RESEARCH ARTICLE

Knowledge and Awareness about Breast Cancer and its Early Symptoms among Medical and Non-Medical Students of Southern Punjab, Pakistan

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Abstract

Breast cancer is the leading cause of morbidity and mortality globally but has an even more significant impact in developing countries. Pakistan has the highest prevalence among Asian countries. A general lack of public awareness regarding the disease often results in late diagnosis and poor treatment outcomes. The literacy rate of the Southern Punjab (Pakistan) is low compared to its Northern part. It is therefore vital that university students and especially medical students develop a sound knowledge about the disease so that they can spread awareness to others who may be less educated. This study therefore considers current knowledge and understanding about the early signs of breast cancer amongst a study group of medical and non-medical university students of the Southern Punjab, Pakistan. A cross-sectional descriptive analysis of the university students was carried out using a self-administered questionnaire to assess their awareness of breast cancer from March to May 2014. A total of 566 students participated in this study, out of which 326 were non-medical and 240 were from a medical discipline. Statistical analysis was carried out using Graph Pad Prism Version 5 with a significance level set at $p<0.05$. The mean age of the non medical and medical participants was 23 (SD 2.1) and 22 (SD 1.3) years, respectively. Less than 35% students were aware of the early warning signs of the breast cancer development. Knowledge of medical students about risk factors was significantly better than the non medical ones, but on the whole was insufficient. Our study indicated that knowledge regarding breast cancer was generally insufficient amongst the majority of the university students (75% non-medical and 55% medical) of Southern Punjab, Pakistan. This study highlights the need to formulate an awareness campaign and to organize conferences to promote breast cancer awareness among students in this region.

Keywords: Breast cancer - awareness - risk factors - student knowledge - warning signs - Punjab, Pakistan

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Introduction

Breast cancer is the most commonly diagnosed malignancy and the second leading cause of cancer-related death among women across the globe. Fortunately, one third of all cancers can be prevented and a further third can also be cured if diagnosed at an early stage. Thus developing countries need to prioritize their cancer awareness and disease control programs (Parkin, 1994). Breast cancer diagnosis has been regularized in developed countries since 1980. This is not however the case in developing countries and as a result breast cancer incidences and the associated mortality rate is on the rise (Forouzanfar et al., 2011). The situation is predicted to become worse (Donnelly et al., 2013). Information regarding morbidity and mortality of breast cancer in Pakistan has been inadequate due to the lack of a cancer registration system at national level. Pakistan has highest incidence rate of breast cancer among Asian countries (Bhurgri et al., 2000). Despite a very similar socio-cultural environment in Pakistan and India the occurrence rate of breast cancer among Pakistani women is significantly higher (50/100,000) than that of Indian women (19/100,000) (Rasheed, 2013).

A general lack of public awareness often results in a late stage diagnosis of breast cancer with a predictably poor treatment outcome. Disease free survival is affected markedly by the breast cancer stage at the time of the diagnosis and treatment. The 5 years disease free survival at stage I and II diagnosed breast cancer is 85% , whilst it is only 10% at late stage diagnosis i.e. stage IV (Gilani et al., 2003). Public awareness of the early warning signs and regular screening can contribute towards the early detection and better treatment outcomes of the disease.

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Breast self examination (BSE), clinical breast examination (CBE) and mammography are the commonly recommended screening methods (Okobia et al., 2006). During BSE, a woman can simply look and feel each of the breasts for the presence of lump, swelling, distortion or any other significant change in the area of the breast. Physical examination performed by a health professional to identify changes in the breast are also part of the CBE. The use of low energy X-rays with a higher sensitivity to detect the presence of distinct masses and/or microcalcifications in human breast tissue is called mammography. BSE is a simple, inexpensive, easy and effective practice which can be carried out by the women themselves It neither requires a professional expertise nor a visit to the hospital involving particular equipment. Regular performance of BSE can help in the early detection of Breast cancer. It increases the chances for early treatment and as a consequence the survival rate in women (Erbil and Bolukbas, 2014).

