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A COMPREHENSIVE STRESS MANAGEMENT APP FOR UNIVERSITY STUDENTS

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Abstract:

Stress, a prevalent mental health disorder, significantly impacts university students, warranting dedicated attention due to its potential effects on their well-being and safety. The "Stress Management Application for Universiti Kebangsaan Malaysia (UKM) Students" is a strategic initiative designed to identify and assist students experiencing stress, consciously or unconsciously. The development of this application stems from the observation that numerous students face stress from academic challenges and family issues but feel embarrassed to seek face-to-face counselling. Additionally, economic pressures and living costs contribute to their financial stress. Aligned with Malaysia's Sustainable Development Goals, this application aims to collaborate with the UKM Counselling Unit to mitigate stress among students. It targets UKM students specifically, providing an innovative solution to detect stress levels—categorized as good, moderate, or dangerous—through a series of standard assessment questions. The application also facilitates access to nearby health facilities and offers a guidance function to arrange counselling appointments, with student information sent directly to the UKM Counselling Department. Furthermore, the application includes resources for effective stress management, such as exercise-based therapies. Developed using Android Studio and following the waterfall model, the application underwent planning, analysis, design, implementation, and testing phases. This comprehensive approach ensures that the application helps reduce stress among UKM students and streamlines the counselling process, enhancing the university's ability to support its students effectively.

Keywords:

Stress Management, Stress Management App, Mental Health Mobile App

Introduction

Stress is a physiological response triggered by excessive emotional pressure, manifesting as a mental health disorder when individuals confront various problems. This condition is particularly perilous among students, who face numerous pressures and challenges during their formative years, posing significant risks to their well-being and those around them. Zakaria, E., et al., (2021) highlights that individuals experiencing such stress are more likely to contemplate suicide rather than seek solutions. Consequently, educational institutions must address this issue with utmost seriousness, dedicating comprehensive attention to reducing the number of distressed students.

Students represent a highly vulnerable demographic regarding mental health issues due to the typical challenges associated with transitioning to adulthood and the frequent economic and material difficulties they encounter. Campbell and Svenson (1992) assert that stress, when perceived negatively or experienced excessively, can detrimentally impact a student's health and academic performance, manifesting as various health problems, including headaches, stomach-aches, insomnia, fatigue, and mood disorders. Indirectly, stress can lead to behavioural and criminal issues. Romas and Sharma (2004) emphasize that uncontrolled stress beyond a certain threshold can create significant personal problems. Moreover, students often feel apprehensive and embarrassed to seek guidance from counselling departments, exacerbating the stress issue due to a lack of communication and support.

Current stress management practices among students often need more organization, leading to less focus on academics. Effective financial management is crucial for students to manage their expenses and avoid financial insufficiency, as Abdollah, A., et al., 2021 demonstrated. Many students overspend on wants rather than needs, resulting in insufficient funds for tuition fees and other university expenses. With many students relying on government PTPTN loans and not working, poor financial management becomes a significant stressor. Additionally, inadequate time management contributes to stress symptoms, as students struggle to meet assignment deadlines, accumulating tasks that must be completed simultaneously.

Moreover, some students feel embarrassed to seek help from the university counselling department. Busy academic schedules often hinder these students from making appointments, leading them to internalize their problems and experience stress without realizing it. A dedicated application could facilitate more accessible communication with the counselling department, allowing students to share their concerns or schedule appointments without embarrassment.

Environmental factors, such as problematic family dynamics and frequent bullying, also contribute to students' stress. These experiences can lead to social isolation due to fear and anxiety, potentially causing long-term trauma. Monitoring these students is essential to prevent them from engaging in harmful behaviours. An application could help raise awareness about the dangers of stress-related issues and provide necessary support.

One significant cause of stress among students is the pressure stemming from academic demands, inefficient time management, escalating living costs, and a generally stressful environment. These issues necessitate intervention through counselling services. Moreover, many students experience embarrassment when seeking treatment and solutions from university counsellors. Due to their hectic academic schedules, they often need help contacting

counsellors and arranging appointments. Consequently, these students tend to remain silent and internalize their problems over extended periods, inadvertently exacerbating their stress levels. This application allows students to communicate discreetly and effortlessly with university counsellors. Students experiencing difficulties can share their concerns or schedule appointments with counsellors via the email feature included in the application. Additionally, the application raises awareness about the dangers of stress and aids students in managing their time effectively by adhering to a structured schedule. Mobile applications have been developed to cater specific need of user, such as RelayVio which is designed and developed as android based mobile applications for all users, particularly users of domestic violence victims and their families in Malaysia (Norowi, N.M., et al. 2021).

