The Implementation of a Body Mass Index (BMI) Calculator in an Android-Based Ideal Body Check and Nutrition Consultation Application

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Abstract

The rising prevalence of obesity necessitates the development of effective strategies for personalized nutritional guidance. This study aims to address common barriers to accessing nutritional advice, such as geographic distance, time constraints, and financial limitations, by introducing an innovative mobile application. The application incorporates a Body Mass Index (BMI) calculator for ideal weight estimation and a real-time online consultation feature with certified nutrition counselors. A user-centered design methodology was employed to ensure the app's usability, accessibility, and engagement. The findings reveal that the app effectively facilitates healthier lifestyle adoption by providing personalized nutritional recommendations and fostering user motivation through regular updates, reminders, and progress-tracking tools. Additionally, the application enhances community engagement by disseminating evidence-based nutritional practices at individual and societal levels. This research highlights the potential of the application as a scalable solution for bridging the gap between users and professional nutritional advice. By empowering individuals to make informed health decisions, the app contributes to obesity prevention and the promotion of a healthier society. Future studies should investigate its long-term effects on health outcomes and explore the integration of advanced features to further enhance its functionality and impact.

Keywords: Obesity Management, Personalized Nutritional Guidance, Mobile Health Application, BMI Calculator, Real-Time Consultations

I. INTRODUCTION

Nutrition plays an indispensable role in health and well-being, as it is directly linked to preventing chronic diseases and maintaining overall vitality. However, it is often overlooked that nutritional issues can be managed and addressed by professionals other than doctors, namely nutritionists. The limited recognition and public understanding of nutritionists often create barriers that prevent individuals from seeking the specialized guidance they need, which becomes a significant problem when people are unable to consult qualified nutrition experts to address their specific dietary concerns [1]. This gap in recognition contributes to the underuse of nutrition counseling, an intervention that is widely regarded as effective in managing nutritional issues. Through a combination of knowledge dissemination and behavior modification strategies, nutrition counseling offers solutions aimed at improving dietary habits and overall health [2].

Despite the benefits of nutrition counseling, a variety of challenges persist. One of the major hurdles is motivating clients to adopt healthier behaviors, which often requires considerable effort to overcome ingrained habits and perceptions. Additionally, the interpersonal dynamics between counselors and clients play a crucial role in the success of the intervention. If the counselor lacks the necessary skills or if the client is unmotivated, the counseling process becomes significantly less effective. These difficulties are compounded by the rapid advancements in information technology, which underscore the limitations of traditional face-to-face methods in providing comprehensive nutrition care [3]. This highlights the growing need for more innovative solutions that can increase access to nutritional guidance, such as online platforms for nutrition counseling, which can bridge the gap between the need for guidance and its delivery.

Moreover, Wedatama's research on the nutrition services at RSUD DR. Soetomo reveals additional challenges in providing efficient nutrition counseling. The study emphasizes the necessity of implementing systems that facilitate the publication of nutrition-related activities and consultations, both online and in-person, to ensure that services are available to individuals not only from the local community but also from distant regions. This research also points to the need for digital tools that help manage patient flow, such as online queuing systems, which can greatly improve the accessibility of nutrition services [4].

In the context of assessing nutritional status, Body Mass Index (BMI) remains one of the most commonly used tools for determining whether an individual is underweight, normal, overweight, or obese. The BMI is calculated by dividing an individual's weight in kilograms by the square of their height in meters. This simple formula yields a value that serves as a reliable indicator for evaluating nutritional status and identifying potential

health risks associated with abnormal weight [5]. Given its wide use, BMI is a standard measure for detecting nutritional issues such as obesity, a condition that is increasingly prevalent globally.

Several factors influence the ability of individuals to maintain an ideal weight, including the balance between nutrient intake, physical activity, and overall lifestyle. Achieving and maintaining an ideal weight is not solely dependent on genetics, but on a combination of dietary habits and physical activity levels. Therefore, BMI remains an essential metric for evaluating weight problems such as obesity, which continues to be a significant public health concern [6]. The standard classification of BMI values—underweight, normal weight, overweight, and obese—further enables the identification of individuals at risk for associated health conditions, such as heart disease and diabetes. For example, a BMI of 30 or higher is classified as obese, which highlights the importance of tools that help individuals track and manage their BMI, especially for those struggling with obesity [7].

Several studies have proposed digital solutions that aim to enhance the accessibility of BMI-related consultations and nutritional assessments. For instance, Rahmawati's research on Android-based information systems discusses an application designed to assist users in managing weight-related concerns, particularly for obese individuals. The application provides an integrated platform for BMI calculations and nutrition consultations, simplifying access to crucial health information while also offering resources for lifestyle modifications [8]. In addition, Hanum's research explores an image-processing method for calculating BMI, which eliminates the need for manual data input. Although promising, this method still requires specialized devices such as smartphones, load cells, and ultrasonic sensors, making it less accessible to the general public. On the other hand, manual data entry for calculating BMI, although less advanced, provides an efficient and readily available solution for most individuals seeking to monitor their nutritional status [9].

Further innovations have also been explored in the development of BMI measurement devices. For example, the "MEDCA" device combines digital scales with ultrasonic sensors to measure BMI and Basal Metabolic Rate (BMR), utilizing an IC HX711 amplifier connected to an Arduino Nano microcontroller. While technologically advanced, this setup may not be practical for personal use due to its reliance on specific devices and sensors [10]. Fikri's research, which developed a body condition prediction tool using Sugeno Fuzzy Logic, also demonstrated a minimal difference in BMI calculation between manual and automated methods, suggesting that automated systems can provide reliable results even with minor errors [11].

