An Online-based Application of Health Education Media for Prolanis Participants

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Abstract— Prolanis is a government program to reduce the prevalence of chronic diseases and prevent patients with chronic diseases from entering the complication stage. In Prolanis activities conducted by health facilities or Fasyankes, Prolanis participants sometimes come late to the health education activities, so participants do not receive information or benefit from health education activities. The purpose of this study is to investigate the use of online-based health education media for Prolanis participants. This research method is descriptive, with primary data sources from the interviews, documentation studies and literature. The application is developed using the prototype method. The Prototypes is created, evaluated, and continued to the implementation stage. The result of this research shows the developing of an online-based application for presenting health education materials to Prolanis participants. This application was tested on Prolanis participants from Padangsari Puskesamas in Semarang City and received positive responses from them. However, some participants still complained about the limited access to smartphones and the assistance need for elderly participants.

Keywords— Health Education, Prolanis Online

I. BACKGROUND

The Government of the Republic of Indonesia continues to strive to control noncommunicable diseases (NCDs) such as diabetes, hypertension, and heart disease, the cases of which are still high in Indonesia. In 2018, the prevalence of diabetes in Indonesia reached 10.9% of the adult population, while hypertension affected approximately 34.1% of the adult population (Riskesdas, 2018). The government's policy to control NCDs focuses on the prevention of risk factors through various regulations, including government regulations on minimum service standards at the district and provincial levels, presidential directives on the Healthy Living Community Movement, and regulations from the Ministry of Health (MOH) on NCD prevention and the Healthy Indonesia Program with a Family Approach (PIS PK) (KEMENKES, 2020).

The government is responsible for ensuring that all citizens receive health services of the same quality and standard. The government has managed the implementation of public health insurance through the National Health Insurance (JKN). The implementation of the National Health Insurance Scheme (JKN) in primary and secondary health care is based on the principle of managed care, which is an approach to health care management that focuses on cost control and quality of care. Managed care aims to ensure that health resources are used effectively and efficiently while maintaining the quality of care provided to patients. In the context of JKN, cost and quality control are the main pillars that must be maintained. The government is committed to optimizing the allocation of the health budget to cover more people with guaranteed quality of service. This approach is expected to reduce waste of resources, such as spending on unnecessary medical tests and procedures, and minimize the potential for medical errors that could harm patients.

One of the biggest challenges facing the healthcare system in Indonesia and around the world is the high prevalence of chronic diseases. Chronic diseases, such as diabetes, hypertension and heart disease, often require long-term care and are costly. In many cases, if not properly managed, chronic diseases can develop into serious complications that not only reduce the patient's quality of life, but also increase the cost burden on the healthcare system. The government recognizes the importance of chronic disease management as part of its cost and quality control strategy. To this end, one of the key initiatives launched is the Chronic Disease Management Program (Prolanis). This program is specifically designed to help patients with chronic diseases better manage their conditions, prevent disease progression and reduce the risk of complications. (Tyas Purnamasari et al., 2023)

Prolanis promotes a preventive and proactive approach to chronic disease management. The program includes various activities aimed at increasing patients' awareness of their health conditions, educating them about healthy lifestyles, and facilitating access to necessary health services. In addition, Prolanis facilitates coordination between various healthcare providers, such as physicians, nurses and pharmacists, to ensure that patients receive comprehensive and integrated care. Through Prolanis, patients with chronic conditions are encouraged to have regular check-ups, adhere to prescribed medications and adopt healthy lifestyle habits that can help them better manage their conditions. The program also uses

information technology to monitor patients' health on an ongoing basis to provide early warnings of changes in conditions that require medical intervention.

Problems that often arise in Prolanis activities are the lack of information and socialization about the Prolanis Program, causing participants to be less active in participating in Prolanis activities. So to overcome this, several things need to be done, namely by providing information, socialization, and education about the types of Prolanis activities along with their benefits and objectives. The better the level of information that participants have, the greater the tendency to utilize Prolanis. Not a few participants did not know the types of activities and schedules of Prolanis activities so that participants did not take advantage of them. The lack of information about Prolanis services is due to participants' inactive cellphone numbers and invalid addresses in the database, making it difficult for officers to access participants who lack information. Providing information can be done directly through officer invitations to diabetes and hypertension patients at each FKTP or indirectly through printed media such as brochures, bulletins, or using telephone and sms and using information technology. (Arifa, 2018)

Advances in information technology are currently having a positive impact on the world of health, especially computer and Internet technology, both in terms of hardware and software, providing many opportunities and options for the world of health to support health services. its advantage lies in the speed factor for obtaining information and can be easily accessed from anywhere and anytime. Based on the description of the above problems, the authors are interested in researching the development of online-based health education media applications for Prolanis participants.

