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Development of *Mamoji* Products as Educational Media for Adolescent Women about Early Detection of Breast Cancer

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ABSTRACT
Breast Self-Examination (BSE) is the development of a woman's concern for the condition of her breasts for early detection of breast cancer. This study aims to develop Mamae Jingle (MAMOJI) educational media as an effort to detect breast cancer early on in adolescent girls. MAMOJI is an audio-visual-based educational media containing BSE steps. This research design uses the Research and Development method. This research was conducted up to the pilot stage using ten samples of teenage girls at SMA Negeri 1 Gondanglegi aged 15–17 years who were already menstruating. The research instrument used a product assessment questionnaire and pre and post-test questionnaires to measure young women about BSE. After going through various processes, the results from expert validation found that MAMOJI received an assessment weight of 94.2% from material experts and 98.6% from media experts, with a very decent category, while the average results of product assessment respondents obtained results of 94.2% (very feasible). As well as for adolescent knowledge, after being analyzed and tested with paired sample t-test obtained p-value <0.001, which indicates there is a difference in ability before and after being given MAMOJI media. It is hoped that the development of MAMOJI can complement the existing BSE education methods. It is hoped that an increase in young women's knowledge about BSE and it is expected that young women can apply to BSE.
Keywords*: Breast Self-Examination; Early Detection of Breast Cancer; MAMOJI*

ABSTRAK
Pemeriksaan Payudara Sendiri (SADARI) merupakan pengembangan kepedulian seorang perempuan terhadap kondisi payudara sendiri guna deteksi awal kanker payudara. Penelitian ini bertujuan mengembangkan media edukasi *MAMOJI* sebagai upaya deteksi kanker payudara sejak dini pada remaja putri. *MAMOJI* merupakan media edukasi berbasis audio-visual berisi tentang langkah-langkah SADARI. Desain penelitian ini menggunakan metode *Research and Development* (Penelitian dan Pengembangan). Penelitian ini dilakukan hingga tahap uji coba dengan menggunakan 10 sampel remaja putri di SMA Negeri 1 Gondanglegi berusia 15–17 tahun yang sudah menstruasi. Instrumen penelitian menggunakan kuesioner penilaian produk serta kuesioner pre dan post test untuk mengukur pengetahuan remaja putri mengenai

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SADARI, setelah melewati berbagai proses hasil dari validasi pakar didapatkan bahwa *MAMOJI* mendapatkan bobot penilaian dari ahli materi 94,2%, dan ahli media sebanyak 98,6%, dengan kategori sangat layak sedangkan hasil rerata penilaian produk oleh responden didapatkan hasil 94,2% (sangat layak), serta untuk pengetahuan remaja setelah dianalisis dan di uji dengan *paired sample t-test* didapatkan *p-value* <0,001, yang menunjukkan adanya perbedaan pengetahuan sebelum dan sesudah diberikan media *MAMOJI*. Diharapkan dengan dikembangkannya MAMOJI bisa melengkapi metode edukasi SADARI yang ada, sehingga diharapkan tercapainya peningkatan pengetahuan remaja putri mengenai SADARI serta diharapkan SADARI dapat diterapkan oleh remaja putri.

Kata Kunci: SADARI; deteksi dini kanker payudara; *MAMOJI*

INTRODUCTION

Breast cancer is a type of cancer that starts in the breast (American Cancer Society, 2017). Cancer begins when cells begin to grow out of control. Breast cancer cells will usually form a tumour and feel like a lump, and generally, this breast cancer will attack women (Globocan Observatory, 2019). In 2018 breast cancer was still ranked first in the addition of new cases due to cancer in Indonesia. There were 58,256 new breast cancer cases and 22,692 deaths from breast cancer, or 42.1 per 100,000 population, with an average death rate of 17 per 100,000 (Deniz *et al.*, 2018).