Mobile applications for BMI calculation and weight management have gained popularity as they allow individuals to track their BMI regularly and access nutritional information. Aprilian's study on mobile applications confirms that such tools can help people who struggle to determine whether they have an ideal weight. These applications offer a convenient and easy-to-use method for individuals to monitor their weight, fostering greater awareness of nutritional health [12]. Similarly, research by Sihombing and Mutiara highlights the advantages of Android-based applications for BMI measurement, demonstrating how mobile apps can effectively facilitate BMI checks and educate the public on proper nutrition [13]. Berkati's work on an Android-based BMI application achieved low measurement errors for height, weight, and BMI, further demonstrating the viability and accuracy of smartphone applications for health assessments [14].

Despite these advancements, there remains room for improvement in terms of accessibility and ease of use for the general public. Some methods still require specialized equipment, while others involve a degree of measurement error. This gap in research points to the need for an innovative solution that combines ease of use, accuracy, and accessibility for all individuals to monitor and manage their nutritional health effectively. Thus, future research could focus on refining mobile applications or online platforms that offer seamless BMI calculation and nutritional consultation, making these tools more widely accessible and reliable.

Table 1 Problem Mapping and Strengths of Related Research

Research	Focus	Excrescent	Deficiency
D. Rahmawati	BMI calculator & consultation	Practical and online	Less professional
L. Hanum	Image processing for BMI,	Automatic without manual input	Need additional devices
"MEDCA" Device	BMI and BMR with advanced technology	High precision	Low accessibility
M. Azizul Fikri	Ideal body prediction	Fuzzy logic accuracy	Sensor measurement error
Bryan Aprilian	BMI Android Application	Easily accessible to the public	No additional features mentioned
A. Berkati	Android BMI with minimal error	High accuracy	No major innovations mentioned

Android-based applications such as MoGiz are developed with a User-Centered Design approach to help people independently monitor nutritional status through features such as anthropometric measurements, result history, nutrition advice, expert consultation, health education, and gamification, in order to prevent non-communicable diseases (NCDs) and support a healthy lifestyle. A study in Malang District showed that the prevalence of hypertension in adolescents reached 3.13%, with 12.5% of adolescents having obesity as a major risk factor, making early detection and education related to healthy eating, exercise, and avoidance of junk food a priority. Similar diet apps also offer functions to calculate ideal body weight, nutritional status, calorie needs, and calories burned, but further development is needed to improve features such as food calorie calculators, additional exercise options, and user data storage to more effectively support community nutrition management[15] [16] [17].

BMI (Body Mass Index) and Skeletal Size (UK) are used to determine ideal body weight through the K-Means Clustering method based on height, weight, and forearm circumference. The pandemic increases the risk of obesity due to lack of physical activity, so monitoring BMI is important to prevent diseases such as heart disease. This research develops a camera-based Android application to calculate BMI, store measurement history, and provide exercise and health advice. Using Android Studio, the app is designed to help people maintain their ideal weight and healthy diet, answering the need for more accessible health information [18][19][20].

The online health service registration system at RSUD Panembahan Senopati Bantul has been implemented since 2017, initially through WhatsApp, and is now automated. Evaluation of the system shows benefits in reducing queuing time, but there are still obstacles such as registration format errors and access difficulties by some patients. This study aims to identify problems and developments in the online registration system, with the hope of improving efficiency and patient satisfaction [21].

The application that will be developed by the author on this Android-based ideal body check and nutrition consultation application focuses on providing convenience to every individual who has nutritional health problems and complaints regarding information on calculating body weight and height that is not ideal. By using the BMI (body max index) calculator calculation method that will be implemented in the application and can be accessed online. In addition, this application has a consultation feature for the counselor who has been provided if you want to do further consultation.

II. METHOD

A. Research Framework

This research framework is the relationship between the concepts to be observed or measured through the research to be carried out. This research is based on problems that exist in everyday life regarding information systems that apply ideal weight and balanced nutrition for a healthy body. as well as a research framework that is used to explain the relationship between the variables to be studied. The system design in this study uses the following research framework.

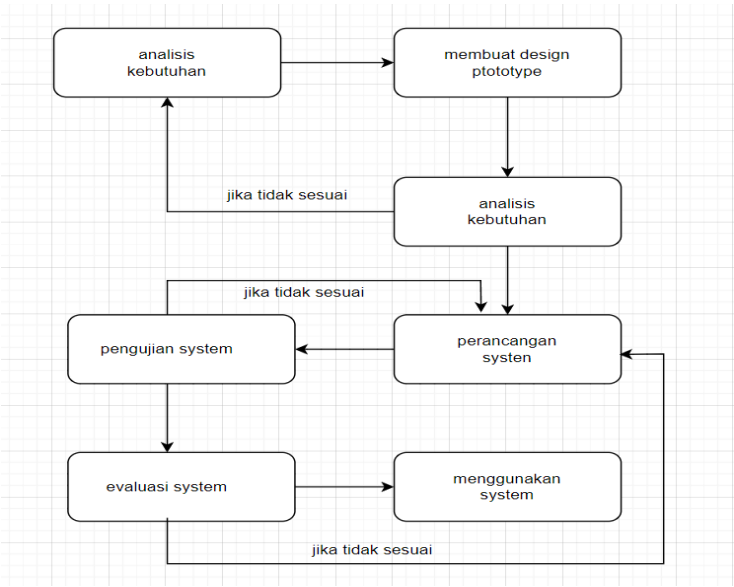

Figure 1 Research Framework

This framework involves requirement identification, initial design creation, prototype development, user evaluation, refinement, and final implementation. This approach allows for early feedback, flexible adaptation, and reduced risk in application system development.

