To Determine The Level Of Knowledge Regarding Breast Cancer And To Increase Awareness About Breast Cancer Screening Practices Among A Group Of Women In A Tertiary Care Hospital In Mumbai, India

S Ahuja, N Chakrabarti

Citation

Abstract
BACKGROUND: Breast cancer is responsible for 10.4% of the global burden of cancers in women and half of this occurs in developing countries. In the sphere of cancer control, much would be achieved if breast cancer were to be detected early. Since a large proportion of patients in India present with advanced disease, any down-staging due to early detection will considerably reduce treatment cost as well as morbidity even if mortality is unaffected. This can be achieved by breast health awareness and adherence to screening practices.

OBJECTIVE: The aims of this cross-sectional study were to determine the level of knowledge regarding breast cancer and to measure breast self-examination (BSE) performance in a group of 80 women aged 40 years and above. Additionally we also intended to demonstrate the correct method of BSE performance to each woman included in our study individually and privately.

METHODS: This was a cross sectional study conducted over a period of two months commencing on August 1st 2009 and ending on 30th September 2009. 80 women were interviewed by means of a structured questionnaire (after obtaining written informed consent) in the surgical outpatient department of the K.J.Somaiya Medical College, Sion, Mumbai. The questionnaire consisted of socio-demographic variables, breast cancer risk factors and protective factors and knowledge and practice of BSE. Further, attitude towards BSE was also evaluated. The data were analyzed by descriptive studies, chi square test and analysis of variance in order to find out the P value. The interview was followed by an interactive session where each woman was individually and privately educated on breast self-examination by the investigators themselves in the presence of a nurse.

RESULTS: Breast cancer awareness was found to be 52% in this group of women even though 95% women claimed to have heard of the disease. Only 12% of all women had received information about breast cancer from health professionals while a majority (60%) stated their source of information to be family and friends. Level of breast cancer knowledge was significantly associated with age (younger women more aware than older), income (women belonging to higher income group found to be more aware than those who were economically deprived), literacy (graduates and post graduates more knowledgeable), parity (women bearing lesser number of children being more aware), occupation (teachers and businesswomen being the most aware versus farmers who were the least aware). 38% women had never heard of BSE and among those that had heard of it, 15% were regular while 23% were irregular performers. Thus performance of BSE was found to be inadequate in this group. Not knowing the correct method was the most frequently reported reason for non performance.

INTRODUCTION
The most prevalent cancer in the world is that of the breast being responsible for 10.4% of the global burden (1). Among Indian women, Breast cancer is the second most common cancer after cancer of the uterine cervix and is already the leading cancer in certain metropolitan cities such as Mumbai, Delhi, Nagpur and Trivandrum(2).

Moreover, upon studying the trends of the major prevalent cancers through the years 1982 to 2002 during various population based cancer registries, it was observed that the incidence of breast cancer was steadily increasing among Indian women and continues to be on the rise (3). Currently 75,000 new cases occur in Indian women every year. It is important to view this figure under the background that the national cancer registries hardly sample 3% of the total
population (2).

These figures appear to be consistent with the economic and social changes occurring in India with increasing number of women marrying late, thus having children at an older age, and low parity in general (4). Research has also proven that Indian women are afflicted by biologically aggressive cancer as shown by a lower incidence of estrogen receptor positive tumors and higher incidence of c-erb B2. Both of these factors are related to a poorer prognosis, resulting in diminished chances for survival (5).

Therefore, with the overall risk of an Indian woman’s chances of acquiring breast cancer being increased several fold it is imperative that we come to terms with the reality of a substantive presence of this modern epidemic.

Even though India’s National Cancer Control Programme, established in the year 1975-76, has contributed enormously to the development of various Regional Cancer Control Centers and Oncology wings in medical colleges in many metropolitan cities, there does not as yet exist a standardized and acceptable prevention strategy for breast cancer for the entire nation. Likewise, despite the fact that a range of awareness programmes have been undertaken in some cities, there is lack of a uniform information, education and communication (IEC) policy for cancer prevention in general (6).

Whereas certain types of cancers are contracted as a result of the recipients’ voluntary acts or personal behaviour such as smoking which can cause lung cancer and unprotected sex which is a factor implicated in acquiring cervical cancer, the aetiopathogenesis of breast cancer involves multiple factors, some of which a woman may have absolutely no control over. This makes it an even more traumatic disease for a woman and her family and puts a far greater deal of responsibility in the hands of health care providers to make available appropriate information about breast cancer and its various risk factors, early warning signs and their management among women.

Increasing awareness about breast cancer would go a long way in the cure of this disease, since breast cancer is a progressive disease having a predilection of early dissemination and consequently detection of small tumors are more likely to be early stage disease, which would have a better prognosis and higher probability of getting effectively treated.

Women, in general, and especially those over the age of 35 years are required to be more educated about the many available screening modalities for breast cancer and also need to be encouraged to adopt these measures as efficiently as they can.

Screening for breast cancer includes mammography, clinical breast examination by a physician (CBE), and breast self examination (BSE). Although mammography has been established as an effective technique for early detection of breast pathologies, mammographic screening of an outsized population cannot be supported as a priority in India owing to its high cost.

Breast self examination (BSE) on the other hand is simple, self generated, repeatable at monthly intervals and cost free. BSE involves regular monthly systematic examination of the breasts and axillary area, both visually and by palpation, for any signs of abnormality. It has been observed that how a woman learns about BSE can determine the frequency with which she performs it, and therefore it is important for every woman to adopt the correct method of performing BSE as demonstrated by a nurse or physician.

This technique will enable a woman to familiarize herself with the structure of her own breasts so that she may readily recognize any deviation in the way they look or feel. Nonetheless, conformity to the regular practice of BSE requires constant motivation and the recognition that breast cancer is a potential hazard. It is therefore important for us to first gauge the level of knowledge regarding breast cancer among the women in our study sample and more importantly, to empower them with the correct information and demonstrate the correct method of performing BSE. It is with this intention of gauging the awareness of an average Indian woman regarding breast cancer and the importance gives to its early detection practices (BSE) that this study was designed.

