

Early Mental Health Self-Detection Using Smart-Senyum Application

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Abstract. Mental health is a state of mental well-being that enables people to cope with stresses, develop their capabilities, perform well in school or work settings, and contribute to their communities. However, mental health problems among adolescents and early adults are high, with an estimated 12 million cases worldwide. Not to mention that access to mental health professionals is still limited, as they are generally only available in big hospitals or health centers. Thus, mental health understanding and access to mental health professionals are major problems. The aim of this study was to examine adolescents' understanding of mental health and develop a mental help self-screening assessment tool based on the Smart-Senyum application. The mental health self-screening application was adapted from the Self-Report Questionnaire, which was translated into Indonesian and validated for the adolescent age group in Indonesia. The population and sample of this study were adolescents aged 15 – 18 years (N = 36; M-age =16.3), who were students of the learning center Sanggar Kegiatan Belajar (SKB) 26 Bintaro, West Jakarta. The results showed that there was an increase in 5-pointers in understanding mental health. It was also found that 40% of the students showed symptoms of non-psychotic mental problems and 60% of the students were in a mentally healthy condition. The conclusion of the study, that early screening youth mental health is important and need further research as program implementation to prevent mental disorder.

Keywords: *mental health, mental health application, self-detection, early screening, smart-senyum*

Introduce

Depression is a common illness worldwide, with an estimated 3.8% of the population, comprising 5.0% of adults, and 5.7% over the age of 60. From adolescents (15 years old and up) to late adults, at least 12 million individuals suffer from mental health problems. These problems, plus the lack of healthcare providers, can increase the number of people with mental problems and social stigma (WHO, n.d.). There are 12 million individuals that have mental health problems in the world, and among adolescent, one out of three teenager is suffering of mental illness (Gloriobarus, 2022). Some factors that affect

mental health in adolescents are parenting style, a sense of acceptance as well as gratitude to God, and gender differences, where females tend to be more vulnerable to mental problems (Fadilah et al., 2022). Mental health issues are particularly important for young people because they lack experience coping with depression and other mental health issues (Bhugra et al., 2013; Savitri et al., 2019). The lack of access to psychologists adds to the severity of this situation (Administrator, 2015).

The number of adolescents with mental health problems will increase because mental health professionals are not always available in schools (Administrator, 2015). As a result, due to the shortage of professional counselors, cooperation between counseling teachers and subject teachers is required. Similarly, a collaboration between counselling teachers and religious teachers is needed in dealing with students' behaviour problems, such as excessive dating, being late for school, skipping school for no reason, and missing congregational prayers for Muslim students (Rahmawaty et al., 2022). These behavioural problems emerge at the Community Learning Centre (PKBM) 26 Bintaro - currently renamed Sanggar Kegiatan Belajar (SKB) 26 Bintaro – most of them have a problems with their relationship with their parents (Savitri et al., 2019), the absence of a psychologist or guidance and counselling teachers (Guru Bimbingan Konseling) lead to untreated psychological problems, disrupting the achievement of learning objectives (Rokom, 2021).

Recognizing the potential mental problems of students is also another challenge (Van Der Westhuizen et al., 2016). Thus, it is necessary to have a valid assessment tool with the help of technology for initial screening to determine whether a student suffers from non-psychotic mental problems. Early screening with the help of technology is needed because with the help of technology, non-guidance and counselling teachers can also direct students for self-assessment to identify any possible mental problems as early.

