Design of a mobile app as an emotional support tool for university students

Diseño de una app móvil como herramienta de apoyo emocional en estudiantes universitarios

OLVERA-MEJÍA, Yair Félix†*, GEA-PÉREZ, Mario Alberto, RESENDIZ-RAMÍREZ, Ivone Vidalia and VARGAS-RANGEL, José Amílcar

Universidad Politécnica Metropolitana de Hidalgo, México.

ID 1st Author: *Yair Féliz, Olvera-Mejía* / **ORC ID:** 0000-0003-4116-088X, **Researcher ID Thomson:** U-8258-2018, **CVU CONACYT ID:** 254526

ID 1st Co-author: *Mario Alberto, Gea-Pérez* / **ORC ID:** 0000-0003-2929-7605, **Researcher ID Thomson:** U-8326-2018, **CVU CONACYT ID:** 651633

ID 2nd Co-author: *Ivone Vidalia, Resendiz-Ramírez* / **ORC ID:** 0000-0003-3234-4986, **Researcher ID Thomson:** GLR-6080-2022, **CVU CONACYT ID:** 1219941

ID 3rd Co-author: *José Amílcar, Vargas-Rangel* / **ORC ID:** 0000-0001-7355-3966, **Researcher ID Thomson:** GLR-5912-2022, **CVU CONACYT ID:** 651422

Abstract

Nowadays, it is normal for adolescents to be vulnerable to intense problems related to their mental health, which are reflected in their behavior inside and outside of school. Although there are various institutional campaigns to combat these problems, it is necessary to generate tools that are liked by adolescents and that are directed to a specific group for greater attention. Reason for which, the design and creation of a mobile app is proposed as an emotional support tool for students of the Metropolitan Polytechnic University of Hidalgo, which consists of mental activities, physical activities, support forums, videos, texts and booking appointments with the psychologist. The purpose is to raise awareness about the importance of emotional well-being. Students should know that mental disorders are normal, but they should not be taken lightly. The mental health of people depend not only on themselves, but also on those around them and the means of communication they use.

Resumen

En la actualidad, es normal que los adolescentes sean vulnerables a sufrir de manera intensa problemas relacionados con su salud mental, los cuales se reflejan en su comportamiento dentro y fuera de la escuela. Aunque existen diversas campañas institucionales para combatir estos problemas, es necesario generar herramientas que sean del agrado de los adolescentes y que sean dirigidas a un grupo determinado para una mayor atención. Motivo por el cual, se propone el diseño y creación de una app móvil como herramienta de apoyo emocional para estudiantes de la Universidad Politécnica Metropolitana de Hidalgo, la cual consiste de actividades mentales, actividades físicas, foros de apoyo, videos, textos y reservación de citas con el psicólogo. El propósito es generar conciencia sobre la importancia del bienestar emocional. Los estudiantes deben de saber que los trastornos mentales son normales, pero no por ello deben ser tomados a la ligera. La salud mental de una persona no solo depende de sí mismo, sino también de la gente que lo rodea y de los medios de comunicación que emplea.

Emotional Support, Mental health, Mobile app

Apoyo emocional, App móvil, Salud mental

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* Author Correspondence (E-mail: yolvera@upmh.edu.mx)

† Researcher contributing as first author.

Introduction

Mental health is a complex concept to define, due to the fact that it is determined by various factors, such as social, psychological and biological. The World Health Organization WHO (2018), defines it as a state of complete physical, mental and social well-being, not only as the absence of mental conditions or illness.

While advocacy about mental health care has increased in recent years, so has the rate of patients suffering from some form of mental disorder, which have been exacerbated lately by the confinement due to the COVID-19 pandemic and subsequent back-to-school. Such disorders reduce people's quality of life, affect their capacity for thought, interaction, expression and enjoyment, both individually and collectively, reaching the point of becoming a disability.

The United Nations United Nations (2020), points out that mental illnesses have become a silent epidemic, due to the fact that many of the people who are affected are not properly diagnosed, refuse to seek professional psychological and/or psychiatric help, or do not have easy access to it. In addition, there is still stigmatization of these conditions, which also affects how the patient perceives his or her illness, often turning the need to ask for help into a feeling of guilt, incomprehension or rejection in the environment in which he or she lives.

