Breast Self-Examination among Female Students:
A Systematic Review.

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Abstract

Background: Breast Self-Examination (BSE) is a primary screening technique to detect breast abnormalities. By performing regular Breast Self-Examination, women would become familiar with their breasts condition so as to enable them to detect any changes from time to time. BSE must be routinely performed by an individual female from young. This is because breast cancer can be developed at the very age of twenty. A systematic search was conducted to analyse the awareness and practice of BSE among students. Materials and Methods: Review identification was performed through a database search on MEDLINE and CINAHL and as such 12 qualified studies were selected. The keyword used is "breast self-examination". Results: A total of 12 articles showed variation with a majority of the studies focused on female college students and a few focused on female school students. Overall there was no consensus on its effects. Conclusions: The previous studies done among students showed that the awareness and knowledge of BSE are poor. Thus, educational intervention program should be done among the students to raise the awareness and knowledge of BSE.

Keywords : Breast Self-Examination - college students - schools students

1.   Introduction

Breast cancer is the most common diagnosed cancer in all ethnic groups and all age groups in women. In 2015, 570,000 women died from breast cancer (WHO, n.d). Breast cancer rates are higher among women in all regions globally. In U.S in 2017, about 252,710 new cases of invasive breast cancer were detected and 40,610 deaths from breast cancer among US women (American Cancer Society, Cancer Facts and Figures 2017-2018, 2017). Breast cancer is increasingly common in Malaysia (Yip et al., 2012). According to Malaysian National Cancer Registry Report 2007-2011, it is estimated that from the years 2007-2011, about 18,343 breast cancer incidences among Malaysian women were reported. A similar study by Omar et al.(2011) reported a total of 3,242 new cases of breast cancer in Malaysia in 2007, giving an age-standardized incidence rate of 29.1 per 100,000 women (Omar et al., 2011). This analysis shows the risk of breast cancer among women is very high and the breast cancer incidence and death rates generally increases.

An early diagnosis of cancer can effectively improve the chance of an early detection of breast cancer at an early stage. Therefore, an early detection of disease through clinical breast exams such as mammography and breast self-examination, which are simple and inexpensive, provide the best approach for reducing the risk of dying from breast cancer (Tahzibi and Feizi 2014). Mammography screening is the only screening method that has proven to be effective (WHO, n.d) and according to American Cancer Society, it is recommended for women to begin mammography screening as early as at the age 40. Younger women tend to have more dense breasts and thus often have mammograms that are difficult to interpret (Joy, Penhoet and Petitti 2005). Therefore breast self-examination seems to be the only method for an early detection for this age group.

Although there is no evidence on the effect of screening through breast self-examination (BSE), the practice of BSE seems to empower women by taking the responsibility for their own

health (WHO 2016). So, it is able to raise breast cancer awareness and educate women about breast cancer. In addition, BSE is a simple, inexpensive, non-invasive procedure which helps a woman to know her breast and allows her to detect changes in the breast; such as breast masses or lumps (Burke, LeMone and Mohn-Brown 2007). Therefore, we conducted the present systematic review in order to review the pattern of the awareness and knowledge of BSE among students.