Breast cancer in Indonesia is found at an advanced stage when the chances of achieving success are small (World Health Organization, 2019). The prognosis of breast cancer per stage a phase I (100%), stage II (92%), stage III (72%), and stage IV (22%). More than 80% of cases are found at an advanced stage. As many as 60-70% of breast cancer patients seek treatment for the first time at stages III and IV. The chance of breast cancer reaches 98% if detected early and treated medically. Symptoms of early-stage breast cancer can be seen easily (Sari ZA, Sari and Nabila, 2019). Breast Self-Examination (BSE) develops a woman's concern for her breasts' condition, equipped with special steps to detect breast cancer early to find out the changes that occur in the breast (Kementerian Kesehatan RI, 2016). As a group that is also considered at risk, the group of young women also needs knowledge about BSE to prepare themselves for early detection of abnormalities in their breasts because women must do BSE every month after menstruation. Although BSE is a simple and inexpensive technique, BSE is considered very effective for detecting the possibility of breast cancer early (Ariani, 2017).

The educational media regarding BSE that existed previously was Instagram (Sari ZA,

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Sari and Nabila, 2019), posters (Padauleng *et al.*, 2020), videos and flipcharts (Somoyani and Erawati, 2019), and flyers (Wahyu Endah Pratiwi, Dian Afriyan and Zulkarnain, 2019). The researcher proposes an innovation to use educational media that changes to jingles accompanied by animated videos. Like video ads and songs that can be packaged attractively, it will increase the attractiveness of the audience, and if repeated, the audience will unconsciously play with the ad. The author has an innovative idea called *MAMOJI. MAMOJI* is a combination of a jingle and a video about the steps of BSE. This innovation will be developed with the hope that the results of this research can be helpful for all people, especially women, so that they can make BSE into a habit pattern.

METHOD

The researcher used a research and Development (R&D) study design. The type of data in this study consisted of qualitative data and quantitative data. The subjects in this study are chosen using non-probability sampling quota sampling. It consists of 10 young women at Senior High School aged 15-17 years who were menstruating. Data collection uses product assessments that are developed and pre and post-test questionnaires to measure young women's knowledge about BSE. The methods and data collection techniques are Nursalam's five steps, but the researcher limits this research to the third step (trial). The description of each step is as follows, at the stage of potential problems and data collection, obtained from 5 high school teenagers who do not know what BSE is at all. Data collection was carried out by spreading the distribution to young women at Senior High School. Furthermore, at the development stage, the researcher compiled a MAMOJI product design which was a combination of a jingle and an animated video that explained the steps of BSE, then validated the method by media experts and material experts. Furthermore, product trials were conducted on ten teenage girls aged 15-17 years who were already menstruating. After the test, the researcher evaluated product improvement.

Data analysis uses qualitative and quantitative data, where qualitative data is in the form of comments given by experts. The data is analyzed as a basis for improving and knowing the resulting product. Quantitative data here consists of two data; namely, the first is data based on development in assessments by experts. The media expert is a doctor of learning media technology and material expert from the population control and family planning service. The data analyzed as the basis for

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the results of the questionnaire research was converted into intervals which would then be categorized using a Likert scale. The second data is knowledge data about BSE, which will be measured or grouped. Then analyzed the level of knowledge before and after given the media.

This research has passed the Health Research Ethics Commission of Malang Health Polytechnic's ethical clearance with 102/KEPK-POLKESMA/2021.

RESULTS AND DISCUSSION

The results of this study were obtained from data collection, product development processes, validation from experts, and small group product trials on young women.

Table 1. Frequency Distribution of Respondents in Exploring Potentials and Problems

Characteristic (n=5)	f (%)
Age	
15 years	1 (20)
16 years	2 (40)
17 years	2 (40)
Menarche	
<12 years	1 (20)
12 years	0 (0)
>12 years	4 (80)

Based on table 1 of the five respondents, it can be seen that most of the respondents' ages ranged between 16 years (40%) and 17 years (40%). Most respondents experienced their first menstruation at more than 12 years (80%). The potential and problems results are done by filling out a questionnaire. The respondent must answer four questions in the potential and problem questionnaire. The following are the results of filling out the questionnaires that have been carried out.

