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Knowledge on breast cancer: a population - based study in Sri Lanka

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ABSTRACT

Background: Breast cancer [BC] is the commonest cancer in women in Sri Lanka. This study aimed to assess the level of knowledge on BC among sample of adults from the general public. **Materials and Methods:** A household survey was conducted among a representative sample of adults of general public [n=1500] living in Colombo district. A pretested interviewer-administered questionnaire was used to assess the knowledge on BC. Overall knowledge and knowledge on – different aspects of BC were estimated based on percentage scores and were presented as ‘good / poor’ levels based on predetermined cut-offs. **Results:** [n=1500] Response rate was 97.2%. Mean age of participants was 37.21 [SD = ± 9.7] years and 48.3% [n = 725] of the sample were males. Only 207 [13.8%] [95% CI - 12.1 – 15.6] adults have a ‘good’ overall knowledge on breast cancer. Less than 20% had ‘good’ knowledge on risk factors, symptoms, screening / diagnosis methods and services provided through Well-Women Clinics. Those with knowledge on available treatment methods were 31.8% [95% CI – 29.5 – 34.1]. Being female [p<0.0001], married [p<0.0001], with high level of education [p<0.001] and being employed [p<0.0001] were associated with a ‘good’ overall knowledge on breast cancer. **Conclusion:** Knowledge on risk factors, symptoms, screening / diagnostic methods and the services provided through Well-Women Clinics were particularly poor among adults of the general public. Educational interventions targeted at these aspects are recommended to improve awareness among the general public on BC.

Keywords: Breast cancer, Awareness, General public, Sri Lanka

Introduction

Breast Cancer [BC] is the commonest cancer diagnosed among women, worldwide [1]. In Sri Lanka, BC is the commonest cancer among females with crude rate of 22.3 per 100,000 population and age standardized rate of 22.2 per 100,000 world population in 2009, accounting for 25.4% of female cancers. One in every 40 females has a risk of developing a breast cancer during her lifetime [2]. The most potential and effective way to improve the cure rate and prolong the survival of BC patients is to detect and treat from an early stage [3]. Patient attributable delays have been found to be responsible for adverse outcomes of BC in many developed countries. It has been recognized that raising public awareness of early symptoms and

promoting screening could reduce patient-attributable delay [4, 5, 6]. Screening of BC was introduced in Sri Lanka in 1996 through well woman clinics [WWCs], where women of 35 years of age or older are subjected to clinical examination of breast and are taught the technique for self-breast examination. Clinical Breast Examination [CBE] is conducted by a health care worker [mostly by Public Health Midwives] with provision of awareness and skills on the practice of regular Self-Breast Examination [SBE] [7]. Eleven years after commencing WWCs, Vithana *et al* [8] assessed clinical breast examination [CBE] coverage and quality of BC early detection services in a selected district in Sri Lanka which showed that BC early detection service coverage was remained at a low level in 2007. Mammographic facilities for screening of BC are also being increasingly available in the government health sector [9]. Despite these interventions, BC deaths in the country are still shown to be on the rise from 1986 to date [9]. In this background, the current study was designed to assess the level of knowledge of

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adults from the general facts on BC – and specifically knowledge on symptoms, risk factors, screening / diagnostic methods, treatment methods and available services provided through Well-Women Clinics for screening of BC.

Materials and methods

The study population consisted of a representative sample of adult residents in Colombo District in Sri Lanka. The district of Colombo has the highest population density [3,417 persons per Km²] in the country and is represented by all three sectors of residence namely, urban, rural and estate. Almost 11.4% of the total population [20.3 million] of Sri Lanka resides in the district of Colombo [9]. Inclusion criteria for participants were being at least 18 years of age and not having major physical or psychological problems affecting their ability to respond to an interviewer administered questionnaire. The interviewer administered questionnaire [IAQ] was developed as the collection instrument based on a review of literature and through discussions with experts. Content validity and face validity of the IAQ were assessed and confirmed by another group of experts in the field of oncology, public health and community medicine. Questions assessing knowledge was organized into six domains as general facts, knowledge on symptoms, risk factors, screening / diagnostic methods, treatment methods and knowledge on available services provided through Well-Women Clinics in screening for BC. The instrument was pre-tested to determine clarity of the wording, acceptability of format and feasibility by a random sample of 15 subjects. Reliability of important questions of the questionnaire was assessed using test re-test method on a sample of 68 study units carried out one week apart and the Cohen's kappa was found to be in the range of 0.40 to 0.80. The multi-stage cluster sampling method was utilized in the present study [10]. Sample size for a prevalence study was calculated according to the formula $n = z^2 p [1-p] / d^2$ [n= the required sample size; Z =1.96 [Standard normal deviation for 5% α error]; P=Prevalence of awareness of BC was taken as 50% in the absence of similar studies in Sri Lanka or any other country in the region and to maximize the sample size; d =the degree of accuracy [precision] desired for margin of error, set at 0.05 [11]. Since cluster sampling method was carried out, the effect of clustering was overcome by making a correction for design effect by multiplying the sample by 3.5. The sample size required was 1344. By considering 10% of non-response rate, and rounding off the resultant 1479, the final sample was estimated at 1500. The civil

