Awareness and Practice of Breast Self Examination among Women in Urban Puducherry

Archana S K[1], Srikanth S[2], Arthi M[3].

[1]Post Graduate, Department of Community Medicine

[2]Professor and Head, Department of Community Medicine

[3]Assistant Professor, Department of Community Medicine, Sri Venkateshwaraa Medical College, Hospital and Research Center, Puducherry, India

Abstract: *Background: Breast cancer is the leading cause of cancer mortality among Indian women. Breast Self Examination (BSE) is a simple yet effective screening method for early detection of breast cancer. Objective: To determine the Awareness and Practice of Breast Self Examination among urban women in Puducherry. Methodology: A community based cross-sectional study was conducted among 160 women aged 20-60 years in Villianur, Puducherry. Population Proportion to Size sampling technique was used to select study participants from 11 wards. A pretested interview schedule was administered. Data was analysed with descriptive statistics. Results: The mean age of the participants were 40.28 ± 8.78 years. Though majority (95%) had heard about breast cancer, only 40.6% participants were aware of Breast Self Examination. Among them, 32.5% knew that it is done to identify breast cancer in early stages. About 19.4% participants mentioned that the ideal age to begin BSE is ≥ 19 years. Only 8.8% knew that BSE should be performed a week after the menstruation. While 36.2% participants mentioned that BSE would increase the fear of breast cancer, 31.2% reported that practicing BSE would make them feel shy and 17.5% considered it as a difficult procedure. Majority (78.8%) agreed that BSE should be taught to all women above 18 years. Only 13.8% (22) of the participants had practiced BSE and none of them were aware of the correct steps in BSE. Conclusion: The findings of the study stress the need for awareness creation on BSE among women.*

Keywords: Breast Cancer, Breast-Self Examination

1. Introduction

Breast cancer is the second most common cancer worldwide (25% of all cancers) and the most frequent cancer among women with an estimated 1.67 million new cancer cases diagnosed in 2012, and slightly more cases in developing (8,83,000 cases) than in developed (7,94,000 cases) countries. Incidence rates vary nearly fourfold across the world regions, with rates ranging from 27 per 1,00,000 in Middle Africa and Eastern Asia to 92 per 1,00,000 in Northern America. Breast cancer ranks as the fifth cause of death from cancer overall (5,22,000) and while it is the most frequent cause of cancer death among women in developing nations (3,24,000 deaths, 15.4%).[1]

Breast cancer survival rates vary greatly worldwide, ranging from 80% or over in North America, Sweden and Japan to around 60% in middle-income countries and below 40% in low-income countries. The low survival rates in less developed countries are mainly due to the lack of early detection programmes, resulting in a high proportion of women presenting with late-stage disease, as well as due to the lack of adequate diagnosis and treatment facilities. The incidence of breast cancer is increasing in the developing countries due to increase in life expectancy, increased urbanization and adoption of western lifestyle.[2]

Earlier cervical cancer was the most common cancer in Indian woman but now the incidence of breast cancer has surpassed cervical cancer and is the leading cause of cancer death among Indian females.[3] According to Globocan 2012, India along with United States and China collectively accounts for almost one-third of the global breast cancer burden. India is facing a challenging situation due to 11.54%

increase in incidence and 13.82% increase in mortality due to breast cancer during 2008–2012.[4] The main reasons for this observed hike in mortality are due to lack of inadequate breast cancer screening, diagnosis of disease at advanced stage and unavailability of appropriate medical facilities.[5]

Controlling the specific modifiable risk factors of breast cancer as well as effective integrated prevention of non-communicable diseases which includes promotion of healthy diet, physical activity and control of alcohol intake, overweight and obesity, eventually will have a positive impact in reducing the incidence of breast cancer in the long term. Raising general public awareness on the magnitude of breast cancer problem and the mechanisms to control as well as advocating for appropriate policies and programmes are the key strategies of population-based breast cancer control.[6]

Early detection in order to improve survival and breast cancer outcome remains the cornerstone of breast cancer control.[7]
There are two early detection methods:
- Early diagnosis or awareness of early signs and symptoms in symptomatic populations which can facilitate diagnosis and early treatment, and
- Screening i.e., the systematic application of a screening test in a presumably asymptomatic population -aims to identify individuals with an abnormality suggestive of cancer.