B. System Analyst

The system to be built is an online nutrition consultation application system that allows patients or clients to undergo an online consultation process using a special application. In this context, patients have the ability to conduct online consultations through the application access provided. Meanwhile, the counselor or nutritionist has the facility to examine and respond to patient complaints through the online consultation feature that has been prepared. All transactions that occur in this system can be accessed by the patient through the application provided.

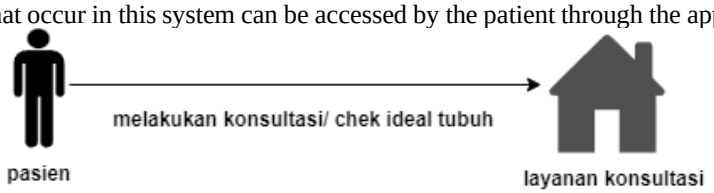

Figure 2 System Running

Thus, patients have the convenience to access and monitor every transaction related to their consultation process through this online platform. The implementation of this system aims to provide an efficient and integrated solution for patients and dietitians, as well as ensure accessibility of information and consultation records that are more transparent and easily accessible to all parties involved.

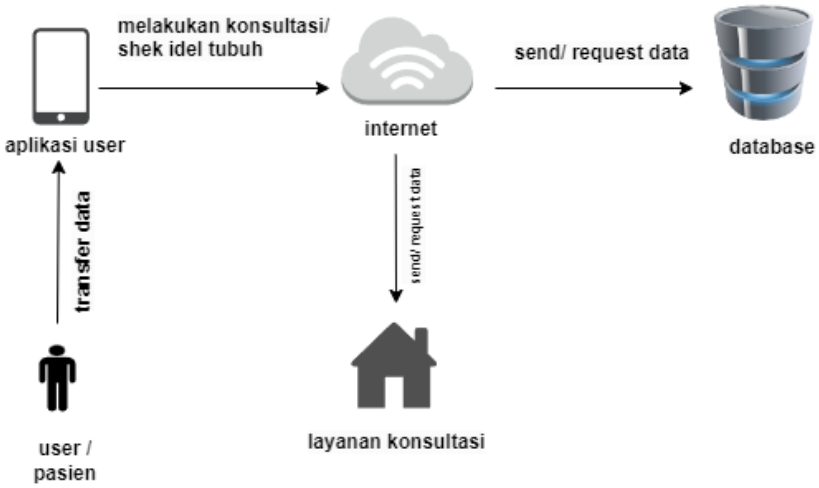

Figure 3 Architecture Model

The system to be built is an online nutrition consultation application system where patients or clients can carry out the online consultation process by accessing the application, patients can also check the ideal body and also consult nutrition online. To support the running of the application properly, in addition to the minimum software specifications required, it must also be supported by adequate hardware specifications, this is done to reduce the error rate on the system. The non-functional needs are software specifications (software) used in building an online nutrition consultation application system are: Android Studio (as text editor), Figma (as design UI), MySQL (as basis data), Draw.io (to make ERD), and Google Chrome (as web browser). Moreover, the hardware specifications used in developing this online nutrition consultation are: Laptop Acer Aspire 5, Processor Intel Core i5 8130-U 2.20 Ghz, RAM 8 GB, SSD 256 GB, and System Design.

In the design stage of the online nutrition consultation system for people with obesity, this system has been conceptualized to provide optimal facilitation for them in accessing information related to nutritional health. The next step after the research framework phase is the analysis stage in the development of this system. This system design phase has the main purpose of identifying in detail the problems that may arise, as well as detecting the needs that need to be met in connection with the development of the information system being run. This analysis

phase is implemented as an intensive research method that involves an in-depth evaluation of various related aspects but is not limited to an in-depth understanding of nutritional health conditions, limitations faced by obese people, and specific requirements expected from the information system to be developed. This analysis provides a strong foundation for the design of a system that is responsive and in line with the actual needs of the users. Thus, in relation to this analysis phase, aspects of caution and rigor are upheld to ensure that each element identified is able to be optimally accommodated in the final design of the online nutrition consultation information system for people with obesity.

C. Calculator BMI (Body Max Index)

BMI or body mass index is a common method for assessing a person's weight status based on the ratio between weight and height. BMI calculation is done by dividing body weight (in kg) by the square of height (in meters) (diamond). BMI categories are generally interpreted as follows:

BMI = $\frac{weight\ (kg)}{hight\ (m)2}$

- Underweight: BMI less than 18.5
- Normal weight: BMI 18.5 to 24.9
- Overweight: BMI 25 to 29.9
- Obesity:
  - Class 1 (Moderate): BMI 30 to 34.9
  - Class 2 (Severe): BMI 35 to 39.9
  - Class 3 (Very severe or morbid obesity): BMI 40 and above.

