BREAST CANCER AWARENESS AMONG WOMEN IN INDIA

Dissertation Submitted to

The IIHMR University, Jaipur

for the partial fulfilment for the award of the degree of Master of Business Administration (MBA)

in

Hospital and Health Management

by

Minora Priya

Under the Supervision and Guidance of

Dr. Susmit Jain
2022

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HEALTHARK

Date: 21st Jun 2022

Whom So Ever It May Concern

This is to certify that **Ms**. **Minora Priya** in partial fulfillment of the requirements for the award ofthe degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur has successfully completed her internship at **Healthark Insights Wellness Solutions LLP** during **March 22, 2022 to June 19, 2022**.

Sincerely,
Amol Pandya
HR Manager
Healthark Insights

Healthark Wellness Solutions LLP
821, Sun Avenue One, Bhudarpura, Ayojan Nagar, Near Shyamal Cross Roads,Ahmedabad - 380015, Gujarat, India

CERTIFICATE

This is to certify that dissertation titled "BREAST CANCER AWARENESS AMONG WOMEN IN INDIA" is a record of the research work undertaken by Minora Priya in partial fulfillment of the requirements for the award ofthe degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision and his/her approach to the research study has been sincere, scientific,and analytical.

Faculty Guide	School Dean
IIHMR University, Jaipur	IIHMR University, Jaipur
Date	Date

ACKNOWLEDMENTS

"Interdependence is certainly more valuable than Independence"

Certainly, this world is the best place to pay gratitude to the people who help others to grow, develop and learn new things.

My Dissertation would not be possible without consistent guidance of my mentors who helped me at every step of my dissertation journey.

It is very pleasant that I got the opportunity to convey my gratitude to all.

I am grateful to Healthark's CEO **Dr. Purav Gandhi** for his persistence guidance and support throughout my dissertation journey. His constant efforts and guidance to help me learn and grow encouraged me a lot to complete my dissertation successfully.

I am thankful to my Team lead and mentor at Healthark **Mr. Dipesh Nagar** who helped a lot in completing this project. He was always there to guide and support me in all the circumstances.Special thanks to HR team for amazing onboarding experience and always be there for me in need.

I thank my parents and friends who encouraged and supported me all the time. I perceive this dissertation as vital part of my professional development. I will work hard to increase my knowledge and learning and put it to good use.

A special thanks and mention to faculty guide **Dr Susmit Jain,** Associate Professor, IIHMR University, Jaipur, for his constant support and guidance without which this research won't be what it is.

Minora Priya
1133

DECLARATION BY STUDENT

I hereby declare that this dissertation titled Breast cancer awareness among women in India is the bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

(Signature)

Minora Priya

19th June 2022

ABSTRACT

Title: BREAST CANCER AWARENESS AMONG WOMEN IN INDIA

Submitted by: Minora Priya (Roll no.: 1133) **Guided by: Dr Susmit Jain**

Background

Breast cancer (BC) is the most commonly diagnosed cancer among women in India. Diagnosis of BCat very advanced stage with increased incidence of breast cancer in India, as well as the high death rates among breast cancer patients, are causing concern among policymakers and the public health system. Some of symptoms of BC are nipple retraction/inversion, bloody nipple discharge, rashes around the nipple, breast skin change, redness or discoloration of nipples, breast pain, painless lumps in armpits, itching, changing breast size and shape. In case women are aware of symptoms of breast cancer, they could identify the symptoms of the BC early on that can lead to early treatment and cure. This will reduce the mortality rate among women occurring due to late identification of disease. With this backdrop the current research is aimed at women's understanding of breast cancer symptoms, risk factors and the early detection method.

Methodology

A cross sectional study was conducted to assess knowledge, perception, and risk awareness about breast cancer among adult women population aged 20 to 75 years of India. Closed ended structured questionnaire using google form was used to collect quantitative data pertaining to awareness, signs andsymptoms and early detection method of breast cancer. The sample size for the study was 101 and convenience sampling techniques was used. The sample was taken from women residing in Gujarat.

Results

The study found that 72% of respondents were aware about the risk factors associated with breast cancer. Among the different risk factors associated with breast cancer diet & diet related factors, gender and obesity came as top 3 with awareness of 71%, 68% and 57%. 68% respectively. Breast self-examination was the top early detection method whose knowledge was prevalent among the respondents as 83% of respondents were aware of it. Other early detection methods like clinical breast examination (52%), mammography (63%), ultrasound for detection of breast tumour (45%) and breast MRI scan (53%) were not highly prevalent among respondents. Among the symptoms of breast cancer respondents were mostly aware of breast pain, breast skin change, painless lump in one of the armpits/breasts, nipple

retraction/inversion. Respondents were mostly aware of chemotherapy (86%), surgery (79%) and radiotherapy (71%) as the options for treatment for breast cancer.

Conclusion

Women had good awareness of the name of the disease but poor awareness of risk factors related to BC. This couldlead to community-based breast cancer screening being delayed. As a result, the study recommends championing and a bigger intervention to improve breast cancer awareness amongwomen in India, with a special focus on women with poor education

Keywords

Breast Cancer, Awareness, Risk factors, Breast Cancer detection method, Women, India

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Abbreviations/Acronyms

ABBREVIATIONS	FULL FORMS
BC	Breast Cancer
AI	Artificial Intelligence
ML	Machine Learning
MRI	Magnetic Resonance Imaging

Breast Cancer Awareness among women in India: A cross-sectional study among adult women population of India

Chapter 1 Introduction

According to Cancer research UK, when abnormal cells divide in uncontrollable way then it is called cancer. There are more than 200 types of cancer. There were estimated 18.1 million cancer cases around the world in 2020. 9.3 million cases were in men and 8.8 million cases in women, based on World Cancer Research Fund International data. [1]

Breast cancer, lung cancer and colorectal cancer were the top 3 types of cancer among both sexes contributing 12.5%, 12.2% and 10.7% of the cases respectively. Among men, lung cancer remains most common cancer type contributing 15.4% of the 9.3 million cancer cases in men. Among women, breast Cancer is the most common cancer contributing 25.8% of the 8.8 million cancer cases in women. In India, the situation is slightly different in case of men as oral/lip cancer is more prevalent due to the habit of chewing tobacco. Breast cancer is the most common cancer among women in India as well. [1]

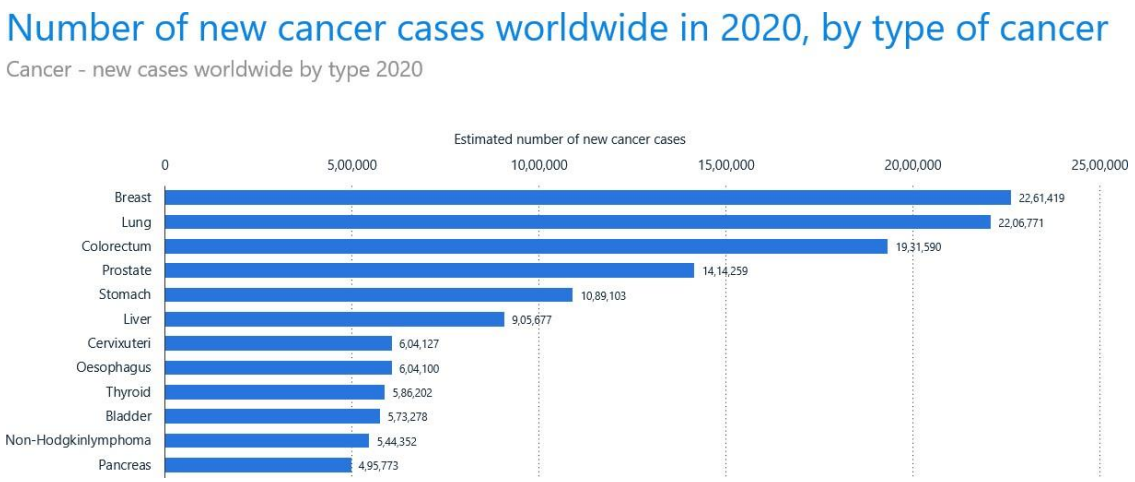

Figure 1. 1 Number of new cancer cases worldwide in 2020 by type of cancer. Source - International Agency for Research on Cancer, WHO

