

Article

## E-Booklet media can increase teenagers' knowledge about breast self-examination

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Breast cancer in women is the highest number of cancer cases in the world. Adolescents aged 10-21 years with breast cancer are often found at an advanced stage. This incident was caused by the low knowledge of teenagers about early detection of breast cancer with BSE. This research aims to determine the effectiveness of e-booklet media in increasing young women's knowledge regarding breast self-examination (BSE). This research is quantitative with a pre-experiment research design with a pre-test and post-test design without a control group design. The sampling technique in this research uses a probability sampling technique with a Simple Random Sampling approach. The sample consisted of 81 respondents who were high school students in DKI Jakarta. The research results showed an increase in the average knowledge score of young women after being given the E-Booklet media about BSE with a p-value < 0.001. Health service institutions and schools can utilize E-Booklet media during health education, especially for young women regarding BSE.

## I. INTRODUCTION

One of the reproductive system diseases that has a reasonably high incidence in teenagers is breast cancer (Karayurt et al., 2008; Lestari et al., 2019). Breast cancer is the cancer that ranks first and most often occurs in women throughout the world. The incidence of this disease is increasing in developed countries. Every year, more than 185,000 women are diagnosed with breast cancer (WHO, 2020).

Breast cancer in women has the highest number of cases among other types of cancer, namely with 2,261,419 (11.7%) cases in the world; the breast cancer death rate is in fourth place with 684,996 (6.9%) after colon cancer, liver and lungs (WHO, 2020). The incidence of breast cancer in Indonesia ranks highest among 36 other types of cancer (WHO, 2020). The prevalence rate of breast cancer in Indonesia in the last five years reached 201,143 cases per 100,000 population, and in 2020, new cases of breast cancer in Indonesia reached 65,858 (16.6%) cases, with the breast cancer death rate reaching 22,430 (9.6%) (The Global Cancer Observatory, 2020). The prevalence of breast cancer in DKI Jakarta has increased from 1.8% in 2013 to 2.3% in 2018 (Pangribowo, 2019; Kemenkes RI., 2020) Data from the Indonesian Ministry of Health on the 2021 Indonesian Health Profile shows that as of 2021, as many as 2,827,177 women in Indonesia have had early detection of breast cancer with clinical breast examination (Kemenkes RI., 2020). The results of early detection examinations showed lumps in the breasts of 18,150 people and suspected breast cancer in 3,040 people (Kemenkes RI., 2020).

Currently, the age of breast cancer patients is gradually shifting to younger women. Adolescence, between 10 and 21 years, is the stage of growth and development of reproductive hormones and puberty, thereby increasing the risk of breast cancer (Nurhayati et al., 2020). Young women or teenagers tend to have greater genetic (hereditary) risk factors for cancer and have the potential to experience cancer much more quickly due to biological factors, along with the rapid growth of tissue at a young age, making the spread of cancer cells from one tissue to another tend to be faster. Even after conservation surgery, the risk of tumour recurrence in adolescents is nine times higher compared to those aged > 60 years (Johnson et al., 2018). Additionally, adolescents are more likely to experience side effects from therapy and psychosocial/mental problems after diagnosis (Cathcart-Rake et al., 2021).

The importance of breast self-examination (BSE) to find early the possibility of breast cancer is currently very necessary for all teenagers to do. BSE aims to detect breast cancer as early as possible and reduce the death rate by 25-30%. Women who do not do BSE regularly have a 7,122 times higher risk of developing breast cancer than women who regularly do BSI (Siregar, 2022; Yulinda & Fitriyah, 2020).

Adolescents must have access to medical information related to the importance of early prevention as a preventive measure to increase the incidence and mortality rate of breast cancer, so it is necessary to carry out health education related to BSE. BSE is more effective in teenagers or productive ages 15-49 years, because women of that age are more at risk of developing breast cancer (Sadoh et al., 2021; Siregar, 2022). By providing health education regarding BSE, it is hoped that the death rate due to breast cancer and the high health costs due to breast cancer can be minimized with effective early detection (Kemenkes RI, 2022).

Health education is an effort to provide messages about health to community groups so that health-related information and efforts to prevent health problems can be understood by the public (Hulu et al., 2020). When conducting education or health promotion, media is needed as a tool to facilitate the delivery of information. Health promotion media that are often found are posters, leaflets, TV media, radio, films, booklets and so on (Jatmika et al., 2019). The use of health education media is carried out with digital media in an effort to provide education such as print and electronic media. E-Booklet is one of the health promotion media in book form, both in the form of images and digital writing (Jatmika et al., 2019). Currently, e-booklet media is designed to help students improve their understanding of a concept. Overall, e-booklet media is valid,

effective and practical to use in learning activities (Hoiroh, 2020). E-booklet media is a visual media where according to experts, the sense that transmits the most knowledge to the brain is the eyes, namely 75% -87%. So it can be concluded that E-Booklets are a good supporting media for health promotion (Notoatmodjo., 2018). According to previous research, using e-booklets can increase motivation and reading skills (Violla & Fernandes, 2021).