A dedicated stress management application is essential because it provides timely and accessible support for students experiencing stress (Solís-Galván, J.A., et al. 2021, Can, Y.S., et al. 2019, De Zavala, G., et al. 2024). Such an app can detect stress early by employing scientifically validated assessment tools that gauge a student's stress levels through questionnaires and self-reported data. By offering personalized feedback and resources based on these assessments, the application can help students recognize their stress symptoms and understand the underlying causes. Furthermore, the app can provide immediate access to coping strategies, such as relaxation exercises, mindfulness practices, and time management tips, which can prevent stress from escalating. Additionally, integrating a direct communication channel with university counselling services ensures that students can seek professional help discreetly and conveniently, reducing the stigma of seeking mental health support. Overall, this technological intervention can significantly enhance the well-being of students by offering continuous monitoring, proactive guidance, and easy access to mental health resources.

Thus, developing the "Stress Management Application for UKM Students" is a crucial initiative to mitigate mental health problems among university students. This application can identify students experiencing stress and assess their stress levels through targeted standard assessment questions. It includes various functions, such as guides for managing stress symptoms, light relaxation exercises, and self-reminders to aid in time management. Additionally, the application will collaborate with the UKM Counselling Department, enabling students to seek assistance online and effectively address their stress issues.

Usability testing is a crucial step in the development of mobile applications, as it directly impacts user retention, engagement, and overall success in the market. Usability testing is conducted with potential users, such as students and councillors. This assessment ensures that the developed apps are user-friendly, intuitive, and easy to navigate, identifying pain points or areas of confusion that could frustrate users. It confirms that all features and functions work as intended across different devices and operating systems, detecting bugs, crashes, and performance issues. Gathering feedback directly from users helps understand their satisfaction and overall experience with the app, identifying what users like and dislike to provide insights for future improvements. Furthermore, usability testing supports an iterative development process, allowing developers to make ongoing improvements based on user feedback and testing results, helping prioritize development efforts by highlighting the most critical usability issues to address.

Literature Review

Mental well-being is a fundamental aspect of an individual's life. It reflects a state of well-being in which people know their capabilities, manage stress effectively, work productively, and contribute to their community. It involves emotional expression and the ability to adapt to the pressures and demands of daily life. However, the distinction between individuals with good mental health and those without is not clearly defined, as mental health exists on a spectrum ranging from moderate to critical levels. Various factors contribute to mental health issues, including socioeconomic challenges, environmental changes, work or study pressures, and physical illnesses. Good mental health is the absence of mental illness symptoms and the ability to overcome challenges and adapt to daily life. Individuals with mental illnesses experience conditions that significantly impact their daily functioning, leading to disrupted activities and deteriorating health. A lack of awareness in the community exacerbates mental health issues. As Shyangwa et al. (2003) highlight, knowledge about mental health issues is crucial, yet the public often holds negative attitudes toward mental illness and those affected by it. Thus, providing treatment and support to individuals with mental health issues is imperative.

Stress is a prevalent concern among those with severe mental health problems. It is an emotional, physical, and mental response to changes in daily life. McNamara (2000) defines *stress* as stemming from internal factors, external events, or the interaction between the individual and their environment. Symptoms of excessive stress include increased workload, tension, anxiety, fatigue, conflict, panic, depression, and apathy. While everyone has an immune system to handle daily activities, stress can weaken this system. Many underestimate the significance of stress due to a lack of awareness of its effects. If not managed, stress can lead to severe health issues such as cancer and heart disease and can even become life-threatening due to a loss of control.

Students are increasingly experiencing stress due to the myriad challenges they face in their academic pursuits. A study by Deckro et al. (2002) on stress within the learning environment revealed that it adversely affects academic performance, causes frustration, impacts physical health, and leads to suicidal thoughts. The negative impact of stress prevents students from achieving their academic goals. Students struggling academically face significant pressure to complete assignments independently, often resorting to inappropriate activities if they cannot manage this pressure, leading to higher failure rates, as noted by Brewster (2001). Addressing stress among students is crucial to developing a healthy, successful future generation of leaders.

