

**BREAST CANCER LITERACY AMONG WOMEN ATTENDING
SURGERY/MEDICINE/OBSTERTICS AND GYNECOLOGY OUT PATIENT
DEPARTMENT (OPD) IN TERTIARY CARE HOSPITAL OF NAGPUR,
MAHARASHTRA.**

**A Capstone project submitted to Johns Hopkins Bloomberg School of Public Health
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degree of Master of Public Health**

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ABSTRACT

BACKGROUND:

Global statistics suggest that breast cancer is the most frequently diagnosed and a leading cause of death in women. In South Asia, it is the common malignancy among women. It is often diagnosed at a late stage and it is due to lack of awareness about the condition, lack of prompt decision making, and females being uninformed about early detection of breast cancer. Preparedness and regular monitoring of cancer is the weakest in the region as population-based registries, plan of action and strategies are not efficient.

A hospital-based study suggests that knowledge regarding the breast cancer is low despite being the second most common cancer among women in India.

Interventions promoting healthy behaviours and practices in have a great role in preventing breast cancer as some of these behaviours are developed at this stage of life.

In light of the evidences mentioned above, this study aims to explore the literacy of breast cancer risk factors, curability and its symptoms among women attending surgery, medicine and obstetrics out-patient department in a tertiary care hospital, Nagpur, Maharashtra.

Cross sectional, descriptive study was done. The instrument was adapted from Langer's Comprehensive Breast Cancer Knowledge Test (CBCKT) after making modifications to fit the Indian population.

Key words: Indian, breast cancer, literacy, malignancy.

INTRODUCTION:

Breast cancer represents the most common cancer in Indian women, with an age-adjusted rate of 25.8 cases per 100,000 women and a mortality rate of 12.7 per 100,000 women (1). Breast cancer was one of the ten cancers responsible for the highest proportion of cancer DALYs in India in 2016 which was 8.2% of total cancer DALYs (2). The estimated number of incident breast cancer cases in India in 2016 was 118 000 (95% UI 107 000–130 000), 98·1% of which were in females, and the prevalent cases were 526 000. Over the last 26-year period, the age-standardised incidence rate of breast cancer in females increased by 39·1% (95% UI 5·1–85·5) from 1990 to 2016, with increase observed in every state of the country(3). Incidence of metastatic breast cancer (MBC) has been reported to be approximately 5% to 25% from various centres in India(4)

The average cost of treatment for breast cancer through a private practitioner would be Rs 5-6 lakh, including investigations, surgery and radiotherapy. However, with targeted therapy, six cycles of chemotherapy can cost up to Rs 20 lakh(5)

Despite marked advances in medicine specifically cancer treatment in recent decades, there is widespread disparities documented in breast cancer management. Disparities are existent with respect to timeliness of diagnosis, receipt of treatment, and long-term health outcomes. Social factors, including poverty and financial insecurity, lack of transportation, poor access to care, poor health literacy, low educational attainment, and lack of health insurance contribute substantially to differences in breast cancer treatment and outcomes(6), (7). In such a situation, breast cancer literacy is a matter of utmost importance because of the following reasons: rising numbers of cases of breast cancer in India; increasing incidence of

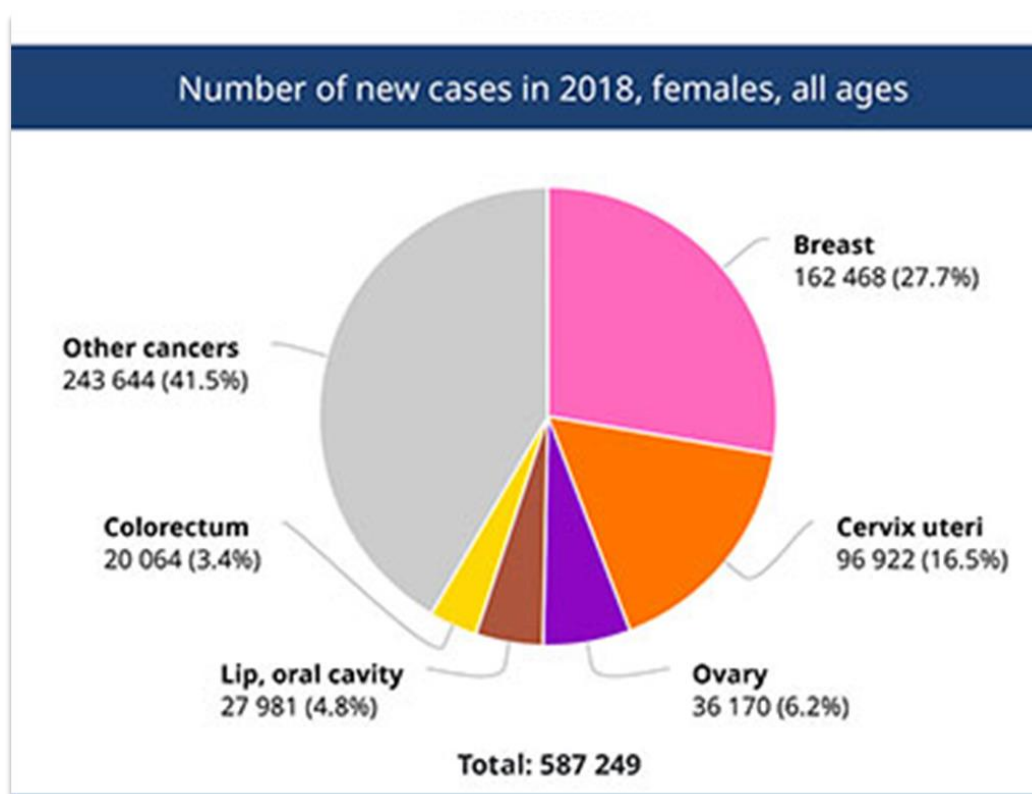
breast cancer in younger age groups; late presentation which directly decreases long term survival of the patient(8).