A study by Rahmiyati et al. (2019) on the Effect of E-booklets about exclusive breastfeeding on increasing the knowledge of pregnant women in the third trimester in 34 pregnant women. The research results show that the group given the e-booklet had a higher average increase in knowledge score (21.09) than the control group (13.91). Therefore, it can be concluded that there is an influence of e-booklet media on increasing knowledge (Rahmiyati et al., 2019). Based on the results of this research, it is proven that e-booklet media can increase the knowledge of a group of people. However, up to now, no e-booklet media is available about BSE for teenagers. The educational media available is mainly in the form of posters or leaflets, so it is necessary to develop e-booklet media to increase young women's knowledge of breast self-examination. For this reason, this research aims to determine the effectiveness of e-booklet media in increasing young women's knowledge of breast self-examination (BSE).

## II. METHODS

This research is quantitative with pre-experiment research with a pre-test and post-test design without a control group design. In this design, two measurements were carried out: the first was carried out before the treatment or intervention and the second was carried out after the treatment or intervention was given using an e-booklet about BSE.

The population in this study were all class X high school students, totaling 149 female students. The sample is part of the number and characteristics of the population that will be studied and conclusions drawn (Imas Masturoh, S. K. M., Nauri Anggita, T., SKM, 2018). The sample in this study was class X female students at senior high schools in DKI Jakarta. The sample was determined using the inclusion and exclusion criteria. The Inclusion selection criteria were having an electronic device, such as an Android/IOS-based cellphone that can be used to access the internet and e-booklet media, and being willing to be a respondent. Meanwhile, the exclusion criteria for this research sample were female students absent during the research due to illness/permission and female students who did not take the pre-test and post-test. Data was analysed using the hypothesis testing formula for testing different hypotheses; the average minimum sample size was 81 female students. The sampling technique in each class uses a probability sampling technique with a Simple Random Sampling approach. The sample was selected using a random name picker application by entering the student's absentee serial number and then drawing a draw by pressing the available spin button. The numbers from the application will be used as samples by researchers.

Data collection was carried out using a questionnaire about BSE knowledge developed by researchers and tested for validity and reliability. Meanwhile, e-booklet media was created by researchers with assistance from consultants who created e-booklet media. This intervention media has been previously tested and stated that it can be given to research respondents. E-booklet media was given to respondents using an online messaging application group after they received a pre-test, and they were asked to read the e-book in their free time within three days. On the third day, another post-test was carried out. The bivariate analysis carried out in this research was used to determine the effectiveness of e-booklet media (independent) on young women's knowledge regarding BSE (dependent). The data was not normally distributed in this study, so a non-parametric test was carried out. Namely the Wilcoxon signed-rank test. This research underwent an ethical review at Respati Indonesia University and received an ethical certificate 114/SK.KEPK/UNR/III/2023.

### III. RESULT

**Table 1 Frequency Distribution of Respondent Characteristics**

Characteristics	Number	
	Frequency (F)	Percentage (%)
<b>Exposure Information</b>		
Exposed	51	63
Not Exposed	30	37
<b>Parent's occupation</b>		
Work	77	95.1
Doesn't work	4	4.9
<b>Parental Education</b>		
Elementary school	8	9.9
Junior high school	7	8.6
Senior high school	38	46.9
Academy/Graduate	28	34.6

The research results in Table 1 show that in the information exposure category, most respondents, namely 51 respondents (31%) out of 81 respondents, had been exposed to information about BSE. Regarding the characteristics of parents's occupation, the majority of respondents with working parents were 77 respondents (95.1%) out of 81 respondents. Regarding the characteristics of parental education, most respondents had parents with a history of junior high school education, namely 38 respondents (46.9%) out of 81 respondents.

**Table 2 Frequency of Knowledge of Young Women before and after being given E-Booklet Media about BSE**

	N	Minimum	Maximum	Mean	Std. Deviation
<i>Pretest</i>	81	45	100	74.32	2,632
<i>Posttest</i>	81	80	100	92.96	1,542

Based on the research results in Table 2, pretest data was obtained, and posttest Respondents' knowledge about BSE was known to have increased the minimum score, namely a score of 45 on the pretest and increased to 80 on the post-test. It is known that there is an increase in the mean value, namely 74.32 to 92.96.

