

Socialization and Early Detection of Breast Cancer Using the Android Application “MamoApp”

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ABSTRACT

Cancer is a public health problem in Indonesia with a prevalence of 136.2/100,000 population. One of the most common cancers, especially in women, is breast cancer. The highest incidence of breast cancer in women is 42.1 per 100,000 population with an average death rate of 17 per 100,000 population. One of the countermeasures for breast cancer is case finding with early detection carried out through clinical breast examination (CBE) and breast self-examination (SADARI). One of the features developed by Postgraduate students of the Institute of Health Sciences STRADA Indonesia is a breast cancer early detection application called “MamoApp”. In this community service activity, 2 aspects of activities will be carried out in the Dharma Wanita group of DLHKP office in Kediri city. The first activity is to conduct a socialization in the form of providing health counseling to the Dharma Wanita group about SADARI techniques, the second activity will be carried out early detection of breast cancer using the MamoApp android application. Mamoapp application contains an educational video on awareness examination, then respondents fill out a questionnaire to detect the presence or absence of symptoms of breast cancer, the time used for filling in is approximately 10 minutes. From the results of filling out the questionnaire through the MamoApp application, we will immediately know the conclusion of the examination results, namely: “Indicated Cancer” or ‘Not Indicated Cancer’, so that participants can immediately find out whether the person concerned is indicated by breast cancer or not. From the results of the questionnaire of 38 participants, there were 2 participants who indicated breast cancer and 36 participants did not indicate breast cancer. Participants who indicated breast cancer by the facilitator were advised to do a further examination to the doctor for a more detailed examination.

Keywords: Breast Cancer, Early Detection, MamoApp, SADARI

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INTRODUCTION

Cancer is currently one of the leading causes of death worldwide. By 2030, it is expected to increase to 26 million patients and 17 million of them will die from cancer (Kemenkes RI, 2018). Cancer is a public health problem in Indonesia with a prevalence of 136.2/100,000 population. (kemenkes, 2019). One of the most common cancers, especially in women, is breast cancer. In 2012 breast cancer was the cancer with the highest proportion of 43.3%,

with an incidence of 40 per 100,000 women and a percentage of deaths from breast cancer of 12.9%. (Globocan, IARC 2012). The highest incidence of breast cancer in women is 42.1 per 100,000 population with an average mortality of 17 per 100,000 population followed by cervical cancer. (Ministry of Health, 2015). Kediri City is one of the cities in East Java province which has a population of 292,363 (Ministry of Home Affairs registration data, 2021), with a composition of 145,351 male residents (49.65%) and 147,417 female residents (50.35%). The magnitude of the problem of breast cancer and the impact caused by it requires public health action/intervention in the form of a national prevention program regulated in Permenkes No. 34 of 2015 concerning Breast Cancer and Cervical Cancer Management. (Ministry of Health 2015). One of the breast cancer countermeasures is case finding with early detection which is done through clinical breast examination (CBE) and breast self-examination (SADARI) which can be done easily by women. SADARI is a breast self-examination technique that aims to determine the presence or absence of lumps that can develop cancer in a woman's breast (Ayu, 2016).

Along with the development of digital technology, smartphones are digital technology that is widely used by the community. Apart from being a communication tool, a smartphone is a tool that has many features. One of the features developed by Postgraduate students of the Institute of Health Sciences STRADA Indonesia (IIK STRADA) is a breast cancer early detection application called "MamoApp. Mamo App is an android application owned by Inst STRADA Indonesia which can be downloaded on the playstore application. The mamapp application is the work of IIK STRADA students who have received an award from the Kediri city government in the popular scientific writing competition held by the Kediri city Communication and information office in 2020. After going through the application preparation process in 2021 MamoApp can already be downloaded in PlayStore. However, currently there are still many people in Kediri who do not know about the application, so it is necessary to socialize and use the application to carry out early detection of breast cancer in women both of productive age and those who have experienced menopause.