II. METHOD

The research method in this study is descriptive research with a qualitative approach, with primary data sources using interviews and observations to officers and Prolanis participants at Padangsari Health Center, as well as secondary data from documentation and literature. System design in this study, using the prototype method, this method is used to make designs quickly and gradually so that they can be immediately evaluated by potential users. (Renaningtias & Apriliani, 2021). The initial stage in is to analyze system requirements, which is a method used to evaluate all the needs required by the system before implementing the program. System analysis assesses how input data is processed and produces information to improve the organization, to identify system needs, the author conducts interviews and discusses with relevant parties in order to explain in detail.

The system design stage is carried out by temporarily designing a system that focuses on usage, including the creation of input and output formats based on the results of interviews in the needs analysis. This process is carried out repeatedly until the prototype is in accordance with the wishes or expectations of the user. The prototype that has been made is then evaluated, if it is in accordance with the needs and desires of the user, then the next step is the process of implementing and testing the system. Data collection was carried out through interviews and question and answer methods directly with the Prolanis manager and related parties to obtain data and information. Furthermore, the author made observations by going directly to the research location, namely the Padangsari Health Center to obtain the data needed in the construction of the prototype. After the data collection stage is complete, the next stage is the concept design stage using the Unified Modeling Language (UML). After that, the prototype was tested to users to get feedback from the tested system.

III. RESULTS AND DISCUSSION

This research focuses on developing an Online-Based Health Education Media Application for Chronic Disease Management Program (Prolanis) participants, with the main objective of increasing the effectiveness and efficiency of health services at first-level health facilities. In the development process, this Online Prolanis service management information system goes through several important stages, namely needs analysis, system design, system implementation, and thorough system testing. This application is named the Online Prolanis Service Management Information System (SIMPELPRO) and is designed in the form of a web-based application that is expected to optimally support various Prolanis service activities, such as monitoring participant health, managing medical data, and providing ongoing health education. The development of SIMPELPRO is based on empirical data and specific needs identified from the implementation of Prolanis in First Level Health Care Facilities, with Puskesmas Padangsari in Semarang City as a case study site. This research aims not only to create an application that supports the administration and management of Prolanis services, but also to make a broader contribution to improving the quality of health services, by providing tools that make it easier for participants to manage their chronic diseases more effectively and purposefully. The description of the process of the proposed system development stages includes the following:

a. Needs Analysis

This stage is the initial data collection process for designing the Prolanis service management information system by analyzing system requirements. (Enstayn et al., 2019). The data obtained are the results of interviews and interviews with the person in charge of Prolanis activities as the user of this application.

Interviews and interviews are data collection methods carried out in this study, through direct question and answer with the person in charge of the Padangsari puskesmas Prolanis activity to obtain the data and information needed. The next stage the author makes observations by going directly to the research site at Padangsari health center.

The process of identifying problems in this study was carried out by in-depth interviews. The results of the interview found several facts related to the problems that occur in the Prolanis service management information system that is currently running, as follows:

1) Prolanis Activities

Elderly community examination activities at UPTD puskesmas padangsari such as the Prolanis Program and Lansia Ceria always get a positive response from the elderly community, so it needs to continue to be developed so that promotive and preventive efforts for non-communicable diseases can be successful. (UPTD puskesmas padangsari, 2022)

2) The current system does not have a module for managing Prolanis service activities.
3) Flow of management of Prolanis service activities
   a) What is the flow of management of the Prolanis service management information system that is currently running
      Based on the results of interviews with the manager of Prolanis activities, it is known that: "The current management flow of the Prolanis service management system is still manual and does not yet have an electronic or online Prolanis service management system"

      What data and information are needed for recording, processing, storing data and information up to reporting?