2.   Materials and Method:
This systematic review was conducted according to 2009 PRISMA guidelines.

2.1 Search strategy
The search strategy used for this systematic review was conducted to analyse the awareness and knowledge of BSE among students. A literature search was done via MEDLINE and CINAHL databases by using 'breast self-examination' keyword. A flow diagram of literature search strategy is shown in Figure 1. The search was limited to journals which manage to access full text article and published in English with the students as the subject population, from year 2010 to 2018 were included.
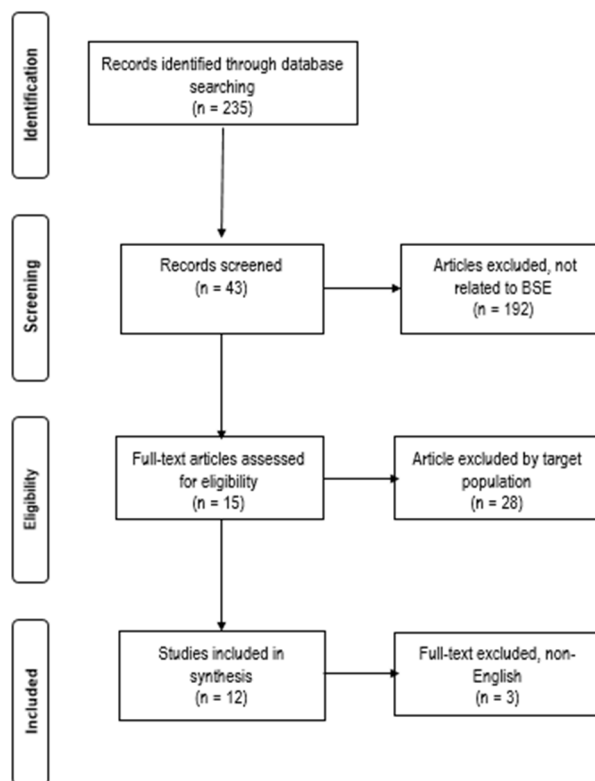

Figure 1. Flow chart of the literature search

Diverse methodological features was used to assess the quality of reviewed study where it clearly defined the sample population, the objectives and the outcomes of the study. The quality of the study were not assessed using scoring approach because the agreement on the quality of the studies was reached between authors. The data extraction was done individually by two reviewers using PICOS technique where data in a form of a table (Table 1). The data extractions contain the name of the author, year of publication, objectives, study design, population, statistical analysis used, and outcomes. Difference on interpretation was determined by discussion and agreement was reached after discussion.

Table. 1 Data of Extractions

NO	AUTHOR	YEAR	OBJECTIVE	STUDY DESIGN	POPULATION	STATISTICAL ANALYSIS	OUTCOMES
1	Ranasinghe, et al.	2013	To evaluate the knowledge, attitudes and practices related to breast cancer with reference to screening services available, breast self-examination (BSE), and sources of information among adolescent schoolgirls in Sri Lanka	Cross-sectional study	Adolescent schoolgirls aged 17-19 in the Colombo District of Sri Lanka. (n=859)	Percentages and Univariate analysis	The knowledge on breast cancer, screening services and breast self-examination among adolescent schoolgirls in Colombo, Sri Lanka is poor.
2.	Umeh and Jones.	2010	To assess co-dependence between health beliefs in predicting breast self-examinations in young women, before and after controlling for familial risk.	Experimental study	Female undergraduates aged ≤35 years from Nottingham Trent University, Nottingham, England. (n=227)	Logistic Regression analysis, t test	Before controlling for familial risk, non-examiners perceived more hindrances and saw fewer benefits in self-examination compared with examiners. After controlling for familial risk, perceived barriers and the Benefits × Susceptibility product term was significant and Barriers × Severity interaction had no significant on Breast Self-Examinations in young women.
3.	Shalini, et al.	2011	To assess the level of knowledge of degree college female students on BSE. To determine the effectiveness of planned teaching program among degree college female students on BSE. To find the association between pre-test knowledge and selected demographical variables.	Pre-test post-test design	Degree female students from selected colleges of Udupi district. (n=40)	Descriptive and Inferential statistics, X^2 tests	The planned teaching program on BSE was effective. There is no significant association between knowledge and selected variables.