Based on this issue, a simple assessment tool was chosen for students to be able to screen their mental health independently. One of the measurement tools that can be adopted for self-assessment is the Self-Report Questionnaire-20 (SRQ-20). The Self-Report Questionnaire-20 (SRQ-20) is an assessment tool for mental problems that has been widely used to assess individuals. The SRQ is already used in longitudinal study on low-income individual (Van Der Westhuizen et al., 2016) and also among adult (Scholte et al., 2011). It is often used to identify symptoms of mental disorders in individuals. The adaption of the

SRQ-20 in Indonesia, consists of 20 questions with yes or no answer options in five symptom groupings, including energy availability, cognitive state, depression, physiological, and anxiety (Prasetio et al., 2022). This assessment instrument cannot be used as a substitute for a diagnosis from a psychologist or psychiatrist, but mental health medical personnel can take the results into consideration for further examination (Prasetio & Triwahyuni, 2022). Furthermore, it can be utilized by educators or school counselors to detect any possible mental health issues in their students. They can also recommend a psychologist or psychiatrist to students and offer advice.

Based on the urgency, it is necessary to conduct several programs to overcome these problems: 1. Conduct psychoeducation on the importance of recognizing and maintaining mental health through a counselling program by psychologists, for teachers and students. 2. Adopting the SRQ self-assessment tool developed with the Smart-Senyum application to help students conduct self-assessment, thus, teachers can recommend professional help from a psychologist or psychiatrist based on the results of the self-assessment. This Community Service aims to increase students' mental health awareness with key performance indicators (KPIs): 1. (KPI 2) University students gain experience outside the campus, 2. (KPI 3) Lecturers perform activities outside the campus, 3. (KPI 5) The work of lecturers benefits the community, especially SKB 26 Bintaro.

Mental and Mental Health

Mental is the interaction between thoughts, feelings, and human behaviour. Mental health is an integral and essential part of overall health, which can be defined in at least three ways - as the absence of disease, as a state of the organism that allows the full performance of all its functions, or as a state of balance within oneself, and between oneself and the physical and social environment (Bhugra et al., 2013).

A state of mental health implies that individuals have the ability to form and maintain affectionate relationships with others, perform the social roles typically played in their culture, manage change, recognize, acknowledge, and communicate positive actions and thoughts, and manage emotions such as sadness. Mental health provides a person with a sense of worth, control, and understanding of internal and external functioning (Manwell

et al., 2015). It is necessary to note that interaction between individuals and their environment is crucial for a person's mental health (Bughra, et al., 2013).

The characteristics which emerge in adolescence are tendency to seek novel experience, heightened sense of vulnerability, low risk perception enhance to seek an extreme experience, desire for independence, and inner search for self identity. It is critical periode to shaping their personality, leading to enhanced psychological awareness and higher level of social and emotional interactions with peers and adults. Therefore, sustaining positive mental health during this period is significant for ensuring a smooth transition into adulthood (Nebhinani & Jain, 2019).

Health Law No. 23 / 1992 defines mental health in Indonesia as a state of mental, social, and physical health allowing anyone to live a productive life on both a social and economic level (Galderisi et al., 2015). Basically, the mental health of an individual is highly dependent on the individual's biology or inherited physical state and the interaction with oneself and the environment. A healthy person is both physically and mentally healthy.

A person who has a gene or a family history of mental illness has the potential to suffer from mental problems when living in an environment with poor social interactions. Research in Langsa Aceh has a result that, there was an influence of genetic factors ($p = 0.000$; OR = 13.81), traumatic experience ($p = 0.001$; OR = 12.37) and parenting patterns ($p = 0.022$; OR = 5.14) on mental disorders. Meanwhile, occupational and socioeconomic factors have no influence on mental disorders (Syahputra et al., 2021). The negative circumstances around people with ODGJ can lead to more severe mental problems or psychotic behaviour. However, when an individual with such inherited genes lives in a healthy environment with a lot of positive social interactions, the potential for mental problems will drop. Therefore, it is necessary for people with mental illness genes to live in a healthy or supportive environment (conditionally normal).

Individuals without mental illness genes who live in an unhealthy environment or have poor social interaction could suffer from mental problems and this is referred to as normal with problems. The solution for such individuals is to find a healthy environment and interact socially in a healthy manner. The ideal mentally healthy state is when an individual does not inherit a mental illness gene, lives in a mentally healthy environment, and interacts healthily with others (Reuben et al., 2022).

