
Application for Mental Health Consultation with Scheduling Function at the Counseling Guidance of Universitas Teknologi Yogyakarta

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Abstract

This study developed a mobile-based mental health consultation application at Universitas Teknologi Yogyakarta (UTY) to offer both online and offline counseling services for students. The tool incorporates two primary features online consultations and offline consultation scheduling, designed to improve students' access to mental health support. The system utilizes Flutter for cross-platform mobile application development, Firebase for data management, and Node.js for backend services. The study employs a Research and Development (R&D) methodology encompassing needs analysis, system design, implementation, and testing. The results indicate that the application successfully mitigates obstacles such as time limitations, stigma, and restricted accessibility, hence enhancing student involvement with mental health services. The Self-Reporting Questionnaire 20 (SRQ-20) serves as a mental health screening instrument within the application, enabling students to evaluate their mental health status. This program aims to deliver a thorough and accessible solution for mental health counseling at UTY and may serve as a prototype for other universities.

1. Introduction

Mental health challenges pose a significant concern among university students, adversely affecting academic performance, social integration, and overall well-being. In Indonesia, recent studies indicate that 34.7% of students exhibit anxiety symptoms, while 27.8% display symptoms of depression. Despite this high prevalence, a substantial number of students refrain from seeking professional help due to persistent obstacles such as social stigma, restricted access to counseling services, and time constraints. At Universitas Teknologi Yogyakarta (UTY), existing counseling services demonstrate minimal student engagement, mirroring challenges faced by many educational institutions [1].

Digital mental health platforms, particularly mobile applications, have shown considerable promise in enhancing the accessibility of psychological assistance and mitigating these barriers to obtaining support. However, much of the existing research focuses on the general population or specific health issues, often neglecting the distinct needs of university students. To address this gap and improve student engagement with mental health resources, this research proposes the development of a customized mobile application for UTY students. This application integrates both real-time online consultations and flexible scheduling functionalities for in-person appointments, thereby enhancing accessibility, adaptability, and efficacy of mental health

services. Ultimately, this initiative aims to diminish the stigma associated with mental health, promote proactive care, and equip students with more efficient strategies for managing stress, anxiety, and depression.

Prior research has investigated the advantages of digital mental health platforms, especially mobile applications, in delivering psychological assistance. Studies by [2] and [3] emphasize that digital platforms can enhance the accessibility of mental health treatments and diminish obstacles to obtaining assistance. Nevertheless, several studies concentrate on the general population or particular health issues, neglecting the distinct needs of university students. This project aims to address this deficiency by creating a customized mobile application that combines real-time online consultations with appointment scheduling for in-person meetings. This research seeks to enhance mental health care accessibility for students at UTY by addressing their specific needs and offering an effective platform for professional support. Additionally, it incorporates the Self-Reporting Questionnaire 20 (SRQ-20), a recognized mental health screening instrument, which will be integrated into the application to evaluate students' mental health conditions at the commencement of their consultation process. Incorporating the SRQ-20 will furnish counselors with a preliminary assessment of the student's mental health status, crucial for efficient counseling delivery.

This research presents an innovative mobile application for mental health consultation, incorporating digital features like SRQ-20 assessment for both online and offline services. The application enhances access to counseling and offers crucial scheduling flexibility for students facing demanding academic commitments. This dual digital and in-person approach effectively addresses significant barriers to mental health assistance, such as time limitations and the stigma of direct consultations [4]. Subsequent sections detail the application's development techniques, design attributes, and user testing outcomes. Ultimately, this project aims to enrich existing literature on digital mental health treatments within higher education, fostering improved student well-being and academic performance through a more accessible, user-friendly, and flexible support system. [5]

2. Research Method

This section presents a comprehensive description of the methodologies utilized in the examination of the Mental Health Consultation Application with a scheduling feature. The text delineates the research process, instruments employed, data acquisition techniques, and the study's context. This methodology guarantees that other researchers can accurately duplicate this study.