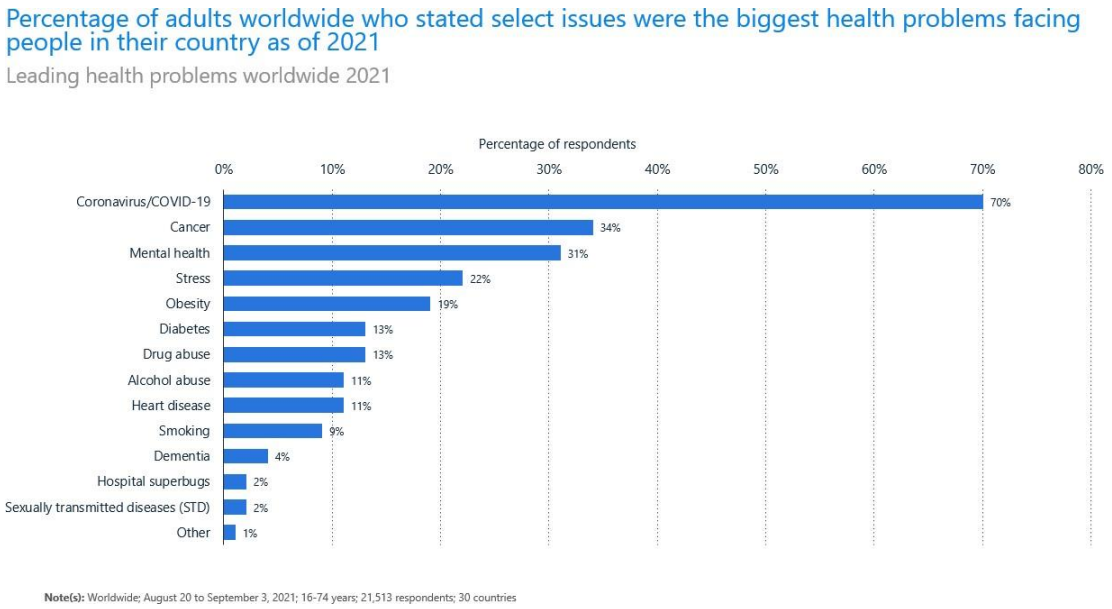

Figure 1. 2 Percentage of adults worldwide who stated select issues were the biggest health problems facing people in their country as of 2021, Source -IPSOS Data

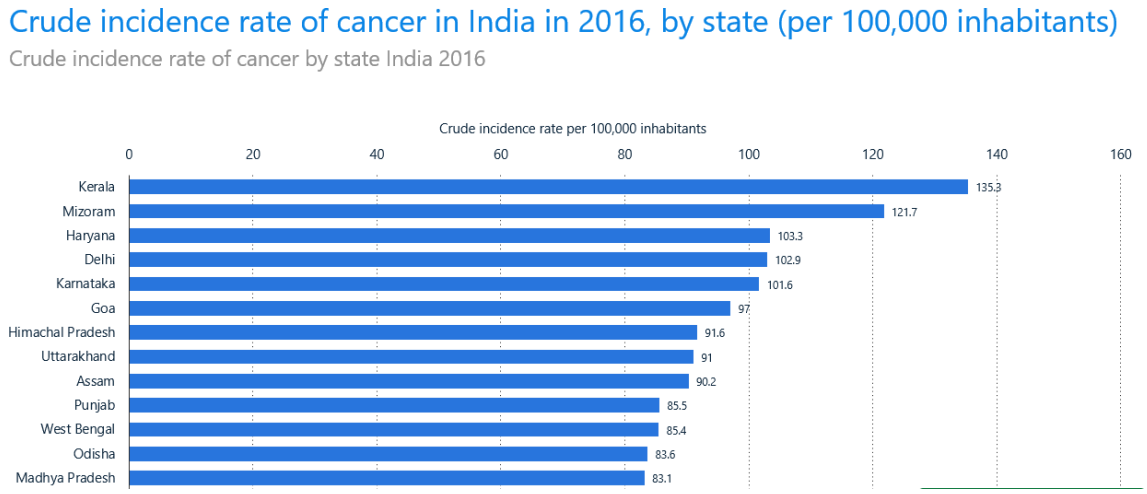

Figure 1. 3 Crude incidence rate of cancer in India in 2016, Lancet Data [Source]

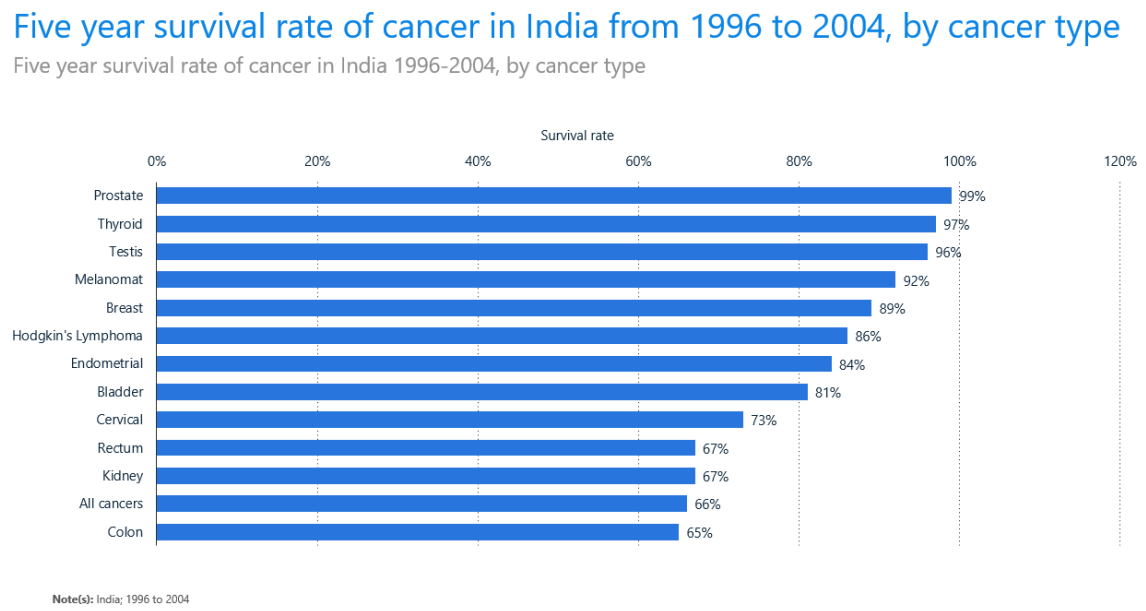

Figure 1. 4 Five-year survival rate of cancer in India from 1996 to 2004, by cancer type, Breast Cancer India

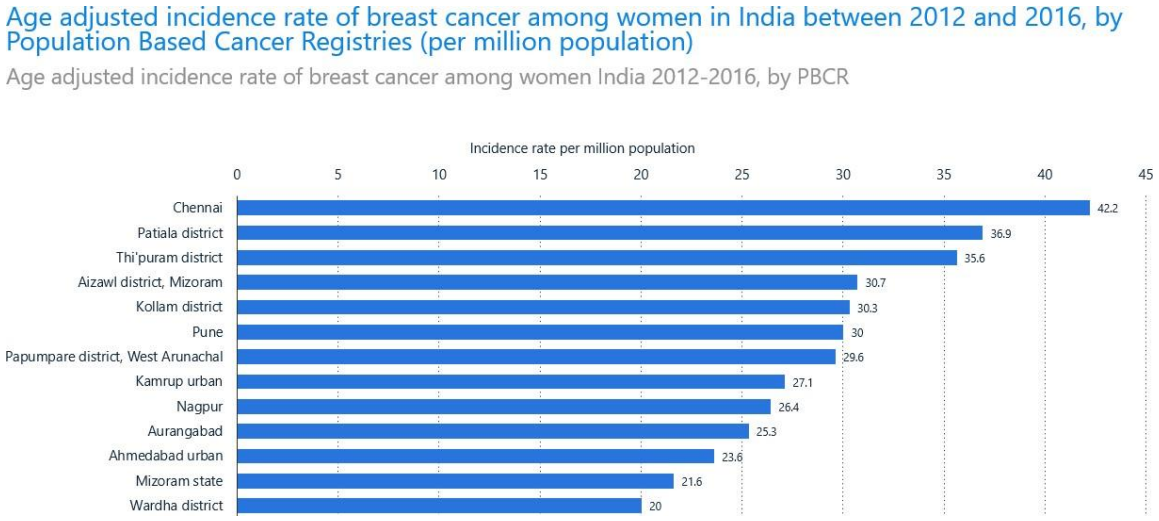

Figure 1. 5 Age adjusted incidence rate of breast cancer among women in India between 2012 and 2016, by Population Based Cancer Registries (per million population), Source ICMR