Followed by lack of awareness and screening of the disease: Breast cancer awareness is being aware about the symptoms of breast cancer, looking out for them regularly, and reporting them on time to a doctor, and it is the single most important factor responsible for better survival of patients. Secondly, breast cancer in the younger age group tend to be aggressive as it presents with an aggressive phenotype, leading to a poorer prognosis than in older women (9), (10) .

Literacy about breast cancer is a woman's functional understanding of her personal and familial risk of the disease, including how to minimize her risk and the risk of her family through preventive early detection, screening, lifestyle changes and understanding how to access the health system and engage providers to minimize her risk and the risk of her family (11). Various observational studies show poor knowledge of breast cancer in general population(12). Literacy is defined as “the degree to which individuals have the capacity to obtain, process, and understand basic health information needed to make appropriate health decisions (13) Hence, considering the importance the breast cancer literacy and role in the survival, we decided to assess the breast cancer literacy and identify its determinants.

DIAGRAM 1

CANCER STATISTICS IN INDIA



Source: Globocan 2018

RESEARCH QUESTION:

- 1) What is the level of breast cancer literacy among women aged 18 to 75 years?
- 2) Is there a difference between breast cancer literacy levels with women coming from urban and rural population?
- 3) Is there an association of socio-economic status of a woman with breast cancer literacy?

OBJECTIVES:

1. To assess the level of breast cancer literacy in the patients attending outpatient departments of specialty branches at NKP Salve Institute of Medical Sciences, Nagpur.
2. To identify if there is a difference between urban and rural women breast cancer literacy levels.
3. To identify if socio-economic status (SES) affects breast cancer literacy levels.

LITERATURE REVIEW

LITERATURE REVIEW: INTERNATIONAL

Author et al (Year)	Study location/ setting	Study design and Objectives	Sample size and eligibility criteria	Study tool and data collection methods	Major findings
Bhandari PM et al (2016)	Western Nepal/ each 'ilaka' of parbat district.	Cross-sectional study To determine level of breast cancer literacy in higher secondary students.	516 Students of grades 11 and 12 from eleven higher secondary schools from Parbat district.	Questionnaire with modified Comprehensive Breast Cancer Knowledge Test was self-administered to 516 students. Knowledge score was categorized into two categories: 'good knowledge' and 'poor knowledge' taking median score as the cut-off.	Level of literacy To determine difference in knowledge by socio-demographic factors, including gender.
Roh S et al (2014)	South Dakota, United States of America.	Cross-sectional. To examine the health beliefs and literacy about breast cancer and their relationship with breast cancer screening among American Indian (AI) women.	286 Women who were an AI woman and be 18 years of age or older and reside in South Dakota at time of interview.	The questionnaire consisted of 17 items. All items offered five response choices ranging from "strongly disagree (scores 1 point)" to "strongly agree (scores 5 points)". Higher scores indicated more perceived benefits and motivation towards breast cancer screening except for barriers to breast cancer screening.	To determine health beliefs and literacy about breast cancer and their relationship with breast cancer screening among American Indian (AI) women.
Noreen M et al (2014)	Rahim Yar Khan and Bahawlpur in the Punjab region of Pakistan.	A cross sectional descriptive analysis. To examine current understanding about the early signs of breast cancer.	566 Female non medical students of Islamia University Bahawalpur and Post Graduate Colleges in Rahim Yar Khan. Medical graduates were from Quaid-e-	A total of 32 questions were included in the questionnaire by researchers each carrying 1 mark. The response of participants was categorized into "poor", "insufficient", "satisfactory" and "good" on the basis of obtained	Breast cancer literacy in the area of Early Symptoms.