REVIEW OF LITERATURE

A lot of research has been carried which aims to explore the knowledge about breast cancer and the attitudes and beliefs regarding its screening practice among women in different parts of the world. To make our review of literature more focused we have documented studies beginning with studies conducted in the western world and then moving on to those carried out in Middle Eastern and South East Asian countries.
Friedman, Nelson et al (7) in their paper in the American Journal of Preventive Medicine in 1994 noted that whereas over 90% of women were aware of breast self examination (BSE) practice, a mere 27% perform BSE monthly. They found that a majority of their subjects knew about most of the recommended BSE steps. The most frequently endorsed barrier was forgetting, or being too busy. In our study on the other hand the overall performance of BSE was quite low with only 12 out of 80 or 15% women reporting a once a month performance, and 23% reported performing BSE irregularly. The most common reason for non performance stated by women on our study was, not knowing the correct method of performing it while being too busy was the second most important reason.

McDonald, Thorne and co workers (8) of the Howard University Cancer Centre, Washington in their paper published in the 1999 winter issue of Ethnicity and Disease reported their findings in a group of 120 randomly selected African American women who were interviewed to determine their perceived severity of breast cancer, perceived barriers to breast cancer screening, and perceived benefits of mammography. Additionally, knowledge about breast cancer causes, risk factors, symptoms and screening was also assessed. The authors concluded that even though 75.8% women performed BSE, knowledge about breast cancer was poor. On the contrary in our study we found that only 12 % of women performed BSE regularly while an additional 23% were irregular performers and the overall awareness about breast cancer was moderate at 52%. Whereas McDonald et al conducted their study based on the Health Belief Model, ours did not incorporate this model.

With education programs being developed to promote adherence to recommended breast cancer screening guidelines in the United States, Sadler GR et al (9) of the UCSD Cancer Centre, California published an article in the 2001 September issue of the Public Health Nursing Forum about breast cancer knowledge, attitudes and screening behaviour of 194 American Asian Indian women and concluded that a majority of these women reported their breast cancer knowledge as being inadequate and monthly adherence to BSE was also poor. These findings were consistent with ours with the overall awareness level being inadequate (52%) and monthly adherence to BSE being deficient (12%).

In another study on breast cancer detection practices of 57 South Asian women aged 40 years and over, residing in Toronto, Canada, Chaudhury and Srivasatava (10) who’s paper was published in Oncology Nursing Forum in November 1998 and found that only 12% of the participants practiced BSE monthly and a majority (i.e. 54%) said that they did not know much about breast cancer. Our study revealed a similar percentage of BSE performers (12% claimed they were regular while 23% were irregular performers) and overall awareness level about breast cancer of 52%. The investigators used an interview guide designed specifically for their study. Our study too incorporated a similar self designed interview. Whereas Chaudhury and Srivasatava’s interview additionally contained questions assessing the variables of the Health Belief Model and also health motivators, ours did not include this aspect. The data were obtained during face to face interviews in the primary language of the participants similar to the manner in which we collected our data.

European studies revealed a relatively different picture. Stephanie Kung et al (11) conducted a research on Screening for Breast Cancer and Cervical Cancer in a large city in northwestern Germany and published their results in the European Journal of Public Health. They noted that knowledge about available procedures for early detection of breast cancer was good and rates of BSE were high (43%). These findings did not correlate with ours, with Indian women in our study sample having less than adequate knowledge about breast cancer (52%), and practice of BSE being quite low at 12 %. Kung et al also determined that almost all women in their study group had had their breasts examined at least once by a medical doctor and age at first breast examination was associated with higher social class. Women included in our study population were not asked whether they had ever had a clinical breast examination (CBE) by a doctor. Whereas Kung and coworkers also intended to identify women who had been affected by breast cancer and also those with a family history of breast cancer, we did not delve into these details in our study. These women were also asked for their source of information. Most women received their information from office-based gynecologists (84.2%). Only 9.4% of women had information from their general practitioners of which most were over 55 years of age and belonged to the lower social class. Much information was obtained from the media (64%) including newspapers, journals and leaflets (39.1%), radio and television (24.9%). Less important sources were
relatives and friends (16.9%). On the other hand we found that most women (60%) obtained their information from their relatives, neighbors and friends, and very few women (12%) most of whom were educated and belonged to a higher socio economic class obtained their information from their gynaecologists or family physicians. Media came in second as a source of information (17%). 6% of the women in Kung’s study group had did not know what mammography was. In our study almost two thirds of all women could not identify mammography as a preventive measure against breast cancer. These authors also identified women who had had a mammography and concluded that most of whom did belonged to upper class (75.4%) and middle class (56.3%). This aspect was not a criterion in our study since we expected a very low percentage anyways, considering the economic background of women in our study group.

In another study of breast self examination attitudes and practices, Wardle et al (12) published their findings in the European Journal of Cancer Prevention in February 1995. Their study group involved young women between 17 to 30 years of age whereas our study was focused on middle aged and older women (40 years and above). They evaluated the attitudes to BSE by means of a questionnaire and their results showed that 54% of women reported as never having practiced BSE, whereas in our study 38% women had never heard of BSE and, additionally 24% women claimed that they had heard of BSE but never performed it. Furthermore, only 8% reported regular and 36% occasional performance. In our study too only 12% performed BSE monthly and 23% irregularly.

A research article by Pinar Erbay (13) et al titled “The knowledge and attitudes of breast self examination and mammography in a group of women in a rural region of western Turkey” was published in February 2002 in the BMC Cancer Journal. The investigators recruited 244 women by means of cluster sampling and subjected them to a questionnaire which consisted of socio demographic variables, risk factors and signs of breast cancer and the adapted version of the Champions Health Belief Model Scale (CHBMS). Our questionnaire was similar in many respects but did not incorporate the CHBMS. Although 76.7% of the women reported that they had heard or read about breast cancer, the authors concluded that only 56.1% of the women had significant knowledge about breast cancer. In our study although 95% women reported having heard of breast cancer, we concluded that overall awareness was only 52%. Similarly although 72.1% of their participants reported having knowledge about BSE practice only 40.9% of the women of their study group ever indicated practicing BSE in the previous 12 months. In our study lesser number of women had heard of BSE (62%), and only 12% were regular while 23% were irregular performers. Very few women in the Turkish study (10.2%) stated that they performed BSE on a regular monthly basis. Women were also enquired about their source of information on breast cancer. Television and Radio ranked as the number one source of information (39.3%). Our study revealed that family and friends ranked first (52%) while media came in second as the source of information on breast cancer (17%).