Azhar M. Zain (2002) reports that approximately 25 to 35 per cent of students in the country experience mental stress due to increasing workloads. The education system's focus on academic excellence leaves students little time for rest or extracurricular activities. The pressure from parents and teachers exacerbates this stress, impacting students' academic performance, social relationships, and overall well-being. Students face various problems during their university life, highlighting the significance of stress issues in this demographic.

The focus on mental health aligns with the third Sustainable Development Goal (SDG), which aims to ensure healthy lives and promote well-being for all ages. The SDGs, introduced by the United Nations (UN), seek to achieve global sustainable economic, social, and environmental development. Health aspects within the SDGs emphasize increasing access to quality health services, reducing disease burdens, and ensuring community well-being. According to the SDG

Index (2019), Malaysia ranks 68th out of 162 countries committed to sustainable development. The health goal includes reducing child mortality, combating communicable and non-communicable diseases, and ensuring access to essential health services and effective medicines. Mental health is increasingly recognized within the SDGs, emphasizing its role in well-being and the need to prevent and treat mental health issues. Studying stress among students aligns with Malaysia's commitment to the SDGs, aiming to reduce stress-related problems among students and enhance their well-being.

The prevalence of stress is a growing health concern in Malaysia, necessitating awareness and solutions to mitigate this issue. Modern initiatives, such as mobile applications, offer promising avenues for disseminating health information to the tech-savvy generation. Health applications can provide critical information, facilitate health monitoring, and offer tips for maintaining mental health. They can also link users to expert help, demonstrating the positive impact of technology on health issues.

Applications designed to perform specific functions on mobile devices are widely accessible through platforms like Google Play Store and App Store. They serve various purposes: entertainment, news, business, and health. Health applications, in particular, facilitate users in finding solutions to their health problems, enhancing communication for advice and knowledge sharing. According to Khairuddin et al. (2014), social interaction through health applications bridges gaps across different spaces, times, cultures, and races, potentially transforming daily health-related routines. Real-time and web-based software are two types of applications relevant to health monitoring. Real-time software allows immediate access to data, while web-based software requires internet access through a web browser. Real-time software is particularly suitable for health applications to monitor significant changes in patient conditions.

There is a growth in the development of app related to managing stress and mental health with various function such as chatbot, online therapy, educational tools, mood tracker, testing and self-help (Teles, A., et al. 2019). As the initial study, a comparative analysis of three existing mental health applications: namely A, B and C. **Application A** is a mental health application that leverages artificial intelligence (AI) and therapeutic techniques to assist users in managing stress, anxiety, and other mental health issues. Designed to provide continuous mental health support and guidance via a mobile platform, application A offers a diverse array of features. One notable function is its AI-powered "penguin bot," which allows users to converse about anything on their minds. This bot delivers psychological support globally, aiding users in self-managing their stress and mental health. Additionally, the application includes a chat feature with experts for direct guidance, specifically addressing stress, anxiety, sleep deprivation, and other mental health concerns. The app incorporates cognitive behavioural therapy (CBT), dialectical behaviour therapy (DBT), yoga principles, and mindfulness. It is a safe space for users to express their feelings without fear. Furthermore, the app offers training modules aimed at reducing stress.

Application B aims to provide a platform that facilitates access to mental health resources and treatments, enhancing emotional well-being, reducing stress, and increasing self-awareness. The application offers numerous features to help users alleviate stress and achieve tranquillity. Among its notable features is an extensive collection of calming music. The application also includes a section dedicated to improving sleep quality and provides breathing exercises for stress management. Users can watch yoga exercise videos as well. Another appealing function

is the community space, which allows users to share knowledge and insights about health. The app also features a journal section for users to note essential matters and a mood tracker to monitor emotional changes over time.

Application C is a prominent mental health app that offers a variety of tools and resources to help users manage stress, improve sleep quality, and achieve emotional well-being. It is designed with features that enhance sleep quality and reduce stress. The application includes a mood tracker in the menu, facilitating guidance based on users' mood changes. Among its appealing features is the sleep quality enhancement section, which offers calming nature sounds and bedtime stories to aid restful sleep. These stories are also suitable for children. The app provides background sounds and videos that users can select according to their preferences. Users can save favourite tracks in a dedicated section, making it easier to find preferred songs without searching. Additionally, the application offers new users various options based on improving sleep and managing stress.

