

Mobile Application for Serious Mental Illnesses (SMI)

Project Written Report

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## Abstract

Feeling sad or depressed are common because they are normal reactions to a loss or a struggle; however, it may become more than sadness when it continues for days to weeks and when daily life is affected. Working, studying, eating, and other activities can become difficult because of the loss of interest. This is major depression (clinical depression), and it is a serious mental illness (SMI) that can be a recurring issue to some individuals. There are a few reasons why major depression may occur, with some possible causes including a combination of biological, psychological, and social sources of distress. The most common methods of treatment consist of antidepressants, therapies, medications, and medical procedures.

Despite having such methods of treatment, there is still a lack of online presence and health information technology (HIT), especially when the highest prevalence population are adults aged between 18 and 25, arguably the most tech-savvy age group. Being affiliated with Kaiser Permanente, this program is a digital mobile application that will provide self-diagnosis and professional treatment for clinical depression in order to monitor and lower the prevalence and incidence rates within Los Angeles County. Our program will be based on the patient engagement model and other models and theories in order to enhance our user and patient experience.

*Keywords:* Major Depression, Clinical Depression, Treatment, Prevalence, Incidence, Serious Mental Illness (SMI)

## Mobile Application for Serious Mental Illnesses (SMI)

### Introduction

Depression is a common mental illness that can affect people either directly or indirectly. Because of this, it has become a large area of concern, and its high prevalence within young adults need to be addressed as major depression can lead to major changes in daily life and their lack of seeking help. Being connected with chronic diseases and illnesses, major depression has many symptoms and causes that can be addressed through the utilization of health information technology (HIT) by implementing a mobile application. We understand that change cannot simply happen overnight; in addition, there are some setbacks and obstacles with development in HIT. As a result, we have teamed up with Kaiser Permanente in order to cater to these individuals and use the patient engagement model and other theories and models to provide them the best user experience as possible. Additionally, our mobile application will have many features that will provide prevention, self-diagnosis, and professional treatment in order to improve their overall well-being.

### Population

Mental illnesses are common within the United States according to the National Institute of Mental Health (NIH); in fact, “nearly one in five US adults live with a mental illness...”, which is expected to be about 46.6 million Americans (NIMH, 2019). Although they can vary in degree of severity and conditions, mental illnesses have the largest prevalence for young adults, specifically between the ages 18 and 25 years. This age group has the highest prevalence of any mental illness (AMI) (25.8%). Whereas, adults aged 26-49 years have the second highest prevalence of AMI (22.2%) (NIMH, 2019).

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Additionally, an area of concern would be the number of individuals that receive any mental health services to treat their mental illnesses. Surprisingly, the age group that would least likely to seek any sort of treatment would have the highest prevalence, individuals between the ages 18 and 25 years. Only 38.4% of this age group received mental health services in the past year. 43.3% of individuals aged between 26-49 years and 44.2% individuals aged 50+ years were able to seek and receive care for their mental illnesses (NIMH, 2019). In addition, these numbers are even more exaggerated with serious mental illnesses (SMI), as the younger adults have higher prevalence and lower rates to seek the necessary care for their mental illnesses. In fact, reports show a significant increase number and percentage of adults who have been diagnosed with depression, which have jumped nearly 50% in frequency within Los Angeles County (Public Health, 2011). Chronic conditions and risky health behaviors may also play a role with depressive disorders, as many individuals in Los Angeles who suffer from mental illnesses also have chronic illnesses. It is also important to note that this age group is very tech-savvy, making them the perfect group to work with HIT. Although a mobile application would be an effective method over a broad audience, Los Angeles County would be an area of needed improvement that would benefit from it.