2.1 Respondent Characteristics

This study involved university students from Universitas Teknologi Yogyakarta (UTY) who completed the Self-Reporting Questionnaire-20 (SRQ-20) to evaluate their mental health status. The chosen individuals were aged 18 to 25 years and constituted a diversified sample from multiple faculties within the university. This varied selection guaranteed a thorough comprehension of mental health concerns across several academic fields.

Researchers utilized the SRQ-20 to assess prevalent mental health symptoms, including depression, anxiety, and associated illnesses. The survey responses yielded significant data for the creation of the mental health consultation application, aiding in the identification of the prevalence of mental health issues within the student demographic.

2.2 Data Collection

The study employed the SRQ-20 (Self-Reporting Questionnaire-20) for data collection, a prevalent instrument for assessing mental health symptoms. The SRQ-20 was administered to 120 students from Universitas Teknologi Yogyakarta (UTY), aged 18 to 25 years. The participants were chosen to reflect a varied sample from multiple faculties at UTY.

The primary objective of the data collection was to evaluate mental health disorders, including anxiety, depression, and stress, among students. The SRQ-20 questionnaire comprises 20 items that assess symptoms encountered by students in the preceding 30 days. The students were requested to specify if they have encountered the following symptoms, responding with "Yes" or "No". [6] Total Respondents is 120 students with

their age range 18-25 years old. And for gender distribution is 82% Female (98 students) and 18% Male (22 students).

2.3 Data Validity and Reliability

This study utilized the Self-Reporting Questionnaire-20 (SRQ-20) to assess mental health issues among students at Universitas Teknologi Yogyakarta (UTY). The SRQ-20 is a screening instrument created by the World Health Organization (WHO) that is extensively utilized to identify signs of mental health disorders, including anxiety, depression, and psychosomatic conditions. The SRQ-20 comprises 20 inquiries concerning psychological symptoms or issues encountered by respondents over the preceding 30 days[7].

The SRQ-20's validity has been confirmed in multiple research. This test assesses broad mental diseases, encompassing physical, cognitive, and emotional symptoms. This study assessed the validity of the SRQ-20 using content validity and face validity. The SRQ-20 encompasses a broad spectrum of symptoms linked to mental disorders, including anxiety, sadness, and sleep disturbances. The SRQ-20 questions have been evaluated in other countries, including Indonesia, and have demonstrated relevance and suitability for measuring the mental health condition of university student populations[8]. Face validity pertains to the assessment of experts that the SRQ-20 effectively assesses its intended construct, namely mental health issues. This instrument has been extensively utilized in Indonesia and has demonstrated its efficacy in identifying mental health disorders across diverse populations, including schoolchildren. Consequently, the SRQ-20 has demonstrated validity within the Indonesian cultural framework.

The reliability of the SRQ-20 was assessed via internal consistency and the temporal stability of this assessment instrument. The SRQ-20 demonstrates exceptional internal consistency, as assessed by Cronbach's Alpha. According to prior research, the SRQ-20 exhibits a Cronbach's Alpha value exceeding 0.80[9], [10], signifying that this instrument is very trustworthy in yielding consistent outcomes in the assessment of mental health issues. The test-retest reliability of the SRQ-20 demonstrates consistent results, indicating that this instrument may reliably assess mental health symptoms throughout time. The test-retest reliability verifies that the SRQ-20 yields consistent results in repeated assessments, hence affirming the instrument's temporal stability.

Following data collection via SRQ-20, the respondents' responses were analyzed by aggregating the scores for each question. Each affirmative response received a score of 1, whilst each negative response received a value of 0. The final score from the questionnaire was utilized to classify whether kids were identified as having mental health issues.

