BECA : An Android Aplication to Increase Breast Self-Examination (BSE) Practice

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BECA: An Android Application to Increase Breast Self-Examination (BSE) Practice

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Artikel info	
	Abstract. Cancer is one of the chronic diseases that could decrease productivity dan the quality of human sources due to its long-term treatment, including breast cancer. Breast self-examination (BSE) should be done as early detection for breast cancer. The use of technology is needed to achieve this goal. The study aimed to examine the effect of a BSE application android on BSE practice. A quasi-experimental study design without a control group was applied in this study. The study was conducted in a selected area in Yogyakarta. The researcher selected the samples using the purposive sampling technique. The BSE practice was assessed used a BSE practice form and statistically tested with the Wilcoxon test. The total number of respondents of this study was 32 women childbearing aged. The characteristic of respondents w**as** 20-30 years old (53.1%), married (68.8%), housewife (43.8%), and senior high school (56,3%). Wilcoxon test results showed a computed p-value of 0.000. It was indicated that the BECA application android is useful to improve the BSE practice. The researchers recommend utilizing BECA Application android for daily use. **Keyword:** *Breastcancer, BSE* application, android_BECA

INTRODUCTION

The theme of the Republic of Indonesia Independent Day 2019 was "Advanced Indonesian High-Quality Human Resources." It was a noble vision to continue the nation's movement in the era of the industrial revolution 4.0. The focus of independence delivered in the state speech delivered by the President of the Republic of Indonesia Joko Widodo was that Indonesia must have human resources (HR) that are innovative, of high quality, and master technology. Furthermore, the use of technology must also support creating innovative and

quality human resources. A person can optimally carry out these functions if they have a high degree of health, free from health problems. Cancer is a worldwide health problem, including in Indonesia.

The number of new cancer patients in Indonesia reached 348 people, while the cancer incidence rate was 136.2 per 100,000. The data also shows an increase in the prevalence of tumors or cancer in Indonesia. In 2013 it was 1.4 per 1000 population to 1.79 per 1000 people in 2018. The number of cancers in Indonesia ranks eight in Southeast Asia, while in Asia, it is 23. In 2040 it is predicted that in 1 second, there will be one person. Cancer and within 2 seconds, one cancer patient died in Indonesia (1).

Special Region of Yogyakarta has the highest prevalence of breast cancer in Indonesia, which is 4.1 per mile, much higher than the national majority, which is only 1.4 per mile (2). Moreover, the highest type of cancer is breast cancer (3). Chairperson of the Cancer I Foundation DIY GKR Hemas said that about 60 percent of breast cancer patients came to the hospital in an advanced state, so that management became more difficult. This condition is mostly due to the reasons for not doing early screening (2). One of the most comfortable and most effective methods for early detection of breast cancer is breast self-examination (BSE) in women of childbearing age.

The use of technology in the health care area has been improved for the last past few years. Still, the research on analyzing the effect of a breast self-examination application android on BSE practice is rarely done. Therefore, the researchers are interested in conducting a study investigating the impact of a breast self-examination application android on BSE practice of women childbearing age.

OBJECTIVE

This study aimed to determine the effect of a BSE application android called BECA on BSE practice.

METHOD

A quasi-experiment design, one group, pre-test, and post-test without a control group, was applied in this study. This research was conducted in a selected area of Yogyakarta. The total respondents were 32 women childbearing aged. This study's variable was BSE practice, and the variable independent of this study was an android application. The inclusion criteria: 1) willing to be respondents; 2) be able to use smartphone android application.

Moreover, these study's exclusion criteria were: 1) currently undergoing treatment therapy for tumors/breast cancer; 2) pregnant woman because stimulation of the nipple can cause uterine contractions. Before the data collection started, the researcher designed Breast Examination for Cancer Awareness-based program. This application was designed to improve BSE practice among women of childbearing age. This application also has a reminder system that would be automatically on as time is set.

Data collection in this study used pre and post frequency BSE practice form. The data gathering procedure started when the researcher got a permission letter from the person in charge of the research area where this study was conducted. Prospective respondents who met the criteria are given informed consent. The researcher described the purpose of the study, the respondent's role, and ethical considerations. The respondents gave their permission right after they agreed to be included in this study. In the next step, the researcher asked the respondent regarding BSE practice. After that, the researcher helped the respondents installed the BECA application on their smartphone. After a month, the researcher collected the data of

BSE practice as post-intervention data. The data was statistically tested using the Wilcoxon test SPSS version 21.