A screening programme is a far more complex undertaking than an early diagnosis programme.[8]

Prevention, early detection, diagnosis and treatment, rehabilitation and palliative care are measures in comprehensive cancer control. In the low- and middle-

income countries where the diseases are diagnosed in late stages and resources are very limited, early diagnosis remains an important early detection strategy. There is some evidence that early detection can produce "down staging" (increasing in proportion of breast cancers detected at an early stage) of the disease to stages that are more feasible to curative treatment.[9]

Breast-Self Examination (BSE)

Breast-self Examination is a self-centred, inexpensive and non-invasive method of screening for breast cancer. It is a monthly examination of both the breasts by a woman at the end of her menstrual flow. It requires systemic visual inspection standing in front of the mirror, feeling or palpation of both the breasts while lying down flat, using palm and pads of the middle three fingers by a woman. It is to be done by all women starting age of 20.[10]

Significance and Need for the Study

Breast cancer screening is very important in India, as we have limited resources, large population base where the number of breast cancer cases is on the rise and where there are no formal guidelines for breast cancer issued by the Government. Lack of knowledge amidst the general public, influences prevention and early diagnosis of breast cancer. Spreading awareness regarding breast cancer by educational programs through mass media is the need of the hour.

Despite long-standing national programmes, such as the National Cancer Control Programme launched in 1975, and the National Programme for cardiovascular disease, Diabetes, Cancer and Stroke (NPCDCS launched under the 12th five year Plan from 2012 to 2017),[11] to increase awareness and early detection behaviours, the mortality rates for breast cancer continue to rank the highest in the country. Barriers such as 'low cancer awareness', also referred to as 'awareness deficit' or 'scarcity of awareness' among women, the presence of stigma, fear, gender inequity and reduced engagement in screening behaviour, contribute to high mortality rates.[12]

Objective: To determine the Awareness and Practice of Breast Self Examination among urban women in Puducherry.

2. Material and Methods

A community based cross-sectional study was carried out in Villianur, the urban field practice area of Sri Venkateshwaraa Medical College, Hospital and Research Centre, Ariyur, Puducherry, from May to July 2017.

Study population: Women aged 20-60 years residing in the urban field practice area (Villianur) of Department of Community Medicine, Sri Venkateshwaraa Medical College Hospital & Research Centre, Ariyur, Puducherry.

Sample size: 160 participants.

Sample size calculation: Sample size was calculated using Open-epi Software.[13]The baseline prevalence of practice regarding Breast-Self Examination was taken from a previous published study as 17.8 %.[14] The sample size was calculated to be **156** with 95% CI and 80% power.

Interviewer assumed a non response rate of 5%. Totally **160** women participants were recruited for this study.

Subjects & selection method

The interviewer went through the population registers of UHTC (updated in February 2017). There were a total of 2157 women in the age group of 20-60 years living in 1132 houses in the study area. Population proportion to size sampling technique was employed to recruit the study participants. Selection of houses was done by Systematic Random Sampling. If a particular house contained more than 1 woman fulfilling the selection criteria, lottery method was used to draw the study participant. A total of **160** women who fulfilled the inclusion criteria, were selected after getting the written informed consent.

Inclusion criteria

1) Permanent women residents aged 20 - 60 years
2) Women who can speak Tamil

Exclusion criteria

1) Pregnant women
2) Lactating women
3) Known case of Carcinoma Breast
4) Women with post mastectomy status
5) Physically challenged women with upper limb deformity
6) Mentally challenged women

3. Ethical Consideration

The study was initiated after obtaining clearance from the Scientific Research Committee and Institute Human Ethics Committee.

