

Needs Analysis for Mental Health Screening Application Development

Andri Gustiadi¹, Lutfan Lazuardi²

¹Nutrition Study Program, Health Polytechnic Tasikmalaya

²Faculty of Public Health, Medicine and Nursing Science, Universitas Gadjah Mada

***Co-responding author:**

andri.gustiadi@dosen.poltekkestasikmalaya.ac.id

Article Info

Submitted 21 01 2025

Revised 23 06 2025

Published 27 06 2025

Keywords:

Analytics, Apps, Mental
Health, Screening,

P-ISSN: 2086-3292

E-ISSN: 2655-9900

National Accreditation:

Sinta 4

Abstract

Background: Mental health is an essential issue among university students, with many cases of depression, anxiety, and stress often detected late. Constraints in early identification and reporting necessitate innovative solutions, such as surveillance-based mobile applications, to support the early detection and treatment of mental health issues. **Purpose:** to identify the needs related to the development of mobile applications in supporting mental health surveillance using the Depression Anxiety Stress Scales-21 (DASS-21). **Methods:** The research design employed is qualitative, utilizing an interview method. The research was conducted at the Health Polytechnic in Tasikmalaya from January to April 2024. The number of samples in this study amounted to 3 people. Data collection using interview guidelines. Data analysis using qualitative analysis. Research ethics letter number.EA/3048/KEPK Poltekkes_Sby/V/2024. **Results:** The results of the needs analysis indicate that the development of mobile applications to support mental health surveillance is necessary to facilitate the identification process, store data, and accelerate action, thereby providing data related to the mental health picture of students. Application development in the form of a mobile health app that is easy to use and access on an Android-based device, which can display results as self-evaluation material. Future development can be done as needed. **Conclusion:** The development of mental health applications has been adjusted to meet the needs through the needs analysis process at the Health Polytechnic of the Ministry of Health, Tasikmalaya.

INTRODUCTION

Mental health issues have become a serious concern in various countries, including Indonesia. Law of the Republic of Indonesia Number 18 of 2014 on mental health, which is a condition in which a person can develop physically, mentally, spiritually, and socially so that they can realize their abilities, can work productively, and can contribute to their community.

Report data from the WHO website in 2019, noted that one in every eight people live with a mental disorder, or about 970 million people worldwide experience mental disorders, and that one in seven children aged 10 to 19 years experience mental disorders, with depression, anxiety and behavioral disorders as the leading causes (*Institute of Health Metrics and Evaluation*, 2022; WHO, 2023b). *American College Health Association* survey data conveyed that nearly 43 percent of college students feel depressed, 63 percent experience excessive anxiety, and 86 percent feel unable to deal with everything they face today (*American College Health Association*, 2019). According to previous research in Indonesia, nearly 28 percent of adolescents aged 15 to 19 years experience symptoms of depression (Purborini et al., 2021), other studies also show that college students experience mental health problems in the form of anxiety and depression problems (Chow et al., 2017; Wang et al., 2020). Some other research results found that there were problems with students' mental health, with the following sequence of cases experienced: depressive thinking, depressive feelings, somatic symptoms, and decreased energy (Deliviana et al., 2020; Kurniawan and Ngapiyem, 2020). Suryanto and Nada (2021) said that gender, social support, income, and history of domestic violence have a significant effect on mental health in college students.

The Health Polytechnic of the Ministry of Health, Tasikmalaya, is one of 38 institutions under the Ministry of Health that provides education in the health sector and serves as a provider of health workers in Indonesia, dedicated to the health sector (Ministry of Health RI, 2022). Some of the obstacles found related to the management of mental health problems in students at Health Polytechnic of Ministry of Health Tasikmalaya include: the initial identification process through psychological tests has not been able to describe the mental health conditions of students, students with mental health problems are detected and handled late, the reports submitted still need to be studied so it takes time, and there is no format or reference related to reporting that inventories student mental health.

Concerns over mental health in university students have prompted a renewed focus on mental health service provision. Services in educational institutions typically include individual or group counseling as well as the provision of more accessible alternative interventions to improve student mental health. Institutions are also expected to be able to identify, prevent, and treat mental health problems in students (Worsley et al., 2022). A multidimensional effort is needed to maintain mental health, this should include universal prevention efforts through the provision of information in the classroom, promotion of mental health related resources, training for faculty and students as well as university staff, routine screening, provision of a variety of accessible services, involvement of all parties in higher education in the development and intervention is important for the success of this effort (Harris et al., 2022).