The analysis encompasses an overview of each application's development objectives, functionalities, and platforms. Additionally, the study assesses the strengths and weaknesses of these applications to inform the enhancement of future mental health app functionalities. The comparison concludes with a detailed examination of the functional differences among the three of them. Mental health applications such as A, B and C are gaining increasing prevalence. Each application offers distinct functionalities and user interfaces. This comparative analysis aims to identify the strengths and weaknesses of these applications to guide the improvement of future developments.

A leverages artificial intelligence and therapeutic techniques to provide mental health support. B offers a platform for meditation, mindfulness, and general well-being. C focuses on meditation, stress management, and improving sleep quality. While all three applications are available on Android and iOS platforms, C also offers web access. In terms of accessibility, A imposes age restrictions: children under 13 are prohibited from using the app, and users under 18 must review the Terms of Service and Privacy Policy with a guardian. Additionally, C lacks a chat room feature for professional medical guidance. Language options are another consideration; A is limited to English, which poses challenges for non-English speaking users.

In conclusion, A, B and C are prominent mental health applications, each serving different purposes. Each application has distinct advantages and disadvantages, providing valuable insights for developing future mental health apps. In an era of growing mental health awareness, these applications contribute positively to mental well-being. The continuous development, adequate customer support, and integration of advanced mental health knowledge will be crucial for the success of future applications.

Methodology

In developing this application, various methodologies were considered to ensure optimal functionality and user-friendliness. The chosen methodology is the Waterfall Model, a classic and well-regarded approach known for producing high-quality applications. The Waterfall model is considered an optimal approach for developing mobile applications due to its structured and sequential methodology, which ensures a clear and systematic progression through distinct phases. This model's emphasis on thorough planning, detailed documentation, and a well-defined scope allows developers to establish clear objectives and requirements

before advancing to subsequent stages. Each phase must be completed before the next begins, reducing the likelihood of errors and rework. This methodical approach is particularly advantageous for mobile app development, where comprehensive planning and rigorous testing are crucial to ensure compatibility, usability, and performance across various devices and platforms. Furthermore, the Waterfall model's focus on documentation facilitates better project management and communication among stakeholders, ensuring that all parties clearly understand the project's progress and deliverables.

The Waterfall Model comprises several phases: Planning, Analysis, Design, Implementation, and Testing. Its primary advantages are its structured and sequential development process, making it particularly suitable for complex system development. Figure 1 illustrates the sequential phases of the Waterfall Model

Planning Phase: All relevant user information is collected and documented during this initial phase. This stage also involves planning the task structure and allocating tasks accordingly.

Analysis Phase: This phase focuses on identifying problems and devising solutions, understanding the primary objectives of the application, and conducting user surveys to ascertain their actual needs.

Design Phase: The design phase involves translating the collected information into a physical sketch and determining user interactions with the system. The design must align with user needs and system objectives.

Implementation Phase: This phase entails coding and data entry into the system using appropriate software, such as Android Studio.

Testing Phase: In the final phase, the system undergoes rigorous testing to detect weaknesses and ensure smooth operation. Additionally, initial user training is provided to guarantee proper and accurate usage. Usability tests were conducted with the students and the UKM Counselling Department to gather feedback from target users and experts.