      "Prolanis activities include routine healthy gymnastics every Saturday (twice a month), monthly health counseling for Prolanis members, as well as medical consultations and health status monitoring with physical and laboratory examinations."

   b) Based on the results of interviews with the manager of Prolanis activities at Padangsari Health Center, it is known that:

      "Currently there is no system specifically used to manage Prolanis service activities, currently for coordination and communication activities using the WhatsApp application, and for the delivery of educational material for Prolanis participants is still carried out directly during Prolanis activities, so that if there are participants who come late they no longer get educational material about Prolanis."

   c) User needs (user entity)

      Based on the results of the research team's interviews with Prolanis managers and participants, it is known that:

      Prolanis managers (Prolanis Person in Charge, Doctor, Laboratory Officer, Admin) have entities for Prolanis data, Prolanis education materials, laboratory tests, Prolanis gymnastics activities and recreation.

b. System Design

System design is a step used to facilitate system analysis, implementation, and testing, which aims to provide an overview of the final results of the system. The system design in this study utilizes Object Oriented Design (OOD) with the use of the Unified Modeling Language (UML) as a tool for visualization and documentation of software design. (Shelly & Rosenblatt, 2012)

UML is based on object-oriented design concepts and provides graphical modeling including use cases and sequence diagrams. (Hidayatuloh & Setyaningsih, 2021).

The class diagram is used by the author to describe the relationship between tables in the database.

Usecase diagrams are used to describe the type of relationship between users of a system and other systems. Usecase serves as a description of how the relationship between actors and also innteraction between systems.

Activity diagrams are used to draw the flow of data used. The system development process is carried out using the Prototype method, namely by compiling a temporary system design that focuses on serving Prolanis participants, such as creating input and output formats. This process will be iterated until the prototype is in accordance with the wishes of the user. The prototype that has been made will be evaluated, if it is in accordance with the provisions and wishes of the user then proceed to the system implementation process. If the system design stage is not perfect, the prototype will be re-modeled until it is perfect and then can proceed to the programming stage in the system implementation. SIMPELPRO system implementation through the programming (coding) stage using the following software:

- XAMPP for virtual server
- MySQL for database
- PHP as a programming language
- Sublime text as text editor
- HTML&CSS for user interface
- Google Chrome for SIMPELPRO browser

System modeling in this study uses use case diagrams and activity diagrams.

1) Use Case Diagram

Use cases in this information system consist of 4 actors, namely Admin (Prolanis Management Officer), Doctor, Laboratory Officer and Patient / Prolanis Participant. The actor's interaction with the information system to be built in this study is explained using Use Case. Explanation of actor identification of the system
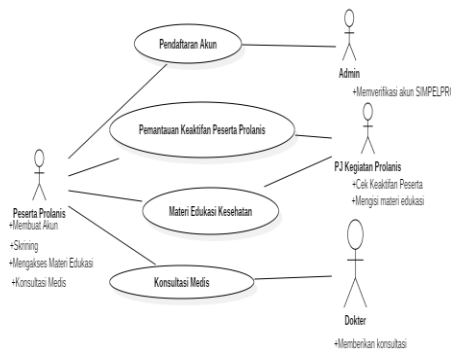

Fig. 1 Use Case Diagram of SIMPELPRO

2) Activity Diagram

The workflow or activity of a system or business process in this study is described in the Activity Diagram, its function is to show the sequence of activities on the system, and to help understand the overall process, and describe the business process in more detail. The following is the Activity Diagram of the system being built.(Wijayanta et al., 2023).
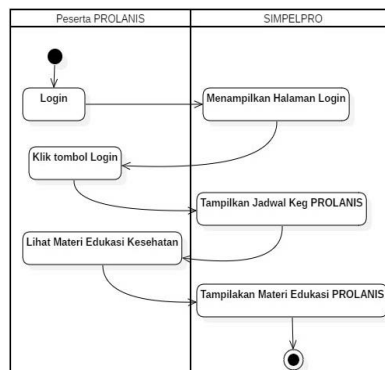

Fig. 2 SIMPELPRO Activity Diagram

c. System Interface Design

At this stage, the system interface design stage is carried out to make it easier to analyze, implement in a programming language, which functions to provide an overview of how the actual system results.(Budiharjo, 2018) The stages of system interface design include the following:

Below is a view of the Simpelpro dashboard page design, the dashboard page design contains the initial page, namely the SIMPELPRO application logo. The next stage is the design of the login page display which will be used to display the login page and also the forgot password menu, as well as the create new account button for those who do not yet have an account in the SIMPELPRO application. the design of the login page consists of 2 columns containing the username and password where the access rights of the health center are limited to users who are allowed or have an account that has the authority to access the SIMPELPRO application.