Description of the Instrument

A Structured Interview Schedule was prepared on the basis of the study objectives after elaborate literature review and guidance of experts. Prior to preparation of the instrument, the investigator had an informal discussion with a few women. This provided some information about the Knowledge, Attitude and Practice of Breast-self Examination. The investigator sent the Interview Schedule to five experts in the field of Community Medicine for content validity before the start of the study. Based on the feedback received from the experts, necessary modifications were incorporated in the Interview schedule.

Interview Schedule

The instrument consisted of the following sections

1) Demographic data

Demographic data of the study participants such as age, education, income and fertility details.

2) Knowledge on Breast Cancer and Breast-Self Examination

It consisted of 15 items related to knowledge on Breast Cancer and Breast -Self Examination (05 items for Breast Cancer and 10 items for Breast-self Examination). A score of 1 was given for each correct answer and 0 for wrong answer. For some questions multiple responses were correct and each correct response was given a score of 1. The maximum score was 46. The score was converted into percentage and interpreted as Adequate (score 15 - 20),

Moderately adequate (score 10 – 14) and inadequate knowledge (score 0 – 09) for knowledge on breast cancer knowledge. For Knowledge on BSE the scores were interpreted as Adequate (score 20 – 26), Moderately adequate (score 13 – 19), Inadequate (score 0 – 12).

3) Attitude regarding Breast Cancer and Breast-Self Examination

Consisted of 10 items related to attitude regarding Breast Cancer and Breast-Self Examination. Attitude questions were assessed by the 3-point Likert scale. Likert scale ranged from Agree to Disagree (Agree, Uncertain & Disagree). Positive responses were scored +1. Negative responses were scored -1 and uncertain was scored as 0. The maximum score was 10. The score was converted into percentage and interpreted as Most favorable (score 8 - 10), Favorable (score 5 - 7), Unfavorable (score <4).

4) Practice of Breast-Self Examination

Consisted of 9 items related to practice. For some questions no scoring was given as proportions were used to represent the responses. A score of 1 was given for each correct answer and 0 for wrong answer. For some questions multiple responses were correct and each correct response was given a score of 1. The maximum score was 13.

The score was converted into percentage and interpreted as Adequate (score 11-13), Moderately adequate (score 8-10) and Inadequate practice (score 0 – 7).

4. Data Collection Procedure

Data was collected for a period of 12 weeks (from 12-05-2017 to 22-07-2017). Data collection was done in the home settings of the selected participants. Data collection was done in the following phases.

I phase: Developed rapport with the study participants; explained the purpose of the study and obtained written informed consent.

II Phase: Conducted interview for all the study participants. The investigator spent 15 minutes for interview. An extra 15 minutes was spent for each participant for giving the structured health educational programme. The health education programme was given using pamphlets and video demonstration on various aspects of Breast cancer and Breast-self Examination like risk factors and symptoms of breast cancer, ideal time to perform a BSE, preferable positions and places to practice BSE, inspection and palpation techniques involved in BSE. The participants were also sensitized regarding the other methods of breast cancer screening i.e., Mammogram and Clinical Breast Examination by a doctor. A pamphlet containing the important facts relating to Breast Cancer and Breast-self Examination and pictorial representation of the steps of BSE was circulated among the participants at the end of the education programme, for their future reference.

Statistical analysis:
1) The data was entered in Microsoft Excel 2007 version and analyzed using Statistical Package for the Social Sciences (SPSS) version 23.0.
2) Descriptive statistics were used to describe demographic data as:

a) Mean and Standard Deviation
b) Proportion
3) Chi-Square test and Odds ratio were calculated to determine the association between knowledge, attitude, practice and selected demographic variables like age, education, socio-economic status, occupation and type of family.

5. Results

The mean age of the study participants were 40.28±8.78 years (range 21-60 years). Sixty two percent women were Hindus and Seventy Nine percent were living in nuclear families. Ninety Five percent participants were belonging to Upper middle or Class II socio economic status according to Modified Kuppusamy's Socio-Economic Classification (Table 1).

