

ORIGINAL RESEARCH

Awareness about breast and cervical cancers among nursing students in Beni-Suef University

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Received: August 7, 2018

Accepted: December 30, 2018

Online Published: January 15, 2019

DOI: 10.5430/jnep.v9n5p44

URL: <https://doi.org/10.5430/jnep.v9n5p44>

ABSTRACT

Background and objective: Breast and cervical cancers represent a public health concern since they result in high mortality and disability rates. The aim of our study was to assess the knowledge of nursing students in Beni-Suef University about both Breast and cervical.

Subjects and methods: A total of 500 students representing all scholastic years from the Technical Institute of Nursing (both 2 years of post-high school nursing education), Beni-Suef University, Egypt, participated in this study that was conducted during the 1st semester of the academic year 2017/2018. The knowledge of the students was assessed using a self-administered questionnaire. The assessment included knowledge of students about 4 aspects; risk factors, manifestations, screening, and management of breast and cervical cancers.

Results: The mean age of the students was 19.2 ± 0.7 years, and most of them (77.6%) were females. Precisely, 43% had optimal knowledge about breast cancer; 43.8% risk factors, 52.4% manifestations, 27.8% screening, and 48% management, while only 29% of students had optimal knowledge about cervical cancer; 21.8% risk factors, 38.2% manifestations, 12.4% screening, and 43.6% management. None of the studied personal characteristics showed association with the knowledge of students whether regarding breast or cervical cancers ($p > .05$). Healthcare givers, TV, and the Internet were the most commonly reported sources of knowledge about breast and cervical cancers: 42%, 33.2%, and 21.2%, respectively.

Conclusion and recommendations: Students lacked the required knowledge about breast and cervical cancers. In particular, knowledge scores of students about screening for both cancers were the lowest. Further studies should focus on improving the knowledge of nursing students using awareness programs or educational modules.

Key Words: Knowledge, Breast cancer, Cervical cancer, Nursing students

1. INTRODUCTION

Cancer is a major worldwide public health concern. Breast cancer (BC) is the most common cancer among women and results into the highest fatalities.^[1] According to American Cancer Society Facts (A.C.S.F.) in 2017, a total of 63,410 in

situ cases, 252,710 invasive cases, and 40,610 deaths were registered.^[2]

In Egypt, as reported by the National Cancer Registry Program (NCRP), BC occupied the 2nd position after liver cancer which both accounting for about 45% of all cancers in

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both sexes in 2014. It represented 38.8% of all cancers affecting women with an incidence of 35.8/100,000 between 2008 and 2011.^[3,4] Moreover, Egyptian study (2014) reported that 19,105 women diagnosed with Breast cancer.^[5]

Early diagnosis of BC can offer more options of treatment, improve the prognosis, and prolong the lifetime. Since breast cancer produces no symptoms in early stages, screening is crucial for early detection. It is also suggested that early diagnosis is the most effective way to reduce the burden of mortalities and morbidities attributed to this cancer.^[6,7]

Currently, the primary preventive measures of BC are limited and assuming the significance of early detection and diagnosis at the early stage to enhance women's quality of life (QOL) and decrease the associated mortality. Thus, screening is the paramount secondary preventive measure for attaining such goals.^[8,9] Typically, screening for breast cancer targets examination of healthy individuals when no apparent manifestations are present with the aim of early diagnosis.^[6,7] Notably, WHO (2018) reported that around 30% to 50% of cancer cases can be inhibited by screening measures and avoidance of mentioned risk factors.^[10] The suggested screening approaches for early identification of BC are: Breast Self-Examination (BSE), clinical breast examination (CBE), and mammography.^[9-11] However, mammography screening is the gold standard technique for the early recognition of BC, WHO recommended BSE, as an individual measure, for raising women's awareness regarding BC risks and its early detection.^[10,11]

Cervical cancer (CC) is a significant health issue worldwide^[12] and the 3rd most common cancer in the world.^[13] It constitutes, also, a public health concern, however less burdensome compared to breast cancer. The incidences and mortalities from cervical cancer vary widely between studies.^[1,14] In Egypt, cervical cancer represented less than 1.2% of all cancers that affected females between 2008 and 2011.^[3] However, 752 cases diagnosed with cervical cancer in 2014,^[13] Egyptian studies reported wide varied estimates of the prevalence of pre-invasive cervical lesions ranging from 1.0% to 8.0%.^[15]