administrative Grama Niladhari [GN] Division was considered as a cluster and the cluster size was decided as 30 eligible study units to keep the cluster effect minimal [10] and also considering feasibility of conducting the study. All the 13 Divisional Secretariat [DS] divisions were selected in the first stage of sampling and 50 clusters were assigned to the DS divisions based on the proportion of adults living in them. The principal investigator [PI] recruited data collectors and trained them by a mock survey in the field which included application of eligibility criteria, obtaining consent and administering the questionnaire. PI and the trained data collectors administered the study instruments in a location within the household of the selected study unit, during weekends and public holidays to avoid only unemployed adults being included as subjects. The project was approved by the Ethics Committee in the Faculty of Medicine; University of Colombo, Sri Lanka [EC-10-035]. Assessment of the knowledge on BC was done by scoring the questions in the IAQ in the following manner. Each correct response was allocated one mark while those who had given an incorrect response or those responded as 'do not know' were given a score of zero. Firstly scores for each of the six domains was calculated by adding up the marks obtained for the items belonging to them. As different domains contained different number of questions each of the domain score was then converted to be out of 100 marks. To describe the overall knowledge, a weighted system was used by assigning different weights to the domains. The weights were assigned based on the importance of the domain to the overall knowledge and the weighting system was reviewed and agreed upon by the experts who assessed the validity of the IAQ. Weights were designed so that they add up to 1. The marks for each of the 6 domains, each from a total of 100 were multiplied by the weight and were added to get the overall score. The minimum overall score one could get was 0 and the maximum was 600. This overall score was then converted to a percentage and the study units with 60% or more were categorized as having a 'good' level of overall knowledge on BC while those below 60% were categorized as having a 'poor' level of overall knowledge on BC. The cut off mark was decided in consultation with the same expert panel. The score obtained for each domain was also converted to a percentage and those with 60% or more were categorized as having a 'good' level of knowledge on the specific domain while those below 60% were categorized as having a 'poor' level of knowledge on the specific domain. All analysis were computed with SPSS version 21.0 [SPS Sinc., Chicago, Illinois, USA].

Results

A total of 1543 eligible adults were invited to participate in the study and one thousand five hundred [1500] agreed giving a response rate of 97.2%. Mean age of the participants was 37.21 [SD = ± 9.7] years. The minimum age was 18 years – while the maximum age of the adult in the sample was 80 years. Proportions of the males and females in the sample was

48.3% [n=725] and 51.7% [n=775] respectively. Composition of the marital status indicated that 82.9% [n=1243] were married, 15.5% [n= 232] were unmarried and 1.6% [n=25] were widowed / divorced / separated. Approximately, 44.1% [n= 662] of the participants had been educated up to GCE [O/L] and 34.8% [n=522] had been educated up to GCE [A/L]. The socio demographic characteristics of participants recruited are shown in Table 1.

Table 1: Distribution of the study population by the socio-demographic characteristics

Socio-demographic characteristics	n = 1500	%
Age in years		
18 - 24	53	3.5
25 - 34	566	37.7
35 - 44	568	37.9
45 - 54	230	15.3
55 -	83	5.5
Sex		
Male	725	48.3
Female	775	51.7
Residence		
Urban	840	56.0
Rural	660	44.0
Married status		
Married	1243	82.9
Unmarried	232	15.5
Widowed/divorced/separated	25	1.6
Highest level of education		
Passed Grade 5	52	3.5
Passed Grade 9	91	6.1
Passed G.C.E [O/L] Examination	662	44.1
Passed G.C.E. [A/L] Examination	522	34.8
University Degree / Diploma	173	11.5
Employment		
Full time or part time	976	65.1
Unemployed or retired	524	34.9