The etiology of breast cancer is not completely known, nevertheless some risk factors such as genetics, environmental, socio-biological and physiological factors are reported to affect the development of breast carcinoma (Hunter, 2000). Although rarely reported, breast cancer at a younger age (before 35 years) is likely to be rather an aggressive disease with a poor prognosis (Dubsky et al., 2002). An international survey involved university students of 23 countries which were found to have poor knowledge regarding the risk factors of breast cancer as compared to older women (Peacey et al., 2006). Women living in developed countries are generally better informed about breast cancer (Jones et al., 2010) than those from developing countries (Montazeri et al., 2008). The dissemination of crucial knowledge about breast cancer in society can be carried out using a range of methods. One particularly effective way is by educating young women while they are studying in educational institutes. So far, no such study has been conducted in order to assess the level of awareness amongst young students about breast cancer in the Southern Punjab region of Pakistan. Therefore,this study was performed to assess the awareness in relation to the risk factors and early signs of breast cancer among the medical and non-medical students of university of southern Punjab, Pakistan.

Materials and Methods

Study design

A community based cross sectional descriptive analysis was carried out with the objective to assess the knowledge that young females possess regarding early warning signs and the risk factors involved in breast cancer.

Study area and target population

The study was conducted in Two major cities; Rahim Yar Khan and Bahawlpur in the Punjab region of Pakistan. We involved female non medical students of Islamia University Bahawalpur and Post Graduate Colleges in Rahim Yar Khan. Medical graduates were from Quaid-e-Azam Medical College, Bahawalpur and Sheikh Zayed Medical College Rahim Yar Khan.

Sampling

The sampling frame included both medical and non-medical students. Female students having a mild mental disability or learning disorders were excluded from the study population. The probability systematic random sampling method was used to choose the samples. An adequate sample size was calculated using the Epi Info Program. The hypothesized proportion of outcome factors of the study population was 50%, confidence limits 95%, absolute precision was 5% and design effect of 2. The required sample size was found to be 316 non-medical and 235 medical students. We added 5% for non-respondents thus the sample size was finalized as 332 and 247 for the non-medical and medical female students respectively. Those students, who were not willing to participate, were not given the questionnaire. Six questionnaires from non-medical students and seven from medical students were excluded from the study due to insufficient information being provided by the respondents. The results of 326 non-medical and 240 medical students were included in the final study.

Instrument

The questionnaire was developed by the researchers to assess basic knowledge about early warning signs and risk factors of breast cancer among female students. Content validity was ascertained by experts. The questionnaire consisted mainly of four sections. The first part included five questions about demographic characteristics of the participant such as age, ethnic origin, religion, marital status and residency. The source of their knowledge regarding breast cancer was also requested from students. The second part included five questions concerning general knowledge about breast cancer. A third portion included seven questions about the early warning signs of breast cancer. The fourth and final section consisted of twenty questions which were designed to assess the knowledge about the potential risk factors of breast cancer. Thus, a total of 32 questions were included in the last three portions of the questionnaire each carrying 1 mark. A score of 1 was awarded to each correct answer while 0 was assigned in the case of a wrong answer. Therefore, 32 was the maximum score one could get. The response of participants was categorized into "poor", "insufficient", "satisfactory" and "good" on the basis of obtained score of ≤ 8, ≤ 16, ≤ 24 and ≤ 32 respectively.

Statistical analysis

Participants were grouped into non-medical and medical sets. Percentage and frequency distribution were calculated to illustrate categorical variables. Data was statistically analyzed, the results were tabulated and graphs were plotted using Graph Pad Prism Version 5. The association between variables was calculated by performing a Chi-Square test with a significance level set at $p<0.05$.

Results

Demographic characteristics

The survey enrolled total 566 female students,

including 326 non medical and 240 medical respondents of the university from southern Punjab, Pakistan. Non-medical students were aged between 20-28 years while medical students ranged between 21-25 years. The mean age of non-medical and medical participants was 23 years (SD 2.1) and 22 years (SD 1.3) respectively. Most of the students were Muslim (99%). The majority of the non-medical i.e 199 (61%) and medical students i.e.182 (76%) were residents of urban areas. 281 (86%) non-medical and 214 (89%) medical students belonged to Punjabi families. Among non-medical girls 309 (95%) were unmarried and 17 (5%) were married. The majority of medical students 238 (99%) were unmarried and only 2 (1%) were married.

