Android Based Mental Health Support Application

Using Android Studio

Mark Christian H. Mercado, Angel Corrine C. Valbuena, John Ivan D. Abiera,

Diuzdean Paul J. Zabala, Sherley R. Luego and Sheila A. Abaya

Department of Computer Studies and Systems, University of the East, Caloocan

sheila.abaya@ue.edu.ph

ORCID: 0000-0002-0123-0890

Abstract

According to the World Health Organization (WHO) over 2,000 cases of suicide had been reported in the Philippines in 2000 to 2012. Suicide victims ranged from 15 to 29 years old. The number of cases is likely to be much higher because many people suffering from mental health illnesses are hesitant to seek help or due to some financial constraints. With a high percentage of children and adolescents affected by mental health problems, the researchers developed a support system to help them cope with it. It will never replace therapy, but it is recommended as a supplement to therapy. This application is intended for UE Caloocan college students suffering from mental health issues. It can be used anytime and anywhere, making it easier for students to use. Having an application like this can help encourage students to be more aware of their mental health condition and thereby improves the student's performance academically. The application is a support system with different features like motivational quotes and videos, a friendly online community, a nature soundtrack, mindfulness feature, daily reminder, and a mood tracker to better understand one's mental health status. Thus, it will help students to overcome mental health problems and to discover ways of handling it.

Keywords: Mental health, mobile application, android studio

I.   Introduction

According to the Department of Health (DOH), an estimated 10% to 20% of children and adolescents globally are affected by mental health problems, with more than half occurring before 14 years of age. Suicide attempts are very prevalent (Uddin et al., 2019). The role of mental health applications is to encourage users to be more aware of their moods and behavior. But one should consider the subsequent growth of the society and the situation of each individual who is experiencing mental issues. Since the pandemic started, the University of the East Caloocan Guidance Counseling and Career Services Office (UE-CAL GCCSO) created a protocol complying with the Philippine Guidance and Counseling Association and adapted the Online Counseling for students as part of their services. They use a secure platform for online counseling like Doxy.me and Google meet. There are some procedures that the students should follow to have an online consultation. The importance of mental health should always be given attention because it is a part of a person's life and impacts their thoughts, actions, and feelings. Good mental health can help us to be more productive and effective in our daily lives. The general purpose of this research is to provide a mental health support application that can help the GCCSO in helping the students to be aware of their mental health condition as well as managing their mental health issues. Spreading mental health awareness will improve the mental health condition of the students and their general health as a whole.

II.   Literature Review

Mental health problems are caused by some of the factors such as family issues, relationships, financial concerns, voluminous schoolwork, peer pressure and sleep disorders. Relatively, most of the studies and literatures gathered dealt with the causes of mental health

problems, the use of mobile applications or technology in dealing with mental health issues as well as reports about people who have experienced mental health problems. These related works opened the door for the development of the proposed application which could help people suffering from mental health illnesses.

In the Philippines, according to the studies of (Tuliao, 2014) and (Tully et al., 2019), most urban areas lack knowledge about mental health, give them wrong information about mental issues, and has a short amount of mental health facilities and workers compared to the population of the country. To make it worse, the world is currently experiencing a global pandemic. According to (Bautista at al., 2020), the pandemic hugely affected everyone, especially students. When it comes to the youth, (Stoll et al., 2016) stated that mental, emotional, and behavioral disorders are common in youth, with anxiety problems being among the most prevalent, typically failing to spontaneously remit, and placing some youth at risk for additional difficulties. The main reason for their stress is school because there is too much work they need to do; another source of their stress is work stress wherein they think about their future if they will be successful. The study of (Bhargava et al., 2018) also stated a similar thing about the youth experiencing mental health problems because of academic duties, career exploration, and peer pressure from the world, especially nowadays that social media is an integral part of their lives and it can bring insecurities and stress. According to (AbdulRahman et al., 2018), sleep disorders can cause depression. Other outcomes in sleep disorders include obesity, diabetes, anxiety, and depressed mood. It could also make a person unproductive throughout their day if they have sleeping disorders. Suicide is a serious public health problem, as suicide is the second leading cause of death for people aged 15 to 29. Suicide is, however, preventable and understanding the risk factors and warning signs can

help in preventing it to happen. As of the 2017 report, 792 million people had mental health problems from the report of (Nadeem et al., 2004).