There are several treatments for such conditions, including Behavioral Behavioral Therapy (CBT). Clark and Beck (2016) refer to it as brief and structured psychotherapy, which teaches the patient to recognize and change their thoughts, beliefs and attitudes related to their negative emotional states. Such therapy focuses on the idea that the way you think directly influences the way you feel, so that by changing the way you think you also change the way you feel. Its goal is that, through daily experiences, people suffering from depression, anxiety or other types of mental disorders, are able to suppress or reduce the feelings that cause them uneasiness.

It is common to hear that some people label those suffering from mental disorders as "crazy", who only pretend to feel bad to get attention. This type of situation triggers that seeking professional help when going through an emotional problem is considered a kind of taboo, causing many young people or adolescents to neglect their mental health care. Another important factor is the lack of sensitivity and confidence to talk about these issues with other individuals, as there is still social stigma, misunderstanding and rejection towards those who live with such problems. It is important to emphasize that, just as it is important to promote physical health care, it is also important to promote mental health care, as there must be a balance between the two in order to develop properly in society.

According to the World Health Organization WHO (2020), more than 1 billion people around the world live with some type of mental disorder. In Mexico alone, the National Institute of Statistics and Geography INEGI (2018) reported in 2017 that about 33.38 million people have felt depressed, of which 8 million are between the ages of 15 to 29.

In addition to this, phenomena such as the pandemic generated by the Covid-19 virus also have an impact on the mental health of individuals, as they have had to face the fear, stress, anxiety and uncertainty that a situation like this brings. Unfortunately, mental health is one of the areas that receives the least attention in the public sector. Data from the World Health Organization WHO (2020) state that, in low- and middle-income countries, more than 75% of people with mental, neurological and substance use disorders do not receive any treatment for their condition, and the rest who can access it receive poor quality care or in most cases cannot afford it.

Nowadays, the use of mobile applications has become an everyday part of people's lives, because they are useful for various tasks, and mental health care is no exception. There are applications that act as emotional support for those patients living with a mental disorder, although they do not replace professional treatment, they do function as an accompanying tool, which is extremely beneficial for the patient, as it makes it easier to go through the sanctioning process.

The importance of treating this type of diseases is extremely high, since suffering from them can influence the individual for many years, affecting from their quality of life, to cause a greater impact, such as an attempt against their physical integrity, or in severe cases, against their own life. According to data from the National Institute of Statistics and Geography INEGI (2020) only from January to August 2020, 1315 suicides were registered, making it the third leading cause of death among individuals aged 15 to 24 years.

For this reason, the present research seeks to demonstrate that the development of a mobile app based on Cognitive Behavioral Therapy (CBT), can serve as an emotional support tool that monitors the state of mental health of students of the Metropolitan Polytechnic University of Hidalgo, aged between 17 and 25 years. In addition, to be a means that facilitates the corresponding departments, the promotion and protection of the same. Only with concrete actions in favor of mental health, it is possible to build an appropriate health system that adapts to the needs required by the current population.

Mental health and emotional support networks

The World Health Organization WHO (2018) defines mental health as an integral and essential component of health, which should be considered as a state of well-being in which the person is able to cope with the problems they face and in turn develop fully in all aspects of their lives, and not only as the absence of mental disorders or disabilities. Mental health and well-being are fundamental to the collective and individual capacity to:

- Think.

- Manifest feelings.

- Interact with others.

- Earn a livelihood.

- Enjoying life.

That is why the promotion, protection and restoration of mental health are vital concerns of individuals, communities and societies around the world. Individual mental health is determined by multiple factors, such as: social, psychological and biological. There are also specific personality and psychological factors that make a person more vulnerable to mental disorders. Poor mental health is also associated with:

- Rapid social changes.

- Stressful working conditions.

- Gender discrimination.

- Social exclusion.

- Unhealthy lifestyles.

- Risk of violence.

- Poor physical health.

- Human rights violations.

Ortego, et al. (s. f.) define emotional support, sometimes known as social support, as the set of human and material resources available to individuals to overcome certain crises, such as illness, poor economic conditions, family breakdowns, etc. These systems can be constituted in the form of interconnected institutions, which in the end favors their effectiveness. The main natural support networks are:

- Family.

- Friends and acquaintances.

- Co-workers.

- Neighbors.

- Spiritual companions.