With advances in digital technology, improving health and behavioral outcomes is easier than ever before. The majority of people worldwide have access to mobile technologies, including cell phones, tablets, and other mobile devices. Mobile *platforms* enable greater reach and scalability of evidence-based assessments and interventions, especially to address the growing burden of mental health disorders worldwide (Li et al., 2020).

Based on some of the points mentioned above, it is necessary to develop the implementation of mental health surveillance in students by utilizing applications that aid in identifying mental health issues among students. This study aims to identify the needs related to the development of *mobile* applications in supporting mental health surveillance, using the Depression Anxiety Stress Scales-21 (DASS-21) instrument, among students at the Health Polytechnic of the Ministry of Health in Tasikmalaya.

METHOD

This type of research employs a qualitative approach, utilizing a case study method. Data collection is conducted through interviews.

The research was conducted at the Health Polytechnic of the Ministry of Health in Tasikmalaya from January to April 2024. In this study, the population consisted of 3 individuals. Sampling was conducted using a purposive sampling technique to support the development of the application. The interview guidelines covered aspects such as current implementation and challenges, as well as the needs, utilization, and follow-up of the development process. The sample consisted of three participants: the Head of the Academic Subdivision of Student Affairs Information Systems and Cooperation (Kasubag ADAK), a Psychologist serving as the Person in Charge of the Counseling Unit and Coordinator of the Student Activity Unit of the Student Counseling Information Center (UKM-PIKMA).

The research variable is the needs analysis of mental health *mobile* application development. Data collection was conducted through interviews using pre-established guidelines. The data obtained is in the form of qualitative data, which is then analyzed with the following stages: data collection, data reduction, data presentation, and conclusion drawing. This research is supported by a letter from the Health Research Ethics Commission (KEPK) of the Ministry of Health Surabaya, bearing certificate number EA/3048/KEPK-Poltekkes_Sby/V/2024.

RESULTS AND DISCUSSION

A. Informant Characteristics

Collecting information to find out the needs related to application development is done by interviewing 3 informants, as follows:

Table 1. Informant Characteristics

Informant	Gender	Age	Education	Length of Service
KSB Informant code: RW01	Female	45	S-2	9 years
PJU Informant code: RW02	Female	47	Psychologist Profession	8 years
KMP Informant code: RW03	Female	36	S-2	1 year

B. Management of Student Mental Health Screening

From the results of the interview, the process of managing student mental health at the Health Polytechnic of the Ministry of Health, Tasikmalaya, starts during new student admissions through psychological tests that focus more on interests and talents, not on identifying specific mental health characteristics, as conveyed by the informant as follows:

"Since Sipenmaru, we have held psychological tests; these tests detect students' interests and talents, but are not specific to their mental health." (KSB, RW01)

"Identification starts from psychological tests during new student admissions, specifically for mental health images, not yet." (PJU, RW02)

The management of students with mental health problems at the Health Polytechnic of the Ministry of Health in Tasikmalaya is carried out through a process that involves academic supervisors as initial supervisors to detect symptoms. If the problem cannot be handled, it will be reported to the

student affairs department in the study program for further handling. Suppose the mental health problems experienced by students are sustainable. In that case, students will be referred to the counseling service unit for treatment by psychologists, with feedback regarding student progress provided after the intervention. The following is the informant's statement regarding this matter:

"The supervision that has been running is more reporting from the study program; it is in process as long as it can still be from the study program through the academic advisor and student affairs, from there, from the study program first, after there is no improvement from the psychology service." (PJU, RW02)

"The flow is appropriate, from us first from the study program, sometimes we, from the academic supervisor, have reports of mental disorders." (PJU, RW02)

C. Flow of Mental Health Problem Resolution Management

The management flow can be described as follows:

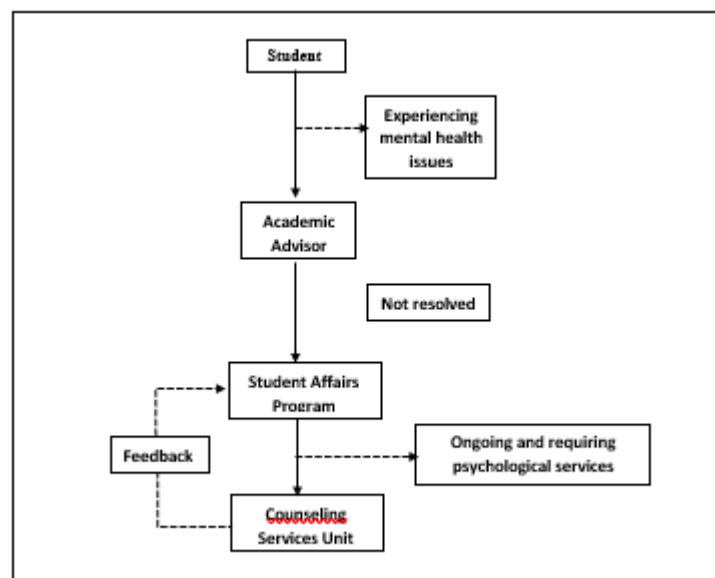


Figure 1: Flow of Mental Health Problem Management

As for the implementation, from the results of the interview, several obstacles were encountered, including:

- 1) The initial identification process through psychological tests has not yet been utilized to describe the mental health conditions of students; therefore, a method or tool is required to assess these conditions accurately.
- 2) Students with mental health problems are detected and treated late.
- 3) The submitted report still needs to be reviewed so that it will take some time.
- 4) There is no established format or reference for reporting student mental health inventories.

D. Development of Digital Surveillance for Student Mental Health

From some of the obstacles encountered, it can be concluded that the development of surveillance through applications is considered important to facilitate the identification, recording, and storage of mental health data. The data can be used to compare conditions between periods, accelerate follow-up,

and support more effective handling of student mental health problems. The following is the informant's statement regarding this matter:

"At the beginning, we can find out what the initial conditions are like, the series, it is necessary, we have a time lag after a certain amount of time, then we check again, this is very necessary." (KSB, RW01)

"Good, for reporting, it is good to help make it easier." (PJU, RW02)

"God willing, surveillance with digital will be more helpful, it will also be recorded, the flow will be clearer and recorded." (KMP, RW03)

The use of applications in the process of identifying student mental health has good potential, considering that students are already familiar with technology. Technical obstacles are estimated to be very few. However, socialization is necessary to ensure that users understand that this application aims to help, not judge, so that they feel comfortable and provide honest answers. The following is the informant's statement regarding this matter:

"So socialization and how to understand that this application is not to judge, but to assess yourself, like what, more to the individual, yes." (KSB, RW01)

"Students are also used to using the academic information system during lectures, so it is safe." (KMP, RW03)

E. Mental Health Surveillance Application Development Needs

Information related to application-based development needs is needed for the development process. From the results of the interview, the following information is needed:

Table 2: Development Needs

Needs	Statement	Informant
Easy-to-use app	The <i>content</i> must be brief, clear, and concise; do not be complicated.	KSB, RW01
	Easy to use, lah	PJU, RW02
Easy-to-access application	The point is that the content application is simple and accessible	KSB, RW01
	Easy to open anytime, anywhere, it will be easier	KMP, RW03
The application can display the result.	In the app, it is beneficial that the results can be displayed immediately, allowing you to evaluate yourself.	KSB, RW01
	The results are also available to students for their evaluation	KMP, RW03
Record Data	As a basis for our activities, particularly those related to the prevention and promotion of student mental health.	KSB, RW01
	There is mom's access to the data	PJU, RW02
	The data can also be used by PIKMA, for example, if they have a mental health prevention and promotion program.	KMP, RW03

Mobile Application	The form of the application that makes it easy to download, for example, in the <i>Android Play Store</i>	KSB, RW01
	Mobile application based on Android, for example, Pak	KMP, RW03
An application can be developed.d	Alternative access for later development may be	KSB, RW01
	If it has been developed and supported by the leadership, it will be good in the future.	KMP, RW03

The benefits and follow-up of student mental health surveillance can be carried out incidentally or periodically to facilitate the identification, recording, and reporting of mental health conditions. This surveillance helps monitor students with unfavorable screening results. It serves as the basis for preventive and promotive measures to maintain mental health in the Health Polytechnic of the Ministry of Health, Tasikmalaya. The following is the informant's statement regarding this matter:

"The benefits are clear, as a basis for how we treat students." (KSB, RW01)

"The surveillance results show that the number of disturbances is this much, so there is a cut-off, which ones will be handled directly and which ones will be handled in the study program." (PJU, RW02)

"It is good, so we have a data picture of student data, it is a picture of student mental health, so it is good, now the data can be used by PIKMA too, for example, later we have a mental health prevention and promotion program for students." (KMP, RW03)

This study began by gathering information to analyze the needs in developing a mobile application that supports mental health surveillance. *The Depression Anxiety Stress Scales-21 (DASS-21)* instrument was used with Health Polytechnic students from the Ministry of Health Tasikmalaya, to inform the design of an appropriate application. According to Salim et al. (2021), identifying needs is crucial for producing a design that is precisely targeted and prevents failure during implementation.