In conclusion, the structured and sequential nature of the Waterfall Model ensures a transparent development process, which is especially beneficial for complex systems. This methodology guarantees high-quality application development and facilitates creating user-friendly and functional software
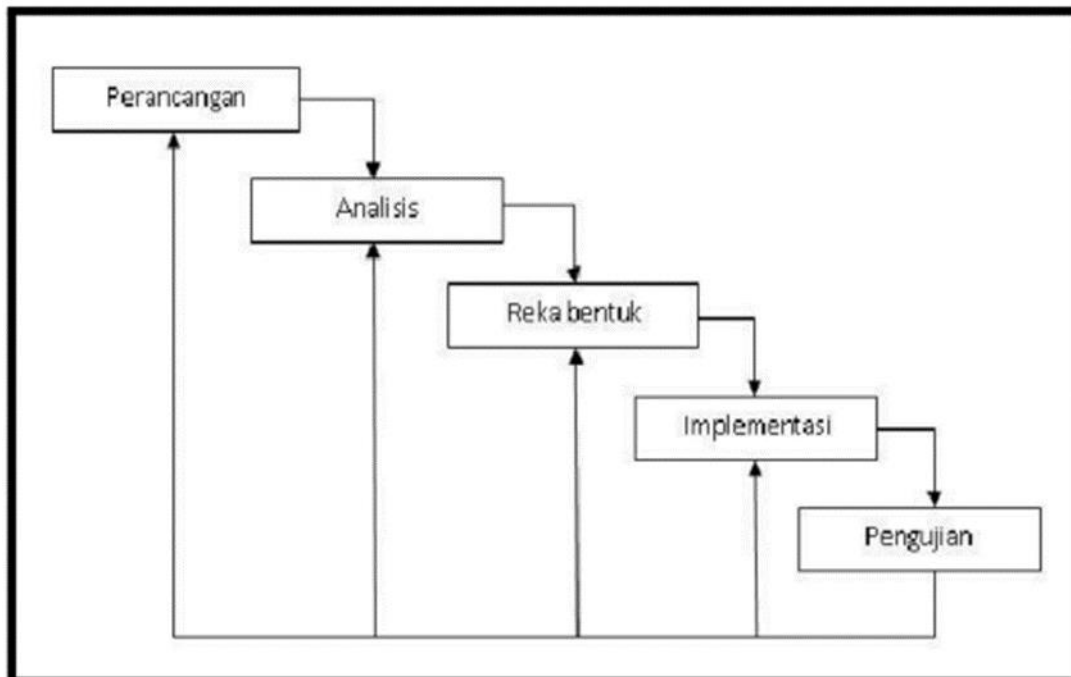
Figure 1: Waterfall Model

Results and Discussion

The Stress Management Application for UKM Students (UKMHealth) has been successfully developed, with all necessary documentation completed—the development process utilized Android Studio software, employing Java as the programming language. Firebase Firestore, a cloud-based database, was selected to ensure secure and efficient data storage and connectivity within the application. Below is a detailed description of the application.

Upon entering the application, users are greeted with the login interface, where they must enter their registered email and password. This initial step ensures secure access and a personalized user experience. Figure 2 illustrates the login interface of the UKMHealth application.
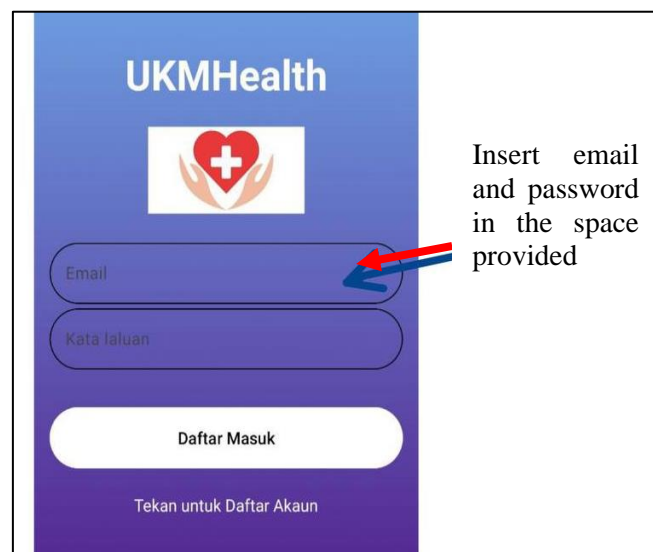
Figure 2: Login Interface

After successfully logging in, users will be presented with the application's main menu. Figure 3 below illustrates the main menu interface of the application. This section features six primary functions: stress detector, appointments, expert guidance, health locations, guides, and reminders. These functions collectively assist users in initially detecting stress, booking online appointments with counsellors, managing stress through guides such as exercises, and providing direct locations to the nearest health centres for emergency assistance. The functions aim to offer a comprehensive platform to help students manage stress and improve their mental well-being.
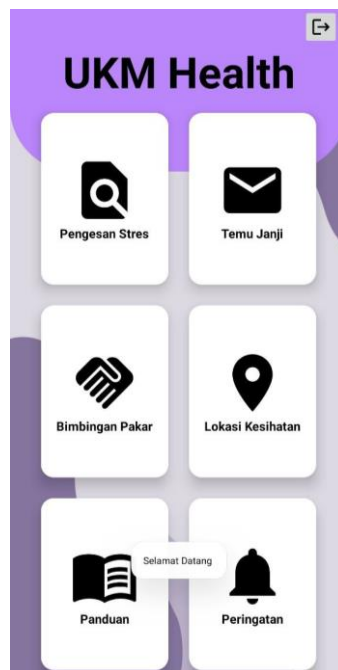
Figure 3: Main Menu Interface