Table 1: Demographic Details of the Study Participants (N=160)

Demographic Details	No.	%
Age Group (Years)		
21-30	20	12.5
31-40	54	33.8
41-50	64	40
51-60	22	13.7
Educational Qualification		
Illiterate	10	6.2
Primary School	33	20.6
Middle School	35	21.9
High School	52	32.5
Diploma	3	1.9
Graduate or Post Graduate	27	16.9
Religion		
Hindu	100	62
Muslim	60	38
Occupation		
Housewife	151	94.3
Private employee	6	3.8
Government employee	3	1.9
Type of Family		
Nuclear	127	79
Joint	33	21
Socio-Economic Status		
Upper or Class I	3	1.9
Upper middle or Class II	152	95
Lower middle or Class III	5	3.1

Table 2: Fertility Details of Study Participants (N=160)

Fertility Details	No.	%
Age at Menarche (in years)		
10-12	32	20
13-15	112	70
16-18	16	10
Number of days of menstrual flow		
1-3	85	53.1
4-5	55	34.3
6-7	16	10
>7 days	4	2.5
Regular cycles	120	75
Irregular cycles	13	8
Post menopausal or Post hysterectomy status	27	17
Age at Marriage (in years)		
14 – 17	36	22.5
18 – 21	67	41.9
22 – 25	43	26.9

26 – 30	14	8.8
Age at first Child birth (in years)		
16 – 20	56	35
21 – 25	70	43.8
26 – 30	24	15
31 – 36	5	3.1
Nullipara	5	3.1
Number of Children		
0	5	3
1	35	22
2	77	48
3	30	19
4	10	6
5	3	2
Duration of Breast Feeding		
Nullipara	5	3.1
0-3 months	17	10.6
4-6 months	13	8.1
7-10 months	14	8.8
11months-1year	37	23.1
>1 year	74	46.2

Table 2 shows the fertility details of the study participants. Majority (70%) of the participants attained Menarche during 13-15 years and the mean age at menarche was 13.6 ± 1.4 years. All the study participants were married. The mean age at marriage was 20.6 ± 3.45 years. The mean age at first child birth was 24.3 ± 12.07 years. Twenty two percent of the participants were having 1 child, 48% of the study participants were having 2 children, and 27% of the participants were having more than 2 children whereas 3% of the participants were nullipara. About (46.2%) had breastfed their children for more than 1 year.
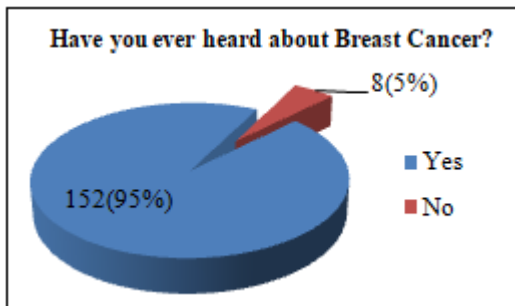
Figure 1: Awareness regarding Breast Cancer (n=160)

Figure 1 shows awareness among the Study Participants regarding Breast Cancer. Ninety five percent (152) participants were aware of Breast Cancer whereas 5% (8) had not heard about it.
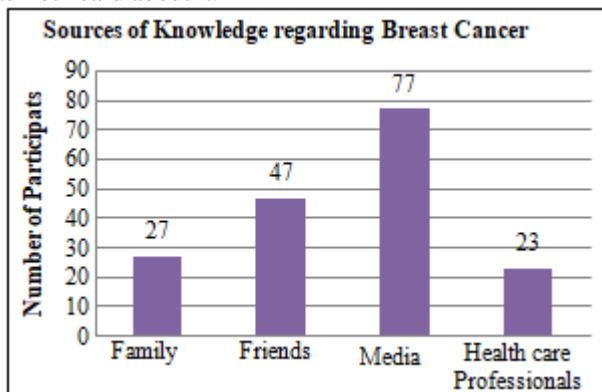
Figure 2: Sources of Knowledge regarding Breast Cancer* (n=152)

*Multiple responses were accepted.