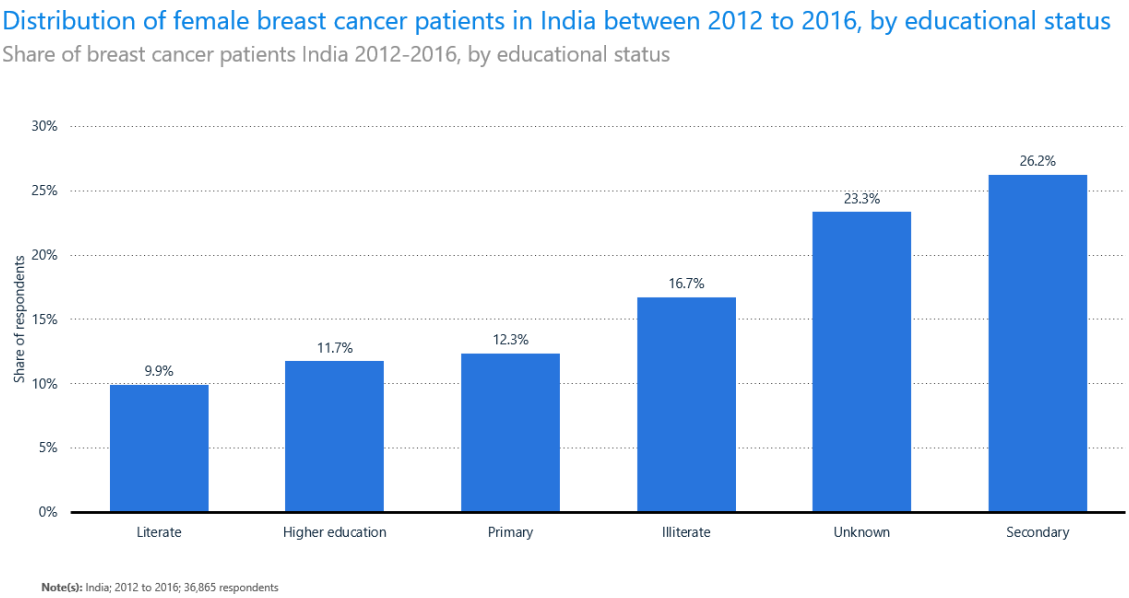

Figure 1. 6 Distribution of female breast cancer patients in India by educational status, ICMR [Source]

Breast cancer is a disease in which the cells in the breast grow out of control. There are different types of breast cancer depending on the part of breast where the cancer starts. It can be lobular cancer, ductal cancer, Paget disease, phyllodes tumour, angiosarcoma, etc. Breast cancer (BC)is the most frequent malignancy in women in India, with approximately 2 lakh cases diagnosedeach year[2]. Today one in every twenty-two women in urban and six women in rural India is at risk of developing breast cancer. The number of breast cancer cases is recorded at faster ratethan ever before. Breast cancer is responsible for nearly a quarter of all new cancer cases in India. The number of new cancer patients is increasing, and the age group of new patients arriving each year has gradually decreased from 55 to under 40 years. The survival rate of breastcancer patients is very low in India as compared to developed countries like USA or UK. The reason for low survival ratio in India is high population and low awareness about breast cancerin rural as well as in urban India. One out of every two women diagnosed with breast cancer die within five years leading to 50% mortality rate of the cases diagnosed. Breast cancer will kill more women in India than any other disease by 2030.The reason for high mortality rate is late or delayed diagnosis of breast cancer. Many patients in urban areas are diagnosed at stagetwo, when the lesions become palpable lumps, whereas most patients in rural areas are detectedonly after the lesions have progressed to metastatic tumours.

Regardless of advancement in screening process of breast cancer, the awareness level as well as diagnosis time among women is low. A lot of Indian start-ups are currently focusing on developing application for easy screening of breast cancer and increase awareness level of

breast cancer among rural, semi urban, and urban areas of India.

India is still a patriarchal society, and while women are now in positions of responsibility and earning for their families, males are still the primary breadwinners. Even educated professional women don't talk to their spouses, fathers, or brothers about their bodies in private.

With this backdrop the study was conducted to analyse the awareness and knowledge of BC, its risk factors, symptoms and detection method among women.

The aim of the study is to assess risk awareness and knowledge about breast cancer among adult women population of India. The study will provide overview of conventional therapies used in management of breast cancer.

Objective of Study

To assess knowledge, perception, and risk awareness about breast cancer among adult women population aged 20 to 75 years of India

Research questions

What is the perception and awareness level about breast cancer among adult women population aged 20-75 years of India?

What is the awareness level about breast cancer among adult women population aged 20-75 years of India?

Chapter 2 Literature Review

A lot of work has been done in the field of Breast cancer prevalence in the world and India. Some of them are listed below:

S.No.	Title	Author	Year of Publication	Findings
1	Evaluation of knowledge, awareness and attitudes towards breast cancer risk factors and early detection among females in Bangladesh: A hospital based cross-sectional study [3]	Nur E. Alam, Md. Shariful Islam, Hedayet Ullah, Md. Tarek Molla, Siratul Kubra Shifat, Sumaiya Akter, Salma Aktar, Mst. Mahmuda Khatun, Md. Rayhan Ali, Tapon Chandra Sen, Kamal Chowdhury, Rehana Pervin, A. K.M. Mohiuddin	Septem ber 2021	This paper was set up in Bangladesh but due to socio-economic and geographical similarity the paper can be helpful in Indian context. The paper found out that there was awareness of the term breast cancer, but the knowledge was limited about the risk factors, symptoms, early diagnosis and detection. Awareness about Breast self-examination (BSE), which is the easiest and most practical self-examination method, was also low. The paper emphasised on the importance of increasing awareness about BC risk factors and early detection among young women.

2	Breast Cancer Awareness among Women in an Urban Setup in Western India [4]	Ranvijay Singh, Nishitha Shetty, Parashar Rai, Ghanshyam Yadav, MuktiGandhi, Maryam Naveed, Ashwini M.Ronghe	June 2021	Breast cancer presentation (other than lump) is poorly understood, as is understanding of risk factors. The lack of awareness is most likely due to a lack of information, and this is the most significant barrier to frequent cancer screening and early diagnosis. To achieve improved results, comprehensive health education initiatives are needed to educate women about breast cancer, disseminate accurate information through the media, and encourage early identification of breast cancer.

3	Increasing breast cancer awareness and breast examination practices among women through health education and capacity building of primary healthcare providers: a pre-post intervention study in low socioeconomic area of Mumbai	Ranjan K umarPrusty, ShahinaBegum, Anushree Patil, D Naik, Sharmila Pimple, Gauravi Mishra	April 2021	Following the health education initiatives, research participant s'awareness of BC signs and symptoms, risk factors, and BSE behaviours improved significantly. Similar interventions, such as health education and capacity building for primary healthcare practitioners, should also included in
4	Can urban Accredited Social Health Activist (ASHA) be change agent for breast cancer awareness in urban area: Experience from Ahmedabad India [6]	Farjana Memon, Deepak Saxena, Tapasvi Puwar, Shyamsundar Raithatha	December 2019	From pre to post-test, the intervention group showed a substantial improvement in knowledge about breast cancer and breast self-examination. After intervention, the research group saw a 33% rise in breast cancer awareness, a 54% increase in BSE method, and a 42% increase in BSE practise. Knowledge has undergone significant modifications. However, consistent reinforcement training is required to modify behaviour.

5	Level of Awareness and Practices of Women Regarding Breast Cancer in Chhattisgarh, India: An Institution Based Survey [7]	Sunita Singh, Anjali Pal, Niraj Kumar Srivastava, Pushpawati Thakur	November 2018	Breast cancer symptoms, risk factors, and screening procedures were all remain unclear to women. Breast cancer diagnosis is delayed due to a lack of awareness about symptoms, risk factors, and screening procedures. Clinical breast examination by health care employees (doctors, nurses, multifunctional health workers) in women over 35 years of age and instruction in breast self-examination as a necessary policy for women attending out-of-hospital clinics
6	Knowledge and Practices Related to Screening for Breast Cancer among Women in Delhi, India [8]	Neha Dahiya, Saurav Basu, Megha Chandra Singh, Suneela Garg, Rajesh Kumar, Charu Kohli	December 2017	The findings of the paper highlight the need for awareness creation among adult women regarding risk factors and methods for early detection of BC.

7	Risk Factors for Breast Cancer among Indian Women: A Case–control Study [9]	MP Antony, B Surakutty, TA Vasu, M Chisthi	May 2017	The paper listed down major list factors of BC and their significance in occurrence of BC. Some of the risk factors analysed were diet, age, body mass index, waist size, triglyceride, number of years of menstruation, history of carcinoma in relatives, waist-hip ratio (WHR), hip size, high-density lipoprotein cholesterol, more than three pregnancies and atypical hyperplasia in the previous biopsy. Waist size and WHR are the major risk factors for carcinoma of breast. Adequate exercise and weight control are the most effective lifestyle changes that can reduce the risk of developing breast cancer.

8	Epidemiology of breast cancer in Indian women [10]	Shreshtha Malvia, Sarangadhara Appalaraju Bagadi, Uma S. Dubey and Sunita Saxena	December 2016	The paper looked into the prevalence of BC in India in terms of incidence rate and mortality rate of carcinoma of breast region wise and age wise. According to projections, the number of breast cancer cases in India might reach 17 lakh by 2020. Better health awareness, as well as the availability of breast cancer screening programmes and treatment facilities, would result in a more favourable and supportive environment.

9	Breast Cancer Awareness and Prevention Behavior Among Women of Delhi, India: Identifying Barriers to Early Detection [11]	Subhojit Dey, Surabhi Sharma, Arti Mishra, Suneeta Krishnan, Jyotsna Govil and Preet K. Dhillon	July 2016	The paper found some of the major behavioral barriers in early detection or presentation of BC. They were posteriority, fear and shyness. Pain was considered as initial symptom of BC by most women. Accessibility of treatment was hampered by financial constraints. Moreover, social stigma about breast problems made things more complicated. BC knowledge was limited, especially among the lower socioeconomic classes. BC awareness initiatives tailored to various levels of socioeconomic class should address women's ambivalence in prioritising their own health and social and behavioural challenges.