#### Problem

As stated above, mental illness is a common occurrence in the United States where young adults between the age of 18 to 25 have a high prevalence for it. Professor Jean Twenge of psychology at San Diego State University claims that “more U.S. adolescents and young adults in the late 2010s, versus the mid-2000s, have experienced” more instances of serious mental illness. Twenge also quotes that the pattern increase of mental illness is “non-existent among adults 26 years and over,” (ScienceDaily, 2019). With this information, it shows that high

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number of prevalence of mental illness (SMI) in the United States within young adults between ages 18 and 25 is a problem. We need to address this information to the public, so people, including those in our problem's focus group, can be enlightened to this situation and received the information and help they need. We will be able to address this problem with our mobile application.

#### Theoretical Premise and Project Goals/Objectives

Mobile applications have many advantages over other eCommerce websites and HIT because of its convenience and the sheer number of smartphone owners. In addition, mobile apps offer an immersive experience, whether it would be offline or online, as its functionality and seamless experiences make it very user-friendly with knowledgeable users (KNOWARTH, 2018). Incorporating it with the Transtheoretical Model (Stages of Change), we can greatly impact and leave a mark on our users.

As technology improves, healthcare needs to improve with it. To alleviate mental health problems, our group has decided to create an app that helps, diagnosis, treat, and prevent mental health disorders. Our goal with diagnosis is to provide users with a way to track their mental health as time goes on. The app provides tools to help users understand with what's going on with their mental health and consultant advice with a psychologist through the app as needed. With the app, users will be able to schedule online video calls with their psychologist at their own convenience. Additionally, the psychologist will use diagnostic methods, which include a mental health questionnaire, psychiatric evaluation, and lab tests, to help assess the current status of the patient's mental health (Mayo Clinic, 2018). Another one of our objectives is treatment; treatment provides users with a way to treat their mental illness if the illness is severe and includes psychotherapy and support groups. Each of these types of treatments can be chosen to

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be done online or in person. Lastly, prevention is another focus point for us. Our goal is to promote a healthy lifestyle and provide users with healthy coping mechanisms when they encounter mental health problems, and prevention can just do that. Some of these coping mechanisms that are proven to work are: mediation, exercise, dieting, and sleeping (Sarris, Jerome et al, 2014).

With mental health, we understand that a lot of relapse can occur. That's why we chose to have our three objectives of preventing, diagnosis, and treatment build on one another. To elaborate, our app is parallel to the Transtheoretical Model of Behavior Change (TTM). By making the app as easy to use as possible, we help appeal to those individuals in the Contemplation Stage, as they are unsure if they want to improve their mental health. Our Diagnosis Stage is similar to that of the Preparation Stage in the TTM, where patients plan with their psychologist to make a change. Our treatment stage is the action stage; this is where patients are actively working to improve their mental health. Our prevention stage is the maintenance stage, and within it, patients are using what they are learning to maintain their mental health by themselves. If a relapse were to occur, they can just go back from the beginning of the cycle and repeat it as many times as they want.

#### Measures/Expected Outcomes

Measuring mental health could be done despite its difficulty because unlike other conditions, mental health issues are not physical. With mental health, it is harder to tell when someone is getting better verses a physical condition. However, there are various ways to measure if the program is effective. One of them is determining the percentage of patients whose anxiety and depression has stabilized. To measure if anxiety has been stabilizing, clinicians can administer tests using the Generalized Anxiety Disorder 7-item (GAD-7) and the Clinically

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Useful Depression Outcome Scale (CUDOS). The GAD-7 and CUDOS measures how well the patients the severity of anxiety and depression through a series of questions. But how reliable are these questions? GAD-7 has been studied and has evidence that it, “is a valid tool for screening for Generalized Anxiety Disorder” (Spitzer, 2006). CUDOS, like GAD-7 has also been studied and has evidence to support, “that it is a reliable and valid measure of depression” (Zimmerman, 2007) Using both these tools we can monitor how a patient respond to treatment and if their mental health is improving. Ideally, if the program worked the number of patients whose anxiety and depression that has stabilize would increase.