The next stage is the design of the display page for creating a new account which will be used to display a new account creation page for those who do not yet have an account in the SIMPELPRO application, in the new account display, an account registration form will be displayed including Name, Email, and Password. It can be explained that the design of the create new account page includes an account registration form including Name, Email, and Password. This page will be used to create an account in the SIMPELPRO application. The next stage is the design of the Prolais education material page display which will be used to display the health education material page that can be accessed by Prolanis participants in the SIMPELPRO application, in the Prolanis education material display will be displayed Prolanis education material content including material: BPJS info, Diabetes Mellitus, Hypertension and non-communicable diseases. the design of the Prolanis education material page, on this page will be displayed educational material about Prolanis activities, including Prolanis leaflets, hypertension material, diabetes material, and non-communicable disease material.

d. Programming Stage

The programming stage is a continuation stage of the design stage, then entering the prototype implementation stage, namely programming or translating the design into program code. The designs that have been made are then translated into programming languages. In this study using the PHP programming language using the help of Sublime Text which is used as a text editor. At this programming stage, it then produces several displays, including the following:

1) Dashboard Page View

Figure 3. is a display of the results of the implementation of the front page (dashboard), the SIMPELPRO application can be accessed via URL: https://www.simpelpro.id/

Fig. 3 Dashboard Page Display

The dashboard page displays the SIMPELPRO logo, welcome greeting, login button, menu option button and footer.

2) Login Page Display

The next stage is the implementation of the login page of the SIMPELPRO application. The display of the results of the implementation of the login page can be seen in Figure 4.

Fig. 4 Login Page Display

The login page displays the SIMPELPRO logo, username & password fields, login button, forgot password button, create new account button, and menu option button. Participants must log in first before they can access the Prolanis education materials.

3) Account Creation Page View

The next stage is the implementation of the SIMPELPRO application account creation page. The display of the account creation page implementation results can be seen in Figure 5.
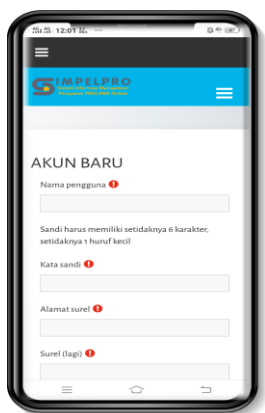

Fig. 5 Account Registration View

In 11 is a view of the account registration page where the content is displayed a new account registration form, which contains username, password, email address, etc.

4) Display of Educational Material Page

The next stage is the implementation of the Prolanis education material page. The display of the results of the implementation of the educational material page includes: BPJS info, prolanis material, diabetes mellitus material, hypertension material, and non-communicable disease material. The display of Prolanis education material can be seen in Figure 6.
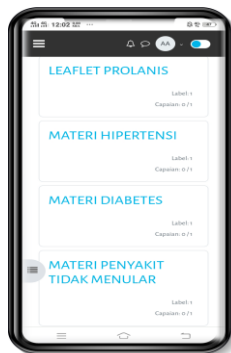
Fig. 6 Prolanis Educational Material Display

On the educational material schedule page, educational material content is displayed, including: BPJS info, Prolanis material, diabetes mellitus material, hypertension material, and non-communicable disease material. This material can be changed, updated or added by the Prolanis activity manager at the puskesmas.

e. System Testing Phase

Testing and verification, several comparisons were made on function, appearance, feedback and personal aspects. This comparison is a measuring tool for changes and development of the Prolanis service management information system at Padangsari Health Center, Semarang City. The questions asked in the questionnaire have been grouped into several categories according to what you want to analyze and compare, divided into Ease of access, Application Appearance, and Application Performance. Documentation of application testing activities can be seen in Figure 7.

Fig. 7 SIMPELPRO Trial

The following is the frequency distribution of SIMPELPRO application trial participants:

Table 1. Distribution of Application Trial Respondents Based on Characteristics

Characteristics	Category	Frequency Distribution	
		n=46	%
Gender	Male	17	37%
	Female	29	63%
Age	<= 45 years	0	0%

46 - 59 years	8	17%
>= 60 years	38	83%

The SIMPELPRO application has been evaluated on a sample of Prolanis participants at Padangsari Health Center, Semarang City, including the assessment of question items by respondents, including ease of access, application appearance, and application performance. Based on the findings above, the results of the application trial can be summarized as follows:

This study describes users' experiences and perceptions of the SIMPELPRO application developed to facilitate Prolanis activities. Based on the results of interviews and observations conducted with Prolanis participants, several findings were obtained, including the following: Prolanis participants who were present during the application trial consisted of 17 men and 29 women, with the majority age range above 60 years. Based on observations and interviews, the app was generally perceived positively.