Early diagnosis of CC plays a pivotal role in prompt and successful management.^[12,16] The Papanicolaou test (Papsmear test) is widely used in developed countries to screen for CC.^[14,15] It is an effective, low-cost, harmless, easily applicable and high-sensitive method of early diagnosis which also reduces the burden of treatment, morbidities, and mortalities.^[16,17]

In order to combat both cancers, nurses have two main roles; awareness role and screening role. It is highly important for

nurses to spread public health awareness about the prevention and early diagnosis of breast and cervical cancers, and they should also participate in screening campaigns for both cancers.^[18] Therefore, it is crucial for nursing students to be aware of the necessary knowledge about both cancers in order to conduct their future tasks, as nurses, appropriately.

1.1 Significance of the study

Although breast and cervical cancers result in graving consequences, little is known about knowledge of nursing students in Beni-Suef University regarding the risk factors, manifestations, screening, and management of both cancers. We believe that knowledgeable nurses could help not only in awareness programs but in screening campaigns as well.

1.2 Aim of the study

The aim of this study was to assess the knowledge of nursing students in Beni-Suef University, Egypt, about causes, risk factors, manifestations, early detection & screening, and management of both breast & cervical cancers.

1.3 Research question

What is the level of knowledge of nursing students in Beni-Suef University about causes and risk factors, manifestations, early detection and screening procedures, and management of both breast and cervical cancers?

2. METHODOLOGY

2.1 Study design

A cross-sectional design was adopted.

2.2 Setting and time frame

A total of 500 nursing students representing all scholastic years of the Technical Institute of Nursing, (both 2 years of post-high school nursing education), Beni-Suef University participated in this study. The assessment of students' knowledge has been done during the 1st semester of the academic year 2017/2018.

2.3 Sampling

The sample size was calculated using Epi-Info version 7 Stat Calc, [Center for Disease Control (CDC), WHO], based on the following criteria; optimal knowledge 25%, the confidence level of 95%, the margin of error of 5% and the non-response rate of 25%.

A total of 622 nursing students was registered at The Technical Institute of Nursing, and all of them were invited to participate in the study and received their questionnaires. Of the 622 questionnaires, 544 came back giving us a response rate of 87.5%. Then 44 questionnaires were excluded be-

cause of incompleteness to end in 500 questionnaires that were included in the analysis.

2.4 Fieldwork and data collection

After reviewing the previous studies, researchers designed an Arabic-language questionnaire of 4 sections. Section 1 included the socio-demographic characteristics of the students; name, age, sex, residence, marital status, family history of breast or cervical cancers, and their readiness, and keenness to assess their awareness of breast and cervical cancer.

Section 2 assessed the knowledge of students about breast cancer using multi-choice questions, and true and false questions. This section included 4 divisions; risk factors, manifestations, screening, and management of breast cancer, and every division included 5 questions.

Scoring system: True answers were given a score of 1, making the score of each division 5, and the total score was 20. Students who achieved 60% or more (3/5 in divisions or 12/20 totally) were considered of optimal knowledge.

The risk factors division evaluated the knowledge of students about the possible roles for family history, fatty diets, ethnicity, alcoholism, early menarche, obesity, hypertension, stress, and use of certain contraceptive methods in the development of breast cancer. The manifestations division had questions about the general and local symptoms and signs that could suspect breast cancer. The screening division included questions about the appropriate age, methods, and regularity of screening. The management division assessed knowledge of students about chemotherapy, radiotherapy, surgical procedures, dietetics, and psychological support.

Section 3 evaluated the knowledge of students about cervical cancer using multi-choice questions, and true and false questions. Similar to the breast cancer section, this section included 4 divisions; risk factors, manifestations, screening, and management of cervical cancer, and every division included 5 questions.

Scoring system: True answers were given a score of 1, making the score of each division 5, and the total score was 20. Students who achieved 60% or more (3/5 in divisions or 12/20 totally) were considered of optimal knowledge.