In this community service activity, 2 aspects of activities will be carried out in the group of Dharma Wanita mothers of the DLHKP office in the city of Kediri. The first activity is to conduct a socialization in the form of providing health counseling to the Dharma Wanita group about SADARI techniques, the second activity will be early detection of breast cancer using the MamoApp android application for Dharma Wanita mothers of the DLHKP Office of Kediri city. Furthermore, from the results of early detection using the MamoApp application, if there are mothers who are detected to have breast cancer, treatment will be immediately carried out with further examination to the Gambiran Hospital, Kediri City. This android-based MamoApp application is also equipped with a data upload feature or photos of the results of the Doctor's examination which the Doctor who handles can also log in to the application and provide input or assessment of the results of the examination.

METHODS

PARTNER PROBLEMS

The problem faced by Partners at this time is the lack of knowledge of the Dharma Wanita group of the DLHKP Office of Kediri city about early detection of breast cancer and not knowing the use of the MamoApp android application to detect breast cancer. The selection of this community service location is based on the consideration that the Dharma Wanita group of the DKLH Office of Kediri city has varied members ranging from housewives, mothers of employees both government employees and private employees, to mothers who are the wives of local officials. The varied group of mothers of the Dharma Wanita DLHKP Office can represent a group of women of productive age to women who have experienced

menopause which is prone to breast cancer. In addition, the majority of the DLHKP Dharma Wanita group in Kediri City also use Android phones so it is possible to use the MamoApp application.

ACTIVITY OBJECTIVES

The objectives of this Community Service are:

1. Increase the understanding of the Dharwa Wanita group of DKLH Kediri City office on the concept of early detection of breast cancer and prevention and treatment when there are symptoms.
2. Improve the skills of the Dharwa Wanita group of the DKLH office of Kediri City to conduct SADARI examinations using the MamoApp android application.
3. Reducing the morbidity and mortality rate of breast cancer in Kediri city with immediate treatment of breast cancer after early detection.

ACTIVITY BENEFITS

This Community Service activity is a contribution made by the implementer of community service (Institution) to the people of Kediri city. In general, the benefits of this community service activity are:

1. Benefits for the Institution
 - a. Become a means of learning (transfer of knowledge) to the community
 - b. Encouraging social care and awareness of academic institutions to the social conditions of the community
2. Benefits for the Community
 - a. Increase public knowledge in conducting early detection of breast cancer with SADARI and how to prevent and handle it
 - b. Improve community skills in conducting early detection of breast cancer with SADARI through the MamoApp android application

PROBLEM SOLUTION

In overcoming the partner's problems above, the best solution is to empower community members with efforts to increase knowledge and skills to conduct early detection of breast cancer using the MamoApp application. With good knowledge and skills, it is hoped that the community will be able to independently carry out early detection of breast cancer, carry out prevention and subsequent treatment.

STRADA Indonesia Health Institute as a health institution that is geographically located in the city of Kediri with a distance of approximately 5 kilometers from the location of community service. The effort to increase knowledge and skills in question is to provide counseling to the community, especially the Dharma Wanita women's group at the DLHKP office in Kediri City in conducting early detection of breast cancer using the MamoApp android application which is the work of Postgraduate students of the STRADA Institute of Health Sciences Indonesia.

The solution to the current Partner Problem is to socialize by providing counseling on early detection of breast cancer in groups of productive age mothers in the Dharmawanita DLHKP group in Kediri City using the MamoApp Android Application.

The MamoApp android application has features consisting of a login menu, a statement of willingness to fill out data, a personal data menu, a video of how to check SADARI, a breast cancer early detection questionnaire, a temporary conclusion menu of the results of early detection of breast cancer with SADARI, a doctor's consultation menu, a menu of uploading mammogram examination results by a doctor, a conclusion menu and suggestions for further management recommended by the doctor in charge. The login menu can not only be done by

users or the public using the MamApp application, but also features a login for the doctor who handles it. Both doctors at the first health facility and doctors at the referral health facility (hospital).