10	A review of breast cancer awareness among women in India: Cancer literate or awareness deficit? [12]	A. Gupta, K. Shridhar, P.K. Dhillon	July 2015	The paper found that evenfor stronger determinants of risk there was low awareness levels. The paper revealed low cancer literacy of breast cancer risk factors, irrespective of their socio-economic and educational background, among Indian women. The paper recommended a nation and state-wide awareness programmes on urgent basis which can engage multiple stakeholders of society & health ecosystem.

11	Breast Cancer Awareness at the Community Level among Women in Delhi, India [13]	Subhojit Dey, Arti Mishra, Jyotsna Govil, Preet K Dhillon	2015	Only 34.9% of women did breast self-examination (BSE), and only 6.9% had received a clinical breast examination/mammography. Higher awareness was found in 40.5% of women, and it was linked to education and socioeconomic level (SES). Women in Delhi had poor BC awareness, which was linked to their socioeconomic status and lack of education. As a first stage in the fight against BC, community outreach and media use must dramatically boost awareness.
12	Changing trends of breast cancer awareness in young females of north India: A pilot study from a rural cancer hospital [14]	Vivek Tiwari, Piyush Shukla, Gourav Gupta	January 2014	The paper found a changing trend in breast cancer awareness among young females in rural north India. Young rural girls are more knowledgeable about breast-related symptoms and seek correct treatment as a result of enhanced education and awareness. A strong rural cancer registry system might chronicle this shifting picture, which could be at odds with established cancer epidemiology assumptions and knowledge.

13	Rural urban differences in breast cancer in India [15]	RT Nagrani, A Budukh, S Koyande, NS Panse, SS Mhatre, R Badwe	2014	The current study shows that leading a healthy lifestyle in a rural setting lowers the risk of breast cancer.
14	Knowledge, attitude and preventive practices of South Indian women towards breast cancer [16]	Pawan Kumar Sharma, Enakshi Ganguly, Disha Nagda and T Kamaraju	January 2013	Breast cancer awareness is low among women in Medchal mandal, with just a minority practising BSE and none practising CBE. The research participants' educational status appears to be the most important factor of their level of knowledge and health behaviour regarding BC. The study advocated that policy guidelines be established to ensure that all women in South India have access to appropriate and timely breast cancer information.

15	Awareness of breast cancer in women of an urban resettlement colony [17]	Somdatta P, Baridalyne N	October 2008	One of the early papers in this field found the need for awareness generation programs to educate women on the issues of breast cancer as the awareness about breast cancer amongst the women in the focused community was low. The paper paid emphasis on the importance of propagation of correct messages and promoting early detection of breast cancer.

Chapter 3: Methodology

Research Question:

What is the perception and awareness level about breast cancer among adult women population of India?

What are the conventional therapy and novel technologies used in the management of breast cancer?

Study Design

Descriptive cross-sectional study

Study Duration

March 21 to June 18, 2022

Sampling Technique

Convenience sampling

Sample size

101 individuals were considered for the study

Inclusion Criteria

All females above 20 years of age and below 75 years of age residing in India.

Exclusion criteria

All females below 20 years of age and above 75 years of age residing in India.

Data Collection Procedure

Primary data about awareness and knowledge of breast cancer among women collected in online mode using google form.

The secondary data on conventional therapies and novel technologies in management of breast cancer collected from research articles available on google scholar and PubMed. Index keywords like (breast neoplasm or breast related) and (risk factors or risk identification) and India, (Cultural beliefs or fears) and (conventional therapy or novel technology) is used.

Study Tool

Questionnaire is prepared for the study on awareness, knowledge, and perception about breast cancer

List of Variables

Dependent Variables

- Knowledge about different risk factors of BC
- Knowledge about early detection methods of BC
- Knowledge about symptoms of BC
- Knowledge about treatments of BC
- Family history of BC
- Personal habits impacting BC

Independent Variables

- Marital Status
- Age
- Living place
- Education level
- Socio-economic level

Operational Definition

Breast cancer is caused by the development of malignant cells in the breast which originate in the lining of the milk glands or ducts of the breast (ductal epithelium). Breast cancer can spread outside the breast through blood vessels and lymph vessel and is said to be metastasized.

Data Analysis

Primary data collected on knowledge, awareness and perception of breast cancer was analysed by Microsoft Excel. Descriptive/ inferential statistics was carried.

Ethical Consideration

In this study ethical concerns like informed consent of participants and their family members were considered. Participant's comfort in discussion of diagnoses and treatment options for breast cancer was also considered.

Chapter 4:Results

A sample of 101 individuals were considered for this study. Out of the total sample, 72.3% were aware about the risk factors of breast cancer whereas 27.7% were either not aware of breast cancer or risk factors of breast cancer.