The risk factors division evaluated the knowledge of students about the possible roles for old age, sexually transmitted infections, smoking, obesity, immunity disorders, and use of certain contraceptive methods in the development of cervical cancer. The manifestations division included questions about the general and local symptoms and signs that could suspect cervical cancer. The screening division included questions about the appropriate age, methods, regularity, and accuracy of screening. The management division assessed

knowledge of students about chemotherapy, radiotherapy, surgical procedures, dietetics, and emotional rehabilitation.

Section 4 questioned about the sources that students accessed to acquire information about breast and cervical cancers; TV, Internet, books and magazines, health-caregivers (nurses, doctors, etc), friends and family.

Before distributing the questionnaire for data collection, a pilot study on 50 students was conducted to evaluate the validity & reliability of the questionnaire. The Cronbach's alpha for reliability was 0.71, while content validity was assessed by a professor of woman health, maternity, obstetrics & gynecology nursing and a professor of community health nursing and a professor of public health. Since there were no modifications to the questionnaire after the pilot study and the results were merely close to the final findings, the questionnaires were included in the final sample.

2.5 Ethical considerations

The study was conducted in full accordance with the guidelines for the Declaration of Helsinki, and data for participants were collected only after obtaining their verbal consent.

2.6 Data analysis

Data entry, verification, and validation were carried out using standard computer software. Data were analyzed using the software, Statistical Package for Social Science (SPSS Inc. Released 2009, PASW Statistics for Windows, version 18.0: SPSS Inc., Chicago, Illinois, USA), then processed and tabulated. Frequency distribution with its percentage & descriptive statistics with mean & standard deviation were calculated. Chi-square, *t*-test, correlations were done whenever needed. The graphical presentation included 3-D Clustered Column and Pie chart diagram. *p* values of less than .05 were considered significant.

3. RESULTS

A total of 500 nursing students from Beni-Suef University participated in this study. Their mean age was 19.2 ± 0.7 years. The majority of the participants (77.6%) were females. More than half (57.6%) of participants were residing in urban areas, and 42.4% were living in rural areas. Only 6.4% were married by the time of the study, and 6.6% reported a family history of BC and/or CC. A high of 84.4% was interested in attending awareness sessions or programs about breast and cervical cancers (see Table 1).

Out of the 500 students, 215 (43%) had optimal knowledge about breast cancer; 219 (43.8%) risk factors and possible aetiologies, 262 (52.4%) symptoms and signs, 139 (27.8%) prevention and early detection, and 240 (48%) management (see Figure 1).

Table 1. Socio-demographic characteristics of the participating nursing students

Socio-demographic characteristics		Total (n = 500) (%)
Age (Mean ± SD) years		19.2 ± 0.7
Sex	Male	112 (22.4)
	Female	388 (77.6)
Residence	Urban	288 (57.6)
	Rural	212 (42.4)
Family history of breast/cervical cancer	Positive	33 (6.6)
	Negative	467 (93.4)
Marriage status	Married	32 (6.4)
	Single	468 (93.6)
Eager to assess the awareness of breast and cervical cancer	Yes	422 (84.4)
	No	78 (15.6)