Determining a person's nutritional status can be assessed by weight and height variables. Body Mass Index (BMI) is often used to measure a person's nutritional status. The following is the IMT calculation formula. Furthermore, the BMI formula that is applied uses pounds of body weight (kg) divided by height (m), from the results of the calculations tried to produce:

BMI = 70 : (1,70x 1,70) = 24.22

Indeed, the BMI calculation result of a person with a body weight of 70 kg and a height of 170 m is 24.22. Meanwhile, patients can find out whether they are thin, ideal, fat, or obese.

Software development has evolved from a copy-and-customize approach on single systems towards product lines that focus on families of systems, improving efficiency and quality through managing requirements, variability and tracking. In a health context, BMI (Body Mass Index) is often used to measure body fat based on height and weight using the formula BMI = Weight (kg) / Height² (m). Although not completely accurate, BMI is effective for assessing health risks such as obesity, hypertension, and diabetes. This project designs an automatic BMI machine with weight and ultrasonic sensors to measure weight and height, processed by a microcontroller, and displayed on an LCD screen, making it a practical and accurate tool for use in hospitals, gyms, and public places[22][23][24].

D. Use Case Diagram

UML activity diagrams describe the sequence of actions in a complex process. Model checking is used to detect errors early, but the problem of state space explosion can be overcome by symbolic model checking. This article discusses two ways of converting UML activity diagrams into symbolically verifiable models, which have proven effective for efficiently verifying large systems[25]. A use case diagram is a visual representation that describes the activities performed by a software system from the perspective of an external observer or user.

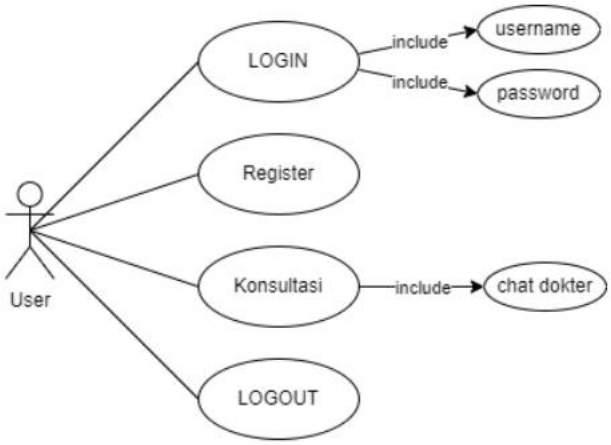

Figure 4 Use Case Diagram User

This diagram is used to model and show the relationships between the various entities involved in the system, including actors (system users) and use cases that explain the functionality of the system.

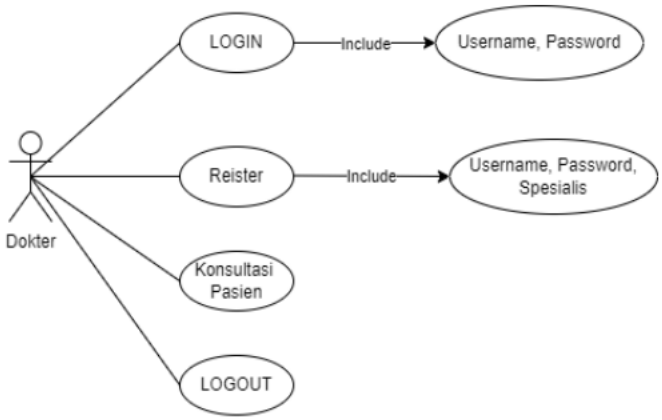

Figure 5 Docter Use Case Diagram

In other words, usecase diagrams make it possible to identify and understand the interactions between actors and the various features or functionality provided by the system. In the context of the Nutrition Consultation application, usecase diagrams will clearly illustrate the activities that occur when a user interacts with the system to obtain nutrition consultation. This includes various scenarios that may occur, such as the consultation process. Therefore, the usecase diagram is a very useful tool in the design and development phase of the application usecase diagram on this Nutrition Consultation application can be seen in Figure 5.

E. Activity Diagram

Activity Diagrams are designed with the main purpose of illustrating all the actions or activities performed by the user against the system, guided by the use cases that have been previously defined. This diagram provides a comprehensive overview of the workflow or process that occurs when a user interacts with the system to achieve a specific goal.