Roles of Mental Health Professionals and Non-Professionals

Mental health professionals include psychiatrists and psychologists or counsellors. Generally, individuals who show symptoms of psychotic disorders or severe mental problems will be referred to mental health professionals. However, there is a lack in the number of mental health professionals. They mostly only work in big hospitals or health centers. Therefore, mental health non-professionals are needed.

Both mental health professionals and non-professionals can help patients with symptoms of mental health problems, however, mental health non-professionals have limitations. Mental health professionals have the authority to conduct clinical interviews and anamnesis as well as diagnose patients. Psychiatrists even have the authority to prescribe medication for their patients.

The role of mental health non-professionals is as first responders who facilitate patients to get help from mental health professionals. Therefore, non-professionals need to have knowledge related to psychological first aid (PFA). The PFA's knowledge according to research, could enhance the self-esteem of nonprofessional helper such as teacher, tutor or voluntary activist to help victim disaster of someone that need psychological help (Sijbrandij et al., 2020).

Psychological First Aid aims to help individuals with mental health problems which can be caused by many factors. Internal factors such as problems in relationships with others (family, peers, bosses, neighbors, etc.), financial problems, academic problems, and work problems. Skills in helping in times of crisis involve active listening skills, therapeutic communication, and basic knowledge in handling simple psychological problems. During the Community Partnership program, PFA counselling was conducted in the second phase.

Method

Study using descriptive method to define the mental health condition of students at SKB-26 Negeri Bintao Jakarta Selatan. The population was 39 students (male = 12, female = 27, M-age = 16.3). Sampling technique was saturated. Measurement was using Smart-senyum application. Pre-Post test design also implemented in this study, to assess mental-health knowledge of the students, before and after mental-health seminar for the

students. Students are surveyed by researchers regarding their knowledge of mental health, and data is collected. A paired sample T-test follows in order to determine a significant change in students' knowledge of mental health. The stages of research conducted during this program were as follows:

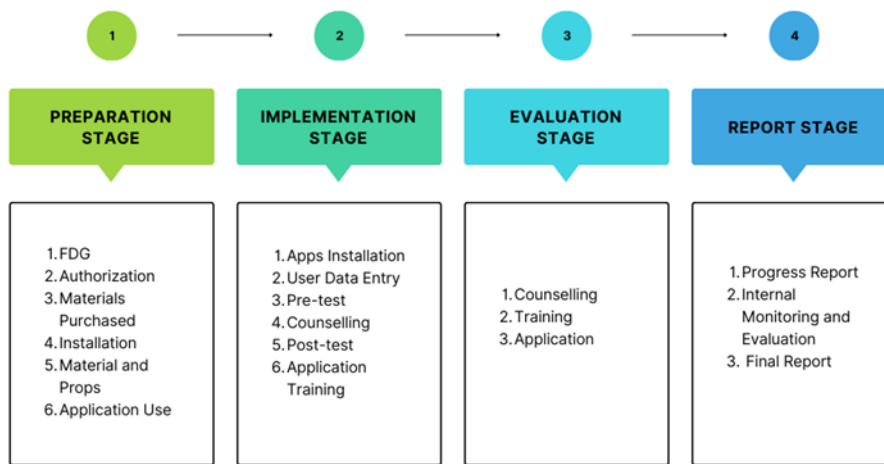


Figure 1: Community Service Method

Based on Figure 1, in the preparation stage, several activities were carried out including a Focus Group Discussion (FGD) involving SKB 26 Bintaro, Universitas Budi Luhur, and Universitas Mercu Buana. Regarding authorization, an MoU between SKB 26 Bintaro and the Faculty of Information and Technology of Universitas Budi Luhur was signed as well as a MoA between Universitas Mercu Buana and Universitas Budi Luhur. Materials compiled include mental health counselling modules and Smart-Senyum training modules. Props prepared include laptops, an InFocus projector, and Smart-Senyum application. Teachers, students, leaders, and administrators tested the application during the event. Counseling was provided once more for students as application users and teachers as facilitators or non-professional counselors who are expected to analyze the findings of the students' self-assessments and, if necessary, refer them to mental health professionals.