In the main function of the application, users can detect their stress levels by answering a few displayed questions. The functionality developed in this application incorporates 21 assessment questions from the Depression Anxiety Stress Test (DASS) available on the Ministry of Health Malaysia's website. These standardized questions serve as an initial screening tool for students. The DASS adopts a dimensional rather than a categorical approach to psychopathology, with scores reflecting the degree of symptom severity rather than diagnostic thresholds. The overall DASS score indicates general psychological distress. For students seeking a more comprehensive understanding of their stress levels, it is essential to consult the Counselling Department, as only counselling professionals and health doctors can interpret stress in-depth. The DASS screening is designed to assess the levels of stress, anxiety, and depression experienced by students, with results interpreted according to Table 1. Figure 4 shows the stress detector question interface where users need to select from the provided answer choices. Instructions are also given for each question.

Table 1: DASS Results Interpretation

	Depression	Anxiety	Stress
Normal	0-5	0-4	0-7
Mild	6-7	5-6	8-9
Moderate	8-10	7-8	10-12
Severe	11-14	9-10	14-17
Extremely Severe	More than 15	More than 11	More than 18

Source: Ministry of Health

Figure 4: Stress Detector Questions Interface

When users have finished answering the questions, the results will be displayed, showing three categories: depression, anxiety, and stress. Figure 5 shows the stress detector results interface obtained by the users. In this section, users can download the results and retake the test.
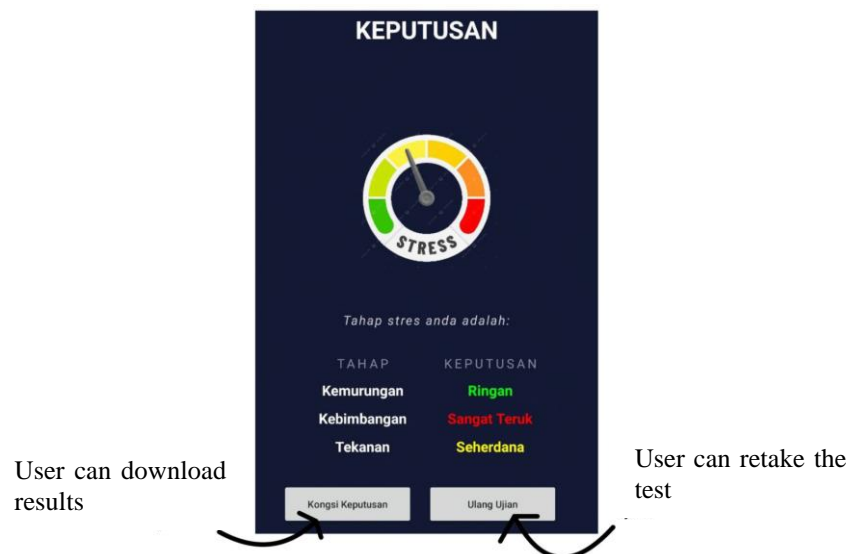
User can download results

User can retake the test

Figure 5: Stress Detector Results Interface

The second function is the expert guidance feature, which allows users to receive personalized support from professionals in their interest. Figure 6 shows a comprehensive list of experts from the UKM Counselling Unit.