One of the main advantages of these support networks is that the help they provide is immediate, thus offering positive emotional support to the person in need. The disadvantage lies in the fact that these networks are improvised, i.e., they depend basically on the closeness of their members and the type of previous affective relationship. For example, if a person lives alone, without close family and does not get along well with his neighbors, he will not have any social support, or if not, it will be very precarious, thus causing him to face the situation he is going through in a bad way (Ortego, et al., n.d.). There are also organized support networks, such as:

-    Organizations that help sick people.

-    Social Security.

-    Company for which the person works (if they have organized support systems).

-    Voluntary organizations.

Emotional disorders

In the opinion of Palacio Betancourt, et al. (2018), there is currently no biologically sound way to make the distinction between mental normality and abnormality, nor are all the causes of imbalances in this field clearly known. The diagnosis of mental disorder, its treatment and prognosis depend on how certain ways of thinking, perceptions, feelings, behaviors and relationships considered as signs and symptoms are grouped, attending to different aspects such as: their duration, coexistence (mixture), intensity, and affectation in the functionality of whoever presents them (affects their performance at work, studies or other activities of daily life and/or their way of relating with other people).

The World Health Organization (2014) defines a mental disorder as one that occurs as a result of an alteration that has an impact on the affective and cognitive procedures of development. Translating into difficulties in reasoning, behavioral alterations, impediments to understand reality and to adapt to various situations. At the same time, it highlights the importance that mental disorders can be a consequence of biological factors (whether genetic, neurological or other), environmental or psychological.

Therefore, they require an interdisciplinary approach focused on improving the quality of life of the subject. Undoubtedly, there are currently a wide variety of mental disorders, each with different manifestations, but generally characterized by a combination of alterations in thinking, perception, emotions, behavior and relationships with others. These include depression, bipolar affective disorder, schizophrenia and other psychoses, dementia, intellectual disabilities and developmental disorders such as autism. There are effective treatments for mental disorders and measures to alleviate the suffering they cause. For this reason, patients must have access to medical care and social services that can provide them with the treatment they need. In addition, it is essential that they receive social support (WHO, 2022).

Emotional disorders are not a condition exclusive to adults; on the contrary, they can also attack young individuals, especially when they are at a vulnerable stage. As mentioned by the World Health Organization (2021), emotional disorders usually arise during adolescence. In addition to depression or anxiety, adolescents with emotional disorders may also experience excessive reactions of irritability, frustration, or anger. Symptoms of more than one emotional disorder may overlap, and rapid, unexpected mood swings and emotional outbursts may occur. Younger adolescents may also develop physical symptoms related to their emotional situation, such as stomach pain, headache or nausea. Worldwide, it is estimated that between 10% and 20% of adolescents experience mental disorders, but these are underdiagnosed and undertreated.

The mental health of adolescents and young people can be affected by a variety of factors, and the more they are exposed to risk, the greater their deterioration. According to the latest data collected by the United Nations Children's Fund UNICEF (2019), more than 20% of adolescents worldwide suffer from mental disorders, in addition to the fact that suicide is the second leading cause of death among young people aged 15-19 years, and about 15% of adolescents in low- and middle-income countries have considered suicide.

For this reason, it is of utmost importance to address the needs of adolescents who are afflicted by such diseases. Strategies to prevent, diagnose and treat them in time are urgently needed.

Cognitive-Behavioral Therapy (CBT)

The Royal College of Psychiatrists Public Education Editorial Board (2008) defines it as a way of understanding how you think about yourself, other people and the world around you, and how your own actions affect your thoughts and feelings. CBT can help change how you think ("cognitive") and how you act ("behavioral"), helping you feel better. Unlike some of the other talking therapies, CBT focuses on problems and difficulties in the "here and now". It does not seek to focus on the causes of past distress or symptoms, but rather looks for ways to improve mood in the now. It has been shown to be useful in understanding complex problems by breaking them down into smaller parts, with the goal of seeing how these parts connect to each other and the effect they cause, as well as treating problems such as:

- Anxiety.

- Depression.

- Panic.

- Agoraphobia and other phobias.

- Social phobia.

- Bulimia.

- Obsessive compulsive disorder.

- Post-traumatic stress disorder.

- Schizophrenia.

CBT is one of the first choice treatments for numerous mental disorders. However, the knowledge that health professionals and the general public have and its presence in clinical practice is probably scarce. It is a form of psychological treatment that assumes the existence of distorted cognitions and/or dysfunctional behaviors that maintain (or cause) the distress associated with mental disorders.