4.	Early, et al.	2011	To assess college women's knowledge, attitudes, and practice of BSE, CBE and mammography. To determine significant predictors of female college students' knowledge, attitudes, and breast health screening behaviours.	Not stated	Female college students from 3 diverse southern universities. (n=1074)	Descriptive analysis, Multiple linear and Logistic regression analyses.	Majority of the sample had knowledge about BSE, CBE and mammography and negative attitudes towards screening. Knowledge, attitudes, and co-pay were significant predictors of screening, whereas family history and ethnicity were not.
5.	Doshi ,et al.	2012	To assess the knowledge, attitude and practice (KAP) regarding breast self-examination (BSE) in a cohort of Indian female dental students.	Cross-sectional descriptive questionnaire study	Female dental students at Panineeya Institute of Dental Sciences, Hyderabad, Andhra Pradesh, India. (n=203)	Multiple group analysis by ANOVA and Newman-Keuls multiple post-hoc test, Chi-square test, Pearson's correlation coefficient.	Knowledge, attitude and practice of BSE in the sample of study were very poor. There is a positive correlation between knowledge and practice.
6.	KM Al-Haji and SA Moawed.	2015	To assess the knowledge of breast cancer and practice of Breast Self-Examination (BSE) among female high school students in Riyadh city.	Cross-sectional descriptive correlation study	Secondary school girls from Governmental and private (n=917)	Descriptive analysis, Chi-square test, Linear regression	Most female secondary school students have a very low knowledge about breast cancer and breast self-examination.
7.	Nde, et al.	2015	To evaluate the knowledge, attitude and practice of BSE among female undergraduate students of University of Buea	Cross sectional descriptive study	Female undergraduate students aged 17-30 years in University of Buea. (n=166)	Pearson Chi-square test	Knowledge and level of practice on BSE were low and the attitude towards BSE was good among female undergraduate students.
8.	M. Jasline	2016	To assess the level of knowledge regarding Breast Self-Examination among school students before and after Video Assisted Teaching. To evaluate the effectiveness of Video Assisted Teaching on knowledge regarding Breast Self-Examination among School students.	Pre-experimental study	School students at selected school in Madhurai District, Tamilnadu. (n=60)	Descriptive analysis, Paired t- test, Inferential statistics Karl Pearson correlation Coefficient, Chi-square test	Knowledge regarding Breast Self-Examination before Video Assisted Teaching was low and after Video Assisted Teaching was high. Video Assisted Teaching significantly increases knowledge regarding Breast Self-Examination. There was a positive correlation found between the pre- test level of knowledge and post- test. There was a significant association between knowledge and age, type of family, previous

			To correlate the post-test level of knowledge of Video Assisted Teaching regarding Breast Self-Examination among school students. To associate the post-test level of knowledge regarding Breast Self-Examination with their selected demographic variables.				source of knowledge gained related to Breast Self-Examination.
9.	Akhtari-Zavare, et al.	2016	To determine the effectiveness of a Breast Health Awareness program based on Health Belief Model (HBM) among female undergraduate students in public universities in Malaysia	Single-blinded randomized controlled trial study	Female undergraduate students in Universiti Putra Malaysia and Universiti Teknologi MARA. (n=370)	Chi-square test, independent samples t-test, two-way repeated measures ANOVA	Breast Health Awareness program has a positive impact on increasing the knowledge about breast cancer and Breast Self-Examination on intervention groups.
10.	Meenakshi.	2016	To assess the Effectiveness of Structured Teaching Program on Breast Self-Examination (BSE) among postgraduate students.	True experimental study	Female Post Graduate students aged 21 to 29 years. (n=80)	Paired t-test, Unpaired t-test, X^2 test	Structured Teaching Program increased the knowledge level in Experimental group on Breast Self-Examination (BSE).
11.	Abera, Mengistu and Bedaso.	2017	To assess the effectiveness of planned teaching program on knowledge and practice of breast self-examination among first year female midwifery students in Hawassa health Sciences College.	Pre-experimental study	Female midwifery year 1 students. (n=192)	Descriptive analysis, Paired t-test	Level of knowledge and practical competency scores after intervention program was significantly increased.
12.	Didarloo, Nabilou and Khalkhali.	2017	To examine BSE behaviour and its predictive factors among female university students using the Health Belief Model (HBM)	Cross-sectional study	Female students at Urmia University of Medical Sciences. (n=334)	Descriptive and inferential statistical methods, Chi-square test, Multivariate logistic regression	Breast Self-Examination behaviour among female university students was low. Academic level, high knowledge, high perceived self-efficacy, high perceived benefits, and high perceived severity were predictors of Breast Self-Examination behaviour.

