

## RESEARCH ARTICLE

# Knowledge on breast cancer and breast self-examination among public-school teachers of Aurora province, Philippines

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### ABSTRACT

**Background and Objective:** Breast cancer remains one of the top leading morbidity and mortality among women within the country and around the world. Breast self-examination has been considered as a safe and easy to perform screening procedure to detect breast lumps and swelling. This study was conducted to determine knowledge on breast cancer and breast self-examination among public-school teachers.

**Methodology:** A cross-sectional design was employed involving 348 professional teachers in Aurora, Philippines in April 2019. Self-report questionnaire derived from literatures was used to generate participants' knowledge on breast cancer and breast self-examination. Descriptive statistics like frequency, percentages and averages were used in data analysis.

**Results:** Majority of the participants are females (83.3%) whose age is between 31-40 years old (37.9%). Three hundred twenty-seven (94%) participants have knowledge on breast cancer while two hundred ninety-four (84.48%) of them have knowledge on breast self-examination.

**Conclusion:** Professional teachers have knowledge on breast cancer and breast self-examination however, health care providers and concerned health agencies need to continue and enhance comprehensive health education about breast cancer and breast self-examination to teachers. It is essential that awareness program about these need to be integrated to teacher's training programs or professional development activities.

**Keywords:** *Breast cancer, breast self-examination, teachers, health education, public-school*

## Introduction

The World Health Organization (WHO) has reported that cancer is increasing in incidence making it one of the major causes of mortality worldwide. Breast cancer (BC) is the top five cause of cancer related deaths among women, and of the world's total annual cases, more than 60% occur in Africa, Asia and Central and South America with 70% of cancer mortality coming from these areas [1-3].

In the Philippines, cancer is the top three cause of morbidity and mortality after heart and vascular system diseases, with BC ranking 4th among the top leading causes of mortality. Philippine Obstetrical & Gynecological Society (POGS) reported in 2017 that the country has the highest prevalence of BC among the top 197 countries with this condition [4]. The number of new cases for both sexes of all ages for this cancer was 17.6% (24,798) in 2018. Cancer is

one of the national health priorities in the country. It is considered a lifestyle-related disease (LRD) and one of the four epidemic non-communicable diseases (NCD) together with cardiovascular diseases, diabetes mellitus, and chronic respiratory diseases of which they share common risk factors [5].

Breast cancer affect both genders but it is prevalent in women older than 50 years old [5]. In cancer, the DNA of the cells are damaged that leads to abnormal and uncontrolled proliferation resulting to tumor formation. The tumor may invade near tissues and once it metastasize may reach distant organs destroying their structure and functions. It can be benign if it will remain in its site of growth or malignant if it spreads, with the tumor felt as a lump or visualized in imaging studies [1]. A tumor not detected and

treated early may spread and becomes full cancer and cause the death of the patient [3].

Studies have shown that breast cancer is caused by a cluster of risk factors. Among these are a combination of: genetic makeup or family history; gender (woman); age (50 year old and above); reproductive factors like prolonged exposure to endogenous estrogen that includes having early menarche & late menopause or a long menstrual history; first pregnancy after age 30; oral contraceptive use or hormone replacement therapy after menopause; lifestyle related risk factors; environmental factors as in radiation exposure; and cultural factors as beliefs, attitudes and knowledge about cancer which vary among different races [6-8].

Reference [9] reported that the survival rate among developing countries is below 40% because of lack of early detection program and lack of adequate diagnosis as well as treatment facilities. Early detection of breast cancer is paramount to lessen its metastasis and mortality rate because this helps in its early management or this makes a victim respond more to even less expensive treatment, thus survival is high [1,3]. Screening programs for some cancers are available however they may only be present in selected urban areas of a country [1]. The manual for early diagnosis of breast cancer of the American Cancer Association (ACS) [10] identified the three screening measures and periodically recommends for monthly breast self-examination (BSE) for women aging 20 years old and above; for women ages 20-40 years old and those aging 40 and above, clinical breast exam (CBE) once every three years; and mammography starting at age 40 every 1-2 years. International Agency for Research on Cancer (IARC) reported that mammography as a screening method remained the main modality of breast cancer screening throughout the world as it was found to be effective resulting to 25% reduction in BC mortality, unfortunately however this is not available in remote areas of low-to-middle income countries [3,11].