Figure 6: List of Expert from UKM Counselling Unit

When users select an expert, detailed information about the chosen professional is displayed, as illustrated in Figure 7. This information includes the expert's email, position, and other relevant credentials. Users can initiate communication with the expert to seek guidance and request an appointment by pressing the contact button. This feature not only facilitates direct access to professional support but also ensures that students can connect with experts whose specialities align with their specific needs, thereby enhancing the effectiveness of the counselling process. Moreover, the expert guidance function fosters a supportive and proactive environment, encouraging students to seek help and utilize available resources for their mental

well-being. This interaction with professionals can provide students with tailored strategies for managing stress, anxiety, and other mental health challenges, promoting a holistic approach to their psychological health.
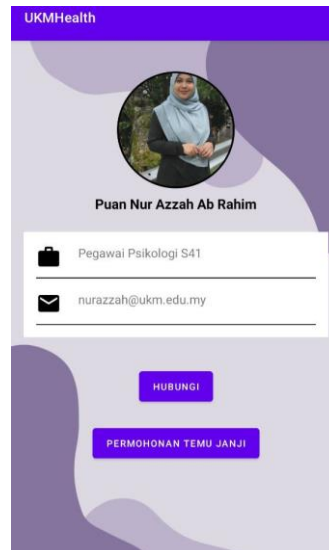

Figure 7: List of Expert's Information

The third function is the appointment function. When users select this function, it will display the appointment history made by the user, as shown in Figure 8. Users can request an appointment by pressing the add button at the bottom of the appointment history section.
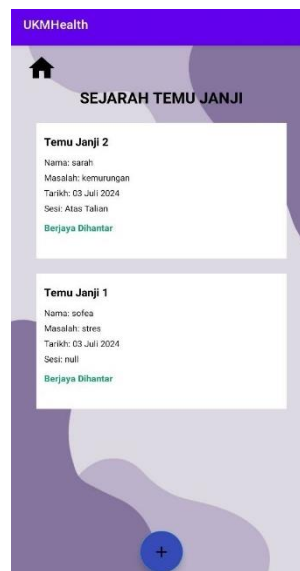

Figure 8: Interface for Appointment's History

When users press the add button, the appointment request form will appear. Figure 9 shows the appointment form interface that users need to fill out if they want to make an appointment with the UKM Counselling Unit.

Figure 9: Interface for Appointment Form

The fourth function is the Health Locations function. Initially, this function will detect the user's current location. When users select a health center and press the search button, the location will be displayed. Figure 10 shows the interface for the health locations function, displaying nearby health locations for emergency purposes.

Figure 10: Interface for Health Center Location

The fifth function is the stress management guide feature, a critical component designed to assist users in understanding and mitigating their stress levels. As illustrated in Figure 11, the guide interface is structured into three comprehensive categories: symptoms, coping steps, and exercises to reduce stress issues. The 'symptoms' category provides detailed descriptions of

various stress indicators, helping users to identify and recognize the signs of stress early. The 'coping steps' category offers practical strategies and techniques for managing stress effectively. These steps are based on evidence-based practices and are tailored to be easily implementable daily. The 'exercises to reduce stress' category includes a range of physical and mental exercises, such as mindfulness techniques, breathing exercises, and physical activities, all aimed at alleviating stress.

Figure 11: Stress Management Guide Interface

For the stress symptoms category, Figure 12 shows the guide interface for this category, displaying an overview of the physical signs of stress.

Figure 12: Interface for Stress Symptom Guidelines

For the coping steps category, Figure 13 shows the guide interface for coping steps, using illustrations as a guide for users.

Figure 13: Interface for Stress Coping Suggestions

For the exercise category, Figure 14 shows the guide interface for this category, displaying several short exercise videos. Users can play the provided videos as a guide.

Figure 14: Interface for Exercise Guide

The final function in this application is the reminder function. Figure 15 shows the reminder interface, displaying a list of reminders created by the user. Users need to press the add button to add a new reminder. Additionally, in this section, users can edit and delete reminders they have created.

Figure 15: Interface for Notification Reminder

Figure 16 shows the interface for reminder information that users need to fill out to create a new reminder.

Figure 16: Interface for Reminder Setting

After finishing using the application, users can log out. Figure 17 shows the application's logout interface, which will display the user's current email.
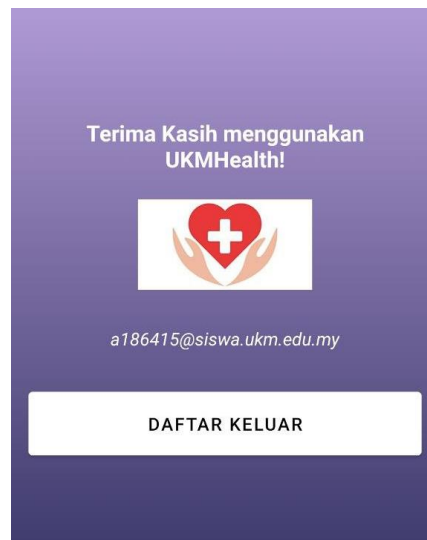
Figure 17: Logout Interface

Usability Testing

The usability testing aims to understand how real users interact with the developed application and to implement changes based on the results. Ensuring the application or website is easy to navigate and that tasks can be completed effortlessly is paramount. Two types of users were selected for testing: UKM students, the primary target users, and representatives from the UKM Counselling Department, serving as expert users.