Unfortunately, the youth is not the only one experiencing mental health problems. (Bhargava et al., 2018) stated that stress is a mental pressure for particular individual facing environmental and social well-being problems, which leads to many diseases. Academic exams, interpersonal relationships, financial issues, and career exploration all causes stress in today's youth. This type of stress leads to psychological, physical, and behavioral issues and should be brought up in a positive environment.

According to (Aliyev, 2020), most people and adults with mental health problems often do not seek professional help, despite the existing treatments and medicines for every psychological problem. From (Martinez, 2020) most Filipinos do not have access to mental health facilities or a psychiatrist, so they keep their mental health problems with them. Also, every mental health care should be handled with compassion, as (Spandler et al., 2011) stated.

Mobile health (mHealth) might be a novel avenue to strengthen prevention efforts for child anxiety since program effects is generally minor. Mobile devices continuously improve software programs where individuals can easily use them. Based on (Madzhie, 2015), students have different perceptions of what causes their stress. It is recommended that the university take action to their students' stress; a mobile application that could help the student seeks help from their University if they are stressed. Mobile applications could help them cope up with their stress and continue enjoying their youth. With a growing number of health applications within easy reach for consumers on smartphones, (Garrido et al., 2019) stated that it is essential to distinguish the features of mobile apps for mental health that young

people find most engaging and appealing to inform future intervention design. In (Sucala et al., 2017) study, most of the currently accessible anxiety apps came up short due to the lack of inclusion of medical services experts. For (Wright et al., 2019) many mobile applications had been created claiming to be beneficial for depression and/or anxiety.

For that, the researchers created an application that has a feature of socializing with other people who have mental health problems through the help of technology. Technology is now a big part of everyone's life, and arguably people cannot function well without its help. That is why this study aimed to provide a mobile application that could support a person with mental health problems. An issue that mental health applications are facing is the effectiveness of their functions. One of the application's features is that it reminds the user to manage their sleeping habits to help those with a sleeping disorder. VVECare is guided by a licensed psychologist during its development for credibility and effectiveness. This project created a safe place for everyone who will use the application as evidenced by the study of (Biringer et al., 2015) that "Recovery takes place within the person's daily life context and involves the interplay of contextual factors, such as family, friends, good places, work, and other meaningful activities." It shows that it is essential for a person to have the right tools such as support and a great environment to properly cope with their mental health problems. These works are the basis in the implementation of the application, designed to support and help users manage their mental health difficulties. Their study assessed the significance of compassion to mental health care and practices and that it should exist daily which is a key component in the proposed application.

That is why reestablishing a connection with others can restore the meaning of life, as evidenced in the work of (Kartalova-O'Doherty et al., 2010). This study provides a mobile

application that could help prevent suicide by including a feature called Online Community. The user can post their thoughts in a friendly environment, thereby users can share their feelings and emotions with someone without being afraid to be judged and it is imperative to ensure that the care they need is given.

III. Methodology

The researchers used an online research method through the Net where valuable and informative resources for the project were gathered. Android Studio was the tool used in developing the application. Then online survey forms were distributed and given only to the UE college and senior high school students currently enrolled for the mobile project evaluation. The results were interpreted using the descriptive research method with the Likert Scale model to determine the effectiveness and efficiency of the application.

Project Design

As seen on Fig. 1, the context diagram of VVECare application is made available for the GCCSO personnel and the university students. The flow starts with the verification of a valid UE email account. Once logged in, several features will be available and accessible for all valid users such as uploading of motivational quotes, articles, stories and published books; notification, invitations and videos to watch; a mood tracker to determine the mood condition of the user; an online community chat area where students and GCCSO staffs can interact and interactively communicate, thus, enabling the GCCSO personnel to monitor the community and the status of the participants; a distress feature that allows the student to activate thereby informing the GCCSO personnel for an immediate guidance and counseling; a firestone database for online connection and real-time updates; and accessibility to mental health institutional hotlines.