Cut-off Value: According to the Basic Health Research conducted by [11], the cut-off value is established at 5/6, indicating that respondents who answer "Yes" to 6 or more items are deemed to be experiencing emotional mental illnesses that could result in mental illness. This threshold is widely recognized and utilized in screening for common mental disorders, making it a robust criterion for identifying students who require further support in this study. In this study, a pupil scoring above 6 is deemed to necessitate more assistance for mental health concerns.

3 Result and Discussions

This study involved the development and testing of a Mental Health Consultation Application featuring a scheduling capability, conducted with 120 students from Universitas Teknologi Yogyakarta (UTY). The program incorporates online consultations and a scheduling system for in-person appointments, with the objective of enhancing accessibility and flexibility of mental health services for students. This study's findings are shown here, emphasizing the results from the Self-Reporting Questionnaire-20 (SRQ-20) utilized for mental health assessment.

The findings from the Self-Reporting Questionnaire-20 (SRQ-20) indicate that a significant number of students at Universitas Teknologi Yogyakarta (UTY) reported prevalent mental health problems. Specifically, 82% of respondents indicated experiencing a minimum of 6 symptoms of mental discomfort, signifying a significant

prevalence of mental health issues within the UTY student demographic and identifying them as needing further assistance.

3.1 Prevalence of Mental Health Symptoms

To provide a more comprehensive understanding of mental health prevalence, a further analysis including a cross-tabulation of symptom prevalence by gender was conducted. This detailed breakdown, presented in Table 4, reveals specific patterns and differences in reported symptoms between female and male respondents. For instance, while certain symptoms like 'difficulty sleeping' and 'anxiety' were broadly prevalent across both genders, preliminary observations from this cross-analysis suggest varying intensities or frequencies for other symptoms based on gender.

The high incidence of certain symptoms, such as 'feeling worthless' (95 female, 18 male respondents) and 'crying more often' (93 female, 20 male respondents) across the student population, could be attributed to the unique pressures faced by university students. These pressures often include demanding academic expectations, significant social adjustments, and uncertainties about future careers or personal development. Such factors can profoundly impact self-perception, emotional regulation, and overall mental well-being in a university environment. The elevated reporting of these symptoms, particularly among female students, also aligns with broader mental health trends where certain emotional symptoms are more frequently reported by women in general populations. This deeper insight into gender-specific symptom prevalence warrants further qualitative investigation to understand the underlying causes and specific triggers within the UTY student demographic. Among the 120 students that completed the SRQ-20, the distribution of the most prevalent symptoms is as follows:

Table 1. Prevalence of Mental Health Symptoms by Gender (SRQ-20 Responses)

Question (Symptom)	Female Respondents (Yes Count / %)	Male Respondents (Yes Count / %)	Total Respondents (Yes Count / %)
Do you often suffer from headaches?	9 / 9.18%	6 / 27.27%	15 / 12.50%
Do you have a poor appetite?	18 / 18.37%	9 / 40.91%	27 / 22.50%
Do you have difficulty sleeping?	86 / 87.76%	12 / 54.55%	98 / 81.67%
Do you easily get scared?	58 / 59.18%	18 / 81.82%	76 / 63.33%
Do you feel tense, anxious, or worried?	72 / 73.47%	9 / 40.91%	81 / 67.50%
Do your hands shake?	17 / 17.35%	4 / 18.18%	21 / 17.50%
Is your digestion disturbed/poor?	11 / 11.22%	6 / 27.27%	17 / 14.17%
Do you have trouble thinking clearly?	89 / 90.82%	22 / 100.00%	111 / 92.50%
Do you feel unhappy?	85 / 86.73%	20 / 90.91%	105 / 87.50%
Do you cry more often?	93 / 94.90%	20 / 90.91%	113 / 94.17%
Do you find it hard to enjoy daily activities?	75 / 76.53%	17 / 77.27%	92 / 76.67%
Do you have difficulty making decisions?	67 / 68.37%	9 / 40.91%	76 / 63.33%