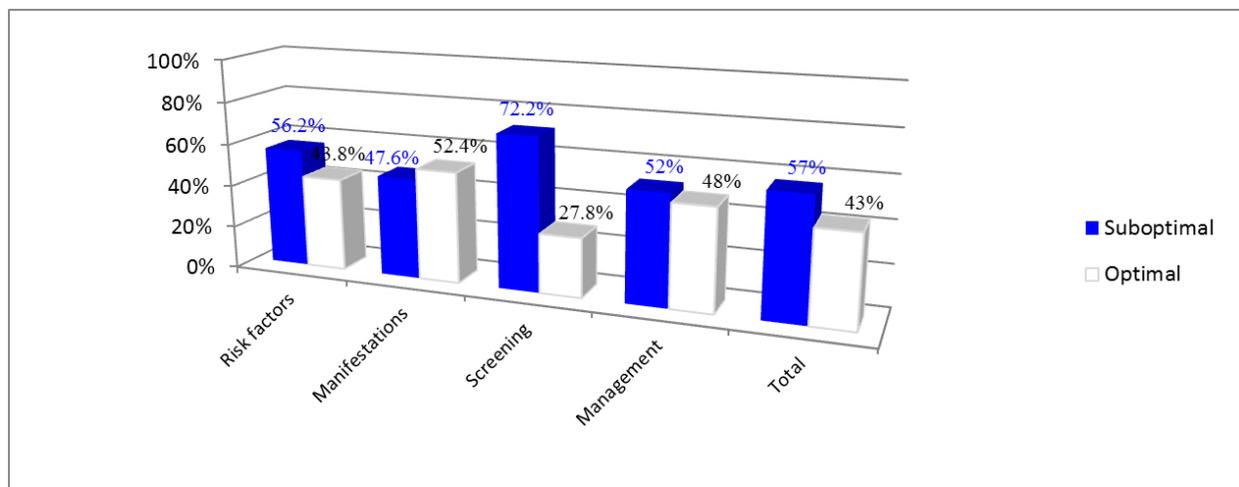


Figure 1. Knowledge of the participating nursing students about breast cancer

However, when students with optimal knowledge about breast cancer were compared to their counterparts with sub-optimal knowledge, none of the studied individual characteristics had a statistically significant impact on students' knowledge ($p > .05$) (see Table 2).

Table 2. Association between socio-demographic characteristics of the participating nursing students and their knowledge about breast cancer

Socio-demographic characteristics		Optimal (n = 215) (%)	Suboptimal (n = 285) (%)	p value
Age (Mean ± SD) years		19.1 ± 0.8	19.2 ± 0.5	.763
Sex	Male	50 (23.3)	62 (21.8)	.821
	Female	165 (76.7)	223 (78.2)	
Residence	Urban	122 (56.7)	166 (58.2)	.848
	Rural	73 (43.3)	119 (41.8)	
Family history	Positive	14 (6.5)	19 (6.7)	.879
	Negative	201 (93.5)	266 (93.3)	
Marriage status	Married	14 (6.5)	18 (6.3)	.892
	Single	201 (93.5)	267 (93.7)	
Eager to assess the awareness of breast and cervical cancer	Yes	177 (82.3)	245 (85.9)	.672
	No	38 (17.7)	40 (14.1)	

Regarding the knowledge about cervical cancer, only 145 factors, 191 (38.2%) manifestations, 62 (12.4%) screening, (29%) students had optimal knowledge; 109 (21.8%) risk and 218 (43.6%) management (see Figure 2).