Table 2. Frequency Distribution of Information About BSE

Variable (n=5)	f (%)
Knowledge about BSE	
Know	0 (0)
Do not know	5 (100)
The importance of doing BSE	
Important	2 (40)
Not Important	3 (60)
Information about BSE	
Once	0 (0)
Never	5 (100)
Information About BSE Steps	
Once	0 (0)
Never	5 (100)

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Based on table 2, it can be seen that all respondents do not understand what BSE is, and all respondents have never received information about BSE and BSE steps. Moreover, only a tiny percentage of respondents (40%) think that BSE is necessary.

The product of this research is MAMOJI as an educational medium for young women about BSE steps. The MAMOJI product consists of a jingle and animated video about the steps of BSE.

Figure 1. Opening design from *MAMOJI*

Figure 2. *MAMOJI* title design

Figure 3. *MAMOJI* intro design

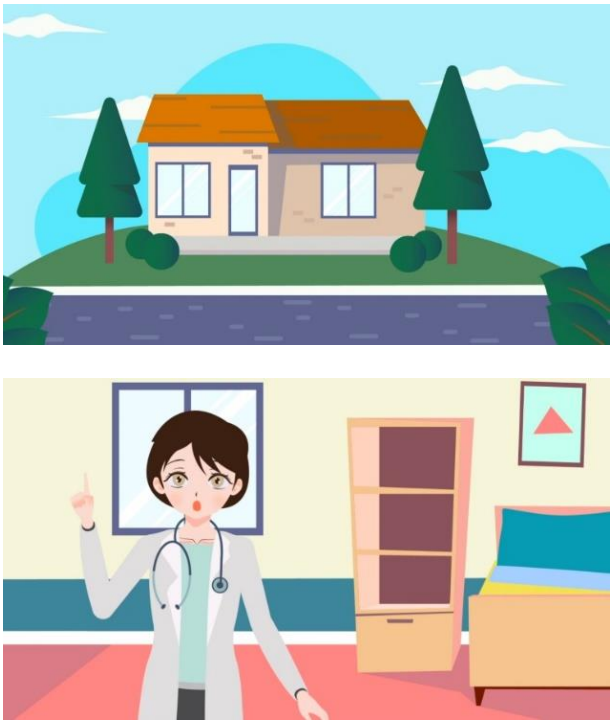

Figure 4. *MAMOJI* first step design

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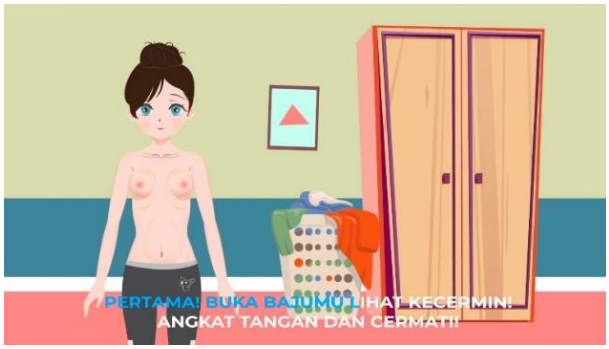

Figure 5. *MAMOJI* second step design

Figure 6. *MAMOJI* third step design

Figure 7. *MAMOJI*'s fourth step design

Figure 8. *MAMOJI*'s fifth step design

After the steps from BSE, MAMOJI will be closed at any time, which contains an appeal or reminder about BSE to be carried out and an invitation to do breast detection early on. The outro part will be demonstrated or played by the same health workers as the health workers at the intro.

Figure 9. *MAMOJI* outro design

Expert Validation Stage

Dr. Lidia Susanti, S.P., M.P carried out media validation as a lecturer/teacher with a doctoral education background in learning media technology to get information, comments, criticisms, and suggestions to develop the *MAMOJI* product can be helpful. The maximum score of each statement point in the validation sheet is five, while the minimum score is 1. The

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product assessment questionnaire for Media Experts contains 15 assessment points consisting of 4 aspects. Namely ease and simplicity of design, media usability, presentation of jingles, video presentation, where the assessment results have a total score of 74 and have an average of 4.93 (98.6%), which is included in the very feasible category.