			Azam Medical College, Bahawalpur and Sheikh Zayed Medical College Rahim Yar Khan.	score of ≤ 8 , ≤ 16 , ≤ 24 and ≤ 32 respectively.	
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Elsie KM et al (2010)	Mulago hospital, Uganda.	Descriptive cross sectional study. To examine current knowledge, attitudes and practices of women on breast cancer and mammography.	100 Women reporting to the Radiology department were interviewed.	Interviewer-administered questionnaires were used to collect opinions of the participants. For data analysis, answers were described as knowledge, attitude, practice and they were correlated with control variables through the chi-square. Bivariate and logistic regression analyses were also used.	Breast cancer literacy focusing on screening techniques.
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LITERATURE: INDIA

Author et al (Year)	Study location/ setting	Study design and Objectives	Sample size and eligibility criteria	Study tool and data collection methods	Major findings
Anita Khokhar et al (2016)	Delhi, India/ Vardhman Mahavir Medical College and Safdarjung Hospital	Cross-sectional/descriptive study To determine level of breast cancer literacy and associated factors in office going women of Delhi.	425 Women office goers.	The instrument was adapted from Langer's Comprehensive Breast Cancer Knowledge Test (CBCCKT). Self-administered questionnaires were given to the Women	Level of literacy Major determinants of literacy BC
Gupta A et al (2015)	9 locations in northern, western, and southern geographical regions of the country.	Literature review. To evaluate the literacy levels of risk factors for breast cancer among Indian women and health professionals.	7066	The methodology of the Cochrane Handbook for Systematic Reviews [17] was followed through a search of several electronic databases including MEDLINE, Cochrane Database of Systematic Reviews, Cumulative	A literature review to evaluate the awareness levels of risk factors for breast cancer among Indian women and health professionals.

				Index to Nursing and Allied Health (CINAHL) and SCOPUS. Searches were restricted to research published in the English language peer- reviewed journals, as well as grey literature, till December 2014. From these publications, the bibliographic lists were also hand-searched for additional papers.	
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METHODOLOGY:

Study Setting and duration:

The study was conducted at the surgery, medicine and Obstetrics and gynaecology (OBGYN) out-patient department at NKP Salve institute medical sciences and research center

(NKPSIMS) which is located at CRPF road, Digdoh hills, Nagpur Maharashtra- 440019. The Surgery outpatient department (OPD) has inflow of patients 50-60 routinely, leading to admissions of 15 patients on an average OPD day. Medicine ward has 50-70 patients' inflow with 20-25 patients' admissions on OPD days. OBGYN has on an average 60-70 women coming for check-up and 20-25 admissions on OPD days.

Study design: Cross sectional descriptive study.

Study duration: The study was conducted in a 30-day period.

Study participants and eligibility criteria:

Study participants were women between the age group of 18 years to 75 years old attending Surgery, medicine and Obstetrics and gynaecology out-patient department.

Females under 18 years of age, women suffering from severe trauma who are unable to answer the questions and people unwilling to give consent were excluded from the study.

Sample size

Cross sectional $\rightarrow$ proportion $\Rightarrow n = [DEFF * Np(1-p)] / [(d^2 / Z^2 1-\alpha/2 * (N-1) + p*(1-p))]$

- Population size (for finite population correction factor or fpc) (N): 4800
- Hypothesized % frequency of outcome factor in the population (p): 50% $\pm$ 5
- Confidence limits as % of 100(absolute $\pm$ %) (d): 5%
- Design effect (for cluster surveys-DEFF): 1
- Non response rate: 10%
- Sample Size: 392

Considering that 50% of the females are breast cancer literate, a sample size of 392 was optimal for a desired 95% confidence interval, considering 5% allowable error and 10% non-response rate.

Sampling technique:

All consecutive patients attending the out-patient department on the day of the survey were subjected to the face to face interview till the sample size was achieved.

Study tools

A semi-structured questionnaire was formulated, and patients were interviewed face to face. The instrument was adapted from Langer's Comprehensive Breast Cancer Knowledge Test (CBCKT) after making some modifications as such a tool was not available for Indian population.

It was a multiple-choice question with four possible answers. It covered the following areas of Breast cancer awareness-

- The risk factors
- The signs and symptoms and
- The screening methods available for its diagnosis among women attending surgery, medicine and OBGYN out-patient department (OPD) at NKPSIMS, Nagpur, Maharashtra.

The questionnaire had three possible answers depending on the question. Options were yes, no or Don't know.

To ensure the proper quality of response, the questions and their respective options were translated into two different languages that is English and Marathi.

Questions pertaining to health literacy with respect to symptoms of breast cancer, high risk factors, screening, investigations and treatment were incorporated in form of statements.