MamApp application is used to help make decisions or solve problems in early detection of breast cancer and subsequent treatment. In the process of making the application, an application is designed that is able to implement the process according to the needs that have been designed as the previous stage. So the application design uses the UML (Unified Modeling Language) method and the author uses flowchart as an explanation of the flow of an application. The process of running an application is described in the form of a flowchart. Flowchart shows a process that is a collection of processes that contain a collection of structured activities and relate to each other that function to provide an output from an application process.

IMPLEMENTATION METHOD

The implementation method that will be carried out in this community service is the workshop method. This method was chosen because it is in accordance with the problems of partner communities who are still unfamiliar with understanding related to breast cancer symptoms, how to detect breast cancer early and use the MamApp android application.

The stages of implementing this community service activity are divided into several stages including: preparation, implementation, report preparation, and finally the publication stage.

The description of activities at these stages is as follows:

1. PREPARATORY STAGE

The preparation stage includes: coordination with the partner community for willingness to cooperate in the community service program, compiling a schedule of activities, and dividing the duties of the implementation team. The chairman is in charge of explaining the aims and objectives, implementation, and evaluation of community service while the members are in charge of implementing and evaluating community service. Students are tasked with assisting the implementation of community service.

2. IMPLEMENTATION STAGE

The implementation stage includes: implementing community service activities to partners in the form of socialization workshops and early detection of breast cancer with the MamApp application), and evaluating the results of the workshop. Details of the implementation stage of community service activities, namely:

- 1) Registration of participants,
- 2) Opening, explaining the purpose of the activity,
- 3) Pre-test of breast cancer material which includes the definition, signs and symptoms of breast cancer and how to detect early with SADARI examination, the team conducted a pre-test of knowledge material about breast cancer, the purpose of the pre-test was to determine the level of understanding of participants about the definition of breast cancer, signs and symptoms, and SADARI examination for early detection.

- 4) Exposure of breast cancer socialization material and detection with SADARI using the MamApp android application, then participants get exposure to the material, the socialization material presented includes:

- a. Definition of Breast Cancer
- b. Causes of Breast cancer
- c. Signs and symptoms of breast cancer
- d. Prevention of breast cancer
- e. Early detection of breast cancer
- f. use of the MamApp android application for early detection of breast cancer

- 5) Simulation of SADARI examination and simulation of the use of MamApp application
- 6) Evaluation of activity implementation
- 7) Post test of socialization material

RESULT

The results of this Community Service have socialized the MamApp Application to the Dharma Wanita DLHKP Kediri City group in conducting breast cancer detection. Applications that are taught:

1. Steps for Using the MamApp Application

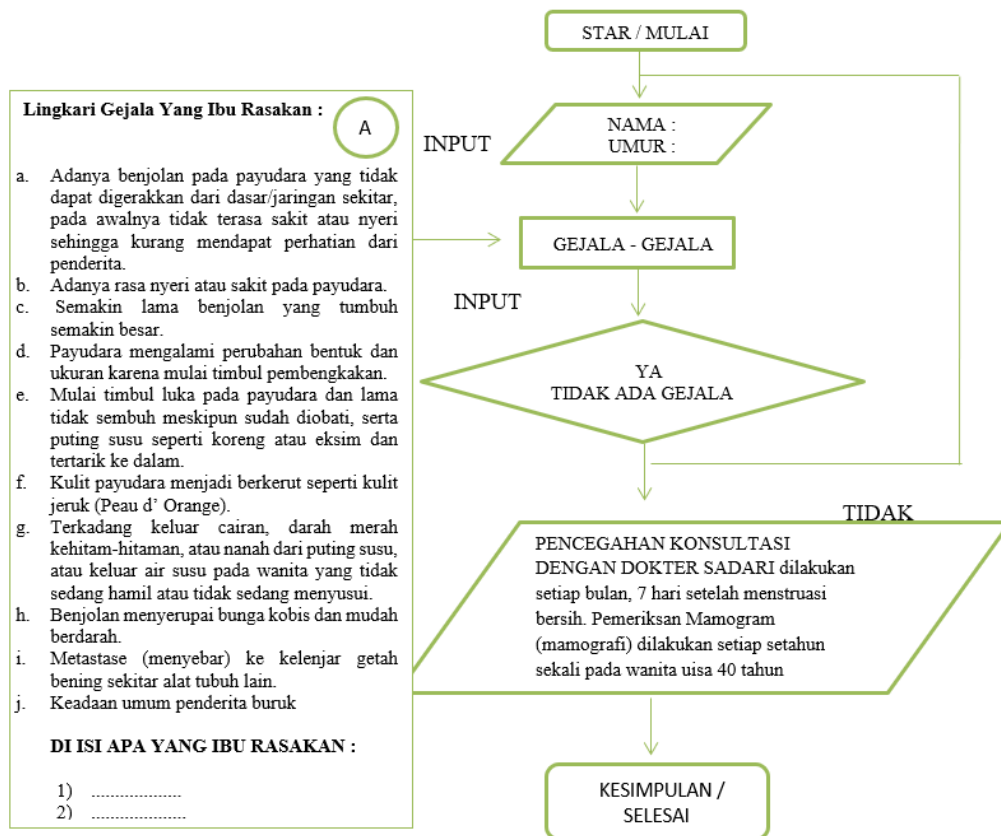


Figure 1. MamApp App Usage steps

1. At the stage of explaining the steps for using the MamApp application by downloading the application on the play store, out of 38 participants, there were 5 participants who could not do it because their cellphones could not access the application. So that participants who cannot register will use the cellphone of the facilitator.