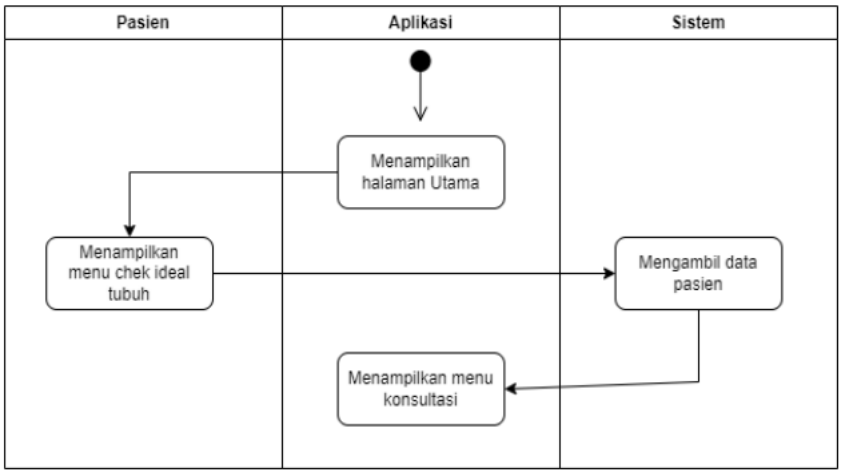

Figure 6 Activity Diagram Login

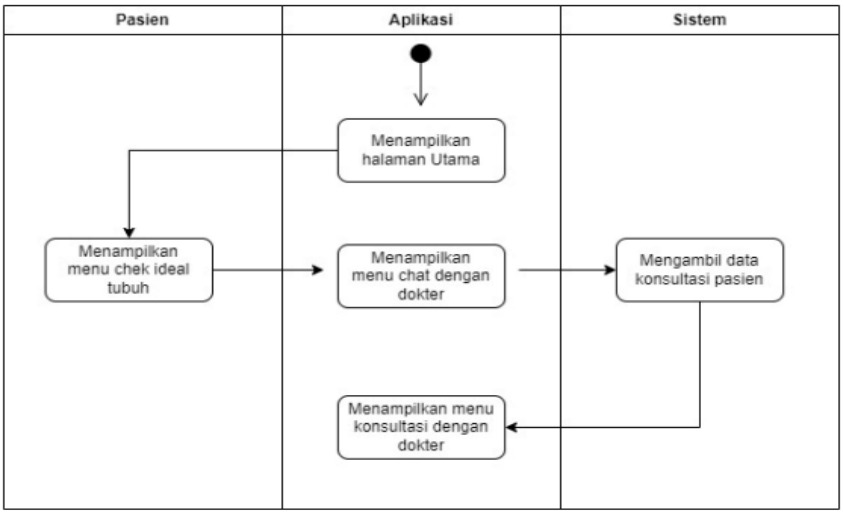

Figure 7 Activity Diagram Calculator BMI

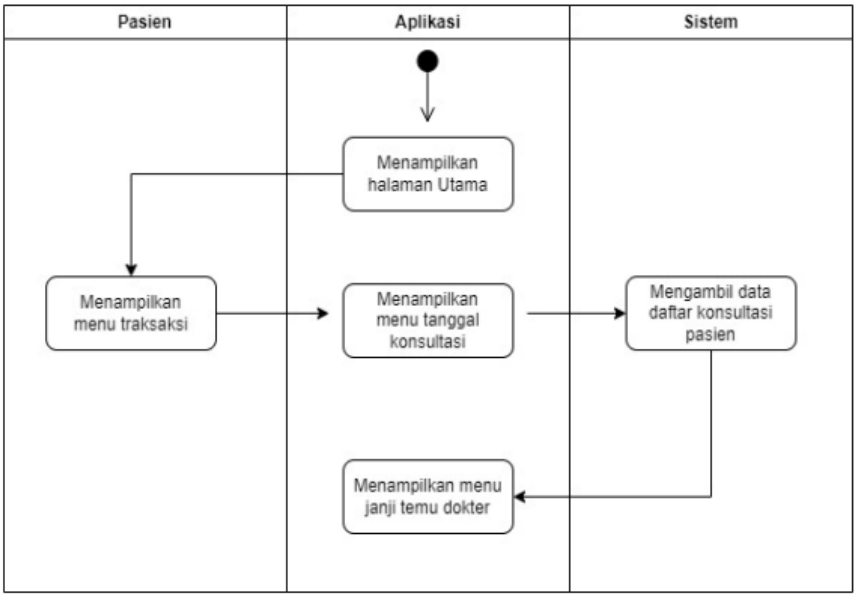

Figure 8 Activity Diagram Consultation

Activity Diagrams are designed with the main purpose of illustrating all the actions or activities performed by the user against the system, guided by the use cases that have been previously defined. This diagram provides a comprehensive overview of the workflow or process that occurs when a user interacts with the system to achieve a specific goal.

III. RESULTS AND DISCUSSION

A. The Development of Body Max Indek (BMI) Calculator

The "Login" or "Register" option page serves as the first screen displayed to users upon opening the application. At this stage, users are prompted to either log in using their email address and password or register for a new account to gain access to the application's features and continue using its functionalities

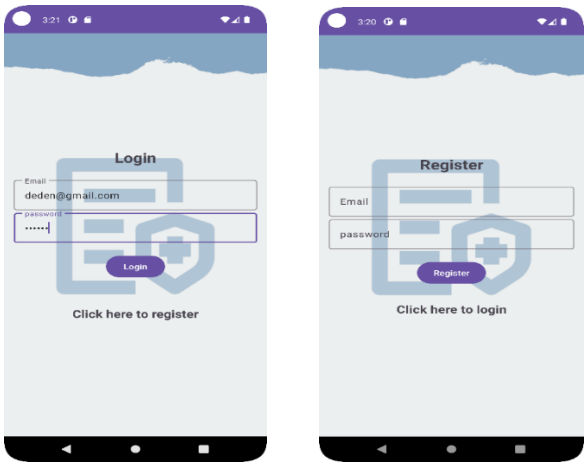

Figure 9 Page Login and Register

This page serves as the primary interface for accessing all the features and functionalities of the application. Users are required to successfully log in to their accounts before they can proceed to the main page, where they will have access to a variety of services provided by the application. These services include tools such as checking for an ideal body weight and consulting with experts on nutrition and diet planning, as illustrated in the figure above. By ensuring secure login, the application guarantees personalized access to these features, enhancing the user experience and maintaining data privacy.

The home page is the initial screen that appears immediately after a user has successfully logged in to their account or completed the registration process. This page serves as the central hub, providing users with an overview of the application and its various functionalities. It includes general information designed to introduce users to the app's purpose and features, offering guidance on how to navigate and utilize the available tools and services. As illustrated in Figure 10, the home page acts as a starting point, enabling users to explore other sections of the application with ease and efficiency.