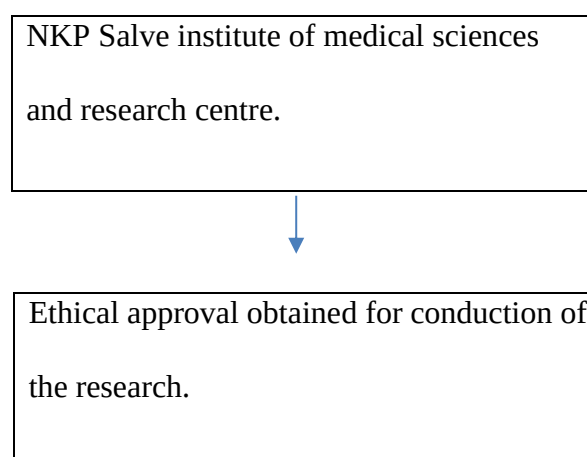
Data collection methods

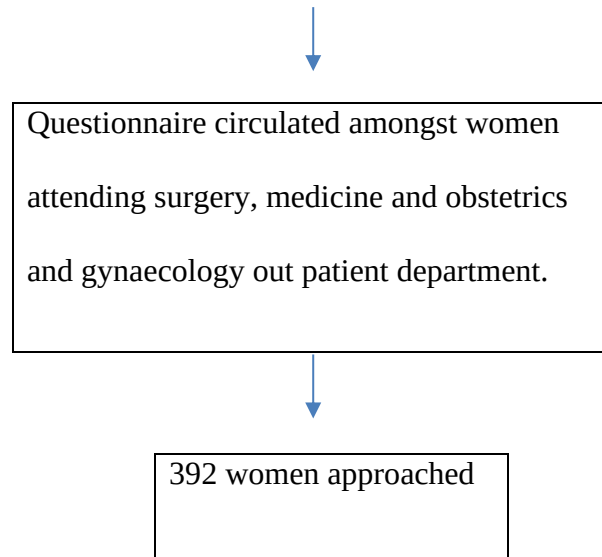
Prior to the study, the women in the sample population were informed about the purpose and procedure of the study being conducted. Alongside that, the benefits, right to withdrawal and maintenance of confidentiality was assured to the patients.

It was validated in a group of women before the commencement of the study. A total of 25 questions were formulated. Further, also evaluation of correct and incorrect responses was done.

Consent forms were handed over to every participant in the study for ethical clarity in the language they were comfortable with. Along with consent forms, patient information sheet was drafted which had all the patient's vital information like name, age, address, phone number, socio-economic status, education and other significant information in it.

DIAGRAM 2





Ethical issues including approval

Ethical approval was taken from IIHMR University, Jaipur. Ethical considerations like maintaining patient's privacy, not disclosing sensitive information to others and anonymity was given special attention.

Statistical analysis:

SPSS software was used to analyse the data.

The technique applied for the analysis was cross tabulation.

Expected outcome:

The study would provide information on the level of literacy about breast cancer among urban and rural women attending speciality outpatient departments of a tertiary care institution. This information may be used to improve breast cancer literacy of women in Nagpur city and other nearby places.

RESULTS:

Characteristics of participants

Participants belonged to an age group of 18 to 75 years of age. Amongst the participants, 216 were Urban females and 176 were from Rural settings. It was

Out of 392 participants, 164 women were graduate and had a professional degree. And 112 were either illiterate or had the educational qualification up until middle school.

Socio- economic strata was calculated via using modified Kuppuswamy scale. According to the scale 18 women belonged to the upper class. And 93 belonged to the lower middle class.

p-value <0.05 was taken as statistically significant.