Here, the professional helps the patient to define goals and teaches him/her how to apply psychological techniques that help to reduce the distress. Exposure techniques, cognitive restructuring or social skills training are some examples.

Compared to other forms of psychological treatment, CBT is characterized by being more directive, goal-oriented, focused on cognitive and behavioral modification, and by the frequent use of "homework", i.e. repeated practice of the skills learned. It is one of the first choice treatments for a significant number of non-psychotic mental disorders, both in adults and children/adolescents, although its efficacy is variable depending on the disorder (Fullana, et al., 2012).

Design and development of the mobile app

The idea is to develop a mobile app that serves as a tool for emotional support, focused on a specific audience, students of the Universidad Politécnica Metropolitana de Hidalgo between 17 and 25 years old. In order to develop this research successfully, it is necessary to reflect on the mental health problems that exist in this population. According to Kessler, et al. (2007), half of the mental disorders begin at age 14 or earlier, but in most cases they are not detected or treated. Failure to treat these disorders correctly can lead to irreparable consequences throughout adulthood.

For this reason, implementing prevention actions from early stages is a key factor, above all, these must be oriented correctly towards the population to be helped, since it is impossible for the same support tool to work satisfactorily for an adolescent and an adult. This is one of the main reasons why the development of a mobile application is chosen as a strategy to minimize the aforementioned problem. In Mexico alone, a survey conducted by the National Institute of Statistics and Geography INEGI (2020) showed that 88.1% of the inhabitants have a smartphone, which makes interacting with a mobile application a daily activity, especially in the young sector.

For the mobile app, named *Apsique*, to have a positive impact among the university student community, it is designed with young people and their needs in mind. With an attractive and friendly interface for users, which makes them feel safe and accompanied, removing those feelings of fear or embarrassment that often arise when seeking psychological help, especially when the process is done in educational institutions and the whole process seems to become bureaucratic. The purpose of creating *Apsique* is not to replace psychological and/or psychiatric treatment, but rather to create a support tool accessible at any time of the day, where students can channel their emotions through simple tasks, talk to other people about the situation they are going through in order to create a support network, schedule an appointment with the institutional psychologist, among other aspects that allow students to take proper care of their mental health.

To identify the app, an imagotype is created referring to the fact that each person needs to work and be responsible for their mental health in order to achieve personal and emotional wellbeing; just as it happens when taking care of a plant so that it grows healthy and strong. The plant with leaves is the main element and is drawn giving the appearance of having organic growth movement. The color white was chosen, as it is commonly linked to concepts such as cleanliness, clarity and simplicity, which in turn causes feelings of peace and tranquility. In addition to the blue background color, as shown in Figure 1.

Figure 1 Isotype of the mobile app
Source: Own elaboration

The home screen, shown in Figure 2, welcomes all users and contains William Shakespeare's phrase "*Our bodies are our gardens, our wills are our gardeners*", which refers to the meaning of the application. As in most apps, at the beginning there are two buttons to log in or register by entering some personal data, highlighting the request for a trusted contact for that moment when the student feels that he/she is in crisis, he/she can call or send a message to his/her contact immediately and easily within the app.

Figure 2 Startup screens
Source: Own elaboration

One of the objectives of *Apsique* is that the user can channel their emotions through activities that can be performed either at home or with a family member. The app has three types of activities based on the user's interests:

Get up a little: Those that are designed to share with other people or require some physical effort on the part of the user. Some of them contain links to *YouTube* or *Spotify*, where videos and songs are selected that the user can use to perform the activity in question. It is planned that, for an update of the app, the content of the videos can be replaced by audiovisual content or activities created and carried out by the university itself. Figure 3 shows what this section looks like.

Figure 3 Stand up a little
Source: Own elaboration

From me to me: These activities focus more on causing the person to analyze him/herself interpersonally, inciting him/her to perform actions for him/herself, as shown in Figure 4, since most of them consist of activities where he/she has to recognize things he/she loves or hates about him/herself, as well as create letters or notes that can serve as emotional support but are more personal.

Figure 4 From me to me
Source: Own elaboration

Hands on: These activities require the student to perform activities with more manual purposes, therefore, they need some simple materials, such as photos, cut-outs, glue or paper, selected with the idea of creating objects that serve as emotional support, as illustrated in Figure 5.