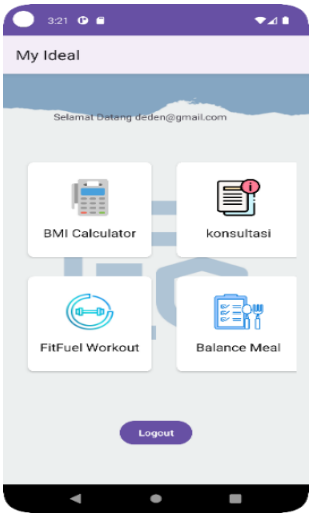

Figure 10 Page Dashboard

In addition to exploring the application's features, users are provided with the option to directly check their ideal body weight using the tools available on the platform. This functionality allows them to quickly access relevant information and proceed seamlessly to the next stage of their journey within the application. By simplifying this process, the app ensures that users can efficiently engage with its services while receiving personalized insights tailored to their health and wellness goals.

The application's primary feature is the Body Mass Index (BMI) calculator, which provides users with an easy and efficient way to assess their BMI based on their individual physical attributes. To begin using this feature, users are guided to first select their gender, as this information helps ensure more accurate calculations. Following this step, users are prompted to input their height and weight into the designated fields. Once these details are entered, they can initiate the BMI calculation process by simply clicking the dedicated button. This streamlined process, as illustrated in the accompanying image, allows users to quickly obtain their BMI results, enabling them to gain valuable insights into their health and fitness levels.

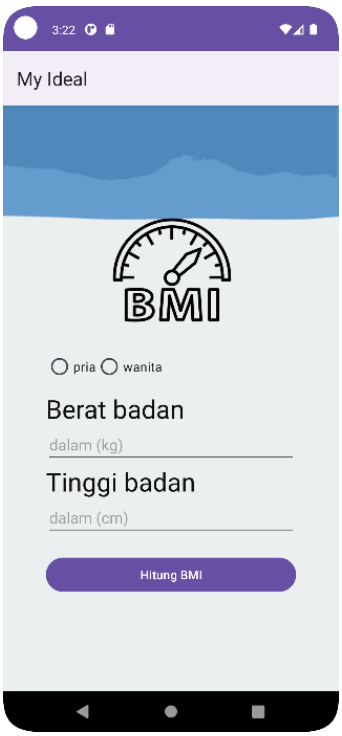

Figure 11 Page Calculator BMI

Once the results from the BMI calculator are displayed, users will receive personalized recommendations tailored to the outcome of their calculations. These recommendations are designed to guide users in making informed decisions about their health and fitness. Depending on the BMI results, the suggestions may include advice on maintaining a healthy weight, strategies for weight loss or gain, or tips for improving overall well-being. This feature ensures that users not only gain insights into their current health status but also receive actionable guidance to help them achieve their health and fitness goals effectively.

B. The Implementation of Body Max Indek (BMI) Calculator

1. Page Result Less than Ideal Weight

If based on the results obtained from the BMI calculation, the user's BMI value indicates that their weight falls within the less-than-ideal category, the application will provide targeted feedback and recommendations. This classification suggests that the user's current weight may not align with the optimal range for their height and gender. To address this, the app offers actionable suggestions and guidance, such as nutritional tips, dietary adjustments, or physical activity plans, aimed at helping the user achieve a healthier and more balanced weight. By highlighting specific areas for improvement, the application empowers users to take proactive steps toward enhancing their overall health and well-being.

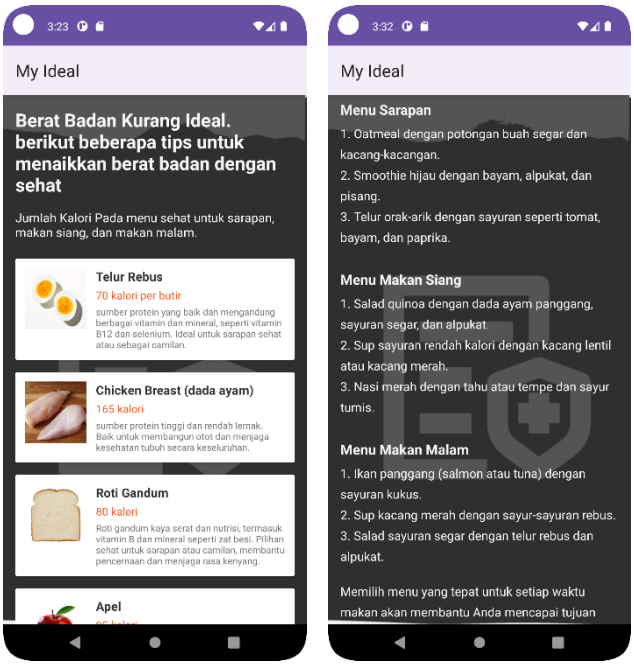

Figure 12 Page Result Less than Ideal Weight

The results of the BMI calculation will provide users with detailed recommendations tailored to address cases where the weight is classified as less than ideal. These recommendations are based on potential underlying causes, which may include factors such as inadequate nutritional intake, irregular eating habits, or specific health conditions that could be impacting the user's ability to maintain a healthy weight. The application takes these factors into account to offer personalized advice, including suggestions for balanced meal plans, tips for improving dietary habits, and recommendations to consult with healthcare professionals if necessary. By identifying these possible causes, the app aims to support users in addressing their unique challenges and working toward achieving a healthier and more balanced lifestyle.