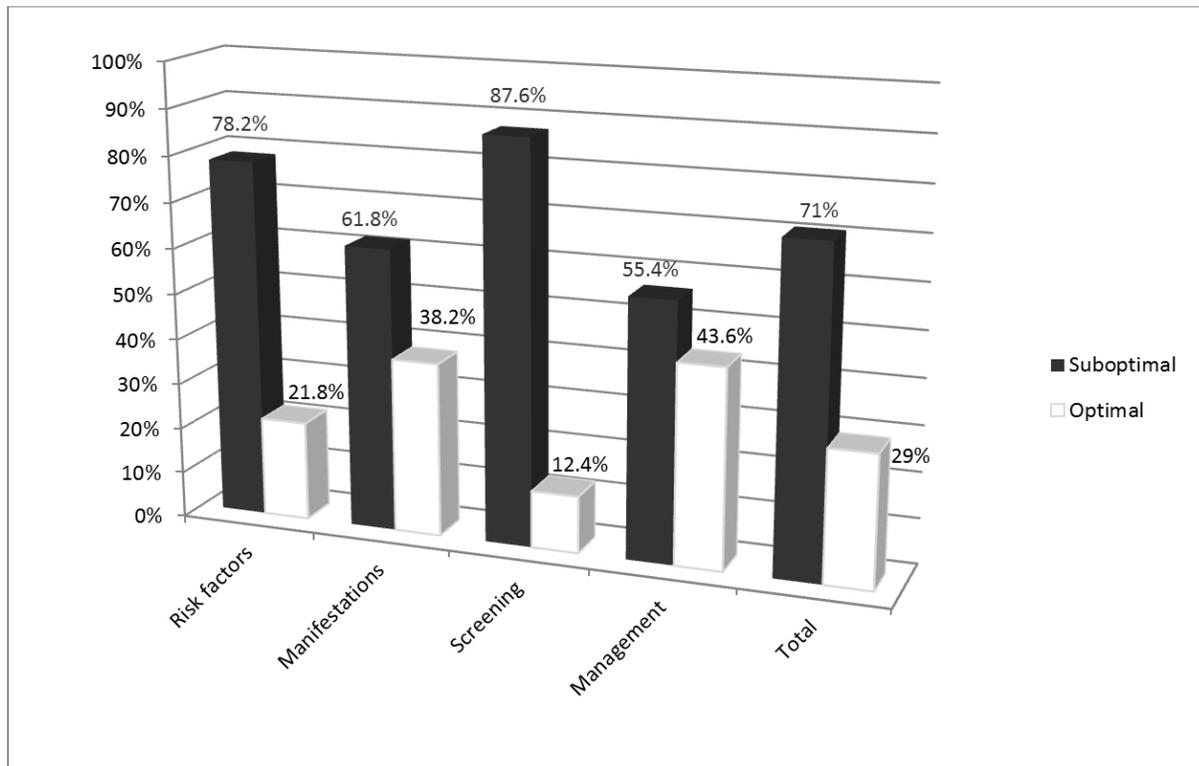


Figure 2. Knowledge of the participating nursing students about cervical cancer

Just like knowledge about breast cancer, the personal characteristics showed no association with students' knowledge about cervical cancer ($p > .05$) (see Table 3).

Table 3. Association between socio-demographic characteristics of the participating nursing students and their knowledge about cervical cancer

Socio-demographic characteristics		Optimal (n = 145) (%)	Suboptimal (n = 355) (%)	p value
Age (Mean ± SD) years		19.2 ± 0.6	19.1 ± 0.9	.654
Sex	Male	34 (23.4)	78 (22.0)	.832
	Female	111 (76.6)	277 (78.0)	
Residence	Urban	81 (55.9)	207 (58.3)	.731
	Rural	64 (44.1)	148 (41.7)	
Family history	Positive	6 (4.1)	27 (7.6)	.259
	Negative	139 (95.9)	328 (92.4)	
Marriage status	Married	8 (5.5)	24 (6.8)	.764
	Single	137 (94.5)	331 (93.2)	
Eager to assess the awareness of cervical cancer	Yes	127 (87.6)	295 (83.1)	.408
	No	18 (13.3)	60 (16.9)	

When the participating students were asked about their sources of knowledge about breast and cervical cancers, healthcare givers (doctors, nurses, etc) came on the top of the list with 42%, followed by TV 33.2% and Internet 21.2% (see Figure 3).