Fig. 1 VVECare context diagram

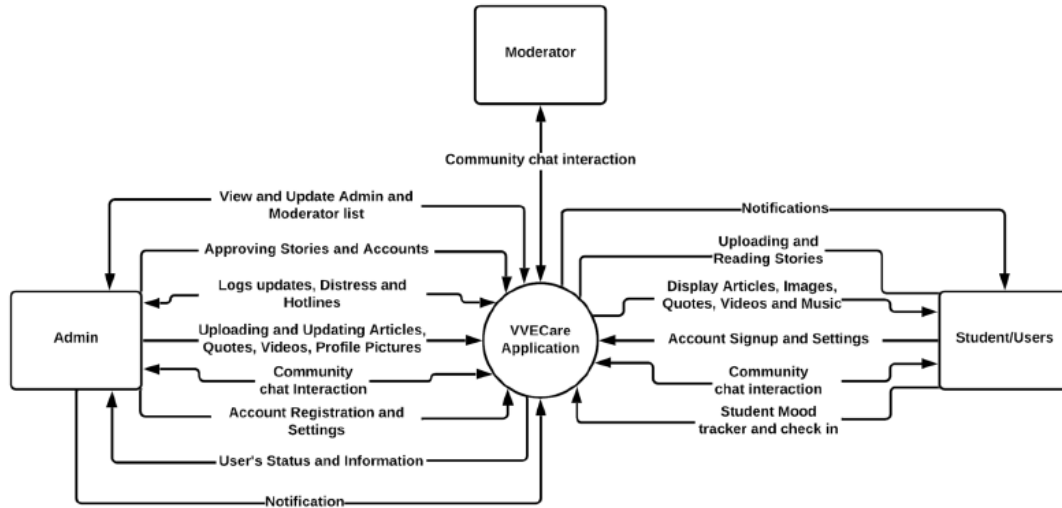
Fig. 2 Admin's dashboard   Fig.   3   Literary   articles   dashboard

Fig. 2 shows the home page of Administrator's account. These are the activities that the Admin can do with the application. Moreover, Fig. 3 shows the literary features of the app such as videos, images, invitations, articles, stories, quotes, and music that the admin can manage.
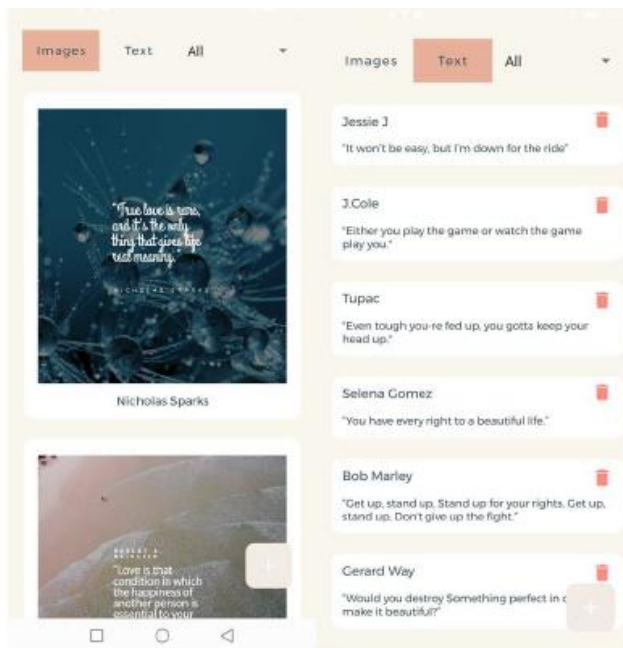
Fig. 4 Quotes UI