Presented in the study *"Development of a Prototype for High-Frequency Mental Health Surveillance"* (Junker et al., 2023), *mental health surveillance aims to measure core mental health indicators periodically and systematically, providing information on mental health development. Furthermore, mobile applications and the mHealth approach, according to Budd et al. (2020), can be used for public health surveillance due to their various benefits, namely efficient and nearly universal presence.*

The development of information technology has had a significant positive impact on daily life. One example is the existence of various gadgets that can help deal with health problems. According to research by Khoiri (2023), android-based mental health applications accelerate the mental health screening process and provide assistance to users who face mental health problems and are reluctant to meet with medical staff; they can conduct independent screening directly through the application.

The growth of mobile mental health apps has offered support that is not limited by physical distance, time, or cost. But while it has sparked doubts about their effectiveness and safety, app users must be aware of the challenges faced, which include engagement challenges, safety concerns, breaches of confidentiality, and lack of evidence-based practices (Koh et al., 2022)

Engagement challenges refer to the high attrition rates and poor sustained engagement rates prevalent among mental health apps. Youth engagement in e-mental health interventions ranges from 29.4% to 87.5%, and there has been a decline in participation over time, attributed to factors such as unsatisfactory app functionality and usage issues, including accessibility concerns (Struthers et al., 2015; Torous et al., 2018).

According to Larsen et al. (2016), mental health apps may not be adequately equipped to help users through emergencies. Most apps are limited in their ability to respond effectively to emergencies related to suicide or self-harm. Therefore, in the event of an emergency, help seekers may not be able to access the essential support needed through mental health apps (Torous et al., 2018).

These breaches of confidentiality are twofold: third-party access to confidential information and lack of a clear privacy policy (Koh et al., 2022). In general, the use of mental health apps is often concerned with the leakage of personal information to third parties, which jeopardizes users' privacy and thus reduces their trust and engagement with these apps. Future development is important for regulation, to develop comprehensive guidelines regarding standardized consent criteria that developers and service providers need to be aware of (Karcher and Presser, 2018).

Lack of evidence-based practice, according to Hwang et al., (2021) have identified 2 studies that do not provide theoretical evidence for intervention methods, involving mental health apps, approaches that are not supported by theoretical and empirical evidence can harm help seekers, Therefore, researchers and health workers need to use scientific evidence underlying app-based mental health services.

The need for an application that can display results as self-evaluation material aims to enable users to understand their mental health conditions, so that they are more aware and do not ignore existing mental health problems. This is important so that they can immediately take the necessary actions to maintain their mental health. Funnell et al. (2022) state that screening can minimize the risk of ignoring mental health disorders that can delay access to treatment and worsen prognosis. Therefore, finding faster ways to assess, triage, and treat mental health patients is essential (Schmitz et al., 2001), which can prevent greater impact on other problems in the future (Arini and Syarli, 2020).

CONCLUSIONS AND RECOMMENDATIONS

The results of the needs analysis indicate that the development of mobile applications to support mental health surveillance is necessary to facilitate the identification process, store data, and accelerate action. The data obtained can provide an overview of student mental health. Application development in the form of a *mobile health app* that is easy to use and access with an *Android-based platform* that can display results as self-evaluation material. Institutions can also utilize the data for monitoring, reporting, and planning preventive and promotive activities to maintain the mental health of students at the Health Polytechnic of the Ministry of Health Tasikmalaya.

REFERENCES

- American College Health Association (2019). American College Health Association. National College Health Assessment: Undergraduate Student Reference Group, Spring 2019.
- Arini, L. and Syarli, S. (2020) 'Deteksi Dini Gangguan Jiwa Dan Masalah Psikososial Dengan Menggunakan Self Reporting Qustioner (SRQ-29)', *Jurnal Keperawatan Muhammadiyah*, 5(1), pp. 167-172. Tersedia di: <https://doi.org/10.30651/jkm.v5i1.4672>.
- Budd, J. et al. (2020) 'Digital technologies in the public-health response to COVID-19.', *Nature medicine*, 26(8), pp. 1183-1192. Available at: <https://doi.org/10.1038/s41591-020-1011-4>.
- Chow, P.I. et al. (2017) 'Using mobile sensing to test clinical models of depression, social anxiety, state affect, and social isolation among college students', *Journal of Medical Internet Research*, 19(3), pp. 1-12. Available at: <https://doi.org/10.2196/jmir.6820>.
- Funnell, E.L. et al. (2022). 'mHealth Solutions for Mental Health Screening and Diagnosis: A Review of App User Perspectives Using Sentiment and Thematic Analysis', 13(April), pp. 1-17. Available at: <https://doi.org/10.3389/fpsy.2022.857304>.