Source of information

Television and school/college education were the most cited sources of information about breast cancer among non medical and medical students of the university, respectively (Figure 1).

Basic knowledge about breast cancer

The next portion of the questionnaire was designed to assess basic knowledge of the university students about breast cancer. Most of the non-medical 239 (73%) and medical 191 (80%) students were aware of the fact that breast cancer is among the most prevalent cancers in women of Pakistan. But taken together across all the responses to questions, the knowledge of the students was not found to be adequate (less than 50% could give correct answer for most of the questions). Only 71 (22%) non-medical and 67 (28%) medical students knew that breast cancer can affect men. The majority of non-medical 260 (80%) and medical students i.e 199 (83) had an information about the possible treatment of breast cancer. 215 (90%) medical students had knowledge that breast cancer is not a contagious disease. Their response was significantly better ($p<0.05$) than that of non-medical students as only 96 (29%) students had this information. 183 (56%) non-medical and 161 (67%) medical students were familiar with the possibility that a woman younger than 30 years can develop breast cancer.

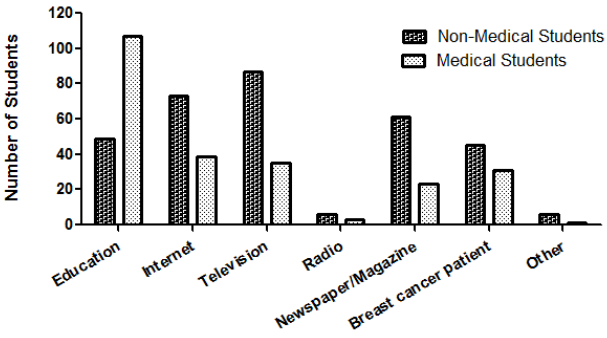

Figure 1. Source of Information about Breast Cancer

Awareness of Early Warning Signs

The responses from medical students did not differ significantly ($p>0.05$) from that of the non- medical ones about information regarding bloody discharge from nipple in a non-pregnant woman. Although the response of medical students to all other questions about noticeable indicators was significantly better ($p<0.05$) than non-medical participants, but as a whole, the knowledge of both groups were inadequate. Most of the medical students (78%) had knowledge that the pain in the breast does not always indicate the presence of breast carcinoma, but the presence of a lump in the breast can be a noticeable indicator (indicated by 90% medical students). Less than 35% students were aware of any potential warning signs that can point to the development of breast cancer, for instance, change in skin color of the breast, bloody discharge from the nipple, change in the color or shape of nipple, the presence of a lump in the neck or armpit and asymmetry of the breasts (Table 1).

Understanding of risk factors

Our results showed that there is a widespread lack of awareness among female students about the risk factors already reported to be associated with the breast cancer (Lai et al., 1996; Talamini et al., 1996). Knowledge of the medical students about risk factors such as the combined hormone therapy after menopause (61% gave correct answer), family history of breast cancer (85% gave correct answer) and the use of oral contraceptive (68% gave correct answer) was significantly better ($p<0.05$) than that of non-medical students. Some 98% of medical students knew that breastfeeding and more children are not risk factors for breast cancer. Interestingly, more non-medical students (64%) were aware of the misconception that the use of tight bra can cause breast cancer than the medical students (43%). The fact that diabetes was known to be a risk factor for breast cancer by only 37% non-medical and only 5% of the medical students may be due to a general concept that diabetes is a risk for a number of other diseases (Table 2).

Table 1. Awareness about Early Warning Signs

Questions	Non Medical Students N=326		Medical Students N=240		p Value
	Corr. Ans. n (%)	Inco. Ans. n (%)	Corr. Ans. n (%)	Inco. Ans. n (%)	
Pain in breast	149 (46)	177 (54)	187 (78)	53 (22)	p<0.05
Change in skin color of breast (redness)	59 (18)	267 (82)	73 (30)	167 (70)	p<0.05
Breast lump	137 (42)	189 (58)	216 (90)	24 (10)	p<0.05
Bloody discharge from nipple in a non-pregnant woman	28 (9)	298 (91)	29 (12)	211 (88)	p>0.05
Change in the color or shape of a woman's nipple	31 (10)	295 (90)	65 (27)	175 (73)	p<0.05
Lump in neck or armpit	50 (15)	276 (85)	84 (35)	156 (65)	p<0.05
Asymmetry of the breasts	37 (11)	289 (89)	59 (25)	181 (75)	p<0.05