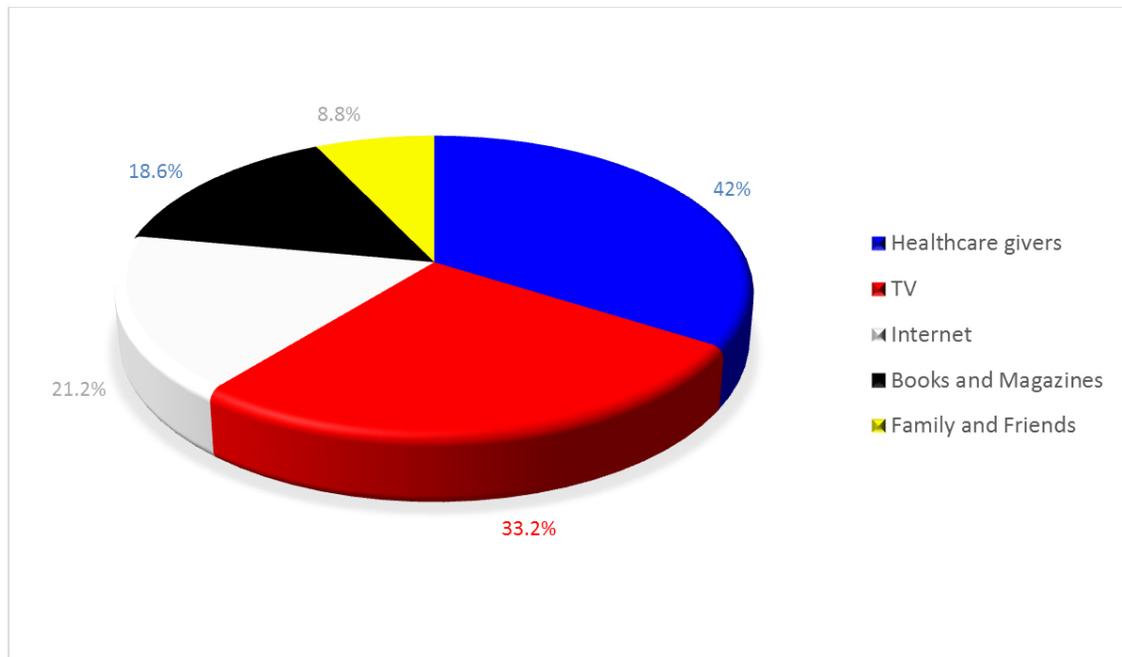


Figure 3. Sources of knowledge of the participating nursing students about breast and cervical cancers

4. DISCUSSION

Knowledge about cancer is a basic step towards developing a positive approach towards screening for the disease. However, educational barriers resulting from suboptimal knowledge is a major reason for low screening prevalence in developing countries.^[19] Hence, this study aimed to evaluate the knowledge of the nursing students at Beni-Suef University about BC and CC.

Our results revealed that 43.0% of the participating nursing students had optimal knowledge about breast cancer; 43.8% risk factors, 52.4% manifestations, 27.8% screening, and 48% management.

In a study over 137 nurses involved in the care of oncology patients in a public university hospital in Brazil, 65.8% gave correct answers about risk factors of breast cancer.^[20] Another study on 281 nurses from Ethiopia showed that 57.8% of them were knowledgeable about breast cancer; less than 30% risk factors, 45.2% signs, 65.9% screening.^[21] Other studies on nurses from Turkey,^[22] Singapore^[23] and Pakistan^[24] showed similar limitations in knowledge about breast cancer. In a cross-sectional study over 301 female university students from Turkey, 65.4% had a satisfactory knowledge score about screening for BC.^[25] A community-based study on 393 females from Brazil aged 40-69 years and receiving health services, found that almost 50% did not know any of the risk factors of breast cancer.^[26] A study on 38 African American females showed significant deficits in knowledge about breast cancer.^[27]

This variation in findings can be attributed mainly to using different data collecting methods and adopting various methods of assessment. Further, most of the cited studies were conducted on working nurses while our study targeted nursing students.

In the current study, we did not find a significant association between the age of students and their knowledge about breast cancer and this could be explained by the tight range of age included in our study. Also, having a positive family history did not correlate with knowledge of students about breast cancer. Unlike our findings, previous reports confirmed the role of having a positive family history in determining the knowledge of nurses about breast cancer.^[20,21] In regards to cervical cancer, 29% of students had optimal knowledge about cervical cancer; 21.8% risk factors, 38.2% manifestations, 12.4% screening, and 43.6% management.

In a study over university students, 55.1% of them were knowledgeable about prevention of cervical cancer.^[25] Another study on 102 nursing students showed that only 30% of the had good knowledge about cervical cancer and 30% were aware of the screening methods.^[28] A study from India indicated that majority of the participants (89.6%) had good knowledge about risk factors of cervical cancer.^[28] Another study on educated young females in Asia concluded that the awareness of cervical cancer was 66% in India, 58.8% in Nepal and 57.7% in Sri Lanka.^[29] Also, less than half of the African and Vietnamese American females showed unsatisfactory knowledge about cervical cancer.^[27,30]

The relatively lower rates of optimal knowledge about cervical cancer in our study may be explained by 2 main factors; lacking of the standardized assessment tool and the fact that cervical cancer constitutes a very small proportion of the cancers affecting females in Egypt, so most of the awareness programs do not consider cervical cancer a priority.