TABLE 1

Total number of participants	Urban	Rural
392	216	176

TABLE 2

SR.NO.	QUESTIONS	Yes n(%)	No n(%)	Don't Know n(%)
1	Early menarche increases the risk of BC	126 (32.14)	62 (15.81)	204 (52.04)
2	Women with delayed menopause are at a higher risk	155 (39.54)	53 (13.52)	183 (46.68)
3	Use of Oral Contraceptive pills increases the risk of BC in some women	56 (14.28)	41 (10.45)	295 (75.25)
4	Breast feeding reduces the risk of developing BC	197 (50.26)	61 (15.56)	134 (34.18)
5	Physical exercise reduces the risk of developing BC	86 (21.94)	73 (18.62)	233 (59.44)
6	A hard blow to the chest may increase the chances of BC later in life	165 (42.09)	82 (20.92)	145 (36.99)
7	Constant irritation of a tight clothing over time may cause BC	108 (27.55)	28 (7.14)	256 (65.31)
8	Being Overweight increases the risk of BC in some	83 (21.17)	115 (29.34)	194 (49.49)
9	A woman who bears first child before the age of 30 years is at a higher risk of BC as compared to a women who bears a child after 30 years of age	39 (9.95)	208 (53.06)	145 (36.99)
10	If there is no lump in the breast the risk of developing breast cancer significantly reduces	150 (38.27)	69 (17.60)	173 (44.13)
11	Fibrocystic disease of breast increases the chances of developing breast cancer	151 (38.52)	53 (13.52)	188 (47.96)
12	Breast cancer is more common in 65-year-old women than in 40-year-old women	85 (21.68)	79 (20.15)	228 (58.16)
13	The most frequently occurring cancer in women is breast cancer	119 (30.36)	81(20.66)	192 (48.98)
14	Women over age 70 rarely get breast cancer	49 (12.50)	76 (19.39)	267 (68.11)
15	Most breast lumps are cancerous	129 (32.91)	65 (16.58)	198 (50.51)
16	Genetic cause is responsible for most of the BC	71 (18.11)	59 (15.05)	263 (67.09)
17	Intake of trans fatty acids in the diet increases the risk of BC in women	56 (14.29)	61 (15.56)	275 (70.15)
18	Radiation therapy at a younger age may increase the risk of BC	194 (49.49)	68 (17.35)	130 (33.16)
19	Pain in the breast is first sign of breast cancer	191 (48.72)	61 (15.56)	140 (35.71)
20	Change in the size/shape of breast is a sign of breast cancer	48 (12.24)	178 (45.41)	166 (42.35)
21	Discharge of pus from the nipple not a sign of BC	48 (12.24)	216 (55.10)	128 (32.65)
22	Painless lump in the breast is a common presentation of BC	205 (52.30)	49 (12.50)	138 (35.20)
23	Discharge of blood from a nipple may be a sign of BC	95 (24.23)	63 (16.07)	234 (59.69)
24	Pulling of the nipple inwards (retraction or inversion) may be a sign of BC	98 (25)	69 (17.60)	225 (57.40)
25	Mammography is used to detect small lumps in the breast	87 (22.19)	51 (13.01)	254 (64.80)

TABLE 3

		Rural		Urban		Total	p-value
		N	%	N	%	N	
Q1	1	11	8.7%	115	91.3%	126	p<0.001
	2	55	88.7%	7	11.3%	62	
	3	110	53.9%	94	46.1%	204	
Q2	1	31	19.4%	125	80.6%	156	p<0.0001
	2	42	79.2%	11	20.8%	53	
	3	103	56.3%	80	43.7%	183	
Q3	1	6	10.7%	50	89.3%	56	p<0.001
	2	19	46.3%	22	53.7%	41	
	3	151	51.2%	144	48.8%	295	
Q4	1	61	31.0%	136	69.0%	197	p<0.001
	2	47	77.0%	14	23.0%	61	
	3	68	50.7%	66	49.3%	134	
Q5	1	15	17.4%	71	82.6%	86	p<0.001
	2	62	84.9%	11	15.1%	73	
	3	99	42.5%	134	57.5%	233	
Q6	1	17	10.3%	148	89.7%	165	p<0.001
	2	71	86.6%	11	13.4%	82	
	3	88	60.7%	57	39.3%	145	
Q7	1	14	13.0%	94	87.0%	108	p<0.001
	2	19	67.9%	9	32.1%	28	
	3	143	55.9%	113	44.1%	256	
Q8	1	12	14.5%	71	85.5%	83	p<0.001
	2	78	67.8%	37	32.2%	115	
	3	86	44.3%	108	55.7%	194	
Q9	1	5	12.8%	34	87.2%	39	p<0.001
	2	113	54.3%	95	45.7%	208	
	3	58	40.0%	87	60.0%	145	
Q10	1	17	11.3%	133	88.7%	150	p<0.001
	2	61	88.4%	8	11.6%	69	
	3	98	56.6%	75	43.4%	173	