Avci IA (14) conducted a descriptive correlational study to identify knowledge levels and performance frequency of BSE and to examine variables related to breast cancer screening behaviours in a sample of 103 Muslim female workers at a hazelnut factory in Ordu city, Turkey. He published his results in the European Journal of Oncology in April of 2008 which showed that only 26.2% of the women reported knowledge about BSE and BSE performance was as low as 4.3%. Our study on the other hand revealed that 62% women had heard of BSE, however a smaller percentage claimed to be regular performers (12%).

Another Turkish study led by Yaren, Ozkilinic et al (15) was published in the May 2008 issue of the European Journal of Cancer Care regarding awareness of breast and cervical cancer risk factors and screening behaviours among nurses in a rural region of Turkey. Researchers utilized a self administered questionnaire for investigative purposes and came to the conclusion that the risk factors and symptoms of breast cancer were generally well known except for early menstruation and late menopause. The overall awareness among our study group was slightly lower and none of the women identified early menarche and late menopause as risk factors. Additionally, women identified BSE as a beneficial method of breast cancer screening. Most women included in our study group too (73 out of 80) showed a positive attitude towards breast self examination.

Soyer (16) at al of the Ege University, Turkey aimed to identify the level of breast cancer knowledge and BSE practice knowledge among primary health care nurses. In addition they aimed to investigate the frequency of BSE practice and evaluated the effects of an in-service training
program about breast cancer and BSE practice. They published their findings in the Journal of Clinical Nursing in April 2007 and concluded that the in-service education improved the knowledge of breast cancer and BSE among the nurses. Our study did not implement a pre test and post test design, although we did train women about BSE practice upon completion of the questionnaire, since we felt that it would be beneficial to those who were unaware of it.

In Puerto Rico’s first national study of breast cancer knowledge, beliefs, and early detection practices among elderly women (65 and above) Sanchez, Suarez et al (17) found no statistically significant correlation between knowledge and early detection practice. In our study too we concluded that although 38.75% of women were found to have good awareness about breast cancer, very few (12%) actually performed BSE on a monthly basis. Sanchez et al also noted that those women who had lesser misconceptions were more likely to have had a clinical breast examination (CBE) or a mammogram. They also noted that a higher socioeconomic status correlated positively with BSE performance, as did age. In our study too, we found that women belonging to a higher social class were more aware than those who were economically challenged, and younger women were more aware than older ones.

Bener, Alvash, Miller and Denic (18) in 2001 conducted a cross sectional questionnaire based survey to evaluate knowledge, attitudes and practices related to breast cancer screening among 1750 Arabic women aged 40 to 65 years who attended primary health care centers and reported in the Journal of Cancer Education that knowledge about breast cancer screening was low and only 12.7% of the study population practices BSE. Our study group too included women over 40 years of age. Overall awareness in our study group rated higher (52%) but BSE performance was similar to the Arabic study (12% were regular and 23% were irregular performers.)

In the July 2002 issue of the Saudi Medical Journal, Alam AA (19) published a study to assess the knowledge of breast cancer and its risk factors among women in Riyadh and reported that knowledge about breast cancer and BSE was as high as 82% however, only 41.2% of the women performed BSE with a lesser percentage performing it regularly, on a monthly basis. In comparison, our study revealed a lesser overall awareness (52%) and an even lower monthly performance of BSE (12%). Knowledge about risk factors and protective factors was found to be moderate and it was also concluded that knowledge varies according to marital status and the level of education in these women. Even though marital status did not have any impact on awareness levels (since all of the women included in our study were married, this variable could not be highlighted), the level of education correlated positively with awareness with more educated women having a greater degree of knowledge about breast cancer, its risk factors and protective factors. Alam AA also determined that 18.2% of the 864 participants had had a mammography done, our study did not investigate this factor.

Jahan, Al Saigul and Abelgadir (20) carried out a cross sectional survey amongst 300 female patients between 20 and 70 years of age attending Primary Health Care Centers in the Quassim region of Saudi Arabia in order to explore their level of knowledge regarding breast cancer and attitudes towards BSE. The authors’ work was published in the Saudi Medical Journal on November 27, 2006 and noted that the level of knowledge about breast cancer and the practice of BSE was low with as many as 69.7% of the women never having heard of BSE and 18.7% reporting to have ever practiced BSE. In our study 38% of all women had not heard of BSE and only 12% performed BSE on a regular monthly basis. However the participants’ had a positive attitude towards learning BSE as did most women in our study sample.

Later in July 2002 Jarvandi S and coworkers (21) conducted a descriptive study at the Iranian Centre for Breast cancer in Tehran, Iran to explore the beliefs and behaviour of 800 Iranian teachers towards breast cancer and BSE. Similar to our study, they too collected data by means if a structured questionnaire. Whereas in the Iranian study the mean age of participants was 37.3 years and 83% were married, in our study the mean age was higher at 48.3 years and all the women were married. Only 6% of women in this study reported BSE performance on a monthly basis. In our study the value was a little higher, at 12%. The most common reasons for not performing BSE was lack of knowledge and the belief that it was not necessary (36% and 34%) In our study maximum women claimed that they did not perform BSE because they did not know the correct method of performing, being too busy was the second most common reason for non performance. The Iranian study also noted that BSE was more frequent among married and older women. We could not study marital status as a variable since...
At the Iranian Centre for Breast Cancer, Tehran another cross sectional study was conducted, this time by Haji Mahmoodi (22) and others and their report was published in The Breast Journal in July 2002. The aim of their study was to examine the knowledge about breast cancer, attitudes towards BSE and its practice among a sample of 410 female health care workers from seven health centers. Haji and co workers used a purposed questionnaire and concluded that whereas 75% of the women knew about breast cancer prevalence and 63% claimed to know how to examine their breasts, only 6% of them practiced BSE monthly. The authors concluded that the respondents’ knowledge about breast cancer risk factors was not satisfactory. They also inferred that the practice of BSE was significantly associated with age, the level of education and a personal history of breast problems. We concluded that although 95% women claimed to have heard about breast cancer, overall awareness was only 52%. We also noted that women who were younger and more educated were more aware than older and uneducated women. BSE performance among women included in our study was also low with as few as 15% women being regular and 23% irregular performers. Overall their findings suggest that the knowledge and behaviours of female health workers concerning breast cancer was relatively poor and needs to be improved.