| 13. | Hadi , et al. | 2010 | To assess the knowledge of breast cancer among female university students at Universiti Sains Malaysia, Penang and their perception towards its treatment outcomes. | Cross sectional study | Female students from ten randomly selected faculties/schools. (n=200) | One-way ANOVA with Post Hoc Tukey HSD | Majority of female university students have inadequate knowledge about breast cancer and have positive perception towards treatment outcomes of breast cancer. |

3. Discussion

Breast cancer is the most common cancer among women around the world. Breast cancer cannot be prevented but it can be controlled by an early detection. An early detection and screening play an important role in detecting breast cancer before it is spread. Thus, they are able to reduce the incidence and mortality rate due to breast cancer. As a mammography can only be carried on women starting from the age of 40, Breast Self-Examination (BSE) is one of the early screening that can be performed by women especially in their younger years. BSE is a type of screening where women are able to examine the breasts by themselves so that they are able to detect any small changes from time to time. This is because breast cancer not only developed in adult women but it can also happen to younger women.

Even though breast cancer is the most common cancer among women, the awareness on breast cancer and practice among women vary in different countries; like in Britain, over half are not practising breast awareness (Scanlon and Wood 2005). In Iran, the study showed that the level of awareness on breast cancer screening methods among the study population was low (Tahzibi and Feizi 2014) and in United Arab Emirates, there remains a lack of awareness on breast cancer screening (Elobaid et al., 2014). Likewise, a study in Malaysia, showed that the knowledge of breast cancer is inadequate (Akhtari-Zavare et al., 2011). These findings are supported by a qualitative study that explored Malaysian cancer patients' perceptions of cancer screening which noted an inadequate knowledge as a barrier to breast cancer screening (Farooqui, 2013). Thus, it is necessary for women to have information on breast cancer. In fact, World Health Organization (WHO) recommended that raising general public awareness on breast cancer problems and the screening as the key strategies of breast cancer control. For this reason many studies have been done to assess the awareness and knowledge of BSE among women out there.

Majority of the searched studies carried out on this issue discussed about the awareness and knowledge of BSE among college women. In Malaysia, a cross-sectional study to assess the knowledge of breast cancer among female university students was also conducted on their perception towards its treatment and outcomes. The sample used was female students with a mean age of 26.7 years, showed that majority of female university students had inadequate knowledge about risk factors and sign and symptoms but they were aware about BSE breast cancer (Hadi et al., 2010). A cross-sectional descriptive study to assess the knowledge, attitude and practice (KAP) regarding breast self-examination (BSE) was conducted in a cohort of Indian female dental students whose age ranges from 17 to 22 years old with a mean age of 19.6 ± 1.38 years the overall knowledge and practice of BSE are very poor where about 86.4% of first year students, 79% of second year students, 78.8% of third year students and 50% of fourth year students have poor knowledge and 92.8% of first year students, 88.7% of second year students, 84.8% of third year students and 80.9% of fourth year students have poor practice on BSE (Doshi et al., 2012). This is similar to a study in Buea, which the study revealed inadequate level of knowledge and practice among female undergraduate students where only 37.3% respondents aware that BSE should be performed monthly with only 9.0% knows the way to do BSE and only 41% of respondents ever do BSE with only 3% do BSE regularly. The reason for not doing BSE were lack of knowledge, no sign of breast cancer, forget, no time, fear of finding lumps and embarrassment (Nde et al., 2015).