Figure 2 shows Sources of Knowledge regarding Breast Cancer. Majority of the Participants had knowledge through Media (50.6%, n=77) and Friends (30.9%, n=47).
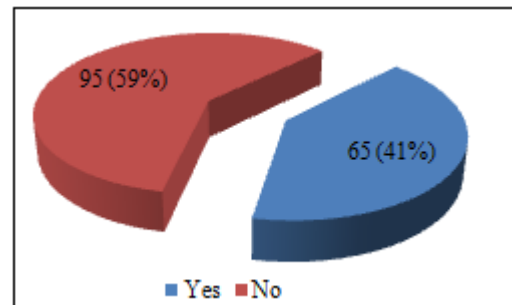
Table 3: Awareness regarding Breast Cancer

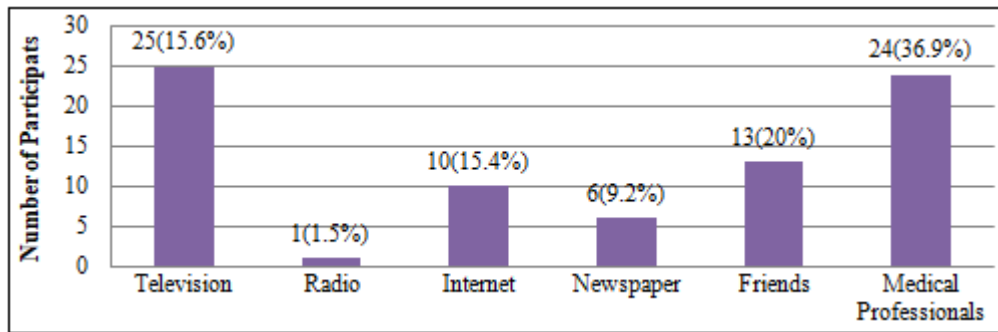| Knowledge	No.	%
Early diagnosis of Breast Cancer (n=152)		
Possible	62	40.8
Not possible	11	7.2
Don't know	79	51.9
Methods of Breast Cancer Screening* (n=152)		
Breast-Self Examination	31	20.3
Physician's Advice	26	17.1
Imaging Techniques	5	3.2
Don't Know	98	64.4
Breast Cancer is Unilateral occurrence(n=152)		
Yes	43	28.3
No	36	23.7
Don't Know	73	48
Symptoms of Breast Cancer* (n=152)		
Nipple discharge		
Breast lump	26	17.1
Nipple changes	73	48
Breast enlargement	22	14.4
Pain in breast(s)	16	10.5
Risk factors of Breast Cancer*(n=152)	18	11.8
Family History	28	18.4
Obesity	15	9.8
Smoke	29	19.1
Alcohol	10	6.5
Short duration of breast feeding	70	46.1

*Multiple responses allowed.

Table 3 shows the awareness among the study participants regarding Breast Cancer. About 51.9% (79) participants did not know that Breast Cancer can be detected in the early stages. About one-fifth of the participants (20.3%) expressed Breast-Self Examination as a method of screening.

Forty three (28.3%) participants felt that Breast Cancer occurs only in one breast and 73 (48%) participants stated breast lump as a symptom of Breast Cancer. Seventy participants (46.1%) correctly identified that shorter duration of lactation is a potential risk factor for Breast Cancer.

Figure 3: Awareness regarding Breast-Self Examination (n=160)

Figure 3, shows awareness among the Study Participants regarding Breast – Self Examination. Among the participants, 41% (n=65) had heard about Breast-Self Examination and 59% (n=95) were not aware about BSE.

Figure 4: Sources of Knowledge regarding Breast-Self Examination (n=65)[*]
[*]Multiple responses were allowed

Figure 4 shows Sources of Knowledge regarding Breast-Self Examination. Twenty five participants (15.6%) had knowledge through Television and 15 % through Medical Professionals.