Compared to the two screening techniques, BSE according to ACS may not be able to detect early tumors, however, this might be the only method available in rural communities as it is easy to learn [10]. There are evidences from previous studies that 90% of BC tumors were detected by self-discovery even without practicing the correct BSE procedure [3]. So for BSE, ACS emphasized that women should understand the normal look and feel of their breast so they can promptly report abnormal ones to their doctor [10]. BSE can be self-performed by a woman to detect lumps and this can be taught to the woman by a health worker or she can self-learn through the

media and published reading materials. BSE is a valuable screening tool as an adjunct to CBE & other imaging studies, it is found to be cost effective and even the Canadian and American Cancer Society are advising women to perform regular monthly BSE. Once skillfully practiced, it is easy to perform, and can aid to detect abnormalities that will likewise ensure good breast health [10]. The Philippines has no clear cancer screening program but the Philippine Breast Cancer Control Program highlighted the importance of annual CBE by health professionals and monthly BSE [12]. A significant finding in a study found that women in developed countries have higher level of knowledge on BSE compared to those in developing countries, but this is probably because most studies were done in urban areas [1,3]. Fatma Demirkiran *et al.* has also recommended the need for women to be aware about breast cancer and its screening methods in the communities, to prevent cancer diagnosis in its advanced stages [13].

The study of Tsu-Yin Wu among Philippine women showed a gap between knowledge & attitude about breast cancer and its screening practices [12]. Majority of the studies conducted locally & internationally on BC, BSE, CBE and mammography focused on groups of women respondents who were health workers, college students taking paramedical courses, factory workers and other female students but only a few has been done on public school teachers especially in the Philippine setting [1,3,12,14].

The workloads of teachers are stressful and literatures emphasized that stress was found to prompt people to turn to unhealthy coping mechanisms like smoking, overeating, or drinking alcoholic beverages which can increase the risk of developing cancer [15]. In the Philippines, there are more teachers as compared to other professionals as education is paramount to most Filipinos, it being a fundamental right and a basic duty of the state. In educating the people on health promotion and disease prevention, teachers could be the nurses' aid as they are best in educating and implementing activities that promote health as long as they are taught and trained [16]. Furthermore, teachers are not only educators but they are catalysts for change as they are role models to students and the communities particularly when they counsel on health promotion. They can help develop healthy behavior as they exhibit healthy lifestyle in school [1,13].

Related studies have demonstrated that a gap exist in teacher's knowledge and attitude towards the practice of BSE. This gap can be filled if school nurses and public health nurses will educate them on health promotion activities to include among others breast cancer prevention and BSE [3]. It is for

this utmost interest that the researchers aimed to assess the knowledge on BC and BSE among Filipino public school teachers so to produce baseline data which could give further information to nurses that will become the basis in planning and designing health education program for the teachers. Implications of this study may also guide the government and health agencies in coming up strategies and activities that will promote awareness on breast cancer to women at risk and the general public as well as promote practicing breast self-examination as the most convenient, easy, and highly personal screening procedure against breast cancer.

## Methodology

This study employed descriptive survey design involving 348 public school teachers of the Department of Education (DepEd) in Aurora Province. Located in the Northern part of Luzon, Aurora is composed of eight municipalities, four of these are located in its central area hence called Central Aurora province. A total of 16 schools offering primary and secondary education, with a population of 493 public-school teachers were targeted for this study in these four municipalities.

The non-probability sampling was employed and the inclusion criteria observed in this homogeneous group were: the age of 20 and above and their being public school teachers. The researchers used total enumeration as they considered the whole population of 493 teachers in sending sealed questionnaires, to be part of the study. However, a statistical power analysis was still done for determining the sample size. An effect size of 0.3 was considered in this study as suggested to be medium using general standards of Cohen's criteria [17]. With an  $\alpha = 0.05$  and power = 0.80, the projected sample size is 84 computed through GPower 3.1.9.7. A total of 348 (70.59%) participated with returned questionnaires filled up completely and accurately.