Evi Kurniawati SE, M.Kes carried out material validation as Head of the Guidance and Synchronization Section of Population Policy at the Department of Population Control and Family Planning, Malang Regency, which aims to obtain information, comments, criticism, and suggestions so that the MAMOJI product developed can be helpful. The maximum score for each question point in the validation sheet is 5, while the minimum score is 1. The Material Expert Questionnaire contains seven assessment items consisting of 3 aspects: the feasibility of content, language, and animation. The assessment results have a total score of 33 and have an average of 4.71 (94.2%), which is included in the very feasible category.

The criticism and suggestions given by two experts are to add text at the end of the video, so the audience understands the message of this video.

Design Revision

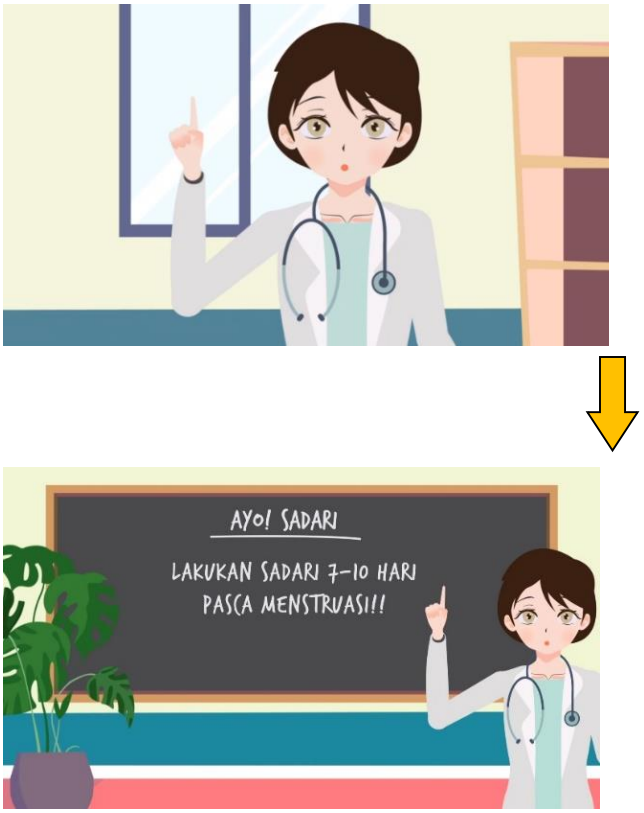

Figure 10. *MAMOJI* Design Revision Results

Trial and Evaluation Stage

After the *MAMOJI* educational media is revised or improved, the next step is product testing in small groups. Researchers conducted small group trials to determine how users responded to the *MAMOJI* educational media.

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Table 3. Characteristics of Respondents for the *MAMOJI* Product Trial

Age (n=10)	f (%)
15 years	1 (10)
16 years	7 (70)
17 years	2 (20)

Based on the table above, out of 10 respondents are teenagers aged 15 years (10%), and more than half are aged 16 years (70%) and 17 years (20%). The age range of the respondents is 15 to 17 years. It shows that the respondents of this study are teenagers. To find out about the product being developed, each of the respondents will provide a score for the questions on the questionnaire. The maximum score for each question point in the questionnaire is 5, while the minimum score is 1.