**Table 3 Effectiveness of E- Booklet Media about BSE on Knowledge of Young Women**

<b>Knowledge Variable</b>	<b>N</b>	<b>Mean</b>	<b>Positive Rank</b>	<b>Mean Rank</b>	<b>P-Value</b>
<i>Pretest</i>	81	74.32			
<i>Posttest</i>	81	92.96	77	41.70	< 0.001

The research results in Table 3 show an increase and change in the respondents' knowledge scores, with a mean rank value of 41.70. As for the positive ranks, The result obtained was 77, meaning that most respondents experienced an increase in knowledge between before (score mean 74.32) and after (score mean 92.96) being given health education using e-booklets. So, it can be said that providing health education through an e-booklet about BSE (breast self-examination) is considered effective in increasing young women's knowledge about BSE.

#### IV. DISCUSSION

The research results showed that the minimum score obtained during the pretest was 45, and the maximum score was 100, with an average or mean score of 74.32. After providing information about BSE using e-booklet media, posttest scores were obtained, which showed an increase in young women's knowledge with a mean score of 92.96, a minimum score of 80 and a maximum score of 100. This result shows that the media provided BSE information using e-booklet media influence on increasing young women's knowledge about BSE.

This research is in line with the research of Viola & Fernandes (2021); it can be seen that based on student learning outcomes, the pretest obtained an average of 75 and the posttest average of 95.83 so that there is a difference in the increase in student learning outcomes before and after using e-booklet learning media. The results show that e-booklet media is effectively used to increase knowledge (Viola & Fernandes, 2021).

According to the theory, the success of health education can be seen through several aspects, namely input, process, output and impact after providing the information. The input aspect is influenced by technology, facilities used, education, management and health education methods (Panarat et al., 2014). In the process aspect, there are outreach activities or health information. The output aspect measured is the aspect of increasing knowledge, attitudes and actions, and then the impact or influence aspect is seen from changes in health status for the better (A et al., 2022).

The researcher believes that success in increasing knowledge in this research was obtained due to the provision of intervention. The provision of interventions in this research is supported, one of the ways, by the use of e-booklet media about BSE; by using digital media, the health education process becomes more attractive more straightforward to understand, and the knowledge gained is much deeper (Rahim et al., 2020).

E-booklet media is a form of innovation in developing health education media. E-booklet media supports health education activities that are appropriate to use because the sense that transmits the most knowledge to the brain is the eyes, namely 75% -87%. E-booklets as a health education medium have a role in increasing the empowerment of individuals, groups and communities to maintain and improve health status (Rahmiyati et al., 2019).

E-booklet media has several advantages, namely that it is more practical because e-booklets can be opened anytime and anywhere, it is not easily damaged because e-booklets are digital, so it is more durable and not easily damaged like printed books, the price is lower because it is made. It does not need to cost a lot and is environmentally friendly because e-booklets do not require

paper from trees and ink at all (Rahim et al., 2020). The e-booklet media used in this research has been tested on teenagers with the same characteristics, teachers and midwives and was declared suitable for use as a health education medium for teenagers. It can be proven that the use of e-booklet media is more efficient in providing increased knowledge compared to leaflet media (Sadoh et al., 2021). Therefore, it can be concluded that providing health education using e-booklets about BSE can provide stimulus to young women so they can carry out early detection of breast cancer (Da Conceição Grego et al., 2011).

With the increase in young women's knowledge about BSE in this study, e-booklet media can make it easier for respondents to remember the information provided. E-booklets display animations and images that can increase a person's focus and can increase creativity. E-booklets also have many advantages, such as their convenient form, they can be easily accessed using a variety of technologies, the media content is in the form of an exciting collaboration of text and images, the information is very focused so that it encourages interest in reading and when reading respondents do not feel bored (Sa'diyah, 2021; Ibrahim-El-Regal, E.E., Ibrahim, S., Mohamed, 2019)

Previous research conducted by Latifiani (2021) showed the results of a bivariate analysis that tested before and after using e-booklet learning media. It was concluded that there was an influence of health education using booklet media on knowledge, attitudes and behavior for early detection of breast cancer (Latifiani, 2021). Knowledge will have an influence on individual actions obtained using an object (Karayurt et al., 2008).

## V. CONCLUSION

This research concludes that the e-booklet media about carrying out self-examination has proven to be effective in increasing teenagers' knowledge about breast self-examination. With the results of this research, it is hoped that schools can be used as an extension to convey various health information to all female students, one of which is information about the dangers of breast cancer and how to carry out early detection with BSE and this e-booklet media about BSE can be used by school teenagers as reading references and media in conveying health information.

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