Yavari et al (23) of the Shaheed Behesti Medical University, Tehran, Iran intended to identify the relationship between Iranian women’s socioeconomic status and their knowledge and practice of BSE. They obtained data from a hospital based case control study among women diagnosed with breast cancer. They included 303 cases and 303 controls whose mean ages were 48.2 and 50.2 respectively. The study revealed that there were significant relationships between education level and knowledge and practice of BSE in both cases and controls. Although ours was not a case control study, we too concluded that, a higher level of education had a positive correlation with breast cancer knowledge and the knowledge and practice of BSE.

In the August 2002 issue of the Cancer Nursing Journal, Madanat H and Merrill RM (24) reported a study on breast cancer risk factors and screening awareness among women nurses and teachers in Jordan. Similar to our study they used data to determine two dimensions of breast cancer awareness; the knowledge of risk factors associated with disease and the knowledge of BSE and mammography. Their survey tool was the Breast Cancer Knowledge Test and Comprehensive Breast Cancer Questionnaire. They found that profession, age and a family history of the disease significantly influenced breast cancer screening awareness. Our study also revealed that women who were professionals (namely teachers) and also women who were younger were more aware about breast cancer and BSE. The Jordanian study involved a comparative analysis of two groups of women namely teachers and nurses whilst our study had no such comparison. Overall the awareness levels for nurses was 88.3% and teachers 73.1% in the Jordanian study whereas our study revealed an overall awareness of only 52% amongst all women.

In another Jordanian cross sectional descriptive study Petro Nustus and Mikhail BI (25) aimed to investigate factors and beliefs that may be related to the practice of BSE. Their sample consisted of 519 women of whom 64% were graduate and undergraduate students and their study instrument was an adapted version of the Champions Revised Health Belief Model Scale. Their results were analyzed using Chi square test and stepwise multiple regression. Their findings indicated that even though 67% of the women had heard or read about BSE, only a quarter of them reported that they had ever practiced BSE in the past 12 months and only 7 % performed it on a regular basis.

Women’s age, level of education, having heard or read about breast tumors and a personal history of breast tumors were found to be significant predictors of BSE practice. In our study 62% women reported as having heard about BSE but regular performance of BSE was found only to be 15% In our study we concluded that younger women and women who were more educated were more knowledgeable about breast cancer.

Shepherd JH and McInerney PA (26) organized a Breast Week in Freetown, Sierra Leone during which 1200 women were educated on Breast cancer and the importance of breast health. They then published their paper in August 2006 in Curationis. Of these a sample size of 120 women (10%) was obtained and it was concluded that the majority of women had some knowledge about breast cancer and its risk factors. The women were able to link breast cancer with its signs and symptoms associated with it as did women in our study group. In our study overall awareness was found to be 52% and 40% of all women were able to identify the 5 symptoms of breast cancer that they were asked.
With breast cancer being the most common cancer among women in Nigeria, even more common than cancer of the cervix, O Abimbola and Oladimeji Oladepo (27) carried out a research to assess the knowledge of breast cancer and its early detection measures among 420 randomly selected rural women in two health districts in Akinyele Local Government Area, Ibadon, Nigeria. This study was published on 26th November 2006 in the BMC Cancer Journal and revealed that respondents overall lacked knowledge of the vital issues of breast cancer and its early detection methods with only 13.3% of the women claiming to have ever heard of BSE. None of the women in this study group had ever practiced BSE. In our study on the other hand 62% women claimed that they had heard about BSE and while 23% claimed they performed it irregularly only 15% stated that they performed BSE regularly.

Therefore many studies have been conducted the world over which are centered around the understanding of breast cancer awareness levels and the adherence to recommended screening methods for its early detection in different groups of women and we have attempted at highlighting a few such studies that we felt were comparable with ours.

AIMS AND OBJECTIVES
To determine the level of awareness regarding breast cancer in the study population.

To assess the level of awareness about BSE (breast self examination) and its performance among women included in the study.

To demonstrate individually to each woman included in the study, the correct method of performing BSE.

MATERIALS AND METHODS
SAMPLE
This cross sectional study was conducted over a period of two months from 1st August to 30th September 2009 at the K.J.Somaiya Medical College and Research Centre, Ayurvihar, Sion, Mumbai. The total study population consisted of 80 women between the ages of 40 and 65 years (mean age 48.3 years) who visited the K.J.Somaiya hospital’s surgical outpatient department (but not necessarily with a breast complaint). Since advancement in age is a definite risk factor for breast cancer, women younger than 40 years were excluded from this study. All 80 women were married and 79 of them had children. 60% of all women were housewives and 38.8% were illiterate. Only 25% of women had total family earnings amounting to over Rs.30,000/- per month.

MEASUREMENT
Data were collected by means of a structured questionnaire devised by the authors themselves. Besides English, the questionnaire was also available in Hindi and Marathi. Willingness to participate in the study was obtained by means of a written informed consent (in the participants mother tongue) after being explained the objectives of the study. The participants were requested to fill out the questionnaire whilst face to face with the authors of the study so as to clarify any doubts that they may have. The questionnaire sought demographic information, including participants’ age, marital status, parental status, education, occupation and monthly family income. We also enquired into their age at menarche, age at menopause (if applicable), whether they had breast fed their child/children or not and whether they visited their family physician or gynecologist on a regular basis. The last question was aimed at assessing participants’ health seeking behaviour. The questionnaire was subdivided (so as not to make it a lengthy and repetitive one) and was to be answered in yes or no format. The questionnaire aimed to measure the knowledge about breast cancer in general, its risk and protective factors and its symptoms. In addition participants were asked whether they knew about Breast Self Examination (BSE) and the frequency with which they performed it. Reasons for non performance were enquired into as well. In order to measure the attitude towards BSE, 4 statements were used (read results) which were designed by the investigators in accordance to the needs of this study. The knowledge score was computed by totaling the number of correct answers for all questions. Upon completion of the questionnaire an interactive session followed where the investigators of the study demonstrated the correct method of BSE performance in both upright and supine positions. Additionally a figurative hand out was distributed to each woman with the intention to reinforce what had been taught. This education was provided to each woman in the privacy of the side room of the surgical OPD, with a nurse standing by.