Table 4: Distribution of the Study Participants with respect to the Knowledge, Attitude and Practice scores

Scores	No.	%
Knowledge on Breast Cancer (0 - 20)		
Inadequate (0-9)	151	94.4
Moderately adequate (10-14)	7	4.4
Adequate (15-20)	2	1.2
Knowledge on Breast-Self Examination (0 – 26)		
Inadequate (012)	158	98.7
Moderately adequate (13-19)	2	1.2
Adequate (20-26)	0	0
Attitude on Breast-Self Examination (-10 – +10)		
Unfavourable (< 4)	107	66.9
Favourable (5- 7)	46	28.7
Most favourable (8-10)	7	4.4
Practice of Breast-Self Examination (0 – 13)		
Inadequate (0-7)	160	100
Moderately adequate (8-10)	0	0
Adequate (11-13)	0	0

Table 4 shows the overall scores obtained by participants.

- Knowledge: Only 2 (1.2%) participants had adequate Knowledge on Breast Cancer. Nearly 7 (4.4%) participants had moderately adequate knowledge whereas 151 (94.4%) participants had inadequate knowledge on Breast Cancer. Similarly 158 participants (98.7%) had inadequate knowledge whereas 2 participants (1.2%) had moderately adequate knowledge.
- Attitude: About 7 (4.4%) participants had most favourable attitude whereas 46 (28.7%) participants had favourable attitude towards Breast Cancer and Breast-Self Examination. Nearly 107 (66.9%) participants had unfavourable attitude towards Breast Cancer and Breast-Self Examination.
- Practice: None of the participants had adequate or moderately adequate BSE practice. There was no significant association between the demographic factors and the Knowledge, attitude and practice scores.

6. Discussion

In the present study, the mean age of the study participants was 40.28 ± 8.78 years and range 21-60 years (Table 1). **Sehrawat J S et al** [15] also reported closely the mean age of the study participants as 41 ± 5 years, while in the study conducted at Bangalore by **Srikanth J et al**[16] mean age was 43.05 ± 12.05 years. Findings of the present study were similar to the observations reported from reviewed studies.

In our study, 95 % (158) of the participants were aware of Breast Cancer during Pre-intervention. This finding was similar to a study done in Puducherry by **Rajini et al** [14] where the authors reported that 97.2% of the study participants were aware of Breast Cancer. In our study the major sources of information regarding Breast Cancer were Media (50.6%), Friends and Family (48.6%). In a study done by **Sehrawat J S et al** [15] in Punjab, friends and family members (59.6%) were reported as the major source of information about breast cancer, followed by television (21.8%), peer-groups or magazines (10.6%) and newspapers (2.4%).

In the present study, 48% reported Breast Lump as a symptom of Breast Cancer . The other symptoms reported were Nipple Discharge (17.1%), Nipple Changes (14.4%), Breast Enlargement (10.5%) and Pain in the breast (11.8%). The level of awareness regarding the symptoms of Breast cancer, among our study participants were higher compared to a study done in Wardha by **Siddharth R et al** [17], where Nipple discharge (1.39%), Enlargement of one breast (4.17%), Lump in breast (18.33%), axillary lump (1.94%), retraction of breast (2.5%), arm swelling (0.83%), nipple retraction (0.28%) and pain in breast (20.56) were the reported symptoms of Breast Cancer.

In the present study, the awareness regarding the risk factors for Breast Cancer was comparatively low. Shorter duration of breast feeding (46.1%), family history of breast cancer (18.4%), obesity (9.8%), smoking (19.1%) and alcohol (6.1%) were the risk factors mentioned by the study participants. In a study conducted by **Madhukumar S et al** [18] in Bengaluru, Increasing age (60%), high cholesterol diet (24%), exercise (15%), smoking (59%), alcohol (58%), late marriage (17%), avoiding breast feeding (26%), family history (28%), oral contraceptive pill consumption (19%), age at menopause (19%) and age at parity (17%) were the reported risk factors. These findings stress that knowledge regarding breast cancer has to be imparted to the women at the community level.

