Endxiety Self-Relief Button Mobile Application

Nor Shahniza Kamal Bashah[1]; Nurul Ashiqin Faizali[2]; Norjansalika Janom[3]; Noor Habibah
Arshad[4]; Syaripah Ruzaini Syed Aris[5]

[1,3,4,5] *Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA, 40450
Shah Alam, Selangor, MALAYSIA*
[2] *IT Department, Halalmall Online, 10B, Jalan Diplomatik 3/1, Presint 15 Diplomatik, 62050
Putrajaya, Wilayah Persekutuan Putrajaya, MALAYSIA*
[1]*shahniza@uitm.edu.my;* [2]*nurulashiqinfaizali@gmail.com*
[3]*norjansalika@uitm.edu.my;* [4]*noor_habibah@uitm.edu.my;* [5]*ruzaini@uitm.edu.my*

Abstract

Mental health issues are commonly debate and heard these days. People often overlook that anxiety attack is one of the mental health problem which is commonly found among the communities. Anxiety attack caused by the anxiety disorder suffered by people need to be addressed properly. The main problem that lead to this research is most people do not aware there are different types of anxiety attack based on its respective symptoms. Hence, people did not know how to address the issues properly. Next, from medical perspectives there is currently no dedicated mobile application to address issue on types of anxiety disorder. It is due to the lack of knowledge on how to address the anxiety attack which may required for self-relief solution. The Endxiety Self-Relief Button mobile application is developed to help people who suffered from anxiety disorder and continuous anxiety attack to sooth themselves or reach for help if necessary, to authorities. It is developed using Ionic with AngularJS framework for Android operating system. A questionnaire was distributed among thirty (30) respondents who have the background and experienced of anxiety attack before. It was developed using Google Form and the feedback was analysed to proof on the validity of the self-relief functions provided by the mobile application. The result indicated that all the functions provided by the Endxiety Self-Relief Button mobile application work accordingly and able to provide self-relief treatment who are suffered with anxiety disorder

Keywords: anxiety, depression, self-relief, mind relaxation, breathing technique, mobile application

I. INTRODUCTION

Mental health includes our emotional, psychological, and social well-being (Mentalhealth.gov, 2019). How human think, feel, and act are affected by mental health. It also helps to identify how human deal with stress, respond to others, and make choices. At every stage of life, from infancy and adolescence through adulthood, mental health is important. Across the globe, people start to give attention on mental health disorder such as depression, anxiety disorder, and panic attack. According to Anxiety and Depression Association of America, it is not unusual for someone with an anxiety disorder to have depression and vice versa as well. An anxiety disorder is also diagnosed in nearly half of those diagnosed with depression (Adaa.org, 2019). There are five (5) major types of anxiety according to U.S. Department of Health & Human Services (HHS) which are Generalized Anxiety Disorder (GAD), Obsessive-Compulsive Disorder (OCD), Panic 2 Disorder, Post-Traumatic Stress Disorder (PTSD) and Social Phobia (or Social Anxiety Disorder) (HHS.gov, 2019). It was estimated that about 272.2 million individuals had an anxiety disorder universally in 2010. Compared to

males (2.8 %), the point commonness of anxiety disorders was almost double in females (5.2 %). Among the other age groups, adults aged 20–64 years were shown to have the highest prevalence (5.0 %). According to Global Burden of Disease Study 2010, 6.1 % of the adjusted point commonness of anxiety disorders in North Africa/ Middle East and 2.1 % in East Asia (the least) which included twenty-one (21) regions worldwide. According to Tan Sri Lee Lam Thye, the patron of the Malaysian Psychiatric Association (MPA), derived data from 2017 National Health and Morbidity Survey showed that Malaysians suffered from depression and anxiety disorders increased to 29% from 12% in 2011 and by the year 2020, mental health issues expected to be major problems among Malaysians (Rakin, 2018). In 2019, mobile technology is seemly adaptable and the phenomenon of using smart devices commonly smartphones can easily be seen worldwide. Predicted that in future, our daily life will be ruled by mobile technology. Since smartphones been introduced, now it becomes more powerful, smaller, and practically useful devices with more reliable applications. Mobile application is defined as a software application specifically designed for use on lightweight, handheld computing devices, such as smartphones and tablets. Mobile application developer has created millions of applications for smartphones user to satisfy their needs and desire. There are three (3) basic categories of mobile applications which are native, web-based and hybrid. According to the 2017 Mary Meeker (former Wall Street securities analyst) reported that 87% of Internet time is spent on mobile apps, while the remaining 13% is spent on mobile websites. More than half of all websites traffic has been from mobile devices worldwide since 2017 (Bhagwandin, 2019). mHealth is the trend for mobile application specialized in health sector. World Health Organization (WHO) defined mHealth as the "medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, Personal Digital Assistances (PDAs)

and other wireless devices". According to The US Food and Drug Administration (FDA), estimated that personal healthcare application is already use by roughly five-hundred (500) million people globally. Thus, a mobile application with supported latest technologies could be a reliable medium and platform to raise awareness and address about mental health problems among the community.