Meanwhile, there are a few studies that discussed the awareness and knowledge of BSE among school. Based on the cross-sectional study conducted in Colombo, Sri Lanka, among girl students aged 17 to 19 years old, the knowledge and practices on BSE are poor which only 9.4% of respondents aware of early detection method and there is a large number of respondents not aware of some important risk factors such as hormone replacement therapy and oral contraceptive usage. About 17.1% of respondents aware on how to do BSE with only 6.17% from them do BSE. The

reasons for not performing BSE, majority said that they felt it not necessary followed by do not know how to perform BSE (Ranasinghe et al., 2013). Besides, in cross-sectional descriptive study conducted on girl students in Riyadh City, showed that the level of knowledge and practice of BSE was low with about 86% of respondents do not know how to perform BSE and only 2.3% of respondents do BSE regularly. The result also state that the level of knowledge is significantly associate with family history of breast cancer (KM Al-Haji and SA Moawed, 2015).

An awareness program can give a positive effect on awareness and knowledge of breast self-examination including the practice of BSE. Many interventions programs have been done worldwide to increase the awareness and knowledge of BSE. Previous studies have suggested that health education program is effective in increasing the breast cancer knowledge, BSE knowledge and BSE practice. A study done by M.Jasline (2015) on school students in Madurai District, Tamilnadu shows that there is a significant increase of knowledge before and after the video assisted teaching introduced to the samples from 18.3% of adequate knowledge to 70% of adequate knowledge. Similarly, a true experimental study was done in Bangalore by Meenakshi (2016) on Post Graduate students. The students are divided into an experimental and a control group in which the experimental group will undergo a structured teaching program regarding BSE. The findings show that the level of knowledge for the experimental group increases from 0% of adequate knowledge before the program to 72.5% of adequate knowledge after the program. All of these studies suggested that the educational program regarding breast cancer and BSE should be introduced to women to raise their awareness and knowledge about breast cancer and BSE especially to the younger age group (KM Al-Haji and SA Moawed, 2015; Akhtari-Zavare et al., 2016; Abera, Mengistu and Bedaso, 2017). This demonstrates that educational program is able to raise women awareness and knowledge regarding BSE.

4. Conclusion

In conclusions, an overall picture from the previous studies on students shows that the level of awareness and knowledge about BSE is low. Thus, an educational intervention program should be done among students to raise the students' level of knowledge and awareness towards BSE. Although breast cancer occurrences among students are uncommon, but promoting BSE can give them an early awareness and more knowledge for practising BSE right through their adulthood.

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References

Abera, H., Mengistu, D., and Bedaso, A. (2017) Effectiveness of planned teaching intervention on knowledge and practice of breast self-examination among first year midwifery students. PLoS ONE. 12(9), 1-9.

Akhtari-Zavare M. et al. (2011). Knowledge on Breast Cancer and Practice of Breast Self Examination among Selected Female University Students in Malaysia. Medical and Health Science Journal. 7, 49-56.

Akhtari-Zavare M. et al. (2016). Result of randomized control trial to increased breast health awareness among young females in Malaysia. BMC Public Health. 738(16), 1-11.

American Cancer Society. Breast Cancer Facts and Figures 2017-2018 (2017). Atlanta: American Cancer Society, Inc. 2017.

Azizah Ab M, et al. (2016). Malaysian National Cancer Registry Report 2007-2011. Malaysia Cancer Statistics, Data and Figure. Putrajaya: National Cancer Institute, Ministry of Health, 2016.

Burke, K. M., LeMone, P., and Mohn-Brown, E.L. (2007). Medical-surgical nursing care. 2nd Edition. Pearson; Prentice Hall.

Didarloo A., Nabilou B. and Khalkhali R. (2017). Psychosocial predictors of breast self-examination behaviour among female students: an application of the health belief model using logistic regression. BMC Public Health. 861(17), 1-8.

Doshi D. et al. (2012). Breast Self-examination: Knowledge, Attitude, and Practice among Female Dental Students in Hyderabad City, India. Indian Journal of Palliative Care. 18(1), 68-73.

Early J. et al. (2011). US Female College Students' Breast Health Knowledge, Attitudes, and Determinants of Screening Practices: New Implications for Health Education. Journal of American College Health. 59(7), 640-647.