Does your daily work get disturbed?	34 / 34.69%	7 / 31.82%	34 / 28.33%
Do you feel unable to do useful things in life?	8 / 8.16%	21 / 95.45%	21 / 17.50%
Have you lost interest in various things?	6 / 6.12%	11 / 50.00%	17 / 14.17%
Do you feel worthless?	95 / 96.94%	18 / 81.82%	113 / 94.17%
Do you have thoughts of ending your life?	83 / 84.69%	22 / 100.00%	105 / 87.50%
Do you feel tired all the time?	30 / 30.61%	18 / 81.82%	48 / 40.00%
Do you experience discomfort in your stomach?	81 / 82.65%	13 / 59.09%	31 / 25.83%
Do you get tired easily?	25 / 25.51%	17 / 77.27%	42 / 35.00%

Note:

Female (%): Calculated from (Female Respondents "Yes" Count / Total Female Respondents (98)) × 100.

Male (%): Calculated from (Male Respondents "Yes" Count / Total Male Respondents (22)) × 100.

Total (%): Calculated from (Total Respondents "Yes" Count / Total Respondents (120)) × 100.

3.2 Effectiveness of the Mental Health Consultation Application

The creation and evaluation of the mobile application intend to improve access to mental health resources by alleviating prevalent obstacles, including time limitations, social stigma, and restricted availability of face-to-face therapy sessions. The tool enables students to participate in online consultations with counselors and arrange offline sessions that align with their academic schedules.

Preliminary user feedback indicated favorable reactions to the application's usability and accessibility. A multitude of students indicated that the online consultation function enabled them to handle mental health issues confidentially, without requiring in-person encounters. This feature is crucial in mitigating the stigma associated with mental health care.[12]

3.3 SRQ-20 Screening Results

The SRQ-20 was incorporated into the application to evaluate students' mental health at the commencement of the consultation session. The SRQ-20 screening findings revealed that a considerable proportion of students had indications of mental discomfort. Students who achieved a score of 6 or above were recognized as requiring additional assistance. The results indicated that 82% of respondents were identified as needing further assistance according to the SRQ-20, as they reported experiencing a minimum of 6 symptoms of mental discomfort. This signifies a significant prevalence of mental health issues within the UTY student demographic. The SRQ-20 effectively identified students who might not have sought assistance otherwise, as it offered a preliminary, non-judgmental, and confidential means of evaluating their mental health.

3.4 Research Framework and System Design

The foundational concept for the application was developed based on the Research Framework illustrated below, which directs the enhancement of mental health care for students at UTY. The framework prioritizes overcoming existing obstacles to counseling services and implementing a digital solution that enables online consultations and offline appointment scheduling.

The framework delineates the shift from students encountering challenges in obtaining conventional counseling services to the suggested remedy, a mobile application, which facilitates enhanced access to both online and offline counseling.

