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Original Research Article

Awareness and screening behaviors of breast cancer among urban women in Mysuru, India- need for breast health education program

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ABSTRACT

Background: Breast cancer is the second most common cancer among Indian women. By recommending them to participate in screening programs, early detection can be possible. The objectives of the study were to determine awareness of 'breast cancer and breast cancer-screening procedures' among urban women of Mysore; to determine the extent to which 'breast cancer screening procedures' are practiced; to determine the factors associated with better screening practices.
Methods: Cross sectional study was conducted (August 15th-September 15th, 2011) in Mysore. Study group comprised of 100 professional women, without history of breast cancer.
Results: Ninety nine percent of women were aware of breast cancer. Sixty three percent of women were aware of breast self-examination. Sixty six percent had practiced BSE once; only 18 percent of them were aware of ideal positions.
Conclusions: It was found that low levels of practice directly associated with the lack of knowledge regarding breast cancer and thus emphasizing the need for a community based breast health education (BHE) program for women.

Keywords: Breast cancer, Screening, Awareness, Urban women, India

INTRODUCTION

The importance of emphasizing the benefits of early breast cancer detection among women across the world cannot be stressed upon enough. With 900,000 women being diagnosed with breast cancer every year and 519,000 deaths a year worldwide, it is one of the leading causes of death in many developed countries among middle aged women. In 2009, the American cancer society estimated that if eight women live to the age of eighty-five years, one of those women would develop the disease during her lifetime. In India, breast cancer is the second most common cancer among women, following cervical cancer, with approximately 75,000 new cases being diagnosed each year.

It is has been reported that in India, breast cancer incidence is rising in urban cities, which appears to be related to risk factors such as: late marriage, birth of the first child at a later age, less number of children, and increased tobacco and alcohol consumption, all of which are common practices among urban women. It has been found that breast cancer occurs a decade earlier in Indian women than Western women; the mean age for occurrence is fifty three among white women, whereas the mean occurrence is forty-two for Indian women.[1] In addition, Indian women are prone for an aggressive form of breast cancer, which is biologically confirmed by the higher incidence of the gene c- erbB2 that is frequently over expressed in breast cancer.[2]

Breast cancer prevention comprises of primary and secondary prevention methods. The aim of primary

prevention is elimination of the established high risk factors (e.g. positive family history, early age of menarche, bearing of the first child at a later age, attainment of menopause at a later age, elevated levels of hormones, excess consumption of tobacco and alcohol), as well as providing cancer education so that high risk groups seek early diagnosis and treatment. It is directed at big population groups, but due to its high cost and difficulty in conducting the programs, its benefits are limited.

On the other hand, secondary prevention is aimed at: cancer registration, early detection, removal of benign tumors, and most importantly, follow-ups. Early detection of breast cancer mainly focuses on cancer screening as a key towards detecting cancer at a pre-malignant stage.[3] In addition to educating women about breast cancer screening practices, namely breast self-examination (BSE), clinical breast examination (CBE) and mammogram, secondary prevention is aimed at successfully inculcating these practices among the high-risk population.[4]

There is an increasing need to emphasize the benefits of early breast cancer detection among women. The symptoms of breast cancer are easy to notice, which include: a lump or thickening in or near the breast or in the underarm that persists through the menstrual cycle; a change in the size, shape, or contour of the breast; a blood-stained or clear fluid discharge from the nipple; a change in the feel or appearance of the skin on the breast or nipple (dimpled, puckered, scaly, or inflamed); redness of skin on breast or nipple; a change in shape or position of nipple; and a marble-like hardened area under skin.

Before a woman can assess her degree of risk towards developing breast cancer, it is essential for her to be familiar with the risk factors. If a woman is aware of breast cancer, knows how to perform BSE, recognize early symptoms and coordinates accordingly with her doctor, she can help prevent the progression to an advanced stage before it becomes incurable. Since early detection is highly beneficial, a study of the awareness of breast cancer and its screening practices was undertaken among urban women in Mysore. A selection of educated, working women were chosen as they are the group, which is comparatively well informed about breast cancer and its implications, and because they are at a higher risk for developing the disease compared to the rural population. By conducting this study, an understanding of the hurdles an urban Indian woman faces regarding breast cancer knowledge and screening practices can be determined.

Aims and objectives

1. To determine the awareness of 'breast cancer and breast cancer-screening procedures' among selected working urban women of Mysore.
2. To determine the extent to which these women practice the 'breast cancer screening procedures'.
3. To determine the factors associated with better screening practices for breast cancer.

METHODS

A cross sectional study was conducted from August 15th to September 15th, 2011, in Mysore, Karnataka. One hundred professional women, predominantly teachers and professors, were recruited from fifteen various schools and institutions. The Medical Schools and Pharmaceutical Schools were excluded from the sampling category so that the results would be unbiased. Women with no personal history of breast cancer formed the study group. Their informed consent to participate in the study was obtained.