This paper starts with an explanation of the motivations of the proposed Endxiety Self-relief Button mobile application. Next, the related works are briefly reviewed. The main part of the paper is the elaboration and discussion of the methodology of the mobile application. The proof-of-concept implementation and the analysis result from the testing are then described thoroughly. Further works are given in the conclusion.

II. MOTIVATION
Different Types of Anxiety Attack

In some circumstances everyone feels anxious and there are always periods of discomfort that arise as a natural reaction to stress. It is true that sometimes everybody feels anxious but it is not the same as getting anxiety. There is a distinction between the type of anxious irregular feelings that people encounter and an anxiety disorder. In the psychological context, getting anxious before a major interview or a first date is not called anxiety. If a person has an anxiety disorder, they frequently struggle with unreasonable fears that for months trigger constant symptoms regardless of any specific circumstance. However, there are some problems regarding these issues. The main problem that lead to this research is that people does not aware that there are different types of anxiety attack based on its respective symptoms. Hence, people did not know how to address the issues properly. The most common mental health condition is the anxiety disorders. The Anxiety and Depression Association reports that there is an anxiety disorder in more than eighteen per cent (18%) of the population. Yet only thirty-six percent (36%) of people with the disorder are getting help. Although the stigma

associated with mental health problems is definitely part of the reason why many people do not seek for help, the other big factor is that people do not know when their anxiety has become an issue. People always misunderstood between the anxiety disorder and normal anxiety because the general symptoms showed almost similar such as dizziness, trembling, shivering, heart racing, vomiting and nausea. One feel like cannot breathe, did not talk, cannot think straight, having trouble focusing or always have to go to the toilet. Anxious people often report feeling isolated or disconnected from the fact (Amy Morin, 2018, September 17). To this date, there were no correct and efficient ways used to distinguish types of anxiety disorder and getting know the symptoms better respectively.

Non-existence of Personalised Mobile Application for People with Anxiety Disorder

On the other hand, from medical perspectives currently there is no dedicated mobile application to address issue on types of anxiety disorder. People who suffered from anxiety attack need a personalised platform to get help when the attack occur and reach for the medical officer or professional health care if necessary. Popular mental health conditions such as depression and anxiety disorder affect about a third-quarter (¾) of the US population and most people who seek care do not receive them. Currently, mobile health or known as mHealth used for the practice of medicine and public health supported by mobile devices. Unfortunately, there is little implementation of mHealth treatments for serious mental disorders such as depression and anxiety disorder. As present, mHealth is neither a regular feature of US mental health care services nor has there been broad acceptance of any mHealth program for mental illness by customers in the US. Several theoretical models have been put forward in the literature to explain the adoption of technology and continued use. Existing models have some conflicting and some common components and were found to account for as little as seventeen percent (17%) and as much as fifty-three percent (53%) of the acceptance variance. Therefore, there were no

mobile applications used to stress the components such as knowledge and solutions to help anxiety disorder people.

Lack of Knowledge on Self-Relief Treatment during Anxiety Attack

Anxiety disorders are receptive to therapy very well and sometimes within a fairly short period. The basic approach to treatment depends on the form and severity of an anxiety disorder. However, most anxiety disorders are usually treated with counselling, drugs or a combination of both. Cognitive-behavioural therapy and cognitive therapy are forms of behavioural therapy which means they focus on behaviour instead of on underlying psychological problems or past issues. Those therapies can assist with symptoms such as panic attacks, generalized anxiety and phobias. Cognitive-behaviour therapy allows one to recognise and question the patterns of negative thinking and irrational assumptions that fuel anxiety. Exposure therapy helps one to discuss anxieties and fears in a safe, regulated atmosphere. One achieved a greater sense of control by incremental exposure to the dreaded object or circumstance, either in imagination or in reality. One's anxiety will diminish when faced the fear without getting harmed. Therefore, there were no significant studies on solution to address the anxiety disorder people as the anxiety attack is occurred.

III.   RELATED WORKS

Currently, there are many projects and systems handling on panic button either via the mobile applications or through specific devices. Most of the