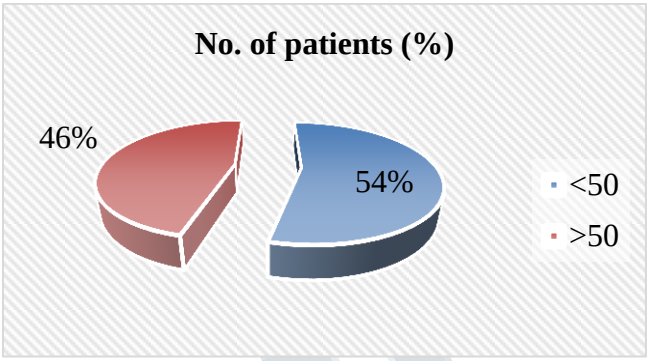


Fig. 2 (a):Illustratingreasons for PD

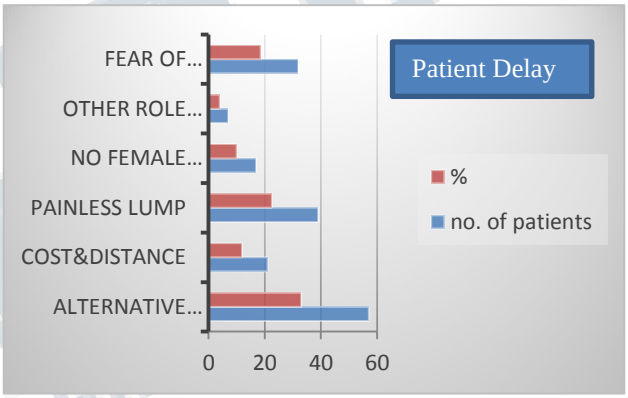
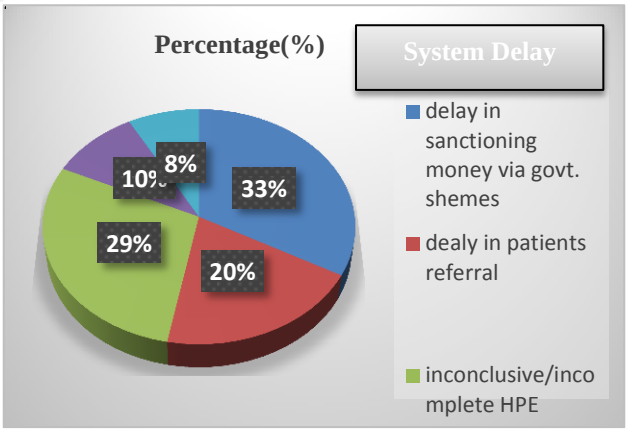


Fig. (2b): Illustrating reasons for SD



V. DISCUSSION

The most common stage of breast cancer presented to our hospital is stage III (77%) in the cohort who delayed seeking treatment for > 3 months. Delay in seeking management could upstage the disease and progress to locally advanced

which hampers the survival benefit of the patients. This could be lack of proper awareness of the disease and discrepancies in health care system. The study depicted statistical significance between late reporting of the disease and patient delay. The association between stage and late presentation was well documented in many illustrative studies [5], [6].

Most of the women hailed from rural backdrop and low literacy which explains the situation for being delay. Most of them derive their livelihood on daily wages and it will be very difficult for them to travel long distances for therapy. In India, even though both men and women work in a family, most of the women prefer not to travel alone and take decisions of their health issues independently without consulting the head of the family. Perhaps proper guidance and access to public health sector locally may resolve certain issues which can help in identifying the disease timely for effective tumor control.

Neglected families, women residing old age homes or alone delay the treatment. Cancer is a disease which needs not only medical attention but also psycho-emotional support throughout the life. It plays a very significant role in cancer patients which makes them strong enough to combat the deadly disease. Various studies have researched and found out that discussing the health issues with family and friends will facilitate to consult doctor [7], [8].

In the present study, association between socio demographic variables and delay was highlighted and this finding is consistent with other studies [9], [10]. In order to frame a comprehensive public health strategy high level in depth research should be focused in this domain from across the nation for a paramount perception.

IV. CONCLUSION

Significant numbers of women with breast cancer in Allahabad experience, reported late toRCC due to poor awareness and misconceptions of the disease correlated with no formal education (58%), poor-low socio economic status (56%) and practice of alternative meds.(33%), followed byasymptomatic painless lump (22.5%) & fear of treatment (18.5%).The results of this study will allow for a better understanding ofbarriers facing by cancer patients, specifically those in Eastern Uttar Pradesh.

This study could enlighten the researchers and the clinicians and contribute to the growth of research in this domain aiming to minimize the obstacles for better outcome. Implementation of high level comprehensive public health strategies at community level andescalating the existing health care facilities in the public sector can improve the current scenario.

VII. ACKNOWLEDGEMENTS

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VIII. FOOTNOTES

Conflicts of interest - None declared.

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