Several contents in the BECA application, such as using personal data, information about breast cancer. Information about breast self-examination and notes on daily breast self-examination also included in the BECA application. This application is also equipped with a reminder feature that can be lit according to the user's time set. This application is effortless to use and practical because it only needs to be installed on a mobile phone.
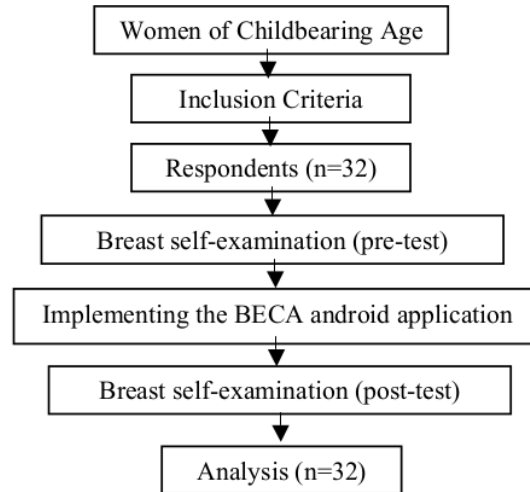
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        │       Analysis (n=32)       │
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Figure 1. Research flow chart

This study was registered to the research ethics board of the Health Research Ethics Commission Poltekkes Kemenkes Yogyakarta, No. e-KEPK/POLKESYO/0231/III/2020, published on March 18th, 2020.

RESULTS

Table 1 showed the characteristics of respondents. The finding explained that the general public who attended breast cancer examinations and introduced the BECA application showed 53.1%. Most respondents were 20-30 years old, and 68.8% of them have been married. The majority of the participants worked as housewives, 43%, and had an educational level of Senior high school 56%.

Table 1. Characteristics of Respondents (n=32)

Variable	Frequency	Percentage (%)
Age		
20 – 30 years	17	53.1
31 – 40 years	7	21.9
41 – 50 years	8	25.0
Marital status		
Single	6	18.8
Married	22	68.8
Widow	4	12.5

Occupation
Housewife	14	43.8
Private work	5	15.6
Entrepreneur	8	25.0
College student	3	9.4
Government employees	2	6.3

Education
Junior high school	3	9.4
Senior high school	18	56.3
Diploma	5	15.6
Bachelor	5	15.6
Magister	1	3.1

Table 2 shows an increase in the frequencies of BSE practice after installing and using the BECA application. On pre-test data, all respondents were not practicing BSE. In contrast, after the intervention, 24 respondents were practicing BSE while eight respondents were not.

Table 2. Distribution frequencies of bse practice before and after intervention

Category	Pre-test		Posttest	
	F	(%)	F	(%)
Not Practice	32	100	8	25
Practice	0	0	24	75

Table 3 shows the Wilxocon Test result shows a significant difference in the participants' practice to conduct breast self-examination before and after installing and using BECA application with a p-value $\leq$ of 0.01. Moreover, data shows that 24 respondents increase their BSE practice, and only eight respondents did not improve their BSE practice.

Table 3. Differences of Value of the Practices Before and After using BECA Application

	Ranks				Wilcoxon (p-value)
		N	Mean Rank	Sum of Ranks	
After intervention – Before intervention	Negative Ranks	0[a]	.00	.00	0.000
	Positive Ranks	24[b]	12.50	300.00	
	Ties	8[c]			
	Total	32			

a. After intervention < Before intervention
b. After intervention > Before intervention
c. After intervention = Before intervention

DISCUSSION

In this study, most respondents were aged 20-30 years old, as much as 53.1%. Someone in the early adult category or younger can receive or learn new things and be better able to remember (4). Furthermore, the implementation of a person's skills is based on their prior knowledge (5). The respondents of this research are familiar with using technology in their daily lives, especially for those aged 20-30. These people with this age number are capable of receiving and processing new information. The researcher believes that the application's information is also easy to be accepted and applicated for them.