STATISTICAL ANALYSIS
The main hypothesis was that level of awareness about breast cancer differs by age, literacy level, income and occupation. We also hypothesized that BSE knowledge and
performance in this group of women would be inadequate.

The data were analyzed by descriptive studies, chi square test and analysis of variance in order to find out the P value and appropriate conclusions were drawn based on the above analysis.

**OBSERVATIONS AND RESULTS**

80 women (between the ages of 40 and 65 years) were interviewed by means of a questionnaire. Their average age was found to be 48.3125 years.

All 80 women were married and all except one had children ranging between 0 to 7 in number. This was a group of women of high parity with average number of children being 3.5. Out of 79 women that had children, 77 of them (96.3%) had breast fed them.

Socio-demographic and other data relevant to this study is presented in the form of various charts and graphs as under.

1. **OCCUPATION:** Maximum women in our study group were housewives.

   ![Figure 1](image.png)

   **Figure 1**
   Table 1: Occupation

2. **LEVEL OF EDUCATION:** A significant proportion of women included in our study were uneducated, however there was a sizeable number of women who were from a well educated background as well including even some post graduates. Thus we had a mixed group of women.

   ![Figure 2](image.png)

   **Figure 2**
   Table 2: Level of Education

3. **MONTHLY FAMILY INCOME:** Most women fell into the lower socio economic bracket with monthly earnings of the family being between 5 to 10,000 rupees.

   ![Figure 3](image.png)

   **Figure 3**
   Table 3: Family Income per month in Rupees

4. **HEALTH SEEKING BEHAVIOUR:** This was assessed by asking women whether they visited their family physician and/or gynaecologist regularly. 27 of the 80 women (i.e.33.7%) claimed that they did.

HAVING HEARD ABOUT BREAST CANCER: 4 out of 80 women included in this study had never heard about breast cancer (i.e. 5%) The remaining 95% of the women were asked about their source of information. Most women had received their information from family and friends, followed by mass media and print, whereas only 12% of the women claimed their source of information to be doctors or health care workers.
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Figure 4
Table 4: Source of Information about Breast Cancer

![Source of Information about Breast Cancer](image)

1] CAUSATIVE FACTORS IN BREAST CANCER:
Women were asked whether they felt the following factors were causative in Breast Cancer. The results obtained were as follows.

Figure 5
Table 5: Women’s Response to Factors Causative in Breast Cancer

![Women’s Response to Factors Causative in Breast Cancer](image)

Only a third of all women knew of the association of genetics with breast cancer. Most women agreed that age (i.e. older women) was a significant risk factor in breast cancer. We asked women whether they felt that trauma, infection, or stress could lead to breast cancer in order to become aware of any lay beliefs that they may have. Whilst almost all women did not believe that trauma or infection causes breast cancer, a very large proportion of women (over 83%) believed that stress could possibly lead to breast cancer. This was in fact, a response we received from a large proportion of educated women belonging to high income groups.

2] BREAST CANCER RISK FACTORS: Information about risk factors for the development of breast cancer was asked. Results showed that although smoking is not a risk factor associated with breast cancer, a large proportion of women believed otherwise. Less than half of all women could identify that a diet rich in fats was a significant risk factor linked to breast cancer. Little over a third of all women knew that oral contraceptive pills and radiation were risk factors positively associated with breast cancer. Very few thought that sedentary lifestyle is a risk factor for breast cancer.

Figure 6
Table 6: Breast Cancer Risk Factors

![Breast Cancer Risk Factors](image)

3] BREAST CANCER PROTECTIVE FACTORS: Most women were of the correct opinion that breast-feeding was a factor which is protective against breast cancer. Similarly a substantial proportion of women felt that regular exercise could eventually prevent a woman from getting breast cancer. The knowledge of a diet high in fiber and low in fat being protective was known by 44% of all women. Although a large percentage of women felt that regular breast self examination (BSE) was protective against breast cancer (85%), a lower fraction knew that mammography was an effective screening procedure to detect breast cancer (64%).
4] SUSCEPTIBILITY: Participants were asked whether they agreed that the following groups of women were more susceptible to getting breast cancer. Older age, having children at a late age and not breast feeding were factors known by most women as susceptible (over 80%). On the other hand less than half (42.5%) knew that a family history of breast cancer makes a woman more susceptible to acquiring the disease. Obesity was also not recognized as a factor which determines a woman’s susceptibility by most women. Almost nobody knew that early menarche and late menopause are factors which increase a woman’s chances of getting breast cancer. Only one woman out of 80 was aware of these two factors.

5] BREAST CANCER SYMPTOMS: Most women could identify more than 3 symptoms of breast cancer correctly. The symptoms which they were asked to identify were, a palpable mass in the breast, a sore on the breast that does not heal, discharge of blood from nipple (least commonly identified), a change in the texture of the skin over the breast and redness and warmth over the breast.

6] BSE KNOWLEDGE AND PERFORMANCE: 42% of all women claimed that they had heard about BSE. Very few (15%) admitted to performing BSE on a regular (monthly) basis whereas a higher proportion (23%) said that they did perform BSE but not a regular basis. Despite of having heard of BSE as a screening method for breast cancer, over half of these women admitted that in fact they never performed BSE regularly, or otherwise.
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Figure 10
Table 10: BSE Performance

7] REASONS FOR NON PERFORMANCE: The most frequently endorsed reason for non performance was, not knowing the correct method. Being too busy was the second most important grounds for non performance. However, none of the women felt that it was a procedure which was unnecessary. Also, none of them stated being embarrassed or being afraid to discover a lump as a reason for non performance.