The assessment of the knowledge of general facts about BC revealed that a great majority of the adults in this study unit knew that breast cancer [99.6%, n = 1494], was a common female cancer in Sri Lanka and 77% were aware that the incidence of BC is increasing in the country. Of the study population, 43.7% [n = 655] knew that all breast lumps are not cancers. Only 5.8% [n = 87] of the respondents knew that breast cancer can occur at any age. Assessment of knowledge of the adults on symptoms of BC revealed that 57.9% [n = 869] correctly recognized that 'a lump, anywhere in the breast' as a red flag symptom. However, the other correct relevant symptoms of BC were known by

less than 35% of the study population. History of BC among mother, sisters or daughters as a risk factor for BC was known by a majority [71.5%, n = 1072]. However, the other correct risk factors [example: female who had first menstruation before 11 years of age; late menopause [stopping period] after 55 years; childless females or those who gave birth after the age of 35; having hormone tablets / any other methods during long period; etc.] were known only by a minority of the study population. Clinical breast examination by health personnel was the best known [48.2%, n = 723] screening method of early detection of BC. Only 38.8% [n = 582] knew mammography as a

screening method. Correct diagnostic methods being fine needle aspiration test and biopsy, were known by 20.1% [n = 301] and 31.4% [n=471] respectively. Surgery [88.9%, n = 1334] and Radiotherapy [83.3%, n = 1250] was the best known treatment methods of BC by the study population. Only 29.5% [n = 442] knew hormone therapy as a treatment method. Only 20.4% [n = 306] knew that performance of CBE and teaching of SBE were services provided through WWCs in the country. Categorizing the study population into levels

of knowledge revealed that less than 20% had a 'good' level of knowledge on five out of six domains namely, general facts, symptoms, risk factors, screening / diagnostic methods of BC and the services provided through Well-Women Clinics. The domain with the highest proportion of study units having a 'good' level of knowledge was treatment methods of BC [31.8%, 95% CI - 29.5 - 34.1]. The study population by the category of knowledge on the specific domains is shown in Table 2.

Table 2: Distribution of the study population by the category of knowledge on breast cancer in each domain

Knowledge level	No	%	95% CI*
Domain 1: Knowledge on general facts			
Good	251	16.7	14.8 – 18.6
Poor	1249	83.3	81.4 – 85.2
Domain 2: Knowledge on symptoms of breast cancer			
Good	295	19.7	17.6 – 21.6
Poor	1205	80.3	78.4 – 82.4
Domain 3: Knowledge on risk factors for breast cancer			
Good	153	10.2	8.7 – 11.7
Poor	1347	89.8	88.3 – 91.3
Domain 4: Knowledge on screening / diagnosis methods of breast cancer			
Good	218	14.5	12.8 – 16.3
Poor	1282	85.5	83.7 – 87.2
Domain 5: Knowledge on treatment methods of breast cancer			
Good	477	31.8	29.5 – 34.1
Poor	1023	68.2	65.9 – 70.5
Domain 6: Knowledge on the services provided through Well-Women Clinics			
Good	290	19.3	17.4 – 21.5
Poor	1210	80.7	78.5 – 82.6
* 95% CI, Confidence interval			

Distribution of the study population by the category of overall knowledge on BC is shown in Table 3. Only

207 [13.8%] [95% CI - 12.1 – 15.6] adults in Colombo district were having a 'good' overall knowledge on BC.

Table 3: Distribution of the study population by the category of overall knowledge on breast cancer

Knowledge level	No	%	95% CI
Good	207	13.8	12.1 – 15.6
Poor	1292	86.2	84.4 – 87.9
Total	1500	100	

The basic socio-demographic characteristic of the adults with 'good' and 'poor' overall knowledge on BC was compared and the results are shown in Table 4.

Table 4: Association between socio-demographic characteristics of the study population and overall knowledge on breast cancer