2. Breast self-examination

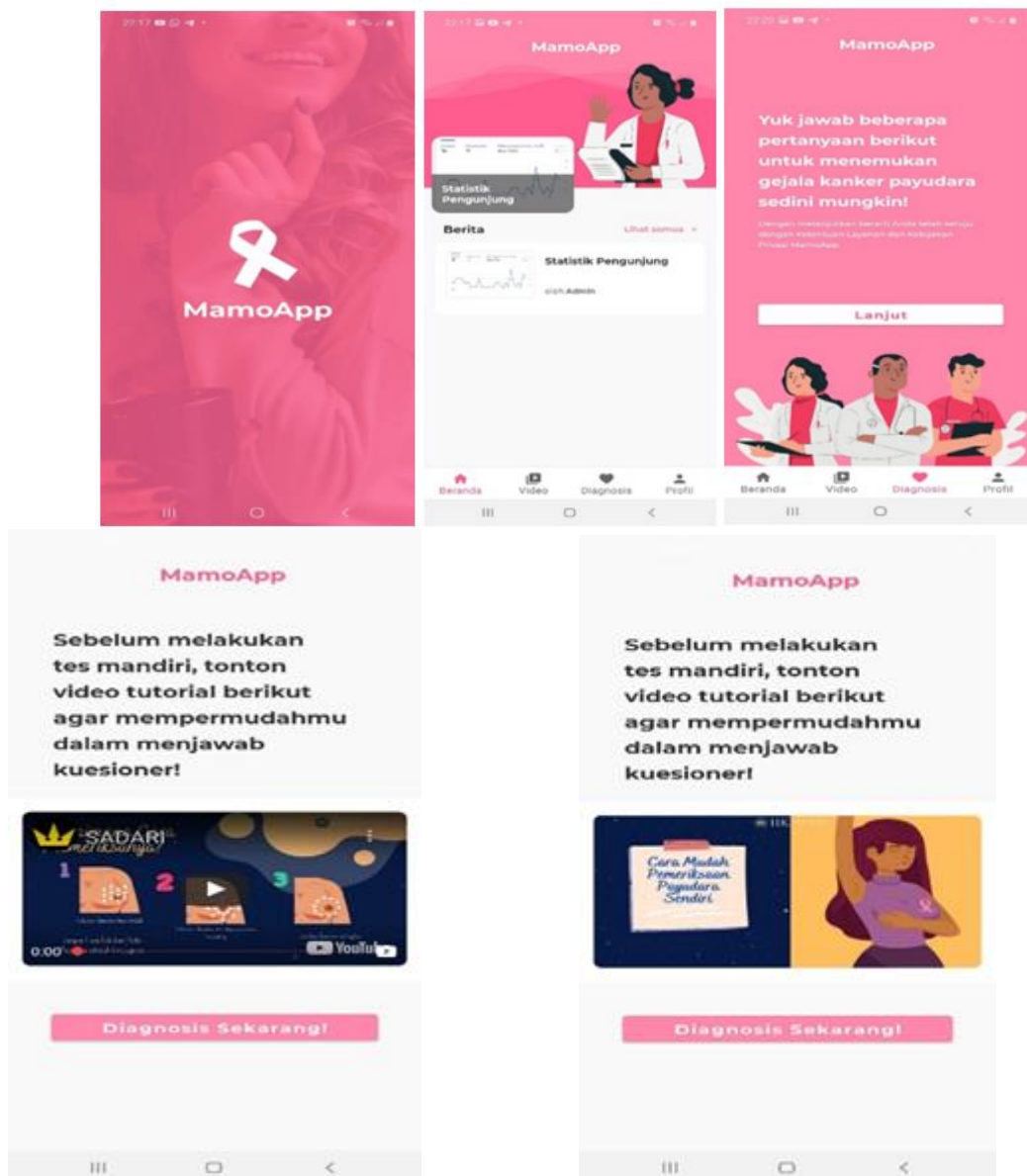


Figure 2. Video on how to perform breast self-examination (SADARI)

At this stage, participants watched a video on how to do breast self-examination (SADARI) from the MamoApp application. From this activity, participants are expected to understand how to perform breast self-examination in an effort to detect breast cancer early. While watching the video, the facilitator also explains some of the movements that are done according to * SADARI Examination Stage. Participants followed the movements of the SADARI examination carefully and felt the presence or absence of lumps in the breast.

3. Breast Cancer Detection by filling out the application

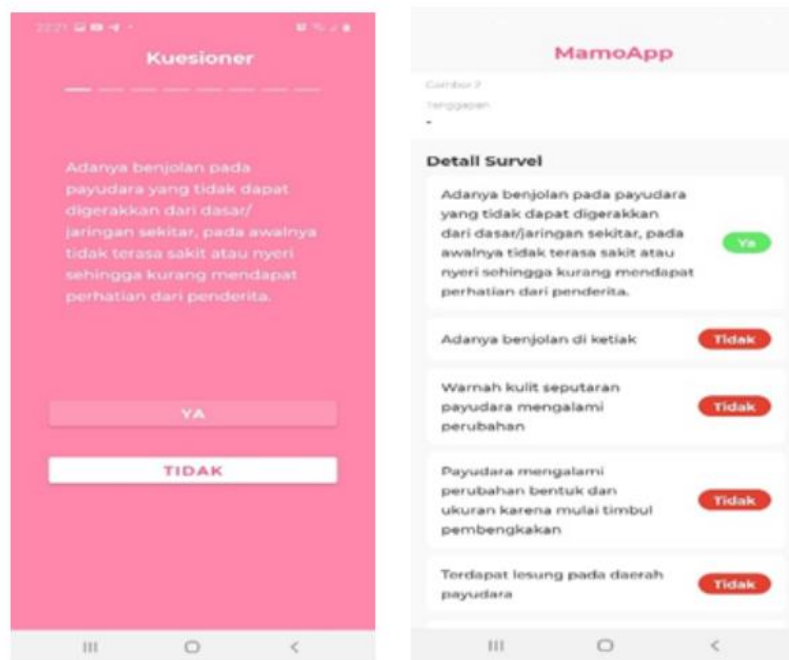


Figure 3. Breast cancer early detection questionnaire

At stage 3, participants fill out the questionnaire available on the MamoApp application according to the results of the examination that has been carried out. For participants who do not have an android cellphone, a questionnaire is given by filling out the form provided by the facilitator. The questionnaire contains questions that must be answered “Yes” or “No”, which contains the following questions:

- The presence of a lump in the breast that cannot be moved from the base / surrounding tissue, at first it does not feel sick or painful so that it gets less attention from the patient.
- The presence of pain or pain in the breast.
- The longer the lump grows, the bigger it gets.
- The breast changes shape and size as swelling starts to occur.
- Breast sores begin to appear and do not heal for a long time despite treatment, and the nipples are like scabs or eczema and are pulled inward.
- Breast skin becomes wrinkled like orange peel (Peau d' Orange).
- Occasional discharge of fluid, red-black blood, or pus from the nipples, or discharge of milk in women who are not pregnant or not breastfeeding.
- The lump resembles a cobbage flower and bleeds easily.
- Metastases (spread) to lymph nodes around other body parts.
- General condition of the patient is poor

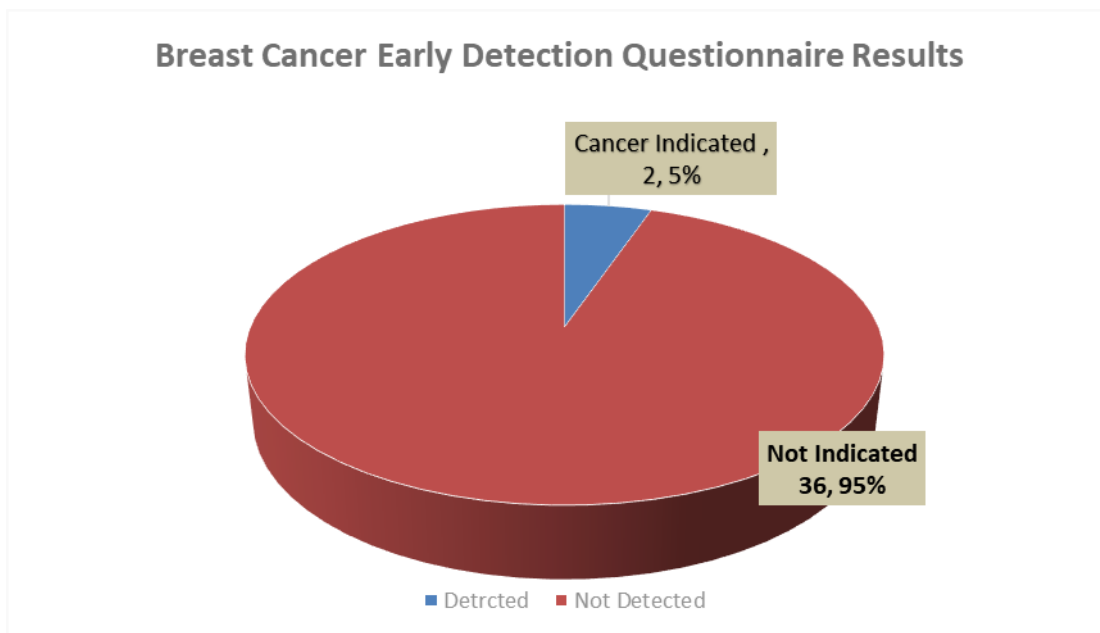


Figure 4. Breast Cancer Early Detection Questionnaire Results

From the results of filling out the questionnaire through the MamApp application, the conclusion of the examination results will immediately be known, namely: “Indicated Cancer” or ‘No Indication of Cancer’, so that participants can immediately know whether they are indicated with breast cancer or not. From the results of the questionnaire of 38 participants, there were 2 participants who indicated breast cancer and 36 participants did not indicate breast cancer. Participants who indicated breast cancer by the facilitator were advised to do a further examination to the doctor for a more detailed examination..