#### Timeline

A timeline would make a great addition, as they are able to showcase the past, present, and future of our project. There would be four important milestones or checkpoints to determine the effectiveness of the mobile application with its users, most of them of being six months apart. The first milestone, or the first six months, would be to create some exposure within young adults; an emphasis of advertising and promotions would be beneficial here in order to build an image for us within the young adult community. The following six months would focus on seeing the utilization and most used features of our mobile application. This will give us an idea regarding ideas of any changes that may be made to our application. After these six months from the mobile application development, enough data and information should be gathered to create several updates to enhance user experience, whether it would be refining the most popular attributes or determining on how to rework unused features. This third stage of our timeline, development, would primarily focus on how to help people take smaller step towards behavior change and can take nearly a month. This is where updates should be created and be held on standby for the next milestone. For the next year, the pre-made updates should be launched

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periodically in order to ensure that our users would stay engaged with the mobile application, discouraging desires to return to unhealthy behaviors or relapse. These steps would eventually repeat itself as we would continuously find ways to improve and refine this mobile application.

### Challenges

There are two certain challenges that our mobile application will need to face when being implemented. The first challenge is access to the mobile application. There are people who don't possess an iOS or Android device or any cellular device. Seeing as how we are selling our program as a mobile application it does hinder access for those people. The second challenge are the social stigmas or negative perception about mental illness. These social stigmas are just common prejudices or misconceptions about mental illness. An example of this is automatically thinking people with any mental illness are crazy or people with schizophrenia are violent. Such misconceptions can affect the people around the person who is mentally ill. For instance, "certain friends and family member [might] start limiting contact to that person" or a "landlord [might be] reluctant to rent to them," (Quebec, 2018). Social stigmas about mental illness can act as a barrier to prevent people with mental illness to seek help. A Latino male with mental illness is less likely to seek treatment if he believes that those in his social environment will perceived him as weak or crazy. Stigmas like that can cause people with mental illness to "feel embarrassed or ashamed, doubt themselves, experience a drop in self-esteem, or avoid discussing their concern with others," (Quebec, 2018). Out of the two challenges the social stigma is the important one we need to address.

### Addressing Challenges

All though there are challenges in our program, there are ways to address them. The easiest challenge to address is the access to our mobile application. Although we are promoting

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the project through a mobile application, it is still accessible through other internet devices like computers or laptops. If a person does not have a computer or cellular device in their possession, then they can head towards a Kaiser Permanente facility to access our application. Due to our partnership with Kaiser, we were able to establish our application within the self check-in kiosks that are usually in the main lobby of their facilities.

To address the challenge of social stigmas about mental illnesses, the easiest thing to do is to talk about it. According to Luna Greenstein, a communications coordinator with NAMI, the best way to fight mental health stigmas is to “openly talk about it with either your friends, family, or general public” (Greenstein, 2017). People with mental illness should talk with those close with them to help them understand their situation and get rid of any stigmas about their mental illness. Our program promotes users to talk with their love ones to eliminate any misconceptions that they may have and alleviate any doubts the user may have. Another way to fight social stigmas is to educate users and people about mental illness and treatment. Our mobile application, like any website about mental illness, contains information about types of mental illness and various treatments for them.

### Conclusion

In general, our mobile application can provide these depressed young adults or other individuals suffering from SMI’s easy access to self-diagnosis and professional treatment with its many features. These individuals are already tech-savvy, so they should be familiar on how to navigate streamlined services and telehealth as a mobile application. By using TTM (Stages of Change) as our foundation, the reasons for certain behaviors are revealed; as a result, we can modify our mobile to cater and appeal to these young adults. Additionally, we can create measures and objectives to determine the effectiveness of the app and create updates for it when

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necessary. However, there are some concerns regarding the mobile application because some individuals lack access of an iOS or Android device. Social stigmas often leave these individuals segregated from society, as they are faced with prejudice and many misconceptions regarding their illnesses. Despite these faults, they can be overcome by making our program widely accessible beyond an application and educating the public of SMI's, more specifically depression. If addressed, our mobile application has a potential to aid towards these depressed individuals.

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