8] ATTITUDE TOWARDS BSE: This was gauged by asking women whether they agreed with the following statements:-

A} It is important for me to examine my breasts regularly
B} Every woman should perform BSE monthly
C} Discovering lumps early would increase my chances of survival if I had Breast cancer
D} I think that doctors should advise their patients to perform BSE.

73 out of 80 women agreed with all of the above statements.

AWARENESS: Knowledge about breast cancer was evaluated on the basis of how many questions a woman could answer correctly about breast cancer causative factors, risk factors, protective factors and susceptibility (as shown in the graphs above) and a scoring system ranging from 0-29 was devised (based on the number of questions). 5% of women (those who has never heard of breast cancer) scored the least (0 points) while the highest obtained was 23 out of 29 points scored by only 2 women. None of the women included in the study were able to answer every question correctly.

We have divided participants into three groups as having low, moderate or high level of awareness on the basis of how many points they scored out of 29.

Overall awareness was found to be 52%.

Figure 11
Table 11: Total Awareness

= Summation fx/ N
= 1208/ 80
= 15.1

Therefore Total Awareness = 15.1/29*100 = 52%

RELATIONSHIP BETWEEN SOCIO-DEMOGRAPHIC VARIABLES AND AWARENESS

A] AGE: As hypothesized, it was found that age correlated with awareness with younger women being more aware than older ones (using ANOVA the difference was found to be statistically significant at p < 0.001)
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B] INCOME: Income was also found to be a factor on which awareness depended as analyzed by descriptive statistics as follows. A definite trend was noticed showing clearly that those women belonging to higher income group subsequently scored higher and were therefore more aware than women of lower income group. (using ANOVA the difference was found to be statistically significant at p < 0.001)

C] LITERACY: Literacy too dictated awareness, with graduates and post graduates scoring much higher in comparison with uneducated women. (using ANOVA the difference was found to be statistically significant at p < 0.001)

D] VISIT TO DOCTOR: Women who visited their physician or gynaecologist on a regular basis were found to be more aware than those who did not. (using ANOVA the difference was found to be statistically significant at p < 0.001)

E] PARITY: Women who had more number of children especially those who had 4 or more children were less aware than women who had 1-3 children. (using ANOVA the difference was found to be statistically significant at P < 0.001)

F] OCCUPATION: Housewives who constituted a large proportion of our study population scored on the lower side (14.00) and were below average (mean = 15.1). Farmers had the poorest level of awareness and scored a mean of only 7.10 points. Highest scores were achieved by women working in the service sector (18.90), followed by teachers and businesswomen (18.00). (using ANOVA the difference was found to be statistically significant at P < 0.001)

DISCUSSION
Limited data exists which serves to identify awareness levels among the average Indian woman as regards breast cancer.

Although 95% of the women included in this study reported having heard about breast cancer, our study revealed that on an average, awareness levels among these women was 52%
(table 11). We further went on to categorize women into groups as having low, moderate and high level of awareness. Even though overall awareness was found to be moderate our study reported that a substantial proportion of women (38.5%) had relatively high level of awareness. This was something we had hypothesized at the very start, considering our study was based in a private charitable hospital in an urban city.

Since most women included in our study, i.e.60% were under educated housewives (table 1), it was not unusual to find their most important source of information (about breast cancer) to be family and friends (table 4). TV and radio is also a facility which is readily available to them, which ranked as the second most important source of information (table 4). This finding clearly indicates the advocacy of mass media in spreading awareness. An unanticipated finding however was that doctors were a relatively poor source of information accounting for only 12% of the group (table 4). This is a significant finding since being an urban city where health care facility is available readily and widely, doctors in Mumbai are falling short of providing basic timely information to their patients about breast cancer and its screening, especially to those women who need it the most, since it is a well known fact that urban women have a much higher likelihood of acquiring this disease as opposed to women hailing from a rural background.

As shown clearly in our results, not very many women (only about a third) knew of the association of genetics with breast cancer (table 5). Most women that did know of this association were educated, working women. It is critical that all women recognize this association so that screening decisions can be individualized in them taking into account the potential benefits and limitations of each screening modality in context of their health condition. As expected, most women did not believe that trauma and infection could cause breast cancer (table5). It was noteworthy however that a sizeable proportion of women, including educated women from higher socio-economic background felt that stress was a definite risk factor for breast cancer (table 5). This was a unanimous response we received even from teachers. Another interesting finding in our study was that almost three quarters of all women felt that smoking was a risk factor for breast cancer (table 6). This probably means that they linked the carcinogenic effects of smoking to multiple types of cancer and could not differentiate all risk factors specific to breast cancer. We also noted that not enough women knew that radiation (in terms of radiotherapy for treatment of cancer as well as that used for diagnostic procedures) was a significant risk factor for breast cancer (table 6). This information needs to be disseminated widely so that the general public may become aware of the ill effects of radiation.

It was interesting for us to note that 85% of all women could recognize that regular BSE( breast self examination) was a protective factor against breast cancer(table 7), since our study was designed not only to assess the awareness levels amongst this group of women, but in addition, also to advocate BSE as an effective screening method. On the other hand not as many women (64%) acknowledged the beneficial effects of a mammography as an early detection method (table 7). This could be due in part to the fact that this screening modality was beyond the reach of a lot of the women since a significant amount of them were economically disadvantaged. Only one woman knew that early menarche and late menopause were risk factors for breast cancer (table 8). A Turkish study too initiated by Yaren et al (15) and published in the European Journal of Cancer Care in May of 2008 found that very few women were conscious of the fact that menstruation for a long period of time increases the likelihood of developing breast cancer. This study aimed at identifying awareness levels and screening behavior amongst nurses in Turkey whereas our study was focused on the middle aged average Indian woman. Yaren et al too found that nurses in their study believed BSE to be a beneficial means for screening.