2. Page Result Ideal Weight

If based on the results from the BMI calculation, the user's BMI value falls within the ideal weight category, the application will provide positive feedback and recognition of their healthy weight range. This indicates that the user's weight is well-aligned with the optimal standards for their height and gender. The app will offer encouragement to maintain their current lifestyle and health habits, as well as provide tips for sustaining a balanced diet, regular physical activity, and overall wellness practices. The goal is to reinforce the user's success while offering continued support to help them preserve their healthy weight and continue living a healthy lifestyle.
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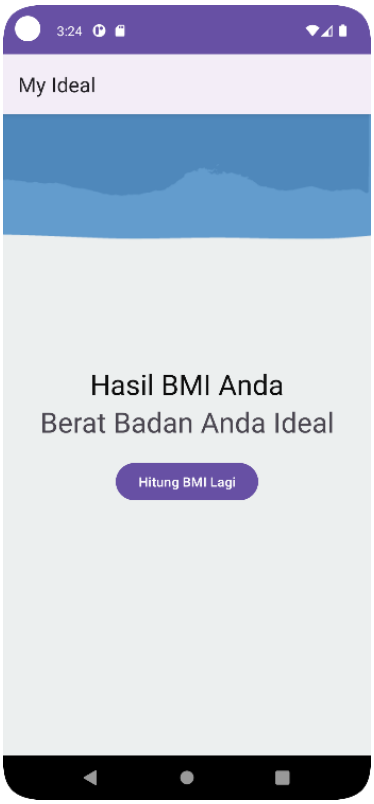

Figure 13 Page Result Ideal Weight

This condition refers to a state where your weight is properly aligned with your height, resulting in a balanced and proportional body composition. It indicates that your body has achieved an optimal weight relative to your height, which is often associated with better overall health and a lower risk of developing weight-related health issues. In this state, your body is functioning efficiently, as it is neither underweight nor overweight, but instead maintains a healthy equilibrium that supports various bodily functions and enhances your overall well-being. This balance is essential for promoting long-term health and preventing conditions such as heart disease, diabetes, and joint problems.

3. Page Result Excessive Weight

If, based on the results obtained from the BMI calculation, the user's BMI value falls within the overweight category, the application will provide tailored recommendations aimed at addressing this condition. This suggests that the user's weight exceeds the ideal range for their height and gender, which may increase the risk of developing health issues such as heart disease, diabetes, or joint problems. To assist the user in achieving a healthier weight, the app will offer practical advice, including suggestions for dietary modifications, exercise routines, and lifestyle changes. Additionally, the app may recommend consulting with a healthcare professional for further assessment and guidance on creating a personalized plan to reduce weight safely and effectively. These recommendations aim to support the user in improving their overall health and achieving a more balanced weight.

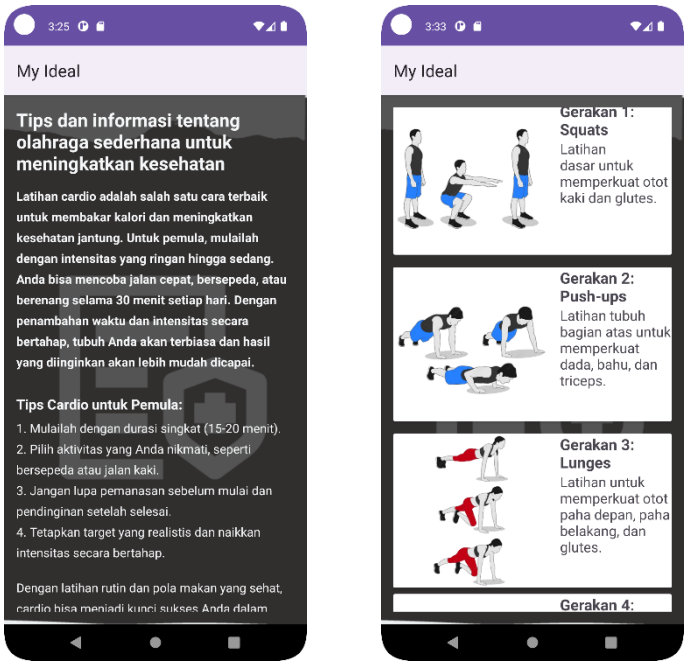

Figure 14 Page Result Excessive Weight

The results will offer personalized recommendations on how to reduce the risks associated with being overweight and work toward achieving a healthier weight. These suggestions will focus on practical steps, such as adopting a balanced and nutritious diet, engaging in regular physical activity, and making other lifestyle adjustments to promote overall well-being. Regular exercise is strongly emphasized as a key component of these recommendations, as it not only helps with weight management but also plays a significant role in improving cardiovascular health, boosting metabolism, and enhancing overall physical fitness. The application may also advise users to set achievable goals, monitor their progress, and consult healthcare professionals to ensure a safe and effective approach to weight loss.

4. Page Result Obesity Weight

If based on the results obtained from the BMI calculation, the user's BMI value indicates that their weight falls within the obese category, the application will provide comprehensive recommendations aimed at addressing this condition. Being classified as obese suggests that the user's weight significantly exceeds the ideal range for their height and gender, which can increase the likelihood of developing serious health issues such as heart disease, high blood pressure, type 2 diabetes, sleep apnea, and joint problems. To help the user manage their weight and reduce these health risks, the app will offer detailed advice, including dietary adjustments, exercise regimens, and lifestyle changes. The app will emphasize the importance of adopting a healthy eating plan, increasing physical activity, and making sustainable long-term changes to support weight loss. Additionally, the application may recommend seeking medical advice or consulting with healthcare professionals to create a personalized plan tailored to the user's specific needs, ensuring a safe and effective approach to achieving a healthier weight and improving overall health.