In terms of ease of access, the majority of respondents agreed with the convenience offered by the app, with many of them stating that the app was quite easy to use. However, a portion of the respondents, especially those who were older, showed a neutral response, indicating that accessibility for this demographic may be a challenge. This is evidenced by the results of an interview with informant 1 who stated that *"The application is good, keep it going. I hope this application keeps on going strong and brings even more benefits to more people! It would be amazing if everyone could access it. I'm excited to see what improvements we can make to this already great application, because I really hope this SimplePro application keeps on being used!."*

Additionally, participants expressed positive sentiments regarding the visual appeal and friendliness of the app. However, some respondents expressed neutral opinions, indicating that the interface design could be improved to enhance user-friendliness, especially for users with limited technological experience. This is evidenced by the results of the interview with informant 2 who stated that *"Hopefully the application can be accessed by everyone. The materials are useful and increase knowledge about diseases. However, it would be even better if there were paper-based materials that could be used."*

In terms of performance, the app was rated fairly well by respondents, with the majority expressing satisfaction with the app's performance. However, some users indicated that they had limited access to technology among older Prolanis participants. Many of them do not own smartphones, or find it difficult to use the app without assistance. Therefore, more intensive socialization and mentoring efforts are needed so that this application can be accessed and utilized by all Prolanis participants. This is evidenced by the results of an interview with informant 3 who stated that *"This application is in accordance with the needs, but unfortunately, I do not have my own cellphone, so it is a bit difficult to always access it. However, overall, this app is very effective and useful for education about diseases. I hope this application can continue to be improved and provide more explanations that can be practiced directly."*

On the other hand, from the perspective of the person in charge of Prolanis activities, this application is considered to facilitate the documentation of activities, which is an added value in program management at puskesmas, especially for disseminating information related to non-communicable diseases such as diabetes mellitus and hypertension.

It is expected that the development of this application will continue with the addition of relevant educational content. In addition, the app is considered an invaluable channel for periodic health education, facilitating ongoing access to important information that supports individual well-being. However, some challenges remain to be overcome, particularly with regard to limited access to technology among older Prolanis participants. A large proportion of the population do not own smartphones or are unable to use the app without assistance. Therefore, more intensive socialization and mentoring needs to be done to ensure that the app is equally accessible and usable by all Prolanis participants. In addition, from the perspective of officers responsible for overseeing Prolanis activities, the app is considered a very useful tool for documenting activities, which is an added benefit in program management at puskesmas. In conclusion, the SIMPELPRO app is considered a useful and valuable innovation with significant potential to be used as an information conduit for continuous health education during the Prolanis activity process. However, there are several aspects that need further attention to ensure that all users can access and utilize the application effectively.

IV. CONCLUSIONS AND SUGGESTIONS

The findings from this study show that the SIMPELPRO app received a favorable response from Prolanis participants. The app was considered to meet users' needs in several key areas, including ease of access, visual appeal, and performance. In addition, the app was considered a medium that could be utilized to deliver health education information, and had the potential to be used routinely during the Prolanis activity process. This suggests that SIMPELPRO is a useful tool for health education in Prolanis activities.

However, this study also found some challenges, particularly related to limited access to technology among older participants. Some participants had difficulty accessing and using the application without assistance. Therefore, although SIMPELPRO was generally rated favorably, some improvements and refinements are still needed to ensure that the app can be used more widely and effectively by all Prolanis participants.

Suggestions from this research include: The appearance of the SIMPELPRO application needs to be simplified and an alternative version that is easier for older participants to use should be considered. In addition, more intensive training and mentoring should be organized to help participants who are less familiar with technology. Collaboration with medical personnel and the person in charge of Prolanis needs to be improved to ensure that the content presented is relevant and useful. This application can be piloted in other FKTPs, and other features can be added according to user needs such as notification of Prolanis activities, etc. This application can be developed in the form of mobile smartphone applications (mobile apps), and this application still needs to be evaluated for its effectiveness and acceptance by users.

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