Our study found that younger women had greater awareness about breast cancer in general as compared to older women (table 12). Older women were probably of the opinion that having led a disease free life so far, they were unlikely to get the disease now, and were therefore complacent and perhaps disinterested in acquiring information about breast cancer. This could also be due to inadequate perception in this group of women. This finding was similarly seen in two Jordanian studies, one conducted by Petro-Nustus et al (25) at the Hashemite University and published in the July 2002 issue of the Public Health Nursing Journal and another by Madanat H and co workers (24), published in the Cancer Journal August 2002. On the other hand, Javandi S et al (21) at the Iranian Centre for Breast Cancer found that older women were more knowledgeable and performed BSE more frequently as opposed to younger women. Theirs was a descriptive study which was conducted to explore the beliefs
and behaviours of Iranian teachers towards breast cancer and BSE. They published their work in the Public Health Journal, July 2002 issue.

In our study, women belonging of higher income group were more aware than those who were economically deprived (table 13). They scored a total of 20 points out of 29 whereas women of low income group had a total score of only 11.9. A Puerto Rican study too conducted by Sanchez Ayender et al (17) and published in the P R Health Science Journal in December 2001 concluded that a higher socio economic class was associated with greater awareness and a higher compliance to breast cancer screening procedures. This was an obvious finding since women who were financially deprived probably had more pressing problems and fear of breast cancer is not a psychological preoccupation among them as it may be among women who were economically advantaged.

Well educated women were evidently more aware than those who were less educated and illiterate. Graduates and Post Graduates scored over 19 points while illiterate women scored only 10.26 and primary school educated women scored 14.43 points in our study (table 14). Alam AA (19) of Riyadh, Saudi Arabia conducted a study similar to ours and concluded in his paper in the Annals of Saudi Medicine that there was a statistically significant association between educational status and knowledge of breast cancer. Petro-Nustus (25) and Haji Mahmoodi (22) found their results to be parallel to that of ours with more qualified women being significantly more aware than women who were only primary school educated and illiterate ones.

In our study business women, teachers and women working in the service sector seemed to be more empowered with knowledge about breast cancer in general as compared to home makers and those working as domestic help (table 17). Farmers who comprised 10% of women in the study group, were found to be least aware. Women working outside their homes were more exposed to information and more receptive to knowing about screening procedures. Madanat H et al (24) also found that profession of women significantly influenced breast cancer awareness. He concluded that professionals were more knowledgeable about breast cancer risk factors and also practiced BSE more frequently than those who were housewives. Since women who were housewives were preoccupied with their daily chores and hardly ever seemed to find time for themselves, it seems improbable that they would go out of their way to specially have a clinical breast examination by a physician even if they acknowledge that breast cancer is a life threatening disease. This is why breast self-examination would be an appropriate option for screening (not to say the two are interchangeable).

Women who regularly visited a family physician or a gynaecologist were subsequently found to be more aware than those that did not (table 15). This obviously shows that women who considered health a priority were more aware about breast cancer and probably more receptive therefore to its screening methods. Enlightened women, especially in urban areas should therefore be given the right knowledge so that they may spread it to others in their community and should be motivated to practice BSE.

We also noted that women who had more than 4 children (who also happened to be poorer and less educated) were less aware than women who had fewer than 3 children (table 16). Women who had more number of children and who were poorer in general obviously had limited time for themselves and were more consumed with their day to day family life and therefore tended to neglect their own health. Owing to the larger size of their family too, they were probably unable to find privacy for themselves to be able to perform a self-examination. It is important for us to recognize these practical problems that they may face in their everyday lives so that when we advocate BSE to them we can take them into account and yet find a way to convince them of its importance. Parity was not a demographic variable studied as a deciding factor for awareness by any other study reviewed by us.

A personal history of breast cancer was a factor studied by many researchers in various studies all over the world. However, we did not enquire into a personal history of breast cancer among women included in our study. Madanat H (24) et al and Petro-Nustus and coworkers of Jordan (25) as well as Haji Mahmoodi (22) of Tehran, Iran all concluded that awareness about breast cancer and the practice of BSE was significantly associated with a personal history and/or a family history of breast tumors.

75% of all women were able to recognize at least 3 symptoms of breast cancer correctly (table 9). The symptom which was least commonly recognized was discharge of blood from the nipple. This was an important element of our study since recognition of symptoms would decide whether a
woman would seek timely medical help. Also in our study we had set out to (additionally) disseminate information about BSE, the success of which requires the recognition that breast cancer is a potential hazard.

Whereas Freidman, Nelson et al (7) in the American Journal of Preventive Medicine reported a very high knowledge of BSE (90%) among subjects included in their study, BSE practice was found to be as low as 27%. The American Cancer Society guidelines for early breast cancer detection clearly state that even a woman at average risk for breast cancer should be told about the benefits of breast self-examination and that women who choose to do BSE should receive instruction by a health professional, which is why it is alarming to note the disappointingly low levels of BSE practice among these women in developed nations. Similarly Sadler et al (9) of the UCSD Cancer Centre and Chaudhury et al (10) of Seneca College, Toronto, reported a very low practice of BSE. Hence even though a considerable proportion of women knew about the practice of BSE, a much lesser percentage of them were utilizing it as an effective screening method for early diagnosis. If this were the state of affairs in developed nations, one can only imagine the situation in lesser privileged countries. BSE practice was found to be even lower in south-east Asian and Middle Eastern countries. In studies conducted in Jordan it was found by researchers Petro-Nustus et al (25) that although 67% of women had heard or read about BSE only a quarter of them reported that they had ever practiced BSE and only 7% had performed it on a regular monthly basis. In Iran too the picture was similar, with Haji Mahmoodi et al (22) reporting a BSE knowledge of 63% and an actual practice of only 6% among their respondents. The same response was obtained by Jarvandi S et al of Iran (21). In the Quassim region of Saudi Arabia results were even poorer and only 42% of all women knew about the practice of BSE and only 18.7% reported practicing it. In our study we found that only 42% of all women knew about the practice of BSE and an even lower number (only 15%) were regular performers while 23% were irregular performers (table 10). The lowest results were seen in a study done by Avci IA among 103 female workers at a Muslim community, where only 26% of the women reported knowledge of BSE and 4.3% reported that they perform BSE. Poorest results were found in the most conservative communities and reflect an urgent need for spreading awareness by means acceptable among them.