Socio-demographic characteristics

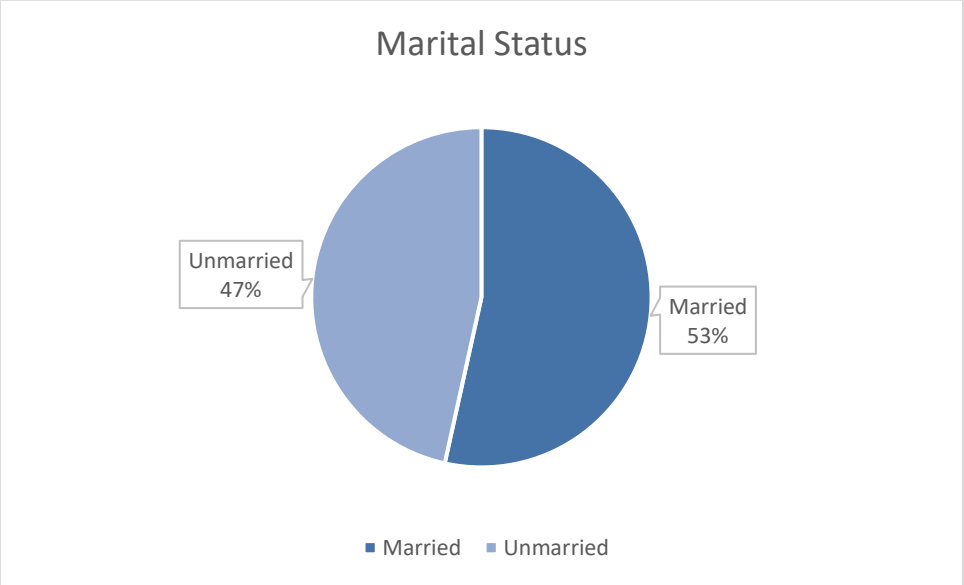

Figure 4. 1 Marital Status of Sample

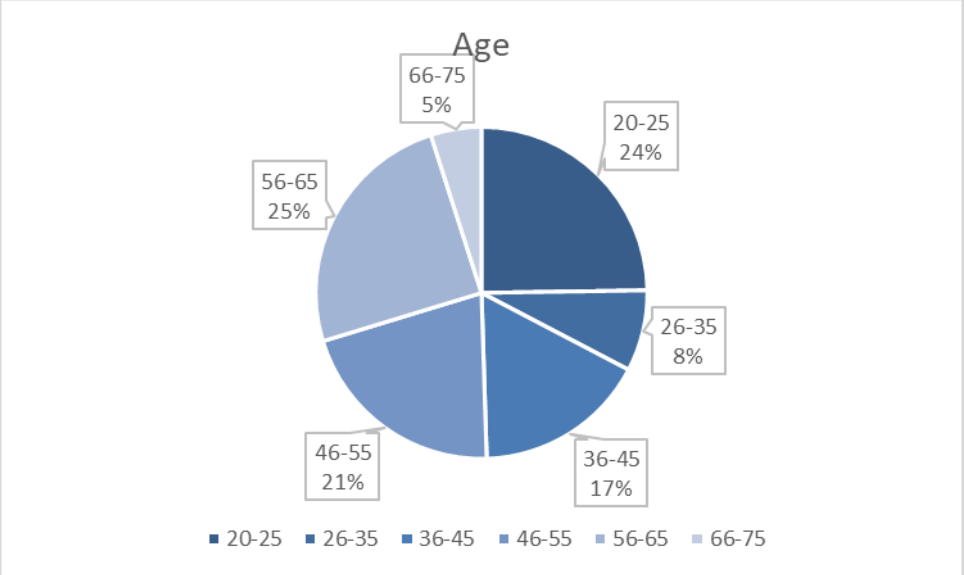

Figure 4. 2 Age distribution of Sample

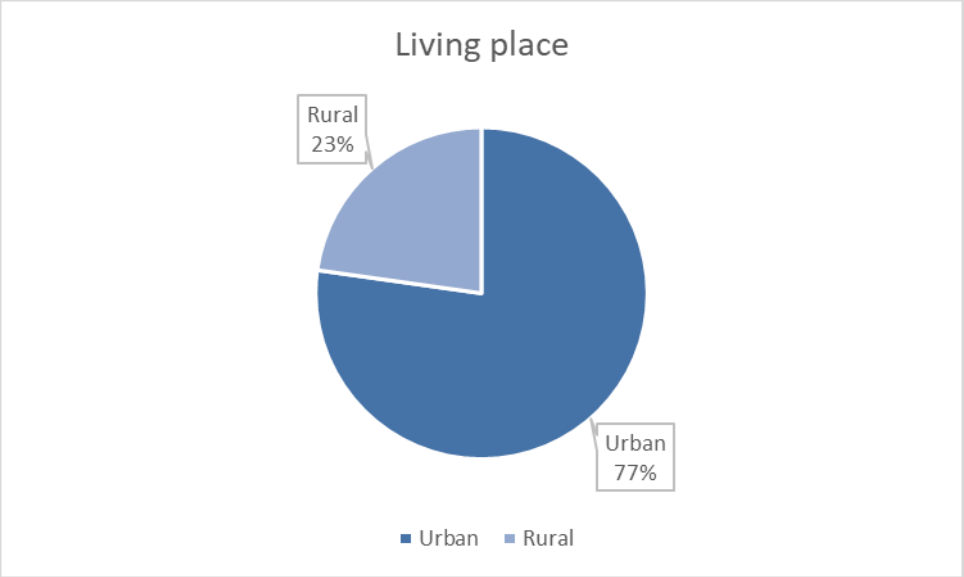

Figure 4. 3 Living place of Sample

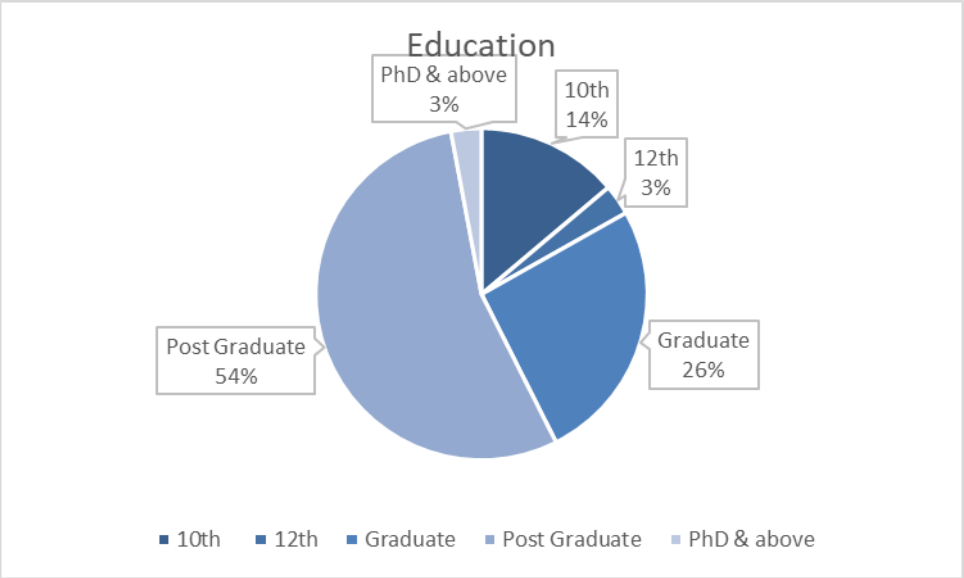

Figure 4. 4 Education level of Sample

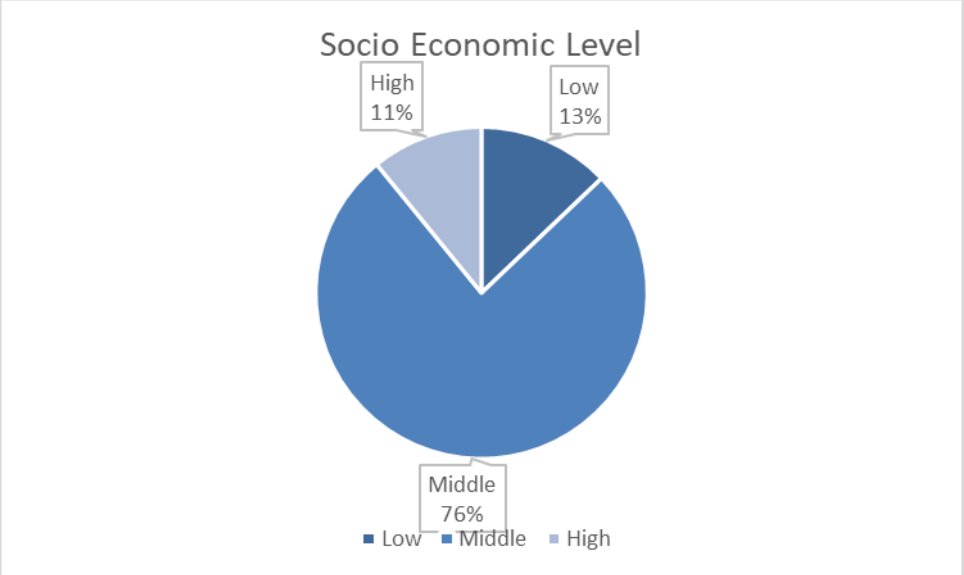

Figure 4. 5 Socio economic level of Sample

Study of knowledge about Breast Cancer

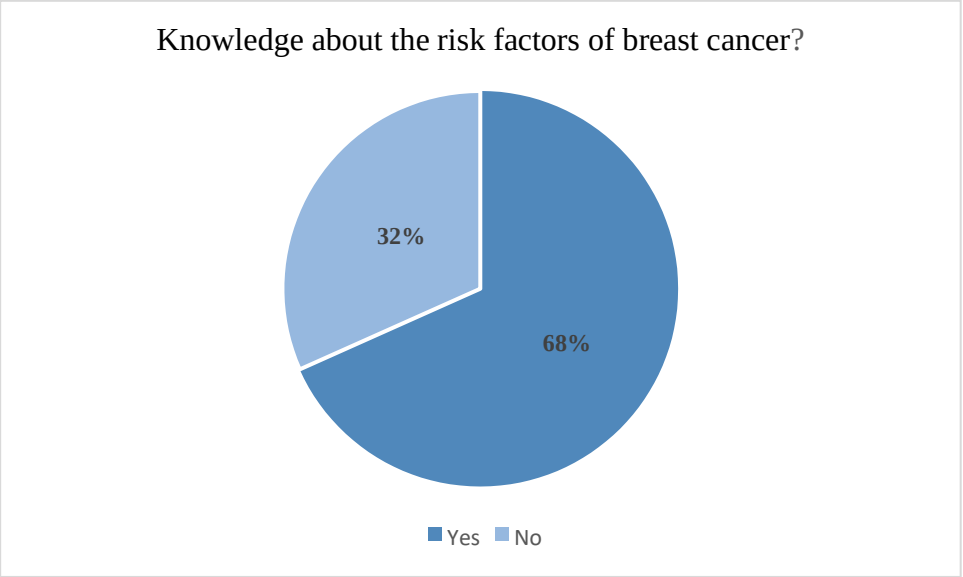

Figure 4. 6 Knowledge about risk factors of breast cancer

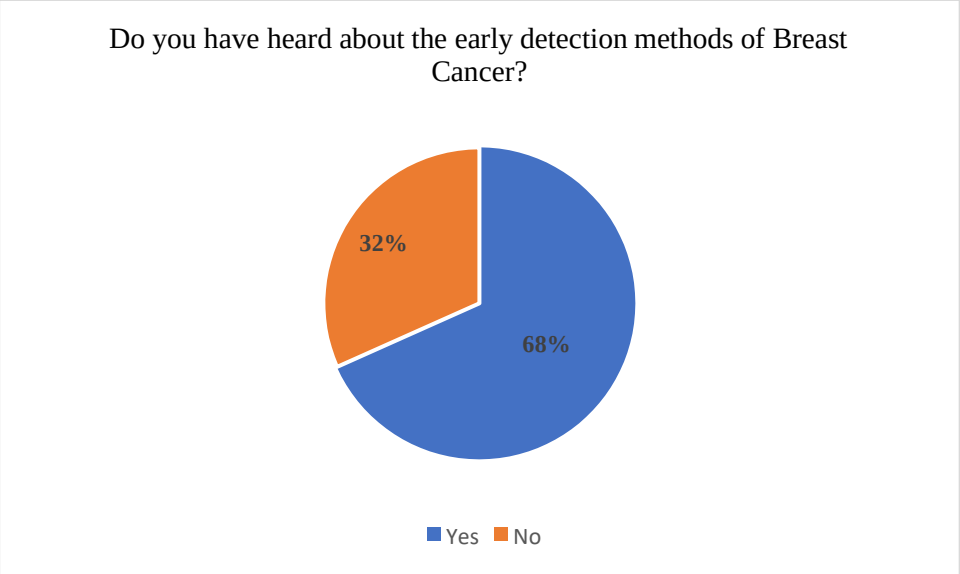

Figure 4. 7 Knowledge about detection method of breast Cancer

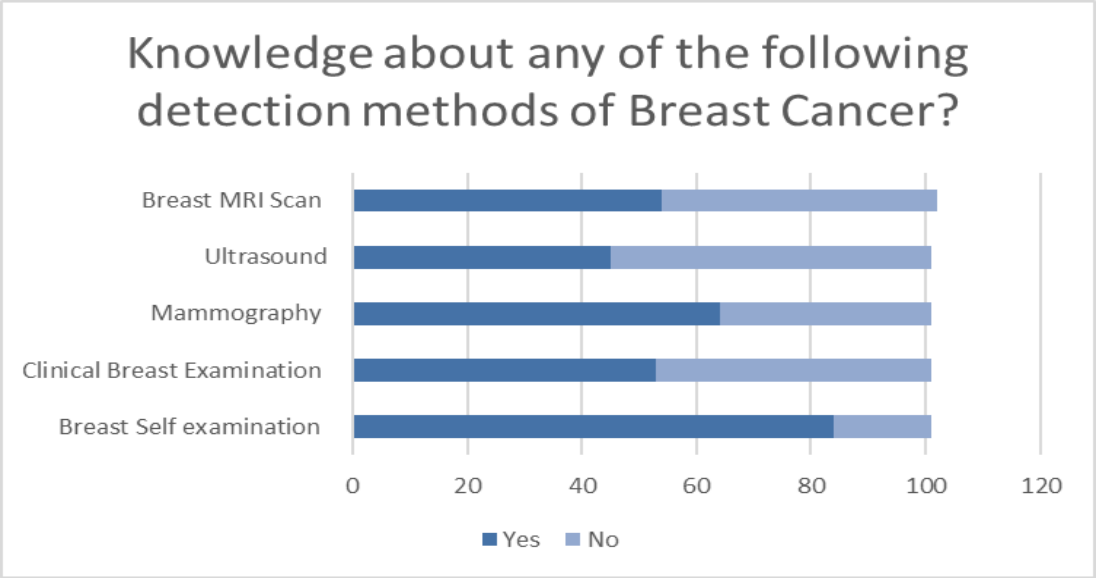

Figure 4. 8 Knowledge about any detection methods of breast cancer