Q11	1	61	40.4%	90	59.6%	151	p<0.001
	2	36	67.9%	17	32.1%	53	
	3	79	42.0%	109	58.0%	188	
Q12	1	16	18.8%	69	81.2%	85	p<0.001
	2	46	58.2%	33	41.8%	79	
	3	114	50.0%	114	50.0%	228	
Q14	1	17	34.7%	32	65.3%	49	p<0.001
	2	41	53.9%	35	46.1%	76	
	3	118	44.9%	145	55.1%	263	
Q15	1	25	19.4%	104	80.6%	129	p<0.001
	2	60	92.3%	5	7.7%	65	
	3	91	46.0%	107	54.0%	198	
Q16	1	13	18.3%	58	81.7%	71	p<0.001
	2	53	89.8%	6	10.2%	59	
	3	110	42.0%	152	58.0%	262	
Q17	1	15	26.8%	41	73.2%	56	p<0.001
	2	48	78.7%	13	21.3%	61	
	3	113	41.1%	162	58.9%	275	
Q18	1	43	22.2%	151	77.8%	194	p<0.001
	2	38	55.9%	30	44.1%	68	
	3	95	73.1%	35	26.9%	130	
Q19	1	27	14.1%	164	85.9%	191	p<0.001
	2	47	77.0%	14	23.0%	61	
	3	102	72.9%	38	27.1%	140	
Q21	1	11	23.4%	36	76.6%	47	p<0.001
	2	80	37.0%	136	63.0%	216	
	3	85	66.4%	43	33.6%	128	
Q22	1	72	35.1%	133	64.9%	205	p<0.001
	2	19	38.8%	30	61.2%	49	
	3	85	61.6%	53	38.4%	138	
Q24	1	13	13.3%	85	86.7%	98	p<0.001
	2	43	62.3%	26	37.7%	69	
	3	120	53.3%	105	46.7%	225	

Here, 1= Yes

2= No

3= Don't know

N = number

U= Urban

R= Rural

Question number 13, 20, 23 and 25 were statistically insignificant as the p value as more than 0.05.

Risk factors of breast cancer

Breast Cancer was correctly identified as one of the common cancers in women by 119 (30.36%) women, 81(20.66%) of them believed it was not a common cancer in women and 192 (48.98%) did not know about it being one of the major cancers occurring in females.

Women were comparatively less aware about the leading risk factors causing breast cancer like early menarche and delayed menopause, 32.14% and 39.54%.

Women were however aware of the protective effects of breastfeeding in reducing the chances of breast cancer. 50.26% women gave the correct answer in support of this.

Women were highly unaware about the risk posed by oral contraceptive pills in being one of the major factors in the development of breast cancer. Out of 392 women, 295(75.25%) women opted for the option 'don't know' and only 56 women that is 14.28% of them were

aware that the long term and frequent usage of oral contraceptive pills can be a precipitating factor for development of breast carcinoma. Other questions like, genetic causes, being obese and protective role of exercising was asked to the women who gave a mixed response.

p value was calculated for all the questions covering the risk factors in the questionnaire.

$p < 0.05$ was taken statistically significant.

The p value for all the questions covering the risk factors was found to be 0.000.

It could be concluded that the result is statistically significant at 99% confidence interval.

One question covered the aspect of women aged 70 rarely got answer to which 19.39% women gave the correct answer. p value was 0.05, meaning that the result was statistically significant at 95% confidence interval.

Signs and symptoms

Only 32.91% women knew that presence of a painless breast lump can lead to carcinoma of the breast in the future. While 50.51% women did not know the correct answer to this question. Similarly, for fibrocystic disease of the breast, 38.52% women knew that it was a sign of impending breast cancer in the future. Breast lumps in the initial stage are painless. 48.72% women knew that they are painless in the formative stages. Change in shape or size of the breast from the normal was correctly identified as a sign of breast cancer by 48 (12.24%) women.

Bloody discharge from the nipple and retraction of the alveolar region was answer correctly by 24.23% and 25% women respectively.

Screening methods

Mammography is an x-ray picture of the breast. It is used to check for breast cancer in women who have no signs and symptoms of the disease. Only small portion of women (22.19%) knew about this screening method.

However, 52.30% women knew that breast self examination (BSE) is a screening method used to detect early breast cancer. The method involves the woman herself looking at and feeling each breast for possible lumps, distortions or swelling.

However, the p value for the question that asked about mammography being a modality for screening of small breast lumps was more than 0.05, rendering it statistically insignificant.

SOCIOECONOMIC STRATA AND BREAST CANCER LITERACY

TABLE 4

CALCULATION OF SOCIO-ECONOMIC STATUS (SES)

Education of head of family	Score	Occupation of head of family	Score	Total per capita family income per month (as given originally in 1976)	Score
Professional degree	7	Professional	10	2000 and above	12
Graduate	6	Semi profession	6	RS 1000-1999	10
Intermediate/diploma	5	Clerical/shop/farm	5	RS 750-999	6
High school	4	Skilled worker	4	RS 500-749	4
Middle school	3	Semiskilled worker	3	300-499	3
Primary school	2	Unskilled worker	2	RS 101-299	2
Illiterate	1	Unemployed	1	Less than RS 100	1

The above total per capita income is no longer used for calculation. And it was revised using AICPI which is currently used to calculate SES.