The population and sample of this program were teachers and students of SKB 26 Bintaro. A pre-test was carried out before the mental health counseling and the post-test was conducted after the counselling was completed, followed by an evaluation of the

program, making progress reports, monitoring and evaluation, and a final report. The specifications of the tools and materials used were as follows:

Table 1.
Smart-Senyum App Specifications

Technical Specifications	Description	Detail
Interface	Web-based	-
Hosting	Domain	smartsmile.id
	Company	Niaga hoster
	Package	Cloud basic
	Phyton version	3.7.16
Tools	Programming language	Phyton framework flask
Library/Extension	Database	MariaDB
	Flask	Flask-wtf, sqlalchemy, flask session, flask-login, datetime
Access Rights	Application	Admin, students, counselors, leaders.
Access Features	Admin	Login and logout Master menu: user, student, counselor, leader, admin, consultation schedule, and report.
	Student	Login and logout. Create diagnosis
	Counsellors/Teacher	Diagnosis (view student's counseling), consultation schedule (view student's counseling)
	Leader	Login and logout. Master menu : user, student, counselor, leader, admin. View diagnosis, view consultation schedule, and view report.

During this program, a trial for the Smart-Senyum application was conducted. The Smart-Senyum application uses the SRQ assessment tool. Furthermore, the program offered mental health counseling services to both teachers and students. Pre-test and post-test were given before and after counselling consisting of 8 closed questions (multiple choice), as below:

1. Knowledge of the definition of mental.
2. Knowledge of mental health.
3. Knowledge of the definition of an individual with a mental illness gene who is exposed to an unhealthy environment.
4. Knowledge of the definition of an individual without a mental illness gene but is exposed to an unhealthy environment.
5. Knowledge of the definition of an individual without a mental illness gene and lives in a healthy environment.
6. Knowledge of the definition of an individual with mental illness gene and lives in a healthy environment.
7. Understanding the source of mental health.
8. Understanding the roles or authority owned by mental healthcare workers.

Result and Discussion

The mental health counselling program was held on 1 September 2023 at Universitas Budi Luhur room 4.3.1. The participants were teachers of the SKB 26. During the session, the students were given pre-test and post-test sheets. An assessment was done after the tests to find out their level of understanding with the following results:

Table 2.
Pre-test and Post-test

	Pre (N=36)		Post (N=29)	
	Correct	Incorrect	Correct	Incorrect
Knowledge about Mental	56%	44%	83%	17%
Knowledge about Mental Health	56%	44%	48%	52%
Mental Illness Gene + Unhealthy Environment	69%	25%	62%	38%
Non-Mental Illness Gene + Unhealthy Environment	39%	53%	48%	52%
Non-Mental Illness Gene + Healthy Environment	86%	14%	93%	38%
Mental Illness Gene + Healthy Environment	14%	86%	52%	48%
The Source of Mental Health	67%	33%	59%	41%
The Roles of Mental Health Professionals	42%	31%	66%	34%

Previous studies in UK show that mental-health also the main issues of adult education (Waller et al., 2018) This study, in line with previous, that mental-health knowledge still need to be our concern. An increase of 5 pointers was shown, from 56% to 83% for understanding the definition of mental. The awareness of the relationship between people without a mental illness gene and an unhealthy environment increased from 39% to 48%. An increase in understanding is also shown in the relations between people with non-mental illness genes and a healthy environment from 86% to 93%, as well as between people with a mental illness gene and a healthy environment from 14% to 52%. Participants also gained a new understanding regarding the roles of mental health professionals, from 42% to 66%. There were only 3 pointers where a decline was seen. The understanding of mental health from 56% to 48%, the relationship between mental illness genes and an unhealthy environment from 69% to 62%, and the source of mental health from 67% to 59%. Although it seems we have increasing knowledge of mental health among the participant, the result of paired sample T-test is no significant difference in the scores of pre-test ($M = 0.53$; $SD = 0.22$) and post-test of mental health knowledge ($M = 0.63$; $SD = 0.16$), $t(7) = -1.60$; $p = 0.147$). Thus, in general, there is no conclusive result about the effectiveness of mental-health seminar. Meaning, we still need to continue our psychoeducation about mental-health among teenagers, and expand our participants, not only students in SKB-26, and yet revise the strategy of delivering the materials.