Table 4. *MAMOJI* Product Feasibility Trial Results

Trial Criteria (n=10)	f (%)
Product Feasibility (Mean±SD)	4,72±0,27
Very Worth	10 (100)

Based on the small group trial in the table above, it can be seen that the *MAMOJI* product developed by the researcher received positive responses from the respondents. Overall the average score of the small group trial results is 4.72 with Very Eligible Criteria. Of the ten research respondents, 3 provided input to reduce the musical instruments further because the sound of BSE's explanation was slightly submerged. After testing the product with ten young women at SMA Negeri 1 Gondanglegi, the researcher got input and criticism, and then the researcher improved the product that was being developed. In this case, the researcher received feedback to improve *MAMOJI* on the elements of the presentation of the jingle, especially in the harmony part of each element (tone, sound, and lyrics). Input from respondents is to reduce the volume of the accompaniment instrument so that the sound of each BSE step does not drown.

The researcher also identified the respondent's knowledge about BSE and the steps for BSE. It aims to determine whether there is an increase in respondents' knowledge after seeing the product being developed.

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Table 5. Pre-test and Post-test Results Values

Knowledge	Before f (%)	After f (%)
Good	0 (0)	10 (100)
Enough	2 (20)	0 (0)
Not enough	8 (80)	0 (0)

In this study, the researcher also looked at the changes in adolescent knowledge as evidenced by pre-test and post-test. As a result, after the post-test, all respondents had good knowledge. MAMOJI is an educational media that is categorized as audiovisual media because this media provides a stimulus to hearing and vision so that the results obtained are more optimal. These results can be achieved because the five senses that transmit the most knowledge to the brain are, the eyes (approximately 75% to 87%). In contrast, 13% to 25% of knowledge is obtained or transmitted through other senses (Kapti, Rustina and Widyatuti, 2013). The highest effectiveness in a health education program requires or involves a combination of several senses. A person learns from his senses. According to De Porter in Siregar (2018), humans can absorb the material as much as 50% of what they hear and see, 30% of what they see, 20% of what they hear, and only 10% of what they see and they read. It is also in line with the research conducted by Rahayu *et al.* (2020) that the results of research using video media to increase young women's knowledge about BSE was considered satisfactory because there was an increase in knowledge of 54.3%. The conclusion given was that this educational package used is effective in increasing adolescent knowledge about BSE (Rahayu *et al.*, 2020). This is also supported by research conducted by Somoyani and Erawati (2018) using audiovisual educational media in providing education to women of childbearing age in Penarukan Village, Tabanan. It can be concluded from the research conducted that the demonstration method uses BSE videos. Moreover, flipcharts will increase knowledge compared to the lecture form method. The final result also shows that 74.4% of respondents who do realize come from the video group. Meanwhile, 37.2% did not do BSE, which was the group given counselling with flipcharts.

Another study conducted by Deviani, Asyary and Edmi Edison (2020) found that audiovisual or audio media both

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experienced an increase in the level of knowledge. However, judging from the difference in effectiveness between the two, the researchers concluded that educational efforts via audiovisual media proved to be more effective than audio media for performing BSE. Based on Occa and Suggs (2016) research, videos had a more positive influence than infographics when communicating breast cancer information for Italian-speaking women ages 18–30 years. According to Suryani, Setiawan and Putria (2018), audiovisual media has the advantage of being more effective in receiving learning because it can serve both auditive and visual language styles for students. It can provide an authentic experience more than that conveyed by audio and visual media. Students will understand faster because listening is accompanied by seeing directly, so they are not just imagining. It is more exciting and fun to use audiovisual media. Based on the theories above, it can be concluded that health education using audiovisual media is proven to be more effective in increasing the level of knowledge of young women about the early detection of breast cancer.

CONCLUSION

The development of educational media through various steps has resulted in an audio-visual-based product containing BSE steps called *MAMOJI*. *MAMOJI* has proven to increase young women's knowledge about how to do BSE and when BSE should be done. Young women can use *MAMOJI* products as a reference for practising BSE steps at home so that young women can do BSE correctly and adequately regularly every month. *MAMOJI* products can benefit the health sector, especially in providing information to adolescents. Teachers or health workers, especially midwives, can give information about BSE and the steps of BSE by using this product. Researchers hope that further research can continue the steps in research and development of R&D with 5 degrees and continue this research and develop the product or material designs.

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