- Harris, B.R., Maher, B.M. and Wentworth, L. (2022) 'Optimizing Efforts to Promote Mental Health on College and University Campuses: Recommendations to Facilitate Usage of Services, Resources, and Supports.', *The journal of behavioral health services & research*, 49(2), pp. 252–258. Available at: <https://doi.org/10.1007/s11414-021-09780-2>.
- Hwang, W.J., Ha, J.S. and Kim, M.J. (2021) 'Research Trends on Mobile Mental Health Application for General Population: A Scoping Review.', *International journal of environmental research and public health*, 18(5). Available at: <https://doi.org/10.3390/ijerph18052459>.
- Institute of Health Metrics and Evaluation. (2022) *Global Health Data Exchange (GHDx)*. Available at: <https://vizhub.healthdata.org/gbd-results/> (Accessed: 27 October 2022).
- Junker, S. et al. (2023) 'Development of a prototype for high-frequency mental health surveillance in Germany: data infrastructure and statistical methods', *Frontiers in Public Health*, 11.
- Karcher, N.R. and Presser, N.R. (2018) 'Ethical and legal issues addressing the use of mobile health (mHealth) as an adjunct to psychotherapy', *Ethics & Behavior*, 28(1), pp. 1-22.
- Kemenkes RI (2022) Profil Kesehatan Indonesia 2021, Pusdatin.Kemenkes.Go.Id. Tersedia di: <https://www.kemkes.go.id/id/profil-kesehatan-indonesia-2021>.
- Khoiri, M. imron (2023) 'Perancangan Aplikasi Kesehatan Mental Online Menggunakan Metode Rapid Application Development (Rad)', *JEKIN – Jurnal Teknik Informatika*, 1(3), hlm.26-32. Tersedia di: <https://doi.org/10.58794/jekin.vli3.206>.
- Koh, J., Tng, G.Y.Q. and Hartanto, A. (2022) 'Potential and Pitfalls of Mobile Mental Health Apps in Traditional Treatment: An Umbrella Review.', *Journal of personalized medicine*, 12(9). Available at: <https://doi.org/10.3390/jpm12091376>.
- Larsen, M.E., Nicholas, J. and Christensen, H. (2016) 'A systematic assessment of smartphone tools for suicide prevention', *PloS one*, 11(4), p. e0152285.
- Purborini, N. et al. (2021) 'ScienceDirect Associated factors of depression among young adults in Indonesia: A population- based longitudinal study', *Journal of the Formosan Medical Association*, 120(7), pp. 1434-1443. Available at: <https://doi.org/10.1016/j.jfma.2021.01.016>.
- Salim, M.F. et al. (2021) Pengembangan Sistem Informasi Surveilans Demam Berdarah Dengue Berbasis Mobile sebagai Sistem Peringatan Dini Outbreak di Kota Yogyakarta', *Jurnal Kesehatan Vokasional*, 6(2), p. 99. Available at: <https://doi.org/10.22146/jkesvo.61245>.
- Schmitz, N., Kruse, J. and Tress, W. (2001) 'Improving screening for mental disorders in the primary care setting by combining the GHQ-12 and SCL-90- R subscales.', *Comprehensive psychiatry*, 42(2), pp. 166–173. Available at: <https://doi.org/10.1053/comp.2001.19751>.
- Struthers, A. et al. (2015) 'The acceptability of e-mental health services for children, adolescents, and young adults: a systematic search and review', *Canadian Journal of Community Mental Health*, 34(2), pp. 1-21.
- Suryanto, A. and Nada, S. (2021) 'Analysis of Mental Health of College Students Higher Education at the Beginning of the Covid-19 Outbreak in Indonesia', *Journal Citizenship Virtues*, 1(2), pp. 83-97.
- Torous, J. et al. (2018) 'Clinical review of user engagement with mental health smartphone apps: evidence, theory and improvements.', *Evidence-based mental health*, 21(3), pp. 116-119. Available at: <https://doi.org/10.1136/eb-2018-102891>.
- Worsley, J.D., Pennington, A. and Corcoran, R. (2022) 'Supporting mental health and wellbeing of university and college students: A systematic review of review-level evidence of interventions.', *PloS one*, 17(7), p. e0266725. Available at: <https://doi.org/10.1371/journal.pone.0266725>.