Figure 15 Page Result Obesity Weight

The results will offer personalized recommendations that encourage users to approach and consult with a professional counselor for further guidance. To facilitate this, the application includes a convenient chat feature, which allows users to directly communicate with a qualified counselor. This feature provides a secure and confidential platform for users to discuss their health concerns, seek personalized advice, and receive professional support tailored to their specific needs. By offering easy access to expert consultations, the app ensures that users have the necessary resources to make informed decisions about their health and wellness. This seamless interaction enhances the overall user experience, helping them take proactive steps toward achieving their health goals with the guidance of a trusted professional.

5. Page Chat with the Console

After receiving the initial guidance through the app's chat feature, users can then continue their consultation by chatting privately with the assigned nutritionist via WhatsApp. This provides a more personalized and direct line of communication, allowing users to discuss their health concerns, dietary needs, and progress in real-time. Through WhatsApp, users can receive tailored nutritional advice, ask follow-up questions, and get ongoing support, all within a secure and convenient messaging platform. This transition to a private chat ensures that users can maintain continuous engagement with their nutritionist, receive timely responses, and have a more interactive and supportive experience as they work toward their health and wellness goals.

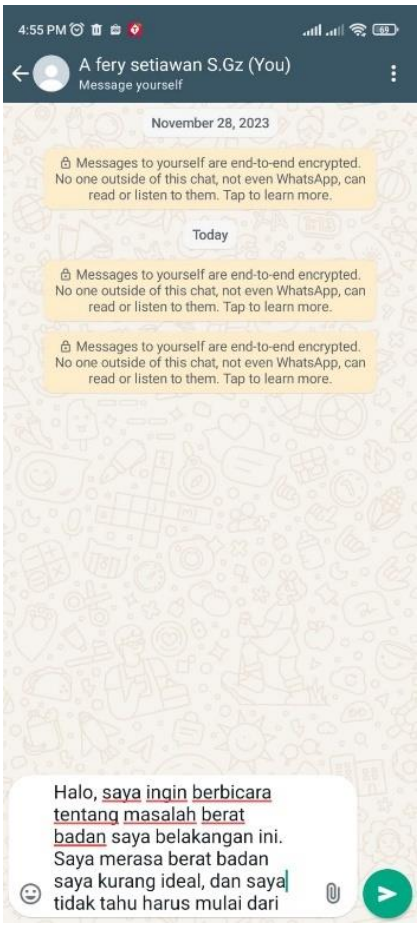

Figure 16 Page Chat with the Console

This is the initial display presented to the user when they choose to consult with the counselor personally. Upon selecting the option for a personal consultation, the user is guided through a straightforward process to initiate a private discussion with the counselor. The interface is designed to provide clear instructions and facilitate easy navigation, allowing the user to connect with the counselor either through the app's chat feature or by transitioning to a more personalized communication platform, such as WhatsApp. This initial screen ensures that users can easily take the first step in seeking professional advice, providing them with a seamless and supportive experience throughout the consultation process.

6. Compliments Black Box Testing

Black box testing is a software testing method that emphasizes functional feature requirements. The goal is to ensure the program meets all defined functional needs. In this method, input conditions include all functional requirements of the program. Testing is carried out on consumer mobile systems and workshop website systems. The following are the results of black box testing:

Table 2 Black Box Testing

No	Name feature	Expected Results	Test Results	Status
1	Login	The system can validate the user login	Login validation system based on	Success
2	Displaying the ideal body check menu	Based on username and password.	Username and password	Success
3	Displaying BMI check results	The system displays the BMI calculator menu	The system can display the BMI calculator menu	Success

No	Name feature	Expected Results	Test Results	Status
4	Send data	The system displays user diagnosis results	The system can display user diagnosis results	Success
5	Data into the database	The system sends user data	The system can send order data to the database	Success
6	Display consultation	Into the database which will be forwarded to the web admin	The system can display consultation information	Success

After going through black box testing, it provides evidence that the application has undergone successful testing and confirms that the functionality in the application matches the expectations that have been set previously. The research/testing plan for the BMI Calculator application will use the Black Box testing method with the State Transition technique. In scenario testing carried out to test the part to be tested is done by creating test cases (test cases) based on the input value of each input component and the expected output. Followed by executing each test case and recording the results to determine whether the application is qualified and suitable for use [26].

IV. CONCLUSION

Based on the analysis conducted in the study, the Ideal Body Check and Nutrition Consultation Application successfully achieved the main objective, which is to provide a practical tool to check the suitability of the user's ideal body weight and provide nutrition consultation and recommendations tailored to the user's individual needs. The app provides accurate results in calculating body mass index (BMI) and evaluating nutritional needs, as well as providing useful nutritional advice although there is still room for improvement in the personalization of recommendations. The problem raised in Chapter I, namely the need for an application capable of combining ideal weight checking and nutrition consultation, can be said to have been solved. The app is effective in providing nutritional recommendations that match the user's data. Objectively, the app is quite user-friendly, but further development is needed to improve the accuracy and personalization of nutrition advice in the future.

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