*Note: Corr. Ans.=Correct Answer, Inco. Ans.=Incorrect Answer, D/K=Don't Know, N=Total number of participants. n=Number of participants

Table 2. Understanding of Risk Factors

Questions	Non Medical Students N=326		Medical Students N=240		p Value
	Corr. Ans. n (%)	Inco. Ans. n (%)	Corr. Ans. n (%)	Inco. Ans. n (%)	
Older age (>45 years)	44 (13)	282 (87)	110 (46)	130 (54)	p<0.05
Less Physical activity	62 (19)	264 (81)	19 (8)	221 (92)	p<0.05
Use of tight bra for longer time	208 (64)	118 (36)	104 (43)	136 (57)	p<0.05
Being overweight / Obese	77 (24)	249 (76)	55 (23)	185 (77)	p<0.05
Consumption of fatty foods	40 (12)	286 (88)	31 (13)	209 (87)	p>0.05
Combined hormone therapy after menopause	53 (16)	273 (84)	146 (61)	94 (39)	p<0.05
Use of alcohol	68 (21)	258 (79)	73 (31)	167 (70)	p<0.05
Diabetes	119 (37)	207 (63)	13 (5)	227 (95)	p<0.05
Family history of breast cancer	102 (31)	224 (69)	205 (85)	35 (15)	p<0.05
Dense breast tissue	25 (8)	301 (92)	43 (18)	197 (82)	p<0.05
Early menarche (<12 years)	22 (7)	304 (93)	20 (8)	220 (92)	p<0.05
Late menopause (>55 years)	19 (6)	307 (94)	31 (13)	209 (87)	p<0.05
Oral contraceptive use	13 (4)	313 (96)	164 (68)	76 (32)	p<0.05
Past history of breast lumps	73 (22)	253 (78)	122 (51)	118 (49)	p<0.05
Smoking	66 (20)	260 (80)	46 (19)	194 (81)	p>0.05
Breast feeding	276 (85)	50 (15)	234 (98)	6 (2)	p<0.05
Chest radiation therapy	56 (17)	270 (83)	100 (46)	130 (54)	p<0.05
Having no children	19 (6)	307 (94)	23 (10)	217 (90)	p>0.05
Having more than 5 children	189 (58)	137 (42)	235 (98)	5 (2)	p<0.05
First childbirth after 30 years	22 (7)	304 (93)	17 (7)	223 (93)	p>0.05

*Note: Corr. Ans.=Correct Answer, Inco. Ans.=Incorrect Answer, D/K = Don't Know, N=Total number of participants. n=Number of participants

Table 3. Categorical Distribution of Students on Basis of Breast Cancer Awareness

Level of Knowledge	Score	Non-Medical Students N=326 n (%)	Medical Students N=240 n (%)
Poor	≤8	73 (22)	11 (5)
Insufficient	≤16	244 (75)	131 (55)
Satisfactory	≤24	9 (3)	95 (40)
Good	≤32	0 (0)	3 (1)