In our study 40.8% of the participants responded that breast cancer can be detected early. The methods of Breast Cancer screening as reported by the participants were Breast-Self Examination (20.3%), Physician's advice (17.1%) and

Imaging Technique (3.2%). In the study by **Sujindra E et al** [19] in Puducherry, 86.7% participants said that breast cancer can be detected early. This contrast stresses the need for health education on Breast Cancer and its screening techniques among general public.

In the present study, 63.6% participants preferred going to a medical practitioner for seeking advice regarding breast care. This was similar to a study done by **Sharma P K et al** [20] in Andhra Pradesh where seeking medical help was cited as the best approach to breast cancer care by majority of participants (70.23%).

In the present study, 41% (65) participants were aware of Breast –Self Examination and 13.7% (22) participants had practiced BSE before. In a similar study done by **Rajini et al** [14] at Puducherry, 40.3% were aware of breast self-examination and 17.8% have performed BSE before. **Paunikar et al** [21] in their study from Maharashtra reported that only 12.14% of the participants had ever performed Breast-Self Examination.

About one-fifth (21.9%) of the study participants in our study felt that Breast Cancer cannot be cured (Table 6). Concurrent findings were reported by **Rajini et al** [14] that 17.8% thought Breast Cancer is in-curable. Regarding the duration of performing BSE, only 13.8 % participants in our study correctly said that it should be done monthly once, in contrast to **Rajini et al** [14] where the response was 38.8%. These findings suggest that many women have misconceptions regarding the various aspects of Breast Cancer.

There was no significant association between the =knowledge on BSE awareness and the socio-demographic characters in our study. This finding was similar to two other studies done in Chennai by **Aruna S** [84] and in Udupi by **Nayak et al** [72].

The present study indicates that the level of awareness about Breast-Self Examination is very low and very few women have the habit of Practicing BSE. This could be explained by low levels of knowledge regarding BSE among the women. Measures to impart health education would bring about a positive reversal in this trend.

7. Limitations

1) The study was done only among women in urban area. Therefore the findings of the study cannot not be generalisable to rural population.
2) This study was limited to the women who could speak Tamil.
3) For some participants, practice was evaluated as verbal responses as the women were feeling shy to practice in front of the investigator.
4) The effect of the health education programme was not assessed.

8. Conclusion

This study shows the extent of Knowledge, Attitude and Practice regarding Breast Cancer and Breast-Self Examination among the women aged 20-60 years in an urban settlement. The findings of this study show that the women had inadequate knowledge, unfavourable attitude and unhealthy practice regarding Breast cancer and Breast-Self Examination. It is a known fact that early diagnosis of Breast Cancer is generally influenced by a woman's understanding about the disease. Hence the public health professionals are in a better position to improve the Knowledge, Attitude and Practice of the women. The public health professionals have to take the initiative in arranging Educational Programmes on Breast Cancer and Breast-Self Examination at the community level. Since reaching out to every individual woman is a difficult task, nurses and field health workers can be contacted to disseminate the information to the general public.