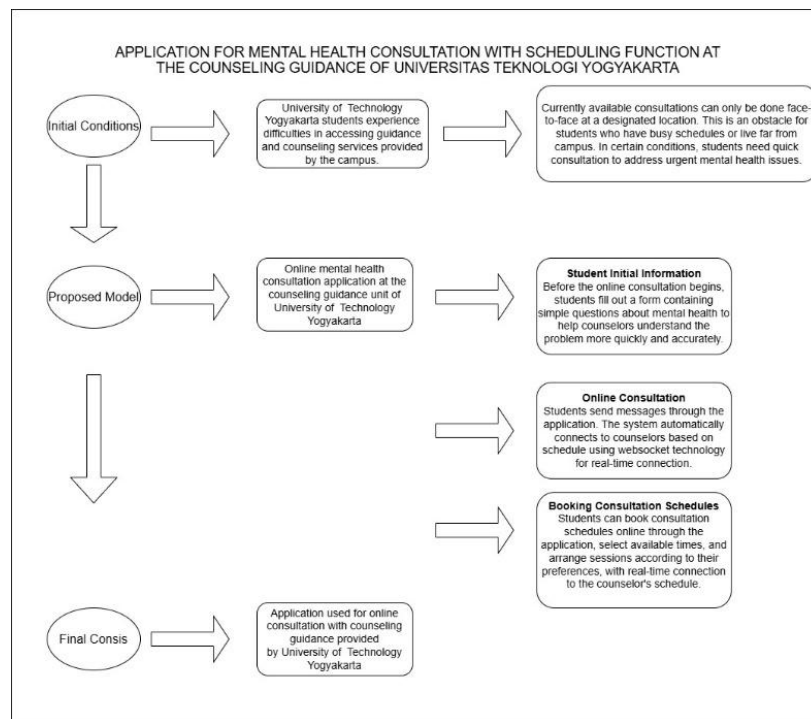


Figure 1. Research Framework

This research framework helped define the essential components of the system, including:

1. Initial Condition: Students encounter challenges in obtaining counseling services offered by UTY owing to geographical and temporal limitations.
2. Proposed Model: A mobile application for mental health consultations, featuring online consultations and a scheduling system for in-person meetings.
3. Final Outcome: The application functions as a convenient, accessible, and adaptable solution to enhance mental health treatment for students.

To further enhance the technical understanding of the application, Figure 4 illustrates the overall system architecture. This diagram details the interaction between the Flutter Frontend (mobile application), Node.js Backend (server-side logic and APIs), and Firebase (database and cloud services) for data management and application functionalities. It visually represents how user interactions, from Login/Registration and User Profile Management to initiating Online Consultation and managing Offline Scheduling, are processed and stored securely. The architecture emphasizes a clear separation of concerns, ensuring efficient data flow and robust service delivery for both students and counselors[13].

The implementation of this mental health consultation application leverages a robust and scalable technology stack. The client-side mobile application was developed using Flutter, a cross-platform UI framework that enables a consistent user experience across Android and iOS devices. For server-side operations and API management, Node.js was employed, providing an efficient and asynchronous environment for handling requests related to consultations and scheduling. Data storage and various backend services, including authentication and real-time data synchronization, are powered by Firebase. This combination ensures seamless data flow and reliable performance for the application's core functionalities, facilitating effective communication between students and counselors.[14]

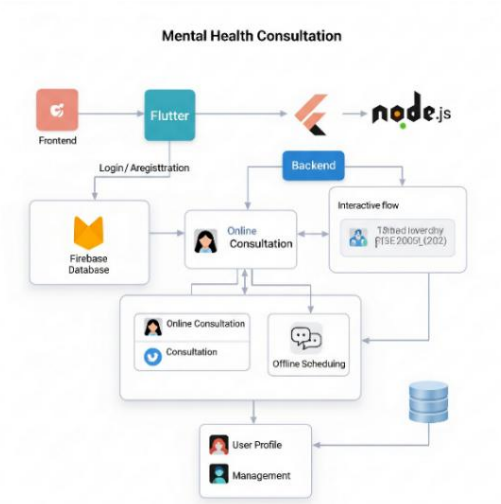


Figure 2. System Architecture Diagram

3.5 Application Features and Functionality

The principal objective of the application is to enhance the accessibility of mental health resources for students. The application incorporates online consultations and a scheduling system for offline appointments. This dual strategy mitigates conventional obstacles to mental health assistance, including social stigma and restricted access to face-to-face treatment[15], [16], [17].

The application allows students to:

1. Schedule real-time consultations with counselors online, alleviating time limitations.
2. Arrange offline consultations by choosing suitable time windows via the app's calendar functionality.
3. Engage in private communication with counselors through the app's messaging platform.