Table 5

Original income group	Revised by using AICPI	Score
RS 2000 and above	RS 47348 and above	12
RS 1000–1999	RS 23674–47347	10
RS 750–999	RS 17756–23673	6
RS 500–749	RS 11837–17755	4
RS 300–499	RS 7102–11836	3
RS 101–299	RS 2391–7101	2
Less than ' 100	Less than 2390	1

TABLE 6

CATEGORISATION OF THE POPULATION BY MODIFIED KUPPUSWAMY SCALE

Total score	Socioeconomic class
26–29	Upper class
16–25	Upper middle
11–15	Lower middle
5–10	Upper lower
Below 5	Lower

Kuppuswamy Scale:

The **modified Kuppuswamy scale** is commonly used to measure SES in urban and rural areas.

This **scale** was devised by **Kuppuswamy** in 1976 and consists of a composite score which includes the education and occupation of the Family Head along with income per month of the family

Interpretation of the relation between SES and breast cancer literacy levels :

Table 7

Socio-economic strata of Women

SOCIO-ECONOMIC STATUS	NUMBER OF WOMEN BELONGING TO THE GROUP
26-29	86
16-25	71
11-15	78
5-10	84
BELOW 5	73

Interpretation of women's Breast cancer literacy with Socio-economic strata

86 women belonged to the upper class. 71 belonged to the upper middle, 78 were from lower middle, 84 from upper lower and 73 were from lower class.

Risk factors

Amongst the upper class out of 86 women 31 women correctly identified the association of early menarche with causation of breast cancer. 44 believed that women with delayed menopause were at a higher risk of getting breast cancer. 11 women knew the harmful effects of OC pills consumption. Relatively a greater number of women (48) knew the beneficial effects of lactation on reducing the chances of breast cancer. Being overweight was correctly identified by 29 candidates. And relation of breast carcinoma with elderly age group was correctly answered by 45 candidates.

Presence of lump in the breast or the axillary region was pointed out by 46 women. And 18 women knew that breast cancer can be genetically transferred.

Constant irritation of the clothing can cause the cancer was identified by 31 women.

For upper middle, 71 women belonged to this category. 32 women knew the result of early menarche made the women prone to risk of breast cancer. And 41 women knew that delayed menopause was a causal factor for breast cancer. 12 correctly identified the harmful effects of oral contraceptive pills.

21 women from the upper middle class stated mammography as the required screening method.

For lower middle-class group, 29 women out of 126 correct answers gave the right answer to early menarche. 30 were aware of delayed menses being the cause of breast cancer. 16 out of 56 correct answers knew the harmful effects of oral contraceptive pills.

For upper lower class, 19 out of 150 correct responses knew that the presence of lump in the breast was an indicator for breast cancer. Genetic risk factors were identified by 13 women out of 71 right answers.

And for lowers groups, they were fairly unaware about the early risk factors, signs and symptoms and the screening methods available for early detection of breast cancer.

Table 8

Key Questions relating to Risk factors, signs and symptoms and screening methods.	Number of correct responses	Upper class	Upper middle	Lower middle	Upper lower	Lower
1) Early menarche	126	31	32	29	21	13
2) Delayed menopause	156	44	41	30	22	19
3) OC pills increase chances of breast cancer	56	16	12	11	8	9
4) Breast feeding reduces risk of breast cancer	197	48	42	44	39	24

5) Physical exercise reduces risk of breast cancer	86	21	22	16	14	13
6) Being overweight causes breast cancer	83	29	21	16	14	3
7) Lump can lead to breast cancer	150	48	41	37	19	5
8) Risk of breast cancer increases with age	151	47	40	35	21	8
9) Breast cancer is a genetic condition	71	21	17	9	13	11
10) Pain is a symptom of breast cancer	191	57	46	41	39	8
11) Change in shape or size of breast is a sign of breast cancer	48	15	11	10	6	6
12) Discharge of pus from nipple can be a sign of breast cancer	48	14	12	11	5	6

13) Bloody discharge from nipple can be due to breast cancer	94	37	16	15	14	12
14) Mammography is a screening tool available to diagnose breast cancer	88	34	21	19	11	3

It can be safely stated that the women belonging to Upper class are well versed with the risk factors, signs and screening methods of breast cancer.

Where lower middle class and lower-class women lack the required knowledge for breast cancer. This can be because they have a low education qualification. Most of them are homemakers and not subjected to the external environment and hence they remain unaware.

Source of information regarding breast cancer:

Most women (70.89%) reported television/radio as the most common source of information on breast cancer. Other sources, reported in descending order of frequency were friends/relatives, newspapers, posters/pamphlets and health care workers.