Fig. 5 User dashboard

Presented on Fig. 4 is the environment where the admin can upload helpful quotes on different categories, while Fig. 5 illustrates the different features that the user can utilize such as reading motivational quotes, learning more about mental health, listening to calm soundtracks, and watching educational videos about mental health.
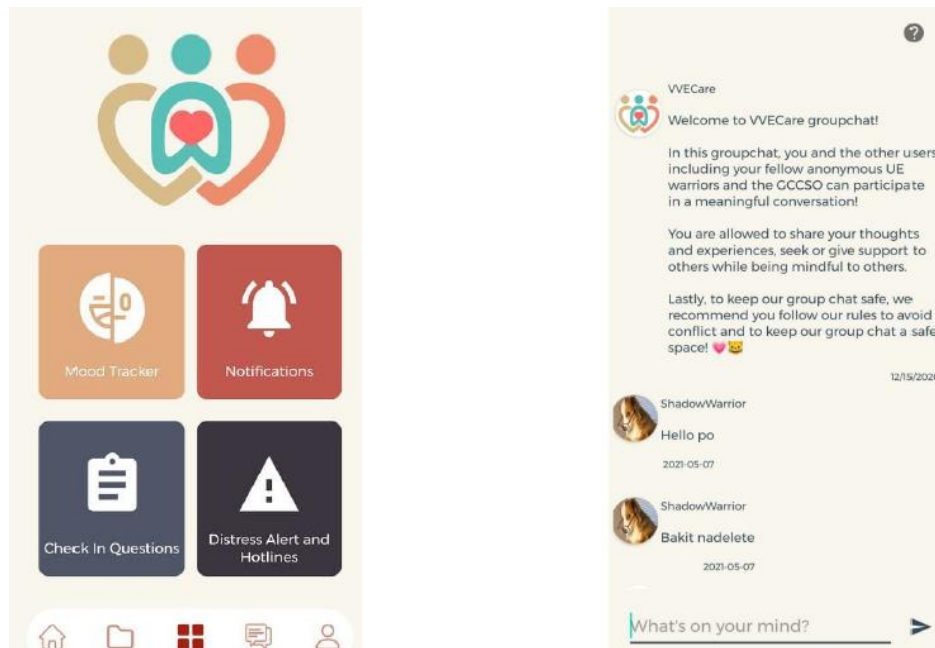
Fig. 6 VVECare Shortcuts

Fig. 7 Group chat UI

Fig. 6 displays the page for the user's shortcuts which includes a mood tracker, monitoring the user's current mood 3 times a day, a notification, check-in questions, and distress alerts and hotlines. However, on Fig. 7, the application's group chat feature page allows all users to communicate with each other through the admin supervision. User anonymity is also observed in this feature for data privacy.

Description of Respondents

The 52 respondents from the University were asked to evaluate the VVECare application which includes:

● Selected college & senior high school students from the College of Arts and Sciences (CAS), College of Business and Administration (CBA), College of Fine Arts, Architecture and Design (CFAD), and the College of Engineering (COE), and from the different SHS tracks of

Academic, Technical-Vocational-Livelihood, and Sports who are currently enrolled in the 1st semester of S.Y 2020-2021.

● GCCSO director and personnel

Statistical Treatment

The evaluation results were interpreted using the Likert scale model to determine the effectiveness of the proposed application. The results were also used to determine the areas of the project that need to be improved.

Evaluation Criteria

Several criteria were used to determine the user's satisfaction of the proposed application and to identify if project goals were achieved.

● Graphical User Interface (GUI) – The key factor to keep the users from utilizing the application. Sub factors such as aesthetic and User Interface (UI) are the basis for this criterion.

● Compatibility – Checks on the workability of the app with no issues and conflicts. Sub factors of navigation easiness and providing clear instructions are the basis for this criterion.

● Functionality – Deals with the system's ability to be error-free and performance-wise. Sub factors for this criterion were performance efficiency, free of bugs and error free, managing incorrect user inputs and application security.

● Application effectiveness – It is the application's ability to determine if the desired objectives were met. Sub factors for this criterion were application helpfulness, effectiveness in coping features and meeting the user's needs and requirements.

IV. **Results and Discussion**

The researchers designed and developed an Android-Based Mental Health Support Application for UE Caloocan using Android Studio. The general purpose of this study is to create a mental health application that will help students overcome mental health problems and discover some ways to handle them. Through a series of tests and evaluations, it was found out that the VVECare application was acceptable based on the criteria identified in determining the effectiveness of the project.

Respondents who participated in the application evaluation have diverse answers to each question. But still, most of the answers are graded on either 5 (Excellent) or 4 (Outstanding) on the Likert scale: 57.7% of the respondents found that the application is attractive and pleasing to the user. In addition to that, 57.7% of the respondents said that the UI format of the application is consistent. 73% of the respondents found that the UI is well-suited for the application. 65% of the respondents said that the application is easy to navigate for the users. 67.3% answered that the user interface contains clear and accurate instructions and responses. 59.6% answered excellent in the survey questionnaire that the application ran without any performance issues. 5% of the respondents said that the application is free of bugs and errors, while 21.1% experienced bugs while testing the application. 59.6% answered that the application is capable of giving notifications when the user inputs wrong information. 57.6% of the respondents answered that they feel secure while using the application. 63.4% of the respondents find that the application helps manage health issues and 61.5% of the respondents voted for excellent features of the application that are effective in managing mental health issues. 63.4% of the respondents answered that the mental health application fulfills the users' needs and expectations. As a result, most of the respondents graded 5

(Excellent) on the overall application, which means they found the application very useful and helpful in managing their mental health issues.

