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A Scoping Review: Accuracy in Early Detection of Breast Cancer Using a Clinical Breast Examination Method

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ABSTRACT

Both globally and in Indonesia, cancer continues to be a serious health issue. The early detection program for breast cancer with the clinical breast examination method is one of the indicators of the success of health development contained in the RPJMN. According to WHO data, the incidence of cancer increased from 12.7 to 14.1 million in 2013, and the specific cause of breast cancer is still unknown. The aim of this study is to review the clinical breast examination method's accuracy for early breast cancer detection is the goal. The method is using the a scoping review method covering Population, Exposure, Outcome, Study Design (PEOS). It approach is to construct a review topic and search strategy. Eight papers from three databases were analyzed (Pubmed, Science direct, and EBSCO). Articles chosen using Prism Flowcharts and Hawker's Critical Appraisal. Results shows that the eights publications analyzed, five articles used a cohort research design, two articles used an RCT study design, and one article used a cross-sectional study design. The clinical breast examination (CBE) approach is for early diagnosis of breast cancer has low accuracy. It is due to the influence of CBE implementation skills. However, when used in tandem with mammography, CBE can produce more sensitive results. The CBE method is seen as less complicated and more affordable, making it one of the suggested early detection techniques for breast cancer in developing nations.

Introduction

Worldwide and in Indonesia, cancer continues to be a significant health issue. According to WHO statistics from 2013, there were 14.1 million new cases of cancer in 2012, up from 12.7 million in 2008. Between 2008 and 2012, there were 8.2 million more fatalities than there were in 2008. thirteen percent behind cardiovascular disease as the second leading cause of death worldwide. Lung, liver, stomach, colorectal, and breast cancers rank among the leading causes of cancer-related fatalities each year. According to estimates, there will be 26 million new instances of cancer and 17 million cancer-related deaths by 2030. The incidence will increase more quickly for poor and developing countries in particular. These findings are consistent with research showing that breast cancer is the primary cancer among women in low- and middle-income nations, both in terms of cancer incidence and death.

Although the exact cause of breast cancer is unknown, there are a number of factors that increase a person's risk of getting the disease. One of the markers of the success of health development is the proportion of women of childbearing age (WUS) who have early detection of cervical cancer and breast cancer. Health professionals are conducting an early detection program for breast cancer with a total of 6,318,000 women of childbearing age as part of the initiative in the prevention and early detection of cancer. The percentage of WUS with early detection is anticipated to reach 50% in 2019. Indonesia still has a problem with breast cancer since only 22.4% of people seek treatment at an early stage, compared to 68.6% who seek it at an advanced stage. An early detection program or screening is established to combat cancer, particularly breast cancer. A clinical breast examination (Sadanis) or clinical breast examination (CBE) and breast self-examination are conducted as part of this program. Based on the backdrop, the scoping review's goal is to evaluate the precision and value of the clinical breast examination (CBE) approach for early diagnosis of breast cancer

Method

A. Inclusion Criteria

Design the Scoping Review method is employed in this investigation. The procedures in this scoping review technique, which was adapted from Ref. [4], are to develop research questions, find pertinent studies, choose articles, chart data, and then compile and summarize the results [4]. Search Methods The inclusion criteria that can be established to choose the article explain how to identify breast cancer early with the clinical breast examination method, regarding accuracy and the contribution of clinical breast examination, and are published in English and Indonesian, from 2000 to 2019. Articles with an opinion or commentary, letters, book reviews, peer-reviewed articles with primary research, systematic reviews, literature reviews, and

reports were all excluded. Three databases, notably Pubmed, Science Direct, and EBSCO, are used to search for pertinent publications. The keywords "Fertile Age Women" OR "Women OR Mother AND early detection" OR "Detection AND breast cancer" OR "tumor AND clinical breast examination" were used in the literature search approach.

B. Search Outcome

The quantity of articles was discovered after searching three databases. Initial screening involved 2545 items from 3 databases. Then, it was discovered that 148 articles were collected that are irrelevant and do not serve the purpose we are seeking. Of the 321 articles that will be screened using confidence, there are 100 duplicates, leaving 221 articles. Then up to 73 discriminating full text publications, followed by the exclusion of 65 papers and the inclusion of 8 studies, were evaluated critically. Critical Appraisal After the data has been filtered, a Critical Appraisal is conducted with the aim of determining the caliber of the articles that will be used. The Hawker checklist was used as the method for evaluating article quality. Eight articles underwent the critical appraisal procedure, and it was discovered that every piece evaluated was graded as A or in the good category.