References

[1] Globocan Cancer Fact Sheets: Breast cancer [Online]. Available at: http://globocan.iarc.fr/old/FactSheets/cancers/breast-new.asp. [Accessed on 1May 2017].
[2] World Health Organization [Online]. 2017. Breast cancer: prevention and control [Online]. Available at: http://www.who.int/cancer/detection/breastcancer/en. [Accessed on 3 Sep 2017].
[3] Kaarthigeyan K. Cervical cancer in India and HPV vaccination. Indian J Med Paediatr Oncol. 2012 Jan-Mar; 33(1): 7–12.
[4] Ferlay J, Soerjomataram I, Dikshit R et al. Cancer incidence and mortality worldwide: sources, methods and major patterns in GLOBOCAN 2012. Int J Cancer 2015; 136: E 359– 386.
[5] Ferlay J, Shin H-R, Bray F, Forman D, Mathers C, Parkin DM. Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008. Int J Cancer. 2010 Dec 15; 127(12): 2893–2917.
[6] Organisation mondiale de la santé. Global status report on non-communicable diseases 2010. Geneva: World Health Organization; 2011.
[7] Anderson BO, Yip C-H, Smith RA, Shyyan R, Sener SF, Eniu A, et al. Guideline implementation for breast healthcare in low-income and middle-income countries: Overview of the Breast Health Global Initiative Global Summit 2007. Cancer. 2008 Oct 15; 113(8): 2221–2243.
[8] Who.int.(2018). WHO | Cancer control: Knowledge into action [Online]. WHO. Available at: http://www.who.int/cancer/modules/en/ [Accessed on 4 Sep 2017].
[9] Yip C-H, Smith RA, Anderson BO, Miller AB, Thomas DB, Ang E-S, et al. Guideline implementation for breast healthcare in low- and middle-income countries. Cancer. 2008 Oct 15; 113(8): 2244–2256.
[10] Cancer.org.(2013). Breast cancer facts & figures 2011-2012. American Cancer Society [Online]. Available at https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/breast-cancer-facts-and-figures/breast-cancer-facts-and-figures-2011-2012.pdf [Accessed on 4 Sep 2017].
[11] Chalkidou K, Marquez P, Dhillon P.K, Teerawattananon Y, Anothaisintawee T, Gadelha C.A. Evidence-informed frameworks for cost-effective cancer care and prevention in low, middle and high-

income countries. Lancet Oncol. 2014; 15(3): e119–e131.

[12] Dikshit R, Gupta P.C, Ramasundarahettige C, Gajalakshmi V, Aleksandrowicz L. Cancer mortality in India: a nationally representative survey. Lancet. 2012; 379(9828): 1807–1816.

[13] Open Epi Menu [Online]. Available from: https://www.openepi.com/Menu/OE_Menu.html. [Accessed on 22 Jan 2017].

[14] Rajini S, Vell CK, Kannan K. A cross-sectional study on awareness of breast self-examination, practice and health seeking behavior regarding breast cancer among rural women of Pondicherry. Sch J App Med Sci. 2016; 4(8C):2924-2928.

[15] Sehrawat JS, Garima , Mor S. Knowledge, beliefs and practices about breast cancer and its self-examination procedure among urban and rural women of district Gurdaspur, Punjab, India: a cross sectional study. Int J Community Med Public Health. 2017 Jan; 4(1): 120-128.

[16] Srikanth J, Upadhya KG, Kumar P. Awareness of cervical and breast cancer among women attending OBG out-patient department of a medical college hospital, Bangalore. Int J Community Med Public Health. 2018 May; 5(5): 2104–2108.

[17] Siddharth R, Gupta D, Narang R, Singh P. Knowledge, attitude and practice about breast cancer and breast-self examination among women seeking out-patient care in a teaching hospital in central India. Indian J Cancer 2016; 53: 226-229.

[18] Madhukumar S, Thambiran UR, Basavaraju B, Bedadala MR. A study on awareness about breast carcinoma and practice of breast self-examination among basic sciences' college students, Bengaluru. J Family Med Prim Care 2017; 6: 487-490.

[19] Sujindra E, Elamurugan T. Knowledge, attitude and practice of breast self-examination in female nursing students. Int J Educ Psychol Res. 2015; 1(2): 71-74.

[20] Sharma P K, Ganguly E, Nagda D, Kamaraju T; Knowledge, attitude and preventive practices of South Indian women towards breast cancer. The Health Agenda, 2013;1(1):16-22.

[21] Paunikar AP, Khadilkar HA, Doibale MK, Kuril BM. Knowledge, attitude and practices of women towards breast cancer in the field practice area of urban health training centre, Aurangabad, Maharashtra. Int J Community Med Public Health. 2017 Oct; 4(10): 3659–3563.