V.   Conclusion

In conclusion, the researchers accomplished all the features necessary to provide a mental health application to help the guidance counseling office as well as the bonafide students of the University of the East, Caloocan. The project was able to successfully integrate mental health coping mechanisms such as e-learning, online community, music, and daily reminder. The application was backed up by studies and literature and supported by the GCCSO entity. The project provided a venue for users to communicate with each other interactively and with the guidance and monitoring of GCCSPO admin and personnel. It is the place where users can gain mental health awareness and improve one's mental health condition. Overall, the respondents answered excellent that the VVECare application is very effective in managing the students' mental health issues.

The project served as an avenue to identify some strategies to cope with stress, such as getting enough sleep, meditation, and going out with friends or family. Due to the increased use of social media, the young became self-centered and only connected with technology. Young people spend too much time on gadgets, and they have less physical movement and interaction amongst people. Thereby, it is recommended that young people limit the use of technology and spend more time with family and friends.

VI.   References

AbdulRahman, I., Yaqoob, U., & Ali Bhatti, T. (2018). Sleep Disorders Caused by Depression. *Clinical Depression*, *04*(02), 1–3. https://doi.org/10.4172/2572-0791.1000131

Aliyev, N. (2020). *Mental Disorders Caused by the COVID-19 Pandemic*. *August*.

Bautista, A. G. M., & Manuel, E. S. (2020). Mental Health of Students in the Philippines during Pandemic: An assessment. *Journal of Humanities and Education Development*, *2*(5), 316–323. https://doi.org/10.22161/jhed.2.5.2

Bhargava, D., & Trivedi, H. (2018). A Study of Causes of Stress and Stress Management among Youth. *IRA-International Journal of Management & Social Sciences (ISSN 2455-2267)*, *11*(3), 108. https://doi.org/10.21013/jmss.v11.n3.p1

Biringer, E., Davidson, L., Sundfør, B., Lier, H. O., & Borg, M. (2016). Coping with mental health issues: Subjective experiences of self-help and helpful contextual factors at the start of mental health treatment. *Journal of Mental Health*, *25*(1), 23–27. https://doi.org/10.3109/09638237.2015.1078883

Cleofas, J. V. (2020). Student involvement, mental health and quality of life of college students in a selected university in Manila, Philippines. *International Journal of Adolescence and Youth*, *25*(1), 435–447. https://doi.org/10.1080/02673843.2019.1670683

Garrido, S., Cheers, D., Boydell, K., Nguyen, Q. V., Schubert, E., Dunne, L., & Meade, T. (2019). Young people's response to six smartphone apps for anxiety and depression: Focus group study. *Journal of Medical Internet Research*, *21*(10). https://doi.org/10.2196/14385

Kartalova-O'Doherty, Y., & Tedstone Doherty, D. (2010). Recovering from recurrent mental health problems: Giving up and fighting to get better. *International Journal of Mental Health Nursing*, *19*(1), 3–15. https://doi.org/10.1111/j.1447-0349.2009.00636.x

Lally, J., Tully, J., & Samaniego, R. (2019). Mental health services in the Philippines. *BJPsych International*, *16*(03), 62–64. https://doi.org/10.1192/bji.2018.34

Madzhie, M. (2015). University Students' Perceptions of the Causes of Stress. *Journal of Social Sciences*, *44*(1), 53–59. https://doi.org/10.1080/09718923.2015.11893459

Martinez, A. B., Co, M., Lau, J., & Brown, J. S. L. (2020). Filipino help-seeking for mental health problems and associated barriers and facilitators: a systematic review. *Social Psychiatry and Psychiatric Epidemiology*, *55*(11), 1397–1413. https://doi.org/10.1007/s00127-020-01937-2

Nadeem, Z., Mcintosh, A., & Lawrie, S. (2004). Mental health Mental health. *Who*, *April*, 81 1500–1531. https://www.who.int/health-topics/mental-health#tab=tab_2