Socio-demographic characteristics	Category of 'overall knowledge on Breast Cancer'						Significance
	Good		Poor		Total		
	No.	%	No.	%	No.	%	
Sex							
Male	17	2.3	708	97.7	725	100	$\chi^2 = 155.049$, df=1 p<0.0001
Female	190	24.5	585	75.5	775	100	
Age in years							
18 – 24	0	0	54	100	54	100	$\chi^2 = 19.234$, df = 4 p< 0.001
25 - 34	85	15.0	481	85.0	566	100	
35 – 44	65	11.5	502	88.5	567	100	
45 – 54	46	20.0	184	80.0	230	100	
55 -	11	13.3	72	86.7	83	100	
Marital Status							
Married	203	16.3	1039	83.7	1243	100	$\chi^2 = 39.181$ df = 2 p<0.0001
Unmarried / Widow	4	1.7	253	98.3	257	100	
Highest Education level							
Passed G.C.E [O/L] or less	101	12.5	704	87.5	805	100	$\chi^2 = 14.610$ df = 4 p < 0.001
Passed G.C.E. [A/L] or more	106	15.3	588	84.7	694	100	
Employment							
Full time or part time	195	20.0	781	80.0	976	100	$\chi^2 = 89.481$, df = 1 p< 0.0001
Unemployed / housewives or retired	12	2.3	512	97.7	524	100	

The female study units with a 'good' level of overall knowledge on BC [n=190, 24.5%] was significantly higher as opposed to male study units [n=17, 2.3%] [p<0.0001]. The highest proportion of the study population with a 'good' level of knowledge was among those in the age group of 45 – 54 [20.0%, n = 46] and the overall knowledge was significantly associated with the education level of the study population [p<0.001]. Proportion with a 'good' level of overall knowledge on BC among married subjects [16.3%, n = 203] was significantly higher than the unmarried / widowed [1.7%, n = 55] [p < 0.0001]. A significantly higher proportion of the full time or part time employed possessed a 'good' level of overall knowledge [n = 195, 20%] [p < 0.0001] compared to unemployed / housewives or retired persons. The study further inquired from female respondents on their practice of performing SBE regularly and only 5% [n = 39] responded positively. Females were also

questioned whether they will accept to undergo a BC screening test if an opportunity is provided and 90% [n = 698] responded positively. Of those accepting to undergo the screening, 61% [n = 426] preferred a female doctor for examination and 94% [n = 656] stated that they do not have any fear to recognize BC in its early stage.

Discussion

Cancer as a multi-etiology disease has created a significant health problem worldwide. Early detection and intervening from an early stage is the effective way to increase the cure rate or prolonging the survival of BC patients [12]. Breast cancer screening tests with advances in treatment have been shown to play a pivotal role in reducing BC related mortality and improving survival [13]. In Sri Lanka, BC has also remained one of the commonest cancers affecting the

lives of many, especially the women. Preventive behavior is essential to reduce cancer mortality. A necessary predisposing factor for behavioral change is knowledge. Knowledge plays an important role in improvement of health seeking behavior. Several studies show that lack of knowledge is a significant factor for delayed health seeking behavior [15]. Literature showed that many surveys on BC knowledge attitude and practice among health workers, especially nurses. Assessment of knowledge among hospital nurses in Lagos [16] and Amman, Jordan [17]; public health nurses in Singapore [18]; nurses in teaching hospitals of Karachi, Pakistan [19] and female health care workers in Tehran [20] indicated that knowledge on BC was not up to the expected level. Review of literature also revealed very few studies among women from the general public in Nigeria [21] and the UK [22]. In keeping with the findings of the present study, these also showed had limited knowledge particularly on risk factors and BC related symptoms. As far as we are aware, this study is the first community based study in Sri Lanka on public awareness on knowledge of BC. The current survey results indicate that 'overall knowledge on breast cancer' among adults in general public to be mostly 'poor'. As expected, better educated and employed adults had better knowledge on BC. The fact that a higher proportion of females having better overall knowledge on BC in fact can be considered as a favorable situation for the prevention of BC considering the fact that breast cancer is far more commoner in females. Although not explored widely, the present study provides an indication of the current poor practices among females in the general public related to getting themselves screened for BC with only a minority [5%] performing SBE, regularly. In parallel there is insufficient awareness of the early warning symptoms of a BC. The present study also found that a great majority of females were willing to undergo screening for BC and preferred a female doctor for examination, if an opportunity is provided. The fact that almost all who were willing to undergo screening and expressed no fear of getting to know of BC in its early stages is a positive finding to advocate for providing the appropriate services for BC screening for adults in the general public. In conclusion, this study confirms that overall knowledge on BC among adults of the general public in Sri Lanka and specific awareness on different aspects of BC is inadequate. Risk factors, symptoms, screening / diagnostic methods and the services provided through Well-Women Clinics were the aspects of the knowledge which are particularly poor. We recommend that educational interventions that address aspects shown to be lacking in adults among the general public, adults with less

education, the younger [$18 \leq 24$ years] and the older [55 years \leq more]groups, unmarried and unemployed adults need to be developed specifically for appropriate application and intervention.

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