The majority of the respondents were married as much as 68.8% and mostly works as housewives as much as 43%. Marital status may correlate with the risk of developing female breast cancer (6). Breast cancer is the most frequently diagnosed cancer for women worldwide and is also the leading cause of cancer death for female patients in over 100 countries (7). Marital status conveys protective health benefits by increasing the availability of social support, the stability of life and mutual monitoring of health behaviors, and supporting each other at work (8). Tradition in Indonesia indicates that it is not an obligation for married want to work in a formal area, but it depends on the economic capacity and permission of the husband. Based on this tradition, the relationship between husband and wife or the relationship between women and families may raise an issue if the woman is working (9).

Women with higher education had better breast cancer health behavior. The majority of respondents had an educational level of senior high school as 56% (10). Moreover, people with this academic level would easily understand screening breast cancer because general education plays an essential role in health literacy (11). In senior high school, the information was given by the teacher still available. The instruction given at the university level is quite different from senior high school education. At the university level, lecturers' teaching is already specific about what course they learn, not as general as senior high school education. In other words, the focus of education is not always about health but could be other educational programs. But in contrast, a study conducted by Tuyen reported that women with high literacy levels had better knowledge of BSE (12).

The result of this study showed that 100% of the participants had never been practiced in BSE. The participants had never been practiced BSE because they never been exposed to information about breast cancer and BSE. The rare and never practice BSE is caused by insufficient knowledge reflects that adequate community education is essential to early detection of breast cancer. The early diagnosis of breast cancer is among the most critical factors for reducing morbidity and mortality. The early diagnosis of breast cancer should be made with proper screening methods (13). The majority of studies performed on screening programs with BSE have demonstrated that screening can control breast cancer early (14). This also is a reason in our research to make an application base android in smartphones to provide information related to breast cancer to be aware and facilitate BSE be easily and practically. We called it BECA (Breast Examination of Cancer Awareness). After utilizing the BECA application, the BSE practice increased on 75% of the respondents. Furthermore, the p-value (0.000) of the Wilxocon Test shows a significant effect on BSE practice before and after the intervention of BECA application. This application could be used as a daily reminder to women of childbearing age to do BSE practice.

As time passes, the use of technology in health care has developed. It shows a positive effect, for example, increasing patient knowledge and health practices, improving the quality of health service delivery in which it becomes easier and faster (15). BECA application in this study aimed to increase the training and ability of the participants to recognize early signs and symptoms of breast cancer. Also providing information related to breast cancer and the steps of BSE, ability to detect the more premature problem and facilitate in doing BSE be easily and practically. Also, the BECA application has a reminder time that can be set according to the user's needs. The recognition of the early signs of breast cancer is significant to be realized by every woman because breast cancer can cause death in treated cases lately (16,17).

Furthermore, the late introduction and practice of BSE is the cause of the severity of people with breast cancer (18,19). BSE is a step in the early detection of breast cancer early as possible (20). BSE is one of the successes of women of childbearing age to detect the early signs of breast cancer and minimize the late in breast cancer severity (21–23).

Additionally, the implementation of new technology within healthcare infrastructures has traditionally been a challenging process. Adaption and utilization of smartphone technology in the practice context are expanding, bringing tremendous opportunities to improve efficiency within the medical practice (24). The application of smartphones in healthcare, especially in BSE, is needed to strengthen and encourage women to be aware of their breast health. The use of smartphones despite communication can also improve human health by increasing the function of applications on the smartphone. Practicing with the right steps and carried out regularly can detect breast cancer as early as possible, and the BECA application can make it easier for women of childbearing age to practice it regularly and correctly.

CONCLUSION

The BECA application is useful to increase BSE practice among women of childbearing age. This application is needed to improve women of childbearing age on practicing BSE correctly and regularly. The researcher suggests using the BECA application as a daily reminder among women of childbearing age.

STRENGTH AND LIMITATION

Through this study, the researcher is designed a new application called BECA that many people could utilize. However, some limitations were encountered, such as this application only focused on BSE practicing without knowing related factors that could affect it. The researchers suggest exploring more about factors that influence BSE practice among women of childbearing age.

ACKNOWLEDGEMENT

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