Schueller, S. M., Neary, M., O'Loughlin, K., & Adkins, E. C. (2018). Discovery of and interest in health apps among those with mental health needs: Survey and focus group study. *Journal of Medical Internet Research*, *20*(6). https://doi.org/10.2196/10141

Spandler, H., & Stickley, T. (2011). No hope without compassion: The importance of compassion in recovery-focused mental health services. *Journal of Mental Health*, *20*(6), 555–566. https://doi.org/10.3109/09638237.2011.583949

Stoll, R. D., Pina, A. A., Gary, K., & Amresh, A. (2017). Usability of a Smartphone Application to Support the Prevention and Early Intervention of Anxiety in Youth. *Cognitive and Behavioral Practice*, *24*(4), 393–404. https://doi.org/10.1016/j.cbpra.2016.11.002

Sucala, M., Cuijpers, P., Muench, F., Cardoș, R., Soflau, R., Dobrean, A., Achimas-Cadariu, P., & David, D. (2017). Anxiety: There is an app for that. A systematic review of

anxiety apps. *Depression and Anxiety*, *34*(6), 518–525. https://doi.org/10.1002/da.22654

Trigueros, J. A., Plaza, V., Domínguez-Ortega, J., Serrano, J., Cisneros, C., Padilla, A., Antón Gironés, M., Mosteiro M, Martínez Moragón, E., Olaguíbel Rivera, J. M., Delgado, J., García Rivero, J. L., Martínez Rivera, C., Garrido, J. J., & Quirce, S. (2020). Asthma, comorbidities, and aggravating circumstances: The gema-forum II task force. *Journal of Investigational Allergology and Clinical Immunology*, 30(2), 140–143. https://doi.org/10.18176/jiaci.0460

Tuliao, A. P. (2014). Mental health help seeking among Filipinos: a review of the literature. *Asia Pacific Journal of Counselling and Psychotherapy*, *5*(2), 124–136. https://doi.org/10.1080/21507686.2014.913641

Uddin, R., Burton, N., Maple, M., Khan, S. R., Khan, A. (2019). Suicidal ideation, suicide planning, and suicide attempts among adolescents in 59 low-income and middle-income countries; a population based study. *The Lancet Child & Adolescent Health,* 3(4), 223 – 233. doi: 10.1016/S2352-4642(18)30403-6

WHO. (2014). 10 Facts on Mental Health. *World Health Organization*, http://www.who.int/features/factfiles/mental_healt. https://www.who.int/news-room/facts-in-pictures/detail/mental-health%0Ahttp://www.who.int/features/factfiles/mental_health/mental_health_facts/en/ on 05/03/2018

Wright, J. H., Mishkind, M., Eells, T. D., & Chan, S. R. (2019). Computer-Assisted Cognitive-Behavior Therapy and Mobile Apps for Depression and Anxiety. *Current Psychiatry Reports*, *21*(7). https://doi.org/10.1007/s11920-019-1031-2

Zhao, S., Li, S., Ramos, J., Luo, Z., Jiang, Z., Dey, A. K., & Pan, G. (2019). User profiling from their use of smartphone applications: A survey. *Pervasive and Mobile Computing*, *59*(7). https://doi.org/10.1016/j.pmcj.2019.101052

Bionote

I am Sheila A. Abaya, a professor in the Department of Computer Studies and Systems within the College of Engineering at the University of the East – Caloocan. My academic journey encompasses a Doctorate in Information Technology earned from TIP-QC, a Master's degree in Computer Science from DLSU-Taft, and a foundational Bachelor of Science in Computer Science from UEMLA. Complementing my technical expertise, I enriched my education with a comprehensive grasp of law by completing 2-year units at UE-MLA's College of Law.

My professional reach extends beyond borders, as I have proudly presented my research contributions in various forums across the globe, both through personal appearances and online engagements. These presentations have taken me to esteemed academic destinations such as the Philippines, Poland, Hong Kong, China, and India, where I've shared insights that bridge international perspectives.

Moreover, my commitment to advancing knowledge is demonstrated through my publication record in refereed journals, spanning both international and local domains. My engagement in scholarly discourse is not confined to authorship alone—I actively contribute as a technical reviewer for multiple reputable international journal publications, further cementing my dedication to the ongoing advancement of academic excellence.