Elobaid Y.E. et al. (2014). Breast Cancer Screening Awareness, Knowledge, and Practice among Arab Women in the United Arab Emirates: A Cross-Sectional Survey. PLOS One. 9(9), 1-6.

Farooqui M. et al. (2013). A qualitative exploration of Malaysian cancer patients' perceptions of cancer screening. BMC Public Health. 13(48), 1-7.

Hadi M.A. et al. (2009). Evaluation of breast cancer awareness among female university students in Malaysia. Pharmacy Practice (Internet). 8(1), 29-34.

Joy J.E., Penhoet E.E., and Petitti D.B. (2005). Saving Women's Lives: Strategies for Improving Breast Cancer Detection and Diagnosis. Retrieved from https://www.ncbi.nlm.nih.gov/books/NBK22311/

KM.Al-Haji & SA.Moawed (2015). Breast cancer, Breast Self-Examination Knowledge Among Female High School Students in Riyadh City. Middle East Journal Of Nursing. 9(1), 25-27.

M. Jasline (2015). A Study to evaluate the Effectiveness of Video Assisted Teaching on Knowledge regarding Breast Self Examination among School students at selected school in Madurai District. Asian Journal of Nursing Education and Research. 6(1),5-6.

Meenakshi P.C. (2016). Effectiveness of Structured Teaching Program on Breast Self Examination (BSE) among Postgraduate Students at Selected Colleges of Bangalore, Karnataka. International Journal of Nursing Education. 8(4), 92-98.

Ministry of Health Malaysia, Academy of Medicine Malaysia (2010). Clinical Practice Guideline: Management of breast cancer (2nd edition). Health Technology Assessment Section, Medical Development Division, Ministry of Health Malaysia, Putrajaya.

Nde F.P. et al. (2015). Knowledge, attitude and practice of breast self-examination among female undergraduate students in the University of Buea. BMC Research Notes. 43(8), 1-6.

Omar Z.A., Mohd.Ali Z., Tamin NS (n.d). National Cancer Registry Report: Malaysia Cancer Statistics – Data and Figure Peninsular Malaysia 2006, Ministry of Health Malaysia.

Omar ZA, Ibrahim Tamin NS (2011) National Cancer Registry Report: Malaysia Cancer Statistics – Data and Figure 2007,

Ranasinghe H.M. et al. (2013). Awareness of breast cancer among adolescent girls in Colombo, Sri Lanka: a school based study. BMC Public Health. 13, 1209.

Scanlon K. and Wood A. (2005). Breast cancer awareness in Britain: are there differences based on ethnicity?. Diversity in Health and Social Care. 2, 211-221.

Shalini, Varghese, D., and Nayak, M. (2011). Awareness and Impact of Education on Breast Self Examination Among College Going Girls. Indian Journal of Palliative Care. 17(2), 150-154.

Simon S. (2015, October 20). American Cancer Society Releases New Breast Cancer Guideline. Retrieved on https://www.cancer.org/latest-news/american-cancer-society-releases-new-breast-cancer-guidelines.html

Tazhibi M. and Feizi A. (2014). Awareness Levels about Breast Cancer Risk Factors, Early Warning Signs, and Screening and Therapeutic Approaches among Iranian Adult Women: A large Population Based Study Using Latent Class Analysis. BioMed Researcg International. 2014, 1-9.

Umeh K. and Jones L. (2010). Mutually Dependent Health Beliefs Associated With Breast Self-examination in British Female University Students. Journal of American College Health. 59(2), 126-131.

WHO (n.d). Cancer. Breast cancer: prevention and control. Retrieved from http://www.who.int/cancer/detection/breastcancer/en/

Yip C.H, Emran N.A, Ibrahim AW, et al (2012). Breast cancer services in Malaysia [Power Point Slides]. Retrieved from Healthcare Performance Measurement & Reporting System (HPMRS).