The decline in the score of understanding the definition of mental health could be due to the subjects' lack of working memory. The students of SKB 26 are adolescents who are unable to attend formal education. Their problems include a) being rejected in formal schools, b) having to work to help parents for economic reasons, c) coming from dysfunctional families, and d) other academic problems. However, they understand well how mental health is affected by the relationships between physical conditions (genetic) with the environment, as well as the roles of mental health professionals and non-professionals.

Mental health counselling and *Smart-Senyum* application training for students were conducted on 25 and 29 September 2023 at SKB 26 Bintaro and Lab.10 Universitas Budi Luhur. After completing a self-assessment on the *Smart-Senyum* application, the following results were obtained:

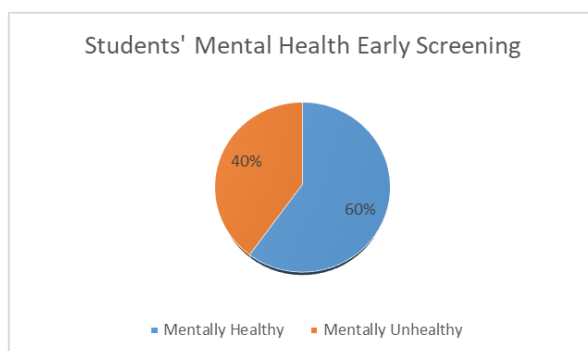


Figure 2. Students' Early Screening Results Using *Smart-Senyum* Application

Figure 2 shows that 60% of the students are mentally healthy but 40% of students are mentally unhealthy. This result shows that students in SKB-26 still have a good mental health although, up to 50%, this probably due to SKB curriculum that focus to bring up the students to graduate in elementary school equivalent with (PAKET A) and mastery the daily life skills. B Package curriculum, focus to bring up the students to graduate in secondary school's equivalent with and have the skills to meet the work demand. Curriculum of C Package, focus to bring up the students to graduate high school equivalent with, and have entrepreneurial skills without any pressure. The students could keep up with their own pace (Bintaro, 2022) The minimum amount of the ratio students and teacher, probably help the learning environment more personal, that help teacher to have more quality attention to the students. So that the students could maintain their mental health

more. Mostly the 40% students that have mental issues, bring their problem in to school from home such as broken home students, parental breakup, that may affect student's mental health (Savitri et al., 2019).

Conclusion

Based on the discussion, it can be concluded that this community service has achieved the following: (1) There is an increase in mental health understanding for the teachers of SKB 26 Bintaro, South Jakarta, but statistically not significant; (2) The *Smart-Senyum* application helps teachers screen students' mental health; (3) From the results of early screening, the teachers of SKB 26 as counsellors could recommend that students with symptoms of mental health problems should see mental health professionals.

The limitation of this study is that the saturated sampling technique adopted allows generalization to a specific sample only. The samples were very limited, only the students of SKB 26 Bintaro, West Jakarta. The Self Report Questionnaire was the main assessment tool, thus, there were no other measuring instruments for comparison. Future research should conduct replication with participants from the same age group from different locations. Other mental health-related self-assessment tools can also be used for comparison.

Suggestion

The *Smart-Senyum* application should be used in non-formal education settings with the hope that this application can be developed according to current needs.

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