It is really worth pointing out that although the knowledge of the nursing students in the current study regarding breast and cervical cancers was unsatisfactory, healthcare-givers was the main source of knowledge for the participants. This point refers to a suggestion that the knowledge of the teaching staff might not be optimal. Previous reports showed different sources of knowledge including nurses, doctors, TV, and social websites, and friends or relatives.^[16,20,26,31,32]

5. CONCLUSION AND RECOMMENDATIONS

In conclusion, the knowledge of the participating nursing students about both cancers was unsatisfactory. Continuing educational programs for nursing students should be conducted regularly to spread knowledge about breast and cervical cancers. Priority should be given to methods of screening and early diagnosis. Further research should be targeted to health-care givers because of their important role in screening programs and spreading health information about breast and cervical cancers.

CONFLICTS OF INTEREST DISCLOSURE

The authors declare that there is no conflict of interest.

REFERENCES

- [1] Qalawa SH, Eldeeb A, Hassan H. Young Adult Women's intention regarding breast and cervical cancer screening in Beni-Suef. *Scientific Research Journal*. 2015; 3(3): 11-24.
- [2] American Cancer Society. *Breast Cancer Facts & Figures 2017-2018*.
- [3] Ibrahim S, Khaled M, Mikhail H, et al. Cancer Incidence in Egypt: Results of the National Population-Based Cancer Registry Program. *Journal of Cancer Epidemiology*. 2014.
- [4] Mohammed F, Shahin M, Youness E, et al. Survivorship in Women Undergoing Gynecological and Breast Cancer Treatment in Upper Egypt: The Impact of Quality of Life Improvement Educational Program. *American Research Journal of Gynaecology*. 2018; 2(1): 1-28.
- [5] Nady F, Said M, Youness E, et al. Impact of Tailored Educational Program of Quality of Life Improvement on Women Undergoing Breast Cancer Treatment at El-Minia Region, Egypt. *American Research Journal of Gynaecology*. 2017; 1(1): 1-17.
- [6] AydinAvci I, Kumcagiz H, Altinel B, et al. Turkish female academic self-esteem and health beliefs for breast cancer screening. *Asian Pac J Cancer Prev*. 2014; 15: 155-60. <https://doi.org/10.7314/APJCP.2014.15.1.155>
- [7] Ersin F, Bahar Z. Effects of health promotion models on breast cancer early detection behaviors: a literature review. *Dokuz Eylul Univers Nurs School J*. 2012; 5: 28-38.
- [8] World Health Organization. Breast cancer: prevention and control. Available: <http://www.who.int/cancer/detection/breastcancer/en/>
- [9] American College of Obstetricians and Gynaecologists. Practice bulletin no. 122: Breast cancer screening. *Obstet Gynecol*. 2011; 118(2 Pt 1): 372-82. PMID:21775869
- [10] World Health Organization (WHO). World Cancer Day 2018. Available from: <http://www.who.int/cancer/world-cancer-day/2018/en/>
- [11] American Cancer Society. Breast cancer screening for women at average risk: 2015 guideline update from the American Cancer Society. *JAMA*. 2015; 314(15): 1599-614. PMID:26501536 <https://doi.org/10.1001/jama.2015.12783>
- [12] Said S, Hassan H, Sarhan A. Effect of an Educational Intervention on Women's Knowledge and Attitude Regarding Cervical Cancer. *American Journal of Nursing Research*. 2018; 6(2): 59-66.
- [13] Nady F, El-Sherbiny M, Youness E, et al. Effectiveness of Quality of Life Planned Teaching Program on Women Undergoing Gynecologic Cancer Treatment. *American Research Journal of Oncology*. 2018; 1(1): 1-17.
- [14] Hassan H, Bayoumi M, Atwa A. Emotional Distress Associated with Gynecologic and Breast Cancer in Beni-Suef City. *International Journal of Science and Research*. 2016; 5(2): 1118-1129.
- [15] Hassan H, Atwa A. Occupational Stress, Job Satisfaction and Cervical Screening Intention of Maternity Oncology Nurses, *Medical Science & Healthcare Practice*. 2017; 1(1): 48-59.
- [16] Ozdemir O, Bilgili N. Knowledge and practices of nurses working in an education hospital on early diagnosis of breast and cervix cancers. *TAF Prev Med Bulletin*. 2010; 9: 605-12. <https://doi.org/10.5455/pmb.20100427030359>
- [17] Karadag G, Gungormus Z, Surucu R, et al. Awareness and practices regarding breast and cervical cancer among Turkish women in Gaziantep. *Asian Pac J Cancer Prev*. 2014; 15: 1093-8. <https://doi.org/10.7314/APJCP.2014.15.3.1093>
- [18] Kanbur A, Capik C. Cervical cancer prevention, early diagnosis-screening methods and midwives/nurses role. *Hacettepe University Health Science Faculty Nurs J*. 2011; 18: 61-72.
- [19] Markovic M, Kesic V, Topic L, et al. Barriers to cervical cancer screening: a qualitative study with women in Serbia. *SocSci Med*. 2005; 61: 2528-35. PMID:15953668 <https://doi.org/10.1016/j.socscimed.2005.05.001>
- [20] Prolla D, da Silva S, Netto O, et al. Knowledge about breast cancer and hereditary breast cancer among nurses in a public hospital. *Rev Lat Am Enfermagem*. 2015; 23(1): 90-7. PMID:25806636 <https://doi.org/10.1590/0104-1169.0185.2529>
- [21] Lemlem B, Sinishaw W, Hailu M, et al. Assessment of Knowledge of Breast Cancer and Screening Methods among Nurses in University Hospitals in Addis Ababa, Ethiopia, 2011. *ISRN Oncol*. 2013; 2013: 470981.
- [22] Akhigbe O, Omuemu O. Knowledge, attitudes and practice of breast cancer screening among female health workers in a Nigerian ur-