Result

The articles obtained from the selection of this article came from 1 France, 1 Colombia, 2 India, 2 Canada, 2 United States. Based on eight articles that have been carefully chosen and of high quality. The research design is one of the points from the article that is classified and further investigated using data extraction. Cohort research designs were employed in 4 articles, RCT study designs in 2, and cross-sectional study designs in 1. Six articles received grades A and one received a grade A out of the eight articles that underwent the critical appraisal process. The results of the article after being analyzed and evaluated from some of the points above, then from the 6 articles. The following Table 1 are themes and sub-themes were obtained as the focus of this review.

Malmartel, Tron, and Caulliez's study from 2019 found that out of 3218 respondents with a median age of 55, 713 (22.2%) had abnormal CBE and 133 (4.1%) had high-risk mammography. The CBE test had a sensitivity of 36% and a specificity of 78%. CBE can aid in the early identification of breast cancer, but its early detection accuracy is poor and it is not advised in France. This study also revealed that the sensitivity of CBE was 39.1 percent (95 percent CI 37.9 - 40.3) and city-specific 83.4 percent (95 percent CI 82.6 - 84.3). However, CBE demonstrated the maximum sensitivity when compared to mammography (95.6 percent). According to the study's findings, while mammography reports good accuracy, CBE utilized in conjunction with mammography greatly boosts sensitivity [2].

Table 1. Mapping Data

Reference Number	Results	Theme
[1]	The sensitivity of CBE was 36% and the specificity was 78% .	Accuracy of early detection of breast cancer Clinical breast examination method.
[2]	CBE sensitivity was 39.1% (95% CI 37.9 - 40.3) and city-specific 83.4% (95% CI 82.6 - 84.3). parallel mammography and CBE showed the highest sensitivity (95.6%).	Accuracy of early detection of breast cancer Clinical breast examination method.
[3]	The proportion of patients receiving breast care increased from 39% to 51%, the proportion receiving chemotherapy decreased from 84% to 56%.	Accuracy of early detection of breast cancer Clinical breast examination method.
[4]	Sensitivity was higher for examined women who were offered CBE than those who were not offered CBE, at baseline 94.9% and 94.6%, respectively, vs. 88.6%. subsequent examinations were 94.9% and 91.7%, respectively. vs 85.3%.	Accuracy of early detection of breast cancer Clinical breast examination method.
[5]	The sensitivity, specificity, false-positive rate, and positive predictive value of CBE were 51.7% (95% confidence interval (CI) (38.2% to 65.0%), 94.3% (95% CI 94.1 % to 94.5%), 5.7% (95% CI 5.5% to 5.9%), and 1.0% (95% CI 0.7% to 1.5%), respectively .	Accuracy of early detection of breast cancer Clinical breast examination method.
[6]	Breast cancer detected by CBE 83.6-88.6 % were also detected by mammography, while for cancer detected by mammography only 31.7-37.2% were also detected by CBE. On average, CBE increases the detection rate of small invasive cancers by 2-6% .	Accuracy of early detection of breast cancer Clinical breast examination method.
[7]	CBE accounted for 14 (3%) of the 453 cancers detected in the study population.	Accuracy of early detection of breast cancer Clinical breast examination method.
[8]	mammography sensitivity was 78% and combined mammography-CBE sensitivity was 82%, so CBE detected an additional 4% of invasive cancers.	Accuracy of early detection of breast cancer Clinical breast examination method.

The study's findings are also supported by the finding that women screened at regional cancer centers or affiliated centers that provide CBE in addition to mammography have higher reference sensitivity than women screened at affiliated centers that do not provide CBE (initial screening: 94.9 percent and 94,6 percent, respectively, vs. 88.6 percent; reexamination: 94.9 percent and 91.7 percent, respectively, vs. 85.3 percent). The 290230 women in the study ranged in age from 50 to 69 [4].

Early detection and more conservative treatment of breast cancer are suggested by initiatives to promote breast awareness and access to care in women's cohorts participating in occupational health care programs. Cancer may decline as a result of raising awareness and

expanding access to care [9]. CBE from the results of research conducted has sensitivity, specificity, false-positive rate, and positive predictive value of CBE is 51.7% (95% confidence interval [CI] = 38.2% to 65.0%), 94.3% (95% CI 94.1% to 94.5%), 5.7% (95% CI 5.5% to 5.9%), and 1.0% (95% CI 0.7% to 1. 5%), respectively [10].