Each participant was given a questionnaire in the English language, which was designed to acquire information on their knowledge of breast cancer and its screening methods, and to what extent they practice the said methods. The questionnaire was based on breast cancer risk factors, signs and symptoms and methods for early detection, with a focus on the different steps of the breast self-examination, clinical examination and mammograms. It consisted of the general socio-demographic inquiries including: age, address, marital status, and educational status. It comprised of a total of 25 questions and was divided into two parts.

The first part regarded the awareness of breast cancer: awareness questions – 2, knowledge questions- 4. One point was awarded for each correct answer and zero for each wrong answer to the questions related to knowledge. The responses related to breast cancer awareness were analyzed as frequencies. In addition, one question in this domain pertained to the channel through which they acquired information about breast cancer (e.g. mass media, etc.). This question was solicited for determining the most common source, and hence was not scored. The maximum score for 'Knowledge' was 18. The participants were scored as Good≥13 points; Satisfactory 7–12 points; and Poor ≤6 points.

The second part comprised of awareness and practice of breast cancer screening procedures: awareness questions – 1, knowledge question – 7, practice questions – 7.

The responses to knowledge and practice questions, received a score of one point for each correct answer and zero for each wrong answer. In addition, there were three open ended questions: (a) a reason was required if the participant had not practiced breast self-examination; (b) what were the concerns for not discussing problems concerning their breasts (e.g. scared if the doctor discovered a lump, etc.), and the responses were scored as 1 for 'most important' and 3 for 'least important' and (c) If they have not had a mammogram, an explanation as to why not? These questions, as well as the awareness

question, were analyzed only for the frequency of responses. The maximum score for knowledge was 14. The participants were scored as: Good≥10 points; Satisfactory 5-9 points; and Poor≤4 points. The maximum score for practice was 7. The participants were scored as; Good 4-7 points; and Poor ≤ 3 points. The data analysis was done by Statistical software i.e. Epi-info version 3.5.3.1 Frequencies were obtained for majority of the data, and the mean along with standard deviation, was obtained for Knowledge and Practice scores. To test for the factors associated with better screening practices, Chi Square Analysis was done.

RESULTS

A total of one hundred women were recruited from fifteen various schools and institutions in the urban localities of Mysore, Karnataka. Descriptive characteristics of the women are as follows: mean age of the participants was 39.35 years and seventy-one percent of women were married, 22 percent were unmarried and two percent widowed.

Table 1: Proportion of study subjects with correct knowledge regarding breast cancer.

Questions	Correct Answers (in percent)
General knowledge	
Women >50 years have a higher risk of developing breast cancer	13
Chances of a woman developing breast cancer in her lifetime	19
Knowledge of breast cancer risk factors	
Having a first degree relative with breast cancer	57
Consumption of alcohol and/or tobacco usage	39
Menstrual cycles at an early age	16
Having a child at a later age	20
Late menopause (after of 55 years)	29
Knowledge of breast cancer symptoms	
Lump in breast	90
Change in shape and size	43
Nipple rash	26
Pain in breast/armpit	58
Change in nipple position	29
Lump under armpit	43
Redness of skin	23
Puckering/Dimpling of skin	19
Discharge from nipple	52
Pulling-in of nipple	29

Responses to some important questions are shown in Table 1. Regarding breast cancer knowledge, 13 percent chose the correct age group of '>50 years' as the group most prone for developing breast cancer, while 45 percent of women wrongly selected the age group of '40-50 years'. Nineteen percent of women knew that the chances of a woman developing breast cancer in her lifetime were 1 in 8; the majority of them (48 percent) chose 1 in 100. A vast majority of the participants were able to appreciate the basic breast cancer risk factors such as; genetic predisposition (63 percent), having a first-degree relative that had breast cancer (57 percent) and consumption of alcohol and/or usage of tobacco (39 percent). A significantly less percent of them were able to appreciate more complex risk factors for the development of breast cancer such as, attaining menopause after the age of fifty-five years (29 percent) having a child at a later age (20 percent), and attaining menstruation at an earlier age (16 percent). In regard to the knowledge of symptoms of breast cancer, it was found that 90% of the study subjects were aware of 'lump in the breast' as the most common symptom of breast cancer. The other most frequently identified correct answers included: pain in the breast and armpit region (58 percent), discharge from nipple (52 percent), change in shape and size of breast (43 percent), and lump in the armpit (43 percent).