- ban city. BMC Cancer. 2009; 9: 203. PMID:19555506 <https://doi.org/10.1186/1471-2407-9-203>
- [23] Seah M, Tan SM. Am I breast cancer smart? Assessing breast cancer knowledge among healthcare professionals. Singapore Medical Journal. 2007; 48(2): 58-162.
- [24] Ahmed F, Mahmud S, Hatcher J, et al. Breast cancer risk factor knowledge among nurses in teaching hospitals of Karachi, Pakistan: A cross-sectional study. BMC Nursing. 2006; 5: 6. <https://doi.org/10.1186/1472-6955-5-6>
- [25] Altay B, Avci A, Rizalar S, et al. Breast and cervical cancer knowledge and awareness among University students. Asian Pac J Cancer Prev. 2015; 16(5): 1719-24. <https://doi.org/10.7314/APJCP.2015.16.5.1719>
- [26] Batiston P, Tamaki M, Souza A, et al. Conhecimento e práticas sobre os fatores de risco para o câncer de mama entre mulheres de 40 a 69 anos. Rev. Bras. Saúde Mater. Infant. 2011; 11(2): 163-71.
- [27] Ndukwe G, Williams P, Sheppard V. Knowledge and perspectives of breast and cervical cancer screening among female African immigrants in the Washington D.C. metropolitan area. J Cancer Educ. 2013; 28(4): 748-54. PMID:23900622 <https://doi.org/10.1007/s13187-013-0521-x>
- [28] Poonam N, Nagaraj K, Nirgude S. Awareness of cervical cancer and effectiveness of educational intervention programme among nursing students in a rural area of Andhra Pradesh. Healthline. 2012; 3: 41-5.
- [29] Joy T, Sathian B, Bhattarai C, et al. Awareness of cervix cancer risk factors in educated youth: a cross-sectional, questionnaire based survey in India, Nepal, and Sri Lanka. Asian Pac J Cancer Prev. 2011; 12: 1707-12.
- [30] Pham T, McPhee J. Knowledge, attitudes, and practices of breast and cervical cancer screening among Vietnamese women. J Cancer Educ. 1992; 7(4): 305-10. PMID:1305417 <https://doi.org/10.1080/08858199209528187>
- [31] Pandey D, Vanya V, Bhagat S, et al. Awareness and attitude towards human papillomavirus (HPV) vaccine among medical students in a premier medical school in India. PLoS One. 2012; 7: 40619. PMID:22859950 <https://doi.org/10.1371/journal.pone.0040619>
- [32] Atwa A, Hassan H, Ahmed S. The impact of a hospital-based awareness program on the knowledge of patients about breast cancer and cancer cervix. International Journal of Studies in Nursing. 2019; 4(1): 20-29. <https://doi.org/10.20849/ijsn.v4i1.537>