DISCUSSION

From Figure 4, it can be explained that participants after participating in educational video shows about early detection of breast cancer and performing SADARI checks themselves, and answering questionnaire questions in the MamApp application, 36 participants (95%) were not detected with breast cancer and there were 2 participants (5%) who indicated breast cancer. Participants who indicated breast cancer by the facilitator were advised to do a further examination to the doctor for a more detailed examination.

Breast cancer is one of the most common types of cancer in women today. This cancer generally affects women, but can also affect men. Breast cancer accounts for one third of malignancies in women. One million women worldwide are diagnosed with breast cancer each year (I Putu Gosen Partama, Made Kurniawan AS, 2021). Breast Cancer in Indonesia is the highest incidence rate for women. Breast cancer according to WHO is the most common cancer among women. In 2018 it was estimated at 42.1 per 100,000 population with an average mortality of 17 per 100,000 population (Kusumawaty et al., 2021). The management of breast cancer malignancies has progressed very rapidly, however, the mortality rate and the rate of breast cancer malignancies are still high. As many as 70% of breast cancer cases are found in an advanced stage. Of course, the five-year survival rate will be higher in breast cancer patients who have received a series of appropriate treatments at an early stage (Lestari & Wulansari, 2018).

The incidence of late self-examination of breast cancer to health services in Indonesia reaches more than 80% so that it is found at an advanced stage, which can worsen the prognosis of the patient. The Case Fatality Rate of breast cancer cases found in the early stages is only

7.2%. Therefore, early detection and diagnosis of malignancy plays an important role to improve prognosis in addition to other clinical factors. Early detection of breast cancer consists of breast self-examination, clinical breast examination and mammography. Early detection associated with appropriate treatment is the most effective strategy to reduce breast cancer mortality. An easy, inexpensive and self-directed way of early detection is breast self-examination (SADARI). It consists of screening the asymptomatic population and awareness of early symptoms and signs will increase the chances of cure. An easy, inexpensive and doable way of early detection is by breast self-examination (SADARI). consists of screening an asymptomatic population and awareness of early symptoms and signs will increase the chances of cure. An easy, inexpensive and self-directed way of early detection is through breast self-examination (SADARI) (Lestari & Wulansari, 2018; Marfianti, 2021).

In the process of making the MamoApp application, the author designs an application system that is able to implement the process according to the needs that have been designed as the previous stage.

The author designs an application system that is made capable of implementing the process according to the needs that have been designed as the previous stage. So in designing the system, the author uses the UML (Unified Modeling Language) method and the author uses flowchart as an explanation of the flow of an application. The process of running an expert system application is described in the form of a flowchart. Flowchart shows a process which is a collection of processes that contain a collection of structured activities and relate to each other that function to provide an output from an expert system process (Gustina & Chandra, 2015; Suleman et al., 2019) In designing the MamoApp application, the author uses the naïve bayes classifier method. Naïve Bayes classifier is a simple probability classification based on the application of Bayes' theorem with the assumption that the explanatory variables are independent, namely the presence or absence of a certain event from a group is not related to the presence or absence of other events (I Putu Gosen Partama, Made Kurniawan AS, 2021; Raharjo et al., 2016; Suleman et al., 2019).

The MamoApp application can be easily used by participants, although there are 2 participants who cannot access the application because they do not have an android phone, but can be directed to fill out the questionnaire manually. This application was made with the aim of helping mothers in improving early detection of breast cancer symptoms that are accurate and can perform early examinations. The MamoApp application can be accessed by all communities because it can be downloaded via the play store. This application is free so it does not burden its users. Furthermore, the MamoApp application will be developed so that it can be accessed by doctors who conduct further examinations and can conduct direct consultations regarding the results of the examination.

CONCLUSION

Based on the results of the discussion and analysis, it can be concluded that the MamoApp application used to detect breast cancer symptoms uses an Android-based naïve Bayes classifier model method that can be used by any version of smartphone. From the results of this community service, 2 participants were detected and further examination will be carried out. The MamoApp application can be used well by the public and is useful in early detection of breast cancer.

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