Table 2 shows the association between knowledge and practices regarding breast cancer, breast cancer screening practices and socio-demographic characteristics. It was found that there was no association between knowledge regarding breast cancer with age, educational status or marital status. There was a definite association between knowledge of breast cancer screening procedures with age and marital status; as age advanced, there was a significant increase in knowledge of the procedures as was with married women. It was found that there was a definite association between practice of breast cancer screening procedures and age; women greater than forty-six years of age practiced the breast cancer screening procedures more than the women in the younger age groups.

Table 2: Knowledge and practices regarding breast cancer, breast cancer screening practices and socio-demographic characteristics.

Socio-demographic characteristics	Score		Total	P value
	Satisfactory	Poor		
Knowledge regarding breast cancer				
Age				
20-30	16 (57.1)	12 (42.9)	28	>0.05
31-45	17 (38.6)	27 (61.4)	44	
>46	14 (50)	14 (50)	28	
Education				
Graduate	30 (50.8)	29 (49.2)	59	>0.05
Post-graduate	8 (40)	12 (60)	20	
Professional	6 (46.2)	7 (53.8)	13	
Marital Status				
Unmarried	9 (40.9)	13 (59.1)	22	>0.05
Married	38 (48.7)	40 (51.3)	78	
Knowledge of breast cancer screening practices				
Age				
20-30	6 (21.4)	22 (78.6)	28	<0.05
31-45	21 (47.7)	23 (52.3)	44	
>46	14 (50)	14 (50)	28	
Education				
Graduate	27 (45.8)	32 (54.2)	59	>0.05
Post-graduate	6 (30)	14 (70)	20	
Professional	5 (38.5)	8 (61.5)	13	
Marital Status				
Unmarried	4 (18.2)	18 (81.8)	22	<0.05
Married	37 (47.4)	41 (52.6)	78	
Practice of breast cancer screening procedures				
Age				
20-30	3 (10.7)	25 (89.3)	28	<0.05
31-45	11 (25)	33 (75)	44	
>46	13 (46.4)	15 (53.6)	28	
Education				
Graduate	18 (30.5)	41 (69.5)	59	>0.05
Post-graduate	5 (25)	15 (75)	20	
Professional	4 (30.8)	9 (69.2)	13	
Marital Status				
Unmarried	3 (13.6)	19 (86.4)	22	>0.05
Married	24 (30.8)	54 (69.2)	78	

Key Note: Figures in parenthesis show percentage, p value obtained by Chi Square test.

Regarding knowledge on breast cancer screening practices, 70 percent of women knew that getting a mammogram done was the most accurate method of early breast cancer detection. 30 percent of women knew that the best position to look for changes in the breast while performing BSE is in front of the mirror. However, only six percent of them knew that the position of the arms must be at the hips during this part of the examination. Even worse, only 8 percent of women correctly chose all ten symptoms of breast cancer to look for while examining their breasts. Eighteen percent correctly chose: lying down, sitting down, and in the shower as ideal positions while palpating their breasts while 21 percent incorrectly chose 'standing in front of the mirror', as the ideal position for feeling for changes in the breast. Only 27 percent of women knew that fingers should be flat and together while palpating their breasts. Surprisingly, more than half of the participants (52 percent) knew that lumps in the breast are usually visible in a mammogram long before they can be seen or felt.

In regard to the extent to which these women apply their knowledge of breast cancer screening practices, it was found that the majority of women (69 percent) had practiced BSE at least once before in their lifetime, and 53 percent examined their breasts occasionally, weekly, or monthly. Out of the 31 percent of women who had not practiced BSE, the main reason was because they did not

feel it was necessary as there was an absence of visual symptoms. Contrary to the percentage of women who practiced BSE, only 28 percent of women scheduled appointments with their doctor for Clinical Breast Examination (CBE). The reason mainly being contributed to the fact that only 39.8 percent of them had been encouraged by their doctors to undergo CBE and mammography, though 63 percent of them are in fact very comfortable in discussing problems concerning their breasts with their doctor or nurse practitioner. The remaining 37 percent of women were not comfortable discussing their problems with their doctor because they felt uncomfortable exposing their breasts for the examination (25 percent). Other reasons included: they feel scared that the doctors will find a lump in their breast (13 percent) and they feel uncomfortable talking about personal problems with their doctor (six percent). Among the study participants, a staggering 87 percent of women never had a mammogram, for the sole reason (37 percent) being that they do not know what a mammogram is and 32 percent because they did not feel it was necessary.

Table 3: Proportion of women with overall score for knowledge and practices regarding breast cancer.