DISCUSSION:

Women had a misleading information about the risk factors for breast cancer. 15.81% women thought that early menarche was not the cause of breast cancer in the future whereas 52.04% did not know about this situation at all. When urban and rural women's answers were compared, it was observed that 115 (29.33%) women coming from urban settings knew early menarche to be the cause of breast cancer whereas only 2.80% rural women thought of it as a

risk factor. Similarly, 125 urban women knew delayed menopause made them prone to breast carcinoma and 30 rural women knew it was a risk factor. According to modified Kuppuswamy scale for calculation of socio-economic status of these women, 114 women belong to upper middle or upper class. Out of these 112 women came from urban dwellings and 2 from rural. Out of the 112 urban women belonging to upper middle or upper class 59 women (more than 50%) gave the correct response to early menarche being the causal factor for breast carcinoma. And out of these 112 women, 63 (more than 50%) women knew that even delayed menopause caused the breast cancer. Women need to know about the non-modifiable risk factors of breast cancer like menarche. It may help them in better understanding the perceived risk of this disease.

Oral contraceptives were identified as a risk by 12.75% urban women which is a small portion. But only 1.53% rural women knew about it. The possible explanation for such inadequate knowledge especially among rural women can be their lack of exposure to the facilities and awareness. Out of the 112 women with modified Kuppuswamy score of between 16 – 29, only 30 women knew the harmful effects of frequent intake of oral contraceptive pills.

Trauma to the breast causes which may be precipitated by fat necrosis. 165 (42.09%) women gave the right response to this question. Out of this number, 148 women were from urban setting and 17 were from rural side of the region. 66 urban women with modified Kuppuswamy scale of 16-29 knew that a hard blow on the breast can be a leading cause for breast cancer.

Constant irritation of tight clothing was identified correctly by 94 urban women and 14 rural women. Out of these 49 urban women (scale 16-29) knew that tight clothing was a risk factor for breast cancer.

71 urban women correctly believed that being overweight and improper diet led to development of breast cancer in the future and only 12 rural women knew about this. There has been wide coverage in media in Nagpur regarding, fatty foods, pesticides and food adulteration and its possible effects on the health of the consumer.

And consumption of trans fatty foods and improper diet was identified as a risk by 56 urban and 41 rural women. Only 25 urban women belong to upper middle and upper class gave the correct option to this question. Rural women did not come under this scale for the question.

Most inherited cases of breast cancer are associated with mutations in two genes: BRCA1 (Breast Cancer gene one) and BRCA2 (Breast Cancer gene two). About 5% to 10% of breast cancer cases are thought to be hereditary, meaning that they result directly from gene defect passed on from a parent. 72 urban women knew the importance of genetic factors in causation of breast cancer whereas 58 rural women knew that breast cancer is passed from a parent (especially mothers) to the next progeny. Rural women are comparatively aware of the fact that certain diseases run in the family. This can also be due to the facts regarding mothers being the carriers of the disease and passing them on to the next generation. 33 urban women with a Kuppuswamy score ranging from 16 to 29 gave the correct answer.

As far as the chances of breast cancer increasing with age is concerned. Women believed that as the age increases chances of breast cancer increase with it. 85 urban women and 69 rural women gave correct answers to that.

Breast cancer presents with a painless lump to begin with, followed by changes in shape and size of the breast, blood discharge from the nipples and retraction of nipples inwards.

48 urban women and 19 rural women correctly identified that the changes in shape and size of the breast can be a sign of developing metastatic carcinoma breast. Only 10 women (scale 16-29) knew the correct answer to this question.

95 urban and 36 rural women believed that the bloody discharge from nipples is a sign of breast cancer. And 98 urban and 85 rural women correctly believed that inversion of nipple pointed towards the cancer. 14 women (scale 16-29) gave the correct response. However, 216 urban women and 136 rural women falsely believed that discharge of pus from the nipple was a sign of breast cancer which is not the case. Discharge of pus is a sign of breast abscess which is caused by infection of the breast.

Breast self-examination (BSE) and mammography are two common modalities that was focused as the screening methods in this questionnaire.

Only 88 urban and 43 rural women knew about the mammography techniques. Whereas 205 urban and 133 rural women knew that Breast self-examination (BSE) is done to detect the cancer.

It is evident unless the women are imparted literacy about screening guidelines, they will not be in a position to practice it. Many studies have confirmed that women with inadequate self-reported health literacy were less likely to have had mammogram in the last 2 years.

Screening is the backbone of any cancer program which may contribute to down staging of a cancer.

CONCLUSION

There is an urgent need for breast cancer literacy programmes at the level of community addressing risk factors, signs and symptoms, screening techniques of breast cancer. Also, misconceptions regarding breast cancer need to be clarified. Breast cancer literacy was

significantly better among urban women in comparison to the rural women. Socio-economic status plays a crucial role. Upper class and upper middle class women have a better education qualification, most of them are working and do not suffer from any economic burden.

Therefore, they are more aware and exposed to the knowledge of breast cancer which other women with a modified Kuppuswamy score of 15 and below are not. Further studies should particularly aim at identifying measures necessary to address the inadequate knowledge along with the urban-rural gap that exists.

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