*Note: Total number of participants. n=Number of participants

Discussion

Breast cancer is the most common malignancy among women worldwide, and the second principle reason of carcinoma related death among women (Fallahzadeh et al., 2014). Unfortunately, Pakistan has the highest prevalence rate of breast cancer from among Asian countries. Breast cancer is a health risk for women of all ethnic and social groups. Commonly Pakistani women are struck by it at a younger age and diagnosed at an advanced stage as compared to women of the western world (Rasheed, 2013). The survival rate of patients is related to the stage of cancer at diagnosis and is the most crucial prognostic variable. Cancer can be diagnosed at an early stage if women are well aware of the risk factors and early danger signs. The timely detection of breast cancer can lead to better opportunities of cost-effective treatment and increased chances of survival. Lifetime maintenance of good health is possible if appropriate healthcare is put into regular practice at a young age. Knowledge of literate young women is of utmost importance not only for their own good health but also for the dissemination of knowledge to others related to them. Thus, we targeted university students in order to assess their level of awareness and perception about breast cancer. To our knowledge, no other study of this type has been published so far regarding Pakistan and this is the first study conducted in the Sothern Punjab region. Our results show a widespread lack of knowledge regarding breast cancer among non-medical and medical university students (Table 3). Our results are in line with several studies conducted in other countries (Ahmed, 2010; Sait et al., 2010; Yadav and Jaroli, 2010; Sambanje and Mafuvadze, 2012; Kurtuncu et al., 2014). Although the perception of medical students about cancer was comparatively better than that of non-medical ones, their overall knowledge was still generally insufficient. A lack of knowledge regarding breast cancer was detected irrespective of the respondant's age, religion, residency, ethnicity or marital status. One factor commonly found to contribute to the knowledge that a respondant had about breast cancer was having a relation or the acquaintance of a person suffering from the disease among their family or friends. About 102 (31%) non-medical and 41 (17%) medical students' declared the association or relation with the breast cancer patient in their family. Thus, the crucial role of breast cancer survivor is noticeable in enhancing understanding amongst the general public.

The overall evaluation of the students BC awareness showed that more than 70% students knew that breast cancer is one of the most prevalent cancers in Pakistani women, but it is treatable. Less than 30% students knew that breast cancer can affect men also. Most of the medical students (90%) were familiar with the fact that the presence of a lump in breast tissue can be a potent early warning sign. 54% non-medical students had the view that pain in breast can be the sign of breast cancer, which is not the case actually, but is just a general misconception (Powe et al., 2005; Radi, 2013). It is already reported that most of the breast cancer patients are not aware of their condition. It is mainly due to the painlessness of

the lump which ultimately results in the delayed visit to the medical professionals for an advice (Ukwenya et al., 2008). The overall knowledge about the early warning signs among both groups was poor (less than 36%) about obvious indicators such as a change in skin color of the breast, a change in the color or shape of the nipple, bloody discharge from nipple, the presence of the lump in the neck or armpit and asymmetry of the breasts. Generally the local women tend to ignore the early warning signs as mentioned above resulting in delayed medical checkup, diagnosis and treatment contributing to significant breast cancer-related morbidity and mortality.

Our study highlights the limited awareness about the potential risk factors among young women in Southern Punjab. Some of the risk factors such as family history, nature of the breast tissue, diabetes, early menarche, late menopause, etc., are inevitable but some other factors such as diet, physical activity, alcohol consumption, smoking, hormone therapy and intake of oral contraceptives can be controlled. The awareness regarding the lifestyle adjustements may be helpful to to reduce the burden of the disease upon society . Awareness of both the groups was poor concerning potential risk factors such as age, the use of fatty food, being obese, physical inactivity, diabetes, dense breast tissue, early menarche, late menopause, smoking, having no children and first childbirth after the age of 30 years.

Interestingly, 57% of the medical students had a misconception that the use of a tight bra for a long time can cause breast carcinoma, while 36% non medical students were unaware of this fact. It was contrary to their answers of most of the questions, where medical students generally displayed a better knowledge than non-medical ones. Only 16% of non-medical students thought that combined hormone therapy after menopause could be a risk factor while 61% medical students knew about it. 85% medical students were sure that family history makes a woman more vulnerable to breast cancer and 95% considered breastfeeding to reduce the risk. Crucial reproductive decisions are made at an age to which mostly university students belong, for example, use of oral contraceptives and duration of breastfeeding for babies, time of first child's birth, etc. Only proper awareness can lead them to better decisions and modification of life routine to reduce the risk of breast cancer.

Our study shows a widespread lack of understanding among both groups of non-medical and medical university students. Thus, we contend that our findings further highlight the need of immediate measures to enhance awareness and thereby reduce the high morbidity and increasing mortality of women due to breast cancer. A proper platform should be established for health care providers and educationists. Through this they can then educate women about the risk factors, the ways to reduce them and the early warning signs of disease. Mass media, internet social media and non-government organizations (NGO) should come forward to foster the transfer of life-saving knowledge to as many women as possible. Special awareness programs, training courses, lectures, seminars and workshops should be conducted at educational institutes regularly. This will lead to in time diagnosis, cost effective treatment and a reduction of the burden that this killer disease places on society.

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