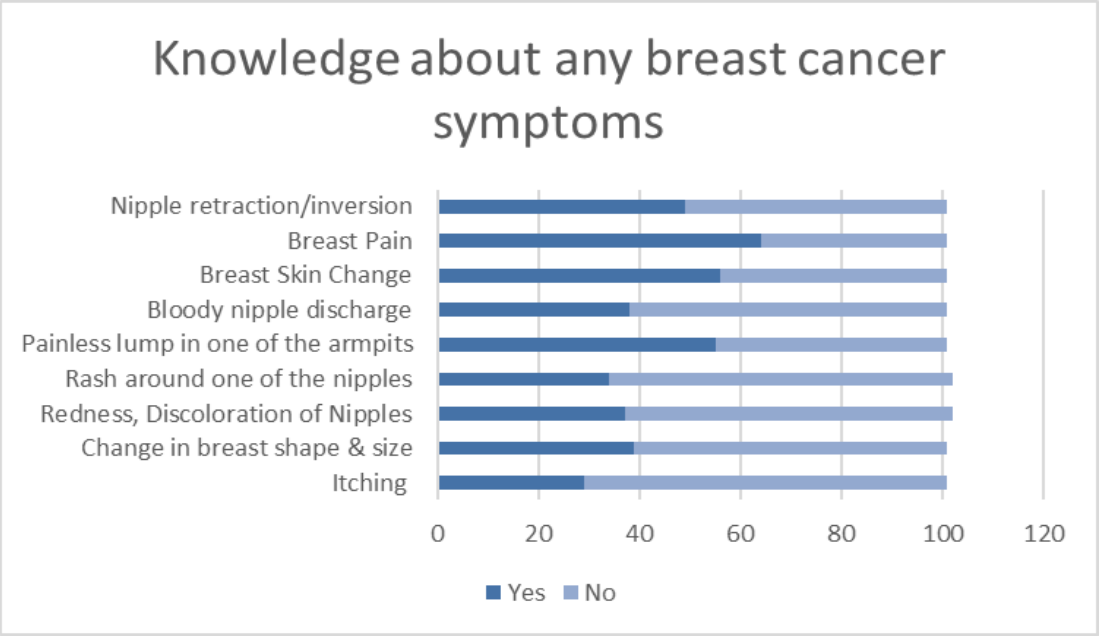

Figure 4. 9 Knowledge about breast cancer symptoms

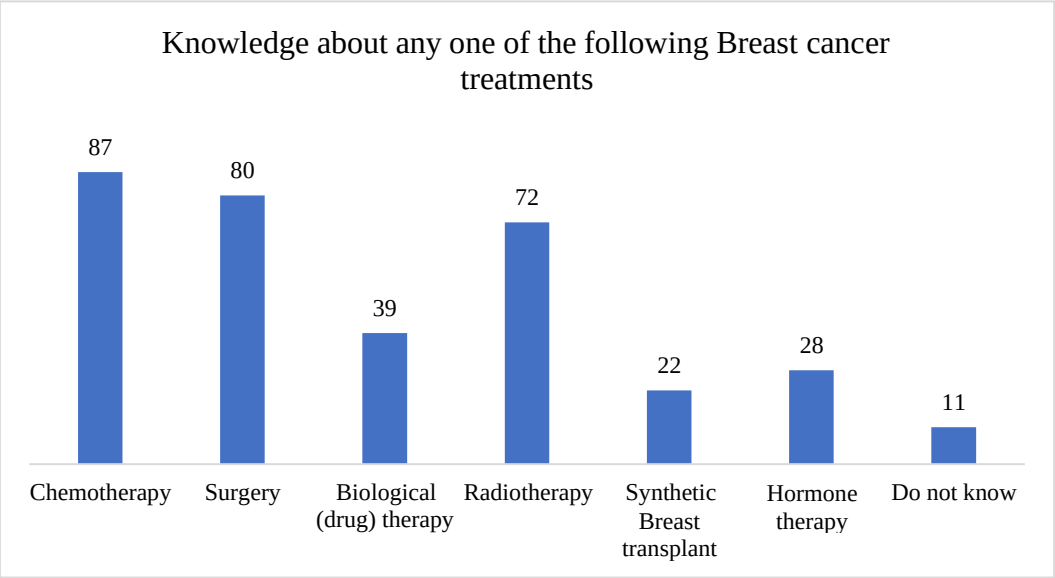

Figure 4. 10 Knowledge about breast cancer treatments

Study of participants risk for Breast Cancer

Table 1 Participants risk of breast cancer

S. No.	Question		Frequency	% of Total
1	Do you have family history of Breast Cancer?	Yes	81	80.2%
		No	20	19.8%
2	Do you have any sister or mother suffering from breast cancer?	Yes	87	86.1%
		No	14	13.9%
3	Do you have at least two uncles, aunt, grandparents who have cancer?	Yes	88	87.1%
		No	13	12.9%
4	Have you done any Hormone replacement therapy?	Yes	87	86.1%
		No	14	13.9%
5	Do you drink Alcohol?	Yes	48	47.5%
		No	53	52.5%
6	Do you have any benign breast disease?	Yes	7	6.9%
		No	94	93.1%