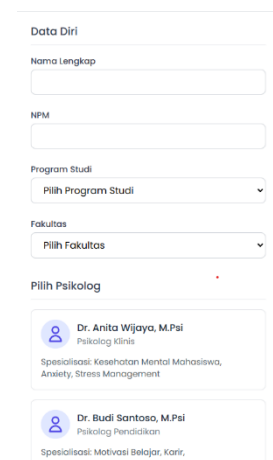
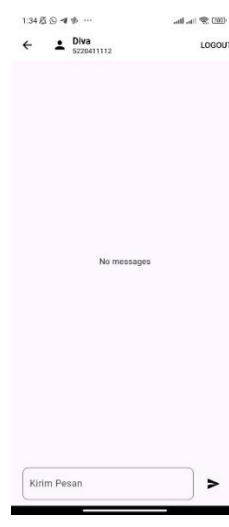


Figure 3. SRQ-20 Screening 1 Figure 4. SRQ-20 Screening 2 Figure 5. Online Consultation Figure 6. Schedule Booking

Significant Prevalence of Mental Health Symptoms: The results from the SRQ-20 indicate that a considerable percentage of students exhibit mental health symptoms, including anxiety, depression, and stress. This

corresponds with prior research emphasizing the necessity for enhanced accessibility to mental health resources within academic environments. The smartphone application's dual approach of providing online consultations and offline scheduling effectively mitigates significant hurdles to mental health care, such as time restrictions and social stigma. User feedback suggests that the app effectively enhances involvement with mental health treatments[12]. The SRQ-20 shown efficacy in identifying students who may not have otherwise pursued assistance. Integrating this screening instrument into the application provides students with an initial, non-judgmental evaluation of their mental health, facilitating more targeted treatment.[18]

4. Conclusions and Future Works

4.1 Conclusions

The creation of the Mental Health Consultation Application, incorporating a Schedule Booking Feature, has effectively resolved multiple obstacles in delivering mental health care to university students at Universitas Teknologi Yogyakarta (UTY). The incorporation of online consultations and a scheduling system for offline appointments has demonstrated an improvement in the accessibility and flexibility of counseling services, especially for students encountering obstacles such as time limitations, social stigma, and restricted opportunities for in-person consultations.

Key findings from the study include a substantial segment of the student population demonstrated signs of mental distress, such as insomnia, worry, and feelings of worthlessness, as indicated by the SRQ-20 screening instrument. This discovery underscores the significance of offering readily available mental health services[11]. The SRQ-20 Screening Tool demonstrates efficacy in the early identification of mental health disorders, facilitating the recognition of students who may not have pursued professional assistance otherwise. Integrating the SRQ-20 into the application provides students with prompt feedback on their mental health state, facilitating early intervention. The application garnered favorable feedback from users, with numerous students highlighting the online consultation option as particularly effective in diminishing the stigma associated with mental health care.[19], [20] The scheduling system afforded students the freedom to arrange sessions at times that aligned with their academic commitments, thereby enhancing engagement with counseling services.

4.2 Future Works

Although the application has demonstrated efficacy, there are other prospective enhancements and avenues for further development. Expansion of features is real-time chat support might be used to provide students with continuous access to counselors between consultations, so ensuring continuing mental health assistance. AI-driven mood tracking could be utilized to assess pupils' emotional states over time and offer tailored mental health resources according to their replies.

Integration with Additional University Services: Future iterations of the program may incorporate university health services to establish a more holistic mental health management platform. This would facilitate improved cooperation between academic and counseling support programs[21]. Expanded Implementation: The mobile application might be disseminated to additional colleges, providing a scalable method to tackle mental health issues across diverse educational institutions. Implementing cross-university research would facilitate the evaluation of the application's impact across varied contexts and enhance its applicability to diverse student demographics[22], [23]. Assessment and Enhancement: Systematic evaluations informed by user feedback and mental health results must be undertaken to further develop the application. Critically, proposing robust empirical studies, including randomized controlled trials or longitudinal cohort studies, to measure the app's long-term impact on student well-being, academic performance, and reduction in mental health symptoms would provide significant insights regarding the application's efficacy and contribute to evidence-based digital mental health interventions.

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