The results of research from [6], breast cancer detected by CBE 83.6-88.6 % were also detected by mammography, while for cancer detected by mammography only 31.7-37.2% were also detected by CBE. When compared to rates when mammography was the exclusive method of detection, CBE often improves detection rates for small invasive tumors by 2–6%. We discovered that CBE had a minimal impact on breast cancer early detection. The findings of this study are also in line with those of Ref. [7] found that CBE screening can help mammography screening in detecting breast cancer in asymptomatic patients. In our study population, 14 (3%) of the 453 cancers were found to have been detected through CBE, and the cost of finding breast cancer was $1,050. This is roughly $122 598 for each cancer.

Mammography had a sensitivity of 78 percent, and when it was paired with CBE, it had a sensitivity of 82 percent, allowing CBE to identify an additional 4 percent of invasive malignancies. The addition of CBE to screening mammography for all ages led to an increase in sensitivity. When CBE was combined with mammography, specificity and positive predictive value decreased, and this loss was especially pronounced in women with thick breasts [11].

Discussion

Accuracy of clinical breast examination (CBE) as a tool for breast cancer early detection. In France, it is not advised to use CBE for breast cancer early detection. When compared to mammography, CBE appears to deliver less precise information but may still be helpful [1]. Recent studies have also shown there is benefit from adding mammography to CBE. However, there is still controversy in showing any benefit from the addition of mammography to CBE [2]. CBE accuracy can be enhanced in screening programs that provide high quality CBE by professionally trained nurses or health professionals. CBE has a greater detection rate for breast cancer and sensitivity for referral [12]. This study is similar to that of [13] that The accuracy of the CBE can be affected by the examiner's experience and technique. A pooled analysis found that the accuracy of CBE varied according to examiner-related factors, such as examination duration, examiner experience, and the CBE technique used.

CBE is not recommended to be implemented in France for early detection of breast cancer in women between 50 and 74 years old but CBE can have a better place to follow up breast lumps but not for diagnosis [1]. Although CBE is limited for diagnostic assessment, it may be a suitable strategy for early detection of breast cancer in a population with a low

screening history and low access to routine care [2]. The results of the above study are similar to those of Ref. [14], that the implementation of early detection programs in most LMICs relies largely on promoting breast awareness and clinical breast examination (CBE).

The results of this study are also supported because organized mammography screening is not affordable or feasible in low- and middle-income countries. clinical breast examination (CBE) is an alternative screening option [15]. Data from LMICs is available. Recently, a cluster randomized trial conducted by the National Cancer Institute of Colombia (NCIC) evaluated the implementation of guideline breast cancer screening with biennial mammography and CBE for women 50-69 years of age, showing significant results for early detection of breast cancer [16].

The approach increases breast awareness and contributes to the diagnostic assessment of women with suspected breast cancer and adequate treatment for cancers detected after diagnosis. There is sufficient evidence that diagnosing breast cancer at an early stage reduces cancer-related deaths [9]. Improvements in early detection and optimized treatment are enhanced incorporating all the advances in reducing the incidence of breast cancer, as well as for the reduction in mortality due to breast cancer due to CBE screening. can be observed if the clinically significant palpable cancer so that it is detected early can be followed up early [6].

In screening programs, CBE offers a little advantage over mammography in terms of the detection of invasive cancer, but it also carries a higher chance of false-positive results. In women with thick breasts, these dangers and advantages are more pronounced. When assessing the inclusion of CBE in screening exams, the balance of risk and benefit must be carefully considered [8]. According to research conducted in India, CBE can increase life expectancy and significantly lower mortality even with a 5-year gap [17]. It has been demonstrated through the results of numerous randomized controlled studies that screening lowers breast cancer mortality. Reduced mortality was found among women in the target age range at up to 70% attendance throughout long-term follow-up of study participants [18].

Conclusion

Early detection of breast cancer using the clinical breast examination (CBE) method has an accuracy that is influenced by the CBE practitioner's skills, but using CBE in tandem with mammography can produce more sensitive results. The CBE technique is thought to be less complicated and more affordable, making it one of the suggested early detection techniques for breast cancer in the developing nations.

Conflict of Interest

Authors declare that there is no conflict of interest.

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