A three-section, self-report questionnaire in English version was used in this study. It was developed by the researchers from related literature search and from other validated published studies' questionnaire [6,8,12,18-20]. The first section was a checklist that determined about the socio-demographic characteristics of the participants which include age, gender, educational status, marital status, religion, and monthly income. The second section was a 10-item multiple-choice type of questions that generated the participants' knowledge on breast cancer, particularly on definition of breast cancer, causes, risk factors, signs and symptoms, screening tests, common treatment modalities,

and if it spreads and is curable. A correct answer is equivalent to a score of one whereas incorrect answer is zero, and the total perfect score was 10. The final scores of the participants were categorized into poor (for scores ranging from 0-3), fair (for scores ranging from 4-6), and good (for scores ranging from 7-10). The third section was also composed of 10 items multiple-choice questions that determined the participants' knowledge on breast self-examination focusing on definition of BSE, age of start of performing BSE, timing and frequency of conducting it, the gender of who should perform it, the procedure and position when doing it, specific breast parts being examined, advantages of BSE and the findings to be noted and reported. The scoring was the same as that of section two. The overall time to completely answer the entire questionnaire was 15-20 minutes.

The questionnaire was evaluated by 3 experts for content validity, a doctor, one nurse academician and one practicing as a nurse-midwife in the hospital, all for the purpose of clarity and relevance of the questions. All of those who helped make the questionnaire valid in its content gave some few suggestions, thus revisions and modifications like rewording and style of the questions were done. Test-retest of the tool followed and this was done among 33 public school teachers who were not included in the study as they were not part of the targeted schools but have the same characteristics as the target sample. The participants provided minimal feedbacks. The researchers evaluated each questionnaire and two common comments like sentence construction and rephrasing of statements were noted. Thus, the questionnaire underwent final revision before the final distribution and data gathering was started.

Administrative approval to conduct the study was obtained from the Department of Education (DepEd) Aurora Province Division. Likewise, letter of approval was secured from every School Principal of the target schools. This study didn't undergo ethics clearance as ethics review board is not available in the province, however, principles of research ethics were observed carefully, and the study procedure underwent ethically. Voluntary participation of the participants was emphasized based on signing the informed consent before accomplishing the questionnaire. This step determined that enough information about the objectives of the study, purposes, possible benefits, risks, and harm were provided. Breach of confidentiality and its potential consequences were identified as possible risks of this study. To prevent this, strict confidentiality of information, anonymity of the participant, and provision of privacy were observed throughout the study. They were not paid in the participation and the researchers have no

authority over them. Thus, there is no conflict of interests involved. It was reiterated that they have the right to withdraw at any point in the study even if they previously agreed. If they opted to withdraw, all the information gathered will be deleted from the database and the questionnaire will be discarded. Pure honesty and transparency were observed from all forms of communication in this study. All 493 teachers were given an invitation letter and informed consent. The questionnaires in a sealed envelope were distributed through personal meetings. However, during the time of retrieval only 70.59% returned the questionnaire. Individual questionnaire were collected and placed in an envelope and sealed again, and were tentatively placed in a locked cabinet until all questionnaires were gathered and ready for collation. The data were encoded and kept in a computer file folder with a password and only the researchers have the access to this, so confidentiality and privacy was assured. The questionnaire didn't require the respondents' name so anonymity was observed. The data collection period was from February to April 2019.

**Table 1. Socio-Demographic Characteristics of Participants (N = 348)**

| Characteristic                  | Frequency | %     |
|---------------------------------|-----------|-------|
| <b>AGE</b>                      |           |       |
| 51 and above                    | 57        | 16.4  |
| 41-50                           | 78        | 22.4  |
| 31-40                           | 132       | 37.9  |
| 20-30                           | 81        | 23.3  |
| <b>SEX</b>                      |           |       |
| Female                          | 290       | 83.3  |
| Male                            | 58        | 16.7  |
| <b>MARITAL STATUS</b>           |           |       |
| Married                         | 273       | 78.4  |
| Single                          | 65        | 18.7  |
| Widowed                         | 7         | 2.0   |
| Separated                       | 3         | 0.9   |
| <b>RELIGION</b>                 |           |       |
| Roman Catholic                  | 240       | 69.0  |
| Other Christian Religion        | 108       | 31.0  |
| <b>EDUCATIONAL ATTAINMENT</b>   |           |       |
| BA EDU                          | 183       | 52.6  |
| MASTERS                         | 146       | 42    |
| DOCTORATE                       | 19        | 5.5   |
| <b>MONTHLY INCOME</b>           |           |       |
| Above P50, 000.00               | 3         | 0.86  |
| P41,000 – P50, 000              | 11        | 3.16  |
| P31,000 – P40,000               | 82        | 23.6  |
| P21,000 – P30,000               | 174       | 50.0  |
| P10, 000 – P20,000              | 78        | 22.41 |
| <b>FAMILY HISTORY OF CANCER</b> |           |       |
| With                            | 42        | 12.1  |
| Without                         | 291       | 83.6  |
| Not sure                        | 15        | 04.3  |