On the other hand Stephanie Klug (11) et al of Germany, and Dundar et al (13) of Western Turkey reported higher BSE practice (over 40%). The higher practice in Germany is probably owing to the fact that since 1971 all women have been eligible for a yearly gynaecological cancer early detection exam which is covered by statutory health insurance wherein from the age of 30, inspection and palpation of the breasts and instructions for BSE are included. Still higher practice rates were found by researchers at the Howard University Cancer Centre, Washington where over 75% of women selected in the study claimed to perform BSE (8).

Our study reported the most frequently endorsed reason for non-performance as not knowing how to perform BSE. Women lacked confidence in their ability to perform BSE and therefore we felt that it was important for us to obviate their fears by demonstrating the correct method of BSE performance by means of a personal instruction. Jarvandi S et al of Tehran, Iran too concluded a similar result. Being too busy ranked as the second most common reason for non-performance in our study. None of the women felt that BSE was an unnecessary procedure and neither of them stated being embarrassed or afraid as reasons for non-performance. This was interesting to note since it implies that these women do not have a mental block and would probably readily adopt BSE as a screening method were somebody to educate them about its importance.

A large proportion of women, (over 90%) had a positive attitude towards BSE and were convinced of its value for early diagnosis of breast cancer. This was a gratifying response since our objective was to disseminate information about BSE and their positive attitude reflects their receptiveness towards learning.

CONCLUSION

Breast cancer awareness was found to be moderate in our study (52%) which substantiates the fact that it is imperative to educate the middle aged average Indian woman about this disease. Knowing facts about breast cancer will help us move together to reach the common goal- prevention. Knowledge must be spread via mass media since this avenue is available to a large number of people and was stated as an important source of information by women included in our study. The role of physicians and gynaecologists were mentioned as a source of information by only 12% of women, which highlights the inadequacy of doctors in
providing appropriate, timely information to patients. This study has allowed us to understand which risk and protective factors women were able to identify easily and those that were missed. BSE knowledge was found to be inadequate (62%) and its regular performance low (15%). Most commonly stated reason for non performance was found to be not knowing its correct method. The study group presented with a positive attitude towards BSE. Therefore this group of women should be taught the correct method of performance of BSE and their awareness about breast cancer should be increased.

SUMMARY

BACKGROUND: Breast cancers are responsible for 10.4% of the global burden of cancers in women and half of this occurs in developing countries. In the sphere of cancer control, much would be achieved if breast cancer were to be detected early. Since a large proportion of patients in India present with advanced disease, any down-staging due to early detection will considerably reduce treatment cost as well as morbidity even if mortality is unaffected. This can be achieved by breast health awareness and adherence to screening practices.

OBJECTIVE: The aims of this cross-sectional study were to determine the level of knowledge regarding breast cancer and to measure breast self-examination (BSE) performance in a group of 80 women aged 40 years and above. Additionally we also intended to demonstrate the correct method of BSE performance to each women included in our study individually and privately.

METHODS: This was a cross sectional study conducted over a period of two months commencing on August 1st and ending on 30th September. 80 women were interviewed by means of a structured questionnaire (after obtaining written informed consent) in the surgical outpatient department of the K.J.Somaiya Medical College, Sion, Mumbai. The questionnaire consisted of socio-demographic variables, breast cancer risk factors and protective factors and knowledge and practice of BSE. Further, attitude towards BSE was also evaluated. The data were analyzed by descriptive studies, chi square test and analysis of variance in order to find out the P value. The interview was followed by an interactive session where each woman was individually and privately educated on breast self-examination by the investigators themselves in the presence of a nurse.

RESULTS: Breast cancer awareness was found to be 52% in this group of women even though 95% women claimed to have heard of the disease. Only 12% of all women had received information about breast cancer from health professionals while a majority (60%) stated their source of information to be family and friends. Level of breast cancer knowledge was significantly associated with age (younger women more aware than older), income (women belonging to higher income group found to be more aware than those who were economically deprived), literacy (graduates and post graduates more knowledgeable), parity (women bearing lesser number of children being more aware), occupation (teachers and businesswomen being the most aware versus farmers who were the least aware). 38% women had never heard of BSE and among those that had heard of it, 15% were regular while 23% were irregular performers. Thus performance of BSE was found to be inadequate in this group. Not knowing the correct method was the most frequently reported reason for non performance.

CONCLUSIONS: This study revealed that the respondents lacked knowledge of vital issues related to breast cancer and that practice of Breast Self-Examination was inadequate. It also revealed that doctors were not forthcoming in providing information to the general public regarding breast health. Spreading awareness amongst the general public is the need of the hour and should be advocated by means of effective educational programmes.

SUGGESTIONS

Breast cancer is a highly feared disease. Not only is it a major cause of cancer death among women in India, but it often strikes women in their prime years long before a disease of such severity is expected. A critical element in the fight against breast cancer is education. Spreading awareness and the knowledge of screening heralds a welcome shift from reactive medicine to a more proactive approach to health care, in which information about risk factors would help the patient take measures to reduce those risks. Of the three established means of screening namely, Clinical Breast Examination by a physician (CBE), Mammography and Breast Self Examination (BSE), BSE seems to be more practicable in an Indian setting. Whereas mammography has been clearly established as an effective method for early detection, mammographic screening of a large population would prove too expensive and cannot be supported as a priority in India. BSE on the other hand would only impose a small cost for a formal education training initially and no
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cost thereafter. We therefore strongly recommend BSE as an effective and appropriate screening measure. Women who regularly perform BSE may be more likely to comply with other breast cancer screening guidelines. BSE has been strongly advocated by breast cancer experts such as Haagensen who stated that, “From the point of view of the greatest possible gain in early diagnosis, teaching women how to examine their own breasts is more important than teaching the technique of breast examination to a physician”.

Since maximum women included in our study gave ‘not knowing the correct method of performing’ as a reason for non performance, it is important that we provide this education to them. It is well known that women are more likely to adhere to regular BSE performance if they receive personal instruction from a nurse or physician, therefore this education needs to be disseminated effectively to the general public by means of enhanced programs.

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Author Information

Shradha Ahuja
Fourth year medical student, K.J.Somaiya Medical College and Research Center

Nilay Chakrabarti, M.S., D.H.A.
Professor and Head, Department of Surgery, K.J.Somaiya Medical College and Research Center