This usability testing involved 13 UKM students to gather feedback on the UKMHealth application. The goal was to ensure that users could use the application quickly, effectively, and satisfactorily. The usability testing was conducted using a survey focused on three key factors: usability, information quality, and interface quality. Each factor included several related questions, and feedback was measured using a Likert Scale ranging from 1 to 5 (1: Strongly disagree, 2: Disagree, 3: Neutral, 4: Agree, 5: Strongly agree).

- **Usability:** Six questions assessed this factor, with an overall average score of 4.75, indicating high user satisfaction.
- **Information Quality:** Six questions evaluated this factor, resulting in an overall average score of 4.63, suggesting that the information displayed is clear and accurate.
- **Interface Quality:** Seven questions were used to measure this factor, with an overall average score of 4.73, showing intense user satisfaction with the application's interface.

As one of the key stakeholders in this app, assessment sessions were conducted with representatives of the Counselling Department. For the Counselling Unit's usability test, the focus was on the functionality of the app. Each function was assessed through several related questions and measured on the Likert Scale ranging from 1 to 5 (1: Strongly disagree, 2: Disagree, 3: Neutral, 4: Agree, 5: Strongly agree). The overall feedback from the Counselling Department indicated that all functions were tested satisfactorily, with average scores exceeding 4.00. This demonstrates that all functions work exceptionally well and meet the Counselling Department's expectations.

The overall average results indicate that the UKMHealth application functions effectively. The testing sessions conducted with students and the Counselling Department have significantly

contributed to the application's development process. Most users who tested the application expressed satisfaction with its functions. However, some areas still need improvement for future iterations.

The usability testing of the UKMHealth application has provided valuable insights into how real users interact with the platform, ensuring that it is easy to navigate and that tasks can be completed effortlessly. Including UKM students, the primary target users, representatives from the UKM Counselling Department, and expert users have enabled a comprehensive evaluation of the application. While the overall results are highly encouraging, indicating that the UKMHealth application functions effectively and satisfies most users, areas are identified for future improvement. These insights will be instrumental in refining and enhancing the application. By addressing the feedback and continually updating the platform, we can ensure that the UKMHealth application remains a valuable tool for students and counsellors, further enhancing its usability, information quality, and interface design. This commitment to ongoing development will help maintain high user satisfaction and support the well-being of the UKM community.

Conclusion

This application is designed to be a comprehensive platform for students managing stress, incorporating several beneficial features. It includes a stress detector, stress management guide, expert appointments, counselling guidance, treatment location suggestions, and self-reminders. These resources and guides aim to help students enhance their mental health, enabling them to focus on their studies and achieve success without mental stress. Through this platform, students will learn practical organizational and problem-solving skills, fostering a positive environment among university students. This approach facilitates the planning and comprehension of user interaction and system interaction, ensuring the application's successful utilization. Several hardware and software requirements are delineated for the application's development. The UKMHealth application offers various functions to assist UKM students in managing stress-related issues. These features will help students navigate the counselling services available at Universiti Kebangsaan Malaysia. The UKMHealth application aims to facilitate easier online communication with experts, providing students with accessible support and guidance.

Integrating mental health applications within university settings holds significant potential to provide ongoing student support and resources, fostering a more supportive and proactive environment. Long-term usage of these applications could lead to a reduction in the stigma associated with seeking mental health help, as regular interaction with the technology normalizes discussions around mental well-being. Furthermore, sustained engagement with these applications can equip students with coping strategies and resilience skills that extend beyond their academic years, enhancing their overall mental health and well-being in the future. Additionally, longitudinal data collected through the application by the counselling department could offer valuable insights into trends and patterns in student mental health, thereby informing university policies and support services. This proactive approach addresses immediate mental health concerns and contributes to students' holistic development, preparing them for the challenges of post-graduate life.

Acknowledgement

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