The collected data were checked for completeness and accuracy before it was encoded. An application software, the SPSS version 20 software (IBM Corp., Armonk, NY, USA) was used for statistical analysis. Descriptive statistics applied include frequency counts and percentages.

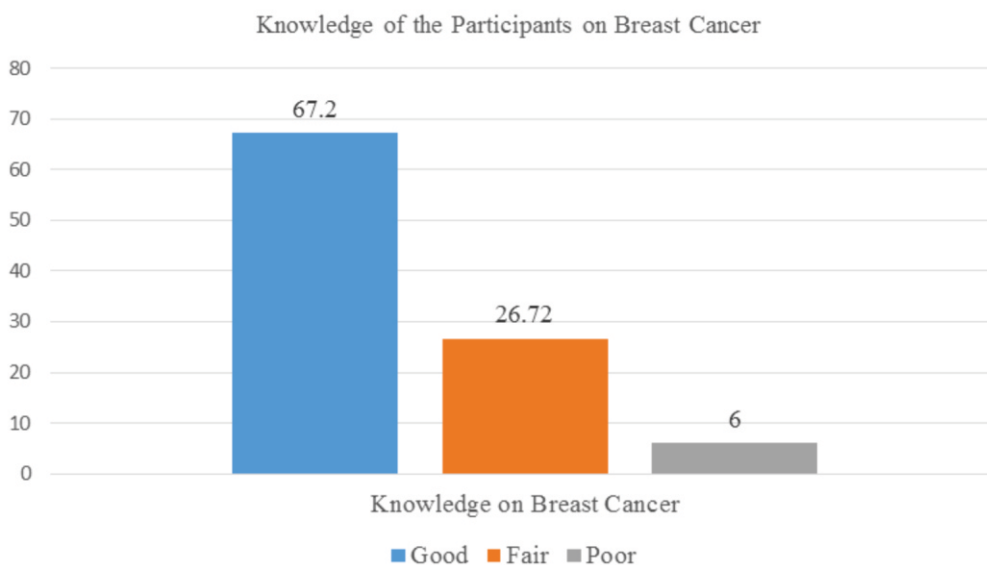
## Results and Findings

Shown in Table 1 are the participants' socio-demographic characteristics. This study revealed that majority of them were within the age bracket of 31- 40 years old (37.9%), females (83.3%), married (78.4%), Roman Catholics (69%), with most of them attaining the bachelor's degree (52.6%) and had an average monthly income ranging from Php 21,001 to 30,000 (50%). On family history of breast cancer, majority (83.6%) of the public-school teachers did not have family history or occurrence of breast cancer in their family.