Figure 5
Source: Own elaboration

In addition to the activities that the user can perform, the app also has the option of scheduling an appointment with the university psychologist, as shown in Figure 6. Once the appointment is confirmed, the psychologist is informed via email that the student has booked an appointment with the date and time chosen. Also, if the student is going through a complicated situation in which he/she needs someone to talk to at the moment, and his/her trusted contact does not answer or there are no appointments available with the psychologist, there is a section in which the student is provided with the telephone numbers of helplines that offer free and immediate service 24 hours a day, 7 days a week.

Figure 6 Appointment with the psychologist
Source: Own elaboration

The app allows the user to monitor and analyze the actions he performed during the day, for example, the things for which he felt grateful, how many hours he slept, how many glasses of water he drank, what healthy habits he did, etc. So that with the passing of the days you can check what changes have occurred in it, by using the activities that the application recommends you to carry out. This section is made up of three categories, in the first one the student fills in the data requested, in the second one he/she can review the day he/she wishes to monitor the data, and in the third one he/she finds the sections with the results that he/she writes, as shown in Figure 7.

Figure 7 Monitoring of activities
Source: Own elaboration

Finally, there is the *Apsique* forum, see Figure 8, perhaps the most valuable function. In this space, students can share their concerns or discomfort with the rest of the users and comment among the university community itself to provide mutual support. It has a functionality similar to that of the *Facebook* wall, since it is possible to "like" and comment on publications, and users are also notified when someone replies to their post. This section is intended to make the user realize that there may be people who are going through the same situation and that there may be someone willing to listen to them. The student can even post and comment anonymously.
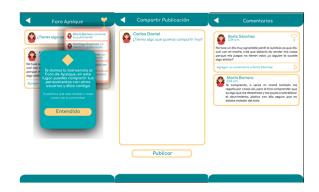

Figure 8 Forum
Source: Own elaboration

All the previously explained sections can be located in the main menu, as shown in Figure 9.

Figure 9 Main menu
Source: Own elaboration

Use of the mobile app

The apk file of the Apsique application is located in the Drive platform, the access to download it is through the institutional account of the students, so that no person outside the Universidad Politécnica Metropolitana de Hidalgo can use it. Likewise, a video is attached in which the correct way to install and interact with Apsique is explained, with the purpose of maximizing the user experience and making its use easier.

Through teachers and tutors, students were encouraged to download the application and make use of it. Initially there were many downloads, however, not everyone registered or cancelled their registration after a few days. Although the university's social networks and websites are used to disseminate the use of the app, the educational services department is the main department in charge of providing this tool to students, since that is where all those who need help with their mental and social health go and are channeled.

After four months of operation, a survey was conducted randomly to 50 users of the app to know their opinion about it. Some of the questions and answers are the following:

- How many times a week do you use the app? One to three times a week: 62%, four to six times a week: 26%, daily: 12%.

- How do you evaluate your energy levels and motivation to perform your daily activities after using the app? No change: 32%, Slightly higher: 50%, Much higher: 18%.

- What was the main reason for your continued use of the app? Demotivation: 30%, sadness: 24%, loneliness: 20%, stress: 14%, annoyance: 12%.

- Did your mood improve after using the app? Not at all: 16%, as much as necessary: 64%, a lot: 20%.

- Do you consider the app to be a good tool for emotional support in the mental health care of students? Yes: 78%, no: 22%.

As in any project, users asked for improvements, for example, more dynamic activities, notifications, more interaction with other users, group activities, experts to provide a session or activity in real time, among others. But in general, students find it a very functional idea for their school. The same is the case for the staff of the educational services department, since they mention that the app has allowed them to have more communication with the students, as well as to suggest activities to do to make them feel better in mind and body at any time and place.

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Conclusions

The design and creation of the mobile app called *Apsique*, got the students of the Universidad Politécnica Metropolitana de Hidalgo to improve their mental health through various emotional support activities based on Cognitive Behavioral Therapy CBT, this according to a random survey of various users.

The app serves as a companion for the care and promotion of mental health, however, it does not mean that by using it the problem is solved, it is only a support and guidance tool that leverages technological innovation to reach students in a pleasant way. While most people recognize that they need to treat their mental health, most of the time they do not know how to take the first step to ask for help, being the main reason why they do not resort to the services provided by the university. The app also allows the student services department, where the psychologists are located, to keep a more accurate monitoring of the students who ask for help. Therefore, the university is willing to listen to users' suggestions and generate more content to enrich the app.

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