	Good	Satisfactory	Poor
Knowledge of breast cancer	12	35	53
Knowledge of breast cancer screening procedures	8	33	59
Breast cancer screening practices	27	-	73

Table 3 indicates that on the whole, the total scores for the three parameters were low; with majority of women scoring fewer points and a 'Poor' score (Table 1). The overall mean total score was 6.8 out of 18 for 'Knowledge on breast cancer'. A total of only 12 percent of women scored 'Good' followed by 35 percent with a 'Satisfactory' score, while 53 percent obtained a 'Poor' score. The overall mean total score was 4.06 out of 14 for 'Knowledge on breast cancer screening practices'. A total of only 8 percent of women scored 'Good' followed by 33 percent with a 'Satisfactory' score, while 59 percent had a 'Poor' score. The overall mean total score was 2.9 out of Seven for 'Practice of breast cancer screening methods'. A total of 27 percent of women scored 'Good' while a dismaying 73 percent of women scored 'Poor'. Coming to awareness, 99 percent of women were aware of breast cancer and 81.8 percent of women were aware of its risk factors. Although, all of the women in the study population were aware of the breast cancer screening tests: 63 percent of women were aware of breast self-examination, 25 percent of them were aware of all three tests (BSE, clinical breast examination, and mammogram) followed by 24 percent of them who were only aware of mammograms.

Table 4: Association between knowledge score and practice score for breast cancer screening procedures.

		Breast cancer screening Practices	
Knowledge regarding breast cancer screening procedures		Satisfactory	Poor
	Satisfactory	19 (46.3)	22 (53.7)
	Poor	8 (13.6)	51 (86.4)
	p<0.0001		

Table 4 shows a comparison of knowledge regarding breast cancer screening procedures against practice of the procedures. There was a significant association, in that the more knowledge women had regarding the procedures, the higher were their practice scores.

DISCUSSION

In this study, the level of breast cancer awareness and its screening practices among urban women was evaluated. It was found that the majority of the women have poor knowledge regarding breast cancer, breast cancer screening practices, and consequently, they do not actively practice the different screening methods.

To substantiate the hypothesis that to this day many women are poorly educated on breast cancer risk factors, a few irrelevant options were included as possible answers. Much of the study population could not correctly identify the known contributory factors for breast cancer, and instead were confident in the false risk factors they have heard (e.g. eating spicy food and wearing tight undergarments). This is attributed to the fact that there is not enough exposure to informative health forums and discussions concerning women's health. It is unnerving to know that wrong information about breast cancer, in the form of old myths and beliefs, is still prevalent among city women. The current findings are in support with a previous report that women had poor knowledge regarding complex risk factors of breast.[5]

A large percentage of the study group had practiced BSE, but their scores regarding 'Knowledge of Breast Cancer Screening Methods' showed that they did not know how to execute the different steps correctly (i.e. position of body, hands and fingers). In this study, two-thirds of the study group had practiced BSE once in their lifetime as was found in a previous study done by Sheraz Ahmad et al (2011).[5] It was also found that though 63 percent of women were aware of BSE, only 18 percent of them were aware of the ideal positions to perform it in, which is much lower compared to a study done amongst Malaysian women by Kanaga et al. in 2011.[6] One of the more disturbing findings, among the women who had not performed BSE, was that they were unaware of such a screening practice and did not feel it was not necessary. This finding goes in favor of the need of an extensive breast cancer awareness campaign in India. It has been

proven that women find breast cancer more frequently on their own, than when they go to a clinician for an examination and studies have shown that learning the proper BSE can lead to greater confidence, and consequently, increased performance.[4] It is essential to highlight the importance of BSE as a simple and cost free method of breast cancer prevention. Practices of the breast cancer screening procedures (BSE and CBE) in this study were influenced by the level of awareness of these procedures as agreed by several studies.[6-10]

It has been shown that more than two-thirds of breast cancer patients visit the hospital when the disease is at an advanced and incurable stage. This is largely attributed to their lack of knowledge that breast cancer is in fact treatable if detected early. Before the cancer spreads, localized tumors can usually be treated successfully, and in nine out of ten cases, the patient can live for at least another five years.[11] Eighty seven percent of women never had a mammogram, similarly found in a study by Kanaga et al, hence emphasizing the need for subsidized mammography.[6] Keeping in mind that facilities for screening, as well as adequate treatment, are grossly limited in India as compared to developed countries, it comes of no surprise that women are reluctant to visit a physician for regular checkups or undergo expensive mammography.

The limitations in this study include: the low number of participants and sampling done only in a limited area. The results of the study did however bring awareness to that factors that play a rule in influencing awareness of breast cancer and its screening procedures among urban Indian women.

CONCLUSION

From this study it was found that the low levels of practice directly associated with the lack of knowledge regarding breast cancer. In developed countries, highly informative breast health education and awareness programs encourage women to get breast cancer screening done and the media focuses its energy equally on women's health care, leading to early detection and lower mortality rates. However, in India, there are only a few health forums for women where they can discuss medical problems and learn techniques to live a healthier lifestyle. By understanding the reasons why the urban Indian woman neglects BSE, clinical breast examination and mammogram, we can help curb the incidence and mortality rates of this disease.

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