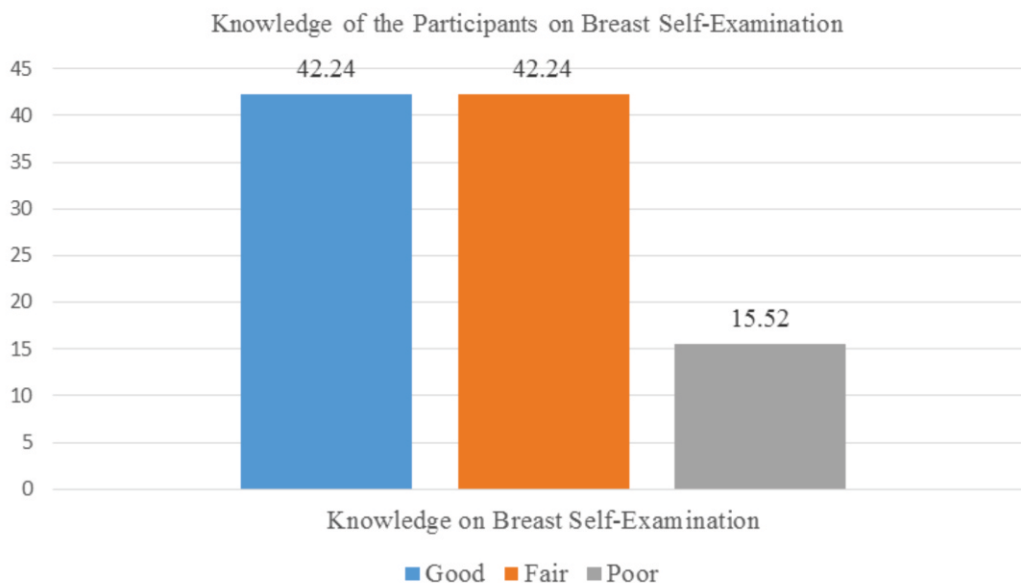
Figure 1 showed the level of knowledge on breast cancer of public-school teachers. Majority (67.2%) of the participants have good knowledge on breast cancer and most of them (94%) reflected to have knowledge about the disease. Table 2 shows the knowledge questions on breast cancer. The knowledge on breast self-examination was measured through the ten multiple choice questions as reflected in Figure 2. Also shown in table 3 are ten questions on knowledge of breast self-examination. Out of 348, forty-two-point twenty four percent (42.24%) of them equally have fair and good knowledge on breast self-examination (BSE). This further implies that majority of them (almost 85%) know all about BSE.

## Discussion

The purpose of this study was to assess the public-school teachers' knowledge on breast cancer and breast self-examination. The response rate of this study was high (70.59%). It showed that study participants were found to have good knowledge about breast cancer. Previous local and foreign studies showed similar findings [21-26]. Enough knowledge about breast cancer and its risk factors may help prompt individuals especially people at risk to immediately report or seek consultation. Early detection and diagnosis prompting to early treatment improves prognosis of the sick person. Moreover, information dissemination about breast cancer is effective for its prevention [24]. Our study was conducted in a province of the Philippines – a developing country and previous studies of similar setting and characteristics of participants demonstrated to have good knowledge also about breast cancer [25]. This implies that the knowledge obtained could be attributed to the educational attainment of the study participants considering that all of



**Figure 1.** Percentage Distribution of Level of Knowledge on Breast Cancer of Filipino Public School Teachers



**Figure 2.** Percentage Distribution of Level of Knowledge on Breast Self-Examination of Filipino Public School Teachers

**Table 2.** Knowledge Questions on Breast Cancer

|    |   |
|----|---|
| 1  | What is breast cancer?  |
| 2  | What are the risk factors for breast cancer development?                      |
| 3  | What lifestyle factors contribute to the development of breast cancer?        |
| 4  | Which of the following are the causes of breast cancer?                       |
| 5  | Can breast cancer cells spread to other parts of the body?                    |
| 6  | Which of the following are the signs and symptoms of breast cancer?           |
| 7  | What screening tests are done to detect breast cancer?                        |
| 8  | Which of the following are the common treatment modalities for breast cancer? |
| 9  | Are the treatment options for breast cancer the same for all patients?        |
| 10 | Is breast cancer curable?   |

**Table 3.** Knowledge Questions on Breast Self-examination

|    |   |
|----|---|
| 1  | What is breast self-examination (BSE)?                        |
| 2  | What benefits does a person get in doing the BSE?             |
| 3  | Who should perform BSE?                                       |
| 4  | At what age should BSE be started?                            |
| 5  | When is the best time to perform BSE?                         |
| 6  | What is the frequency of doing BSE?                           |
| 7  | What is the proper position when performing BSE?              |
| 8  | What is the correct technique in doing BSE?                   |
| 9  | What part of the body is being assessed during BSE?           |
| 10 | What findings should be reported immediately after doing BSE? |



them are professional teachers. On the contrary, previous studies in the developing countries demonstrated poor knowledge regarding breast cancer [21, 22]. Various kinds of avenues are necessary for obtaining information about cancer as these affect level of awareness especially on breast cancer such as traditional media (i.e., TV and radio broadcasts), internet and social media sites, reading materials, and even from friends, relatives, or acquaintances suffering from cancer.