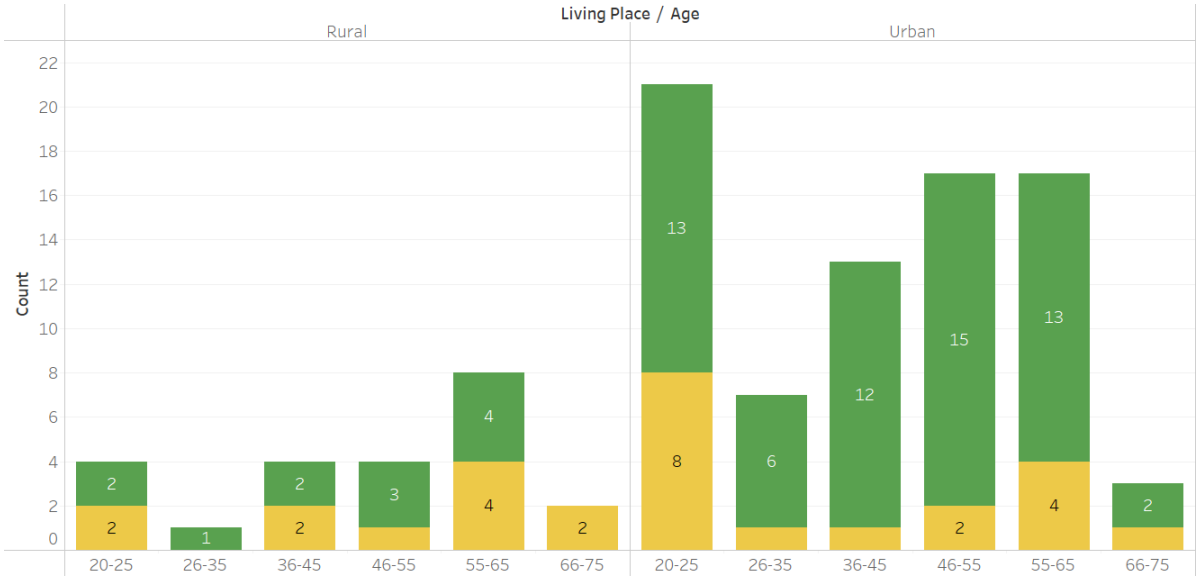

Figure 4. 11 Knowledge about risk factors of breast cancer by age

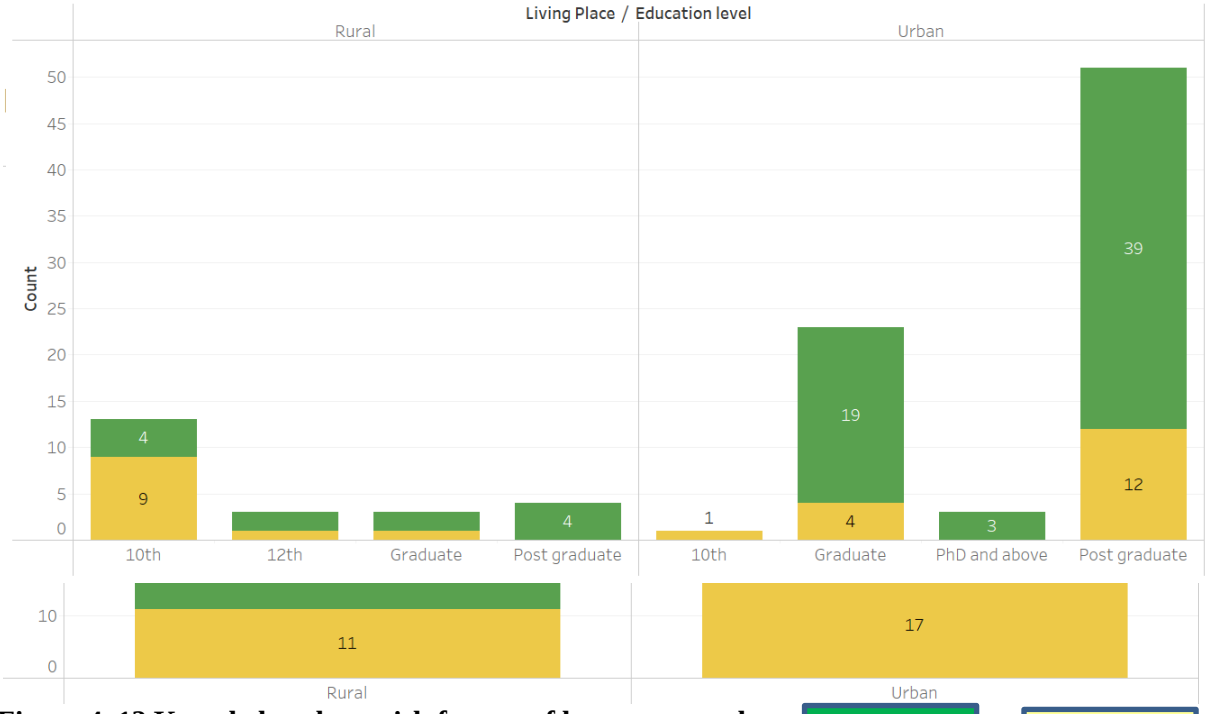

Figure 4. 12 Knowledge about risk factors of breast cancer by education level

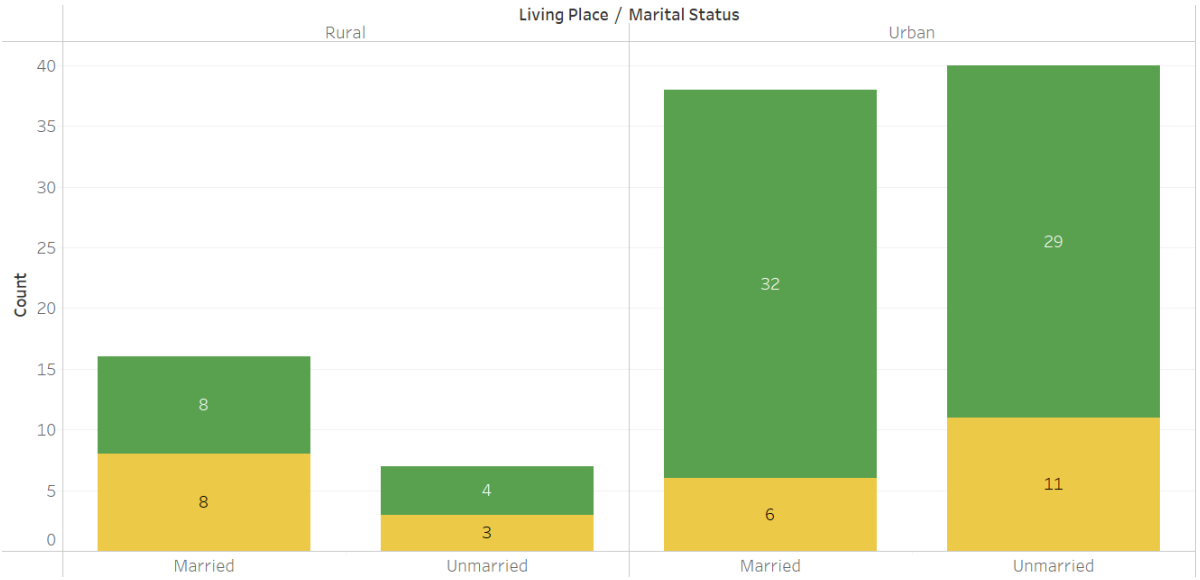

Figure 4. 13 Knowledge about risk factors of breast cancer by Marriage

Yes No

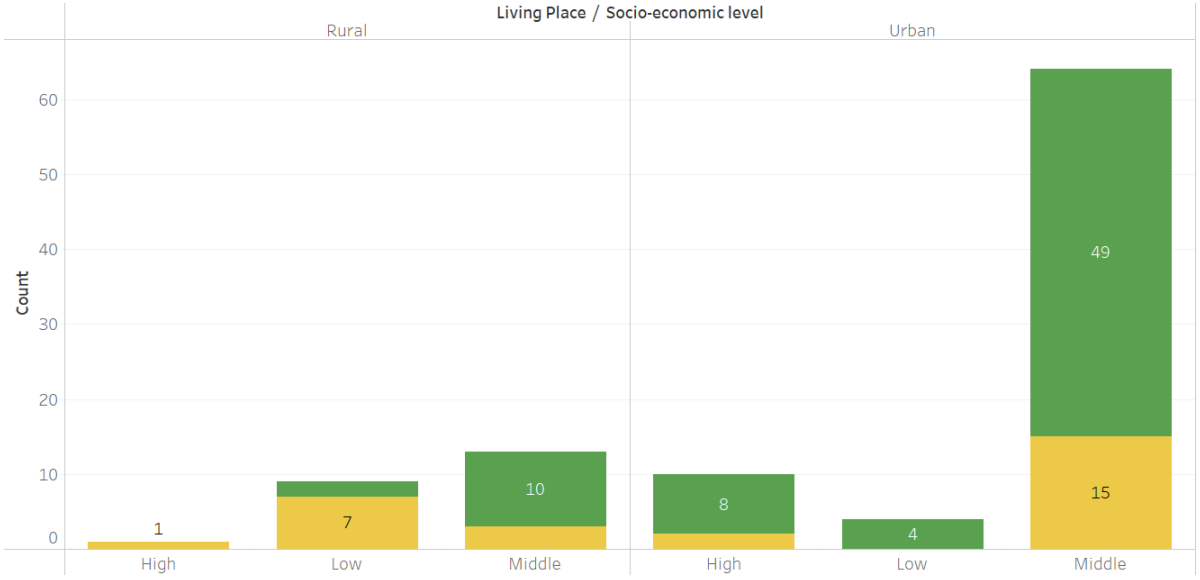

Figure 4. 14 Knowledge about risk factors of breast cancer by socio-economic level

Yes No

Chapter 5: Discussion

The study highlighted several aspects of awareness among the female population about breast cancer. The study found that 72% of respondents were aware about the risk factors associated with breast cancer. Among the different risk factors associated with breast cancer diet & diet related factors, gender and obesity came as top 3 with awareness of 71%, 68% and 57%. 68% of the respondents were aware about the early detection methods of breast cancer. Breast self-examination was the top early detection method whose knowledge was prevalent among the respondents as 83% of respondents were aware of it. Other early detection methods like clinical breast examination (52%), mammography (63%), ultrasound for detection of breast tumour (45%) and breast MRI scan (53%) were not highly among prevalent respondents. Among the symptoms of breast cancer respondents were mostly aware of breast pain, breast skin change, painless lump in one of the armpits/breasts, nipple retraction/inversion. Respondents were mostly aware of chemotherapy (86%), surgery (79%) and radiotherapy (71%) as the options for treatment for breast cancer.

The awareness about the risk factors related to breast cancer was better among married women (74%) against unmarried women (70%). The awareness among age groups 26-35, 36-45 and 46-55 years was highest with average awareness level of 85% indicating high awareness of breast cancer among young and middle-aged women. The awareness is more among the urban respondents (78%) than rural respondents (52%). There is positive correlation between education level and awareness about the breast cancer as the education level rises so does the awareness with graduate and postgraduate having highest awareness of around 80%. Socio-economic level is also correlated with awareness in a positive manner. Middle and high socio-economic level respondents were more aware about the risk associated with breast cancer.

Irrespective of marital status, the awareness regarding early detection was around 68%. Middle aged women in age group 26-65 years had highest awareness with average awareness of 71% across 4 age groups between 26 years and 65 years. Urban women are more aware than their rural counterpart. Graduate and above are more aware with average awareness level of 82%. Middle socio-economic level women have lower awareness level (69%) than higher socio-economic level women (82%) about early detection of breast cancer.

Chapter 6: Conclusion

Women had poor understanding of breast cancer warning signs and risk factors. This could lead to community-based breast cancer screening being delayed. As a result, the study recommends lobbying and a bigger intervention to improve breast cancer awareness among women in India, with a special focus on women with poor education.

- There is urgent need to explore the drivers of awareness deficits and stigma surrounding breast cancer among women population of India
- The government of India should implement strategic and effective preventive and early detection programmes or interventions for breast cancer
- Through educational initiatives increase community awareness of breast cancer prevention, preventable breast cancer risk factors, the benefits of early detection, and the availability of screening facilities
- Integrating District Cancer Control operations with NRHM may be the most cost-effective technique for cancer prevention in rural area
- Healthcare practitioners and community workers should receive training on the most recent findings addressing breast cancer risk factors in order to improve their cancer literacy and pass this information on to general population
- For women's health in the country, continuing medical education programmes with a greater emphasis on breast cancer in nursing curriculum at institutional level and other healthcare training institutions should be a priority
- Awareness about both modifiable and non-modifiable risk factors of breast cancer should be provided to Indian women population
- Increase discussion of other major risk factors of breast cancer such as alcohol, reproductive history, and overweight/adiposity in the media or policy work
- Promotion of breast cancer health apps that will help in creating awareness and prevention of breast cancer among Indian women
- Encourage startups that are focusing on AI & ML driven screening of breast cases which can significantly help practitioners to detect and treat early, For example Niramai, a Bengaluru-based firm, has developed a non-invasive AI-based breast cancerscreening system that can be utilized on a broad scale in rural and semi-urban areas ofIndia.

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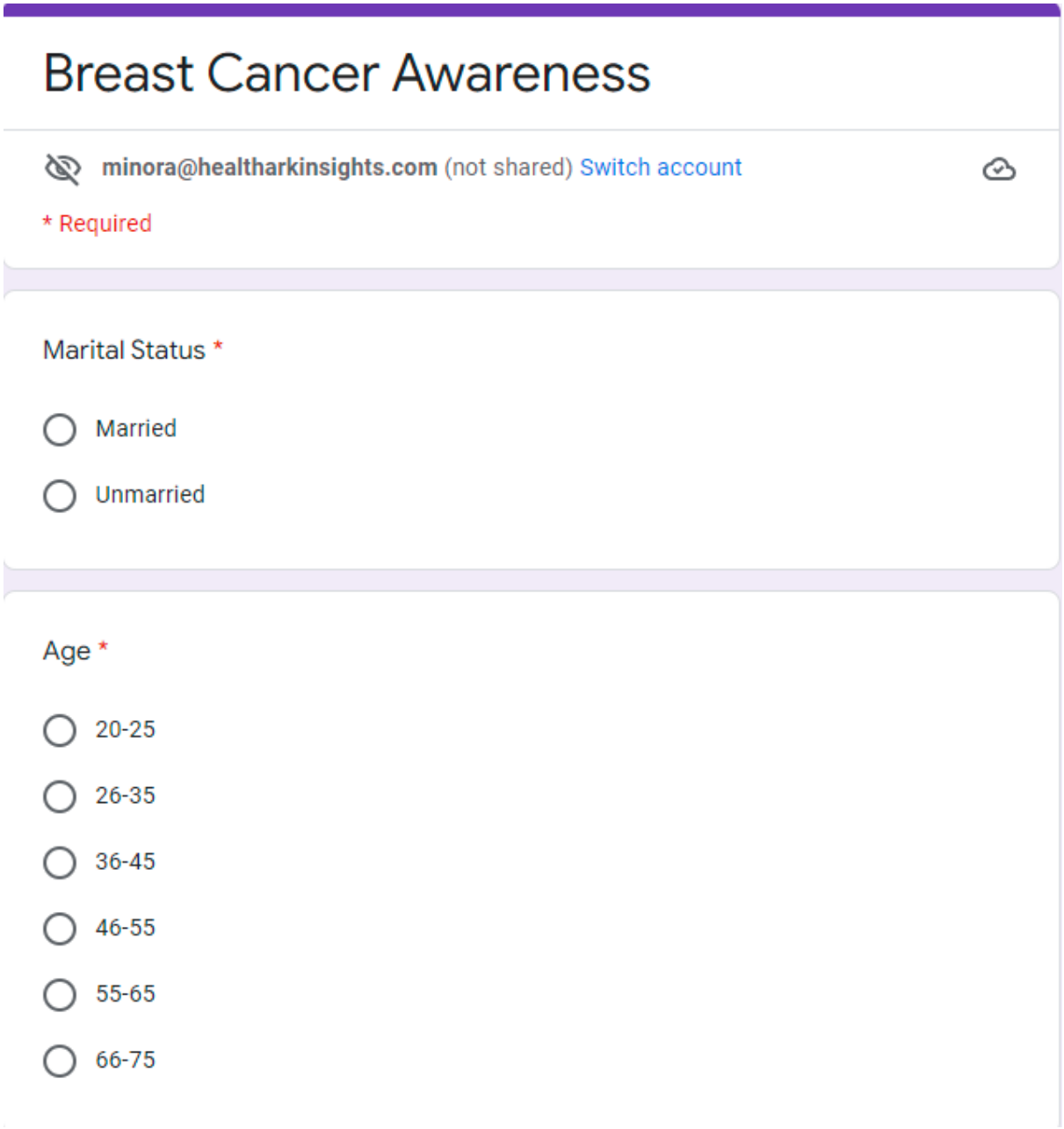
Annexure

Questionnaire to study the level of awareness about the disease called Breast cancer. The questionnaire tried to analyse the awareness about the risk factors associated with BC, the symptoms and its awareness among women, the early detection methods and its awareness, the prevalence of BC in family and personal habits which may lead to BC.



Living Place

- ◯ Urban
- ◯ Rural

Education level *

- ◯ 10th
- ◯ 12th
- ◯ Graduate
- ◯ Post graduate
- ◯ PhD and above

Socio-economic level *

- ◯ Low
- ◯ Middle
- ◯ High

Knowledge about Breast Cancer

Do you have any knowledge about the risk factors of breast cancer? *

- ◯ Yes
- ◯ No

Do you have knowledge about any of the following risk factors of breast cancer? *

	Yes	No
Diet & Diet related factors	☐	☐
Hormones & reproductive factors	☐	☐
Ionizing radiation	☐	☐
Benign breast disease	☐	☐
Menarche earlier than normal age	☐	☐
Gender	☐	☐
Obesity	☐	☐
Hormone replacement therapy	☐	☐

Do you have heard about the early detection methods of Breast Cancer? *

- ◯ Yes
- ◯ No

Do you have any knowledge about any of the following detection methods of Breast Cancer? *

	Yes	No
Breast Self Examination	☐	☐
Clinical Breast Examination	☐	☐
Mammography	☐	☐
Ultrasound for detection of breast tumor	☐	☐
Breast MRI scan	☐	☐

Do you know about any of the following symptoms of Breast cancer? *

	Yes	No
Nipple retraction/inversion	☐	☐
Breast Pain	☐	☐
Breast skin change	☐	☐
Bloody nipple discharge	☐	☐
Painless lump in one of the armpits/breast	☐	☐
A rash around one of the nipples	☐	☐
Redness, discoloration of the nipple skin	☐	☐
Change in Breast size & shape	☐	☐
Itching	☐	☐

Do you have knowledge about any one of the following Breast Cancer treatments? *

- ☐ Chemotherapy
- ☐ Surgery
- ☐ Biological (drug) therapy
- ☐ Radiotherapy
- ☐ Synthetic Breast transplant
- ☐ Hormone therapy
- ☐ Do not know

Participants risk for Breast Cancer

Do you have family history of Breast Cancer? *

- ◯ Yes
- ◯ No

Do you have any sister or mother suffering from breast cancer? *

- ◯ Yes
- ◯ No

Do you have at least two uncles, aunt, grandparents who have cancer? *

- ◯ Yes
- ◯ No

Have you done any Hormone replacement therapy? *

- ◯ Yes
- ◯ No

Do you drink Alcohol? *

- ◯ Yes
- ◯ No

Do you have any benign breast disease? *

- ◯ Yes
- ◯ No