Although breast cancer has been considered as the most common cancer disease among females worldwide [29], our study implicated that those who have history of breast cancer are less likely to be fully aware about it. Nevertheless, the development of this condition is multi-factorial and the risk is high among females of older age, early menarche, menopause beyond age 50, use of oral contraceptives, smoking, drinking alcoholic beverages, obesity, and sedentary lifestyle [6,30-34]. On the positive note, majority of our participants have good knowledge about breast cancer with no history of the disease. Considering that our participants were all professional teachers, this study further implicated that participants are becoming more aware about breast cancer and are therefore more health conscious even if they have no history of the disease. Similar result but specifically on breast cancer risk factors and breast cancer symptoms yielded a satisfactory knowledge among Filipino women participants in a rural area [24]. Previous studies revealed contrasting results implicating that those with history of breast cancer in the family or have history of breast hyperplasia are more likely to acquire knowledge about the disease [22,27]. They were triggered to obtain enough information because of disease history.

Our study demonstrated also that there are participants whose level of knowledge is poor. Thus, an in-depth and wide information dissemination about breast cancer is needed to be imperatively improved.

The knowledge on breast self-examination (BSE) in our study was categorized as knowledgeable. Our study has the same result as other studies conducted in the Philippines on breast cancer screening method particularly BSE [12, 18, 3]. This result is consistent with foreign studies such as in Saudi Arabia [35], Cameroon [36], Ethiopia [37], Iraq [38], Oman [39], and India [22]. In contrast, previous studies conducted in Nigeria [40], Kuwait [23] and Eastern Uganda [41] showed that majority of their participants were not aware or had not heard about BSE. Like the concept on breast cancer, information dissemination campaign about BSE is essential especially among high risk groups of developing breast cancer.

Furthermore, Lera *et al.* explained that the use of electronic media as a means in acquiring information have a greater possibility to practice BSE [37]. Other sources of information about BSE can be obtained from televisions, radios, health care providers like doctors and nurses, friends and relatives. Individuals with knowledge on breast self-examination are more likely to practice this method for detecting breast masses, swellings, or lumps. Previous studies revealed that professional teachers are more likely to have a positive inclination towards BSE demonstrating that the method is essential for early detection of breast cancer and will confidently perform this procedure correctly [13].

Our study involved participants of both sexes and to the authors' knowledge, this is one of the few studies that considered such demographic characteristic to knowledge on breast cancer and breast self-examination. Involving men on this study may be beneficial as they may serve as instruments in disseminating relevant information about breast self-examination to their female partners, mothers, daughters, or female friends and relatives. Notwithstanding, it cannot be denied that both sexes may be affected by breast cancer. In addition, female individuals are more likely to be aware about the purpose and procedure of breast self-examination.

Awareness of breast cancer – its health effects, manifestations and risk factors, may engage participants to help themselves screen or detect early for breast abnormalities. Previous studies revealed similar findings emphasizing that the awareness on the benefits BSE may encourage women to perform BSE [29], [42]. Similarly, Al-Ismaili *et al.* [39] reported that knowledge on breast cancer as the most common cancer among females as well as on knowledge on early detection of breast cancer can lead to successful treatment is therefore correlated to practicing BSE.

## Conclusion, Recommendations and Limitations

The knowledge on breast cancer and breast self-examination was fair to good among professional teachers. Health care providers and concerned health agencies need to continue and enhance comprehensive health education about breast cancer and breast self-examination to teachers. It is essential that awareness program about these will be integrated to teacher's training programs or professional development activities. Moreover, information dissemination campaign about breast cancer and breast self-examination can be widened to various professionals, or groups of individuals especially among women at various sectors. This study can likewise be replicated in other parts of the country that will involve more teacher participants.

This study recognizes some limitations. First, results cannot be generalized to all professional teachers in the Philippines. Hence, similar studies can be conducted involving bigger number of participants across the archipelago. Second, this study employed cross-sectional design which only shows the relationship between the variables and not the causality. Thirdly, no item analysis of questions on knowledge on breast cancer and breast self-examination was done, thus on the poor level of knowledge of the participants it was not determined as to what specific item was not answered correctly. It is then being recommended that if further studies will be done related to this, item analysis of each question be conducted to point out specific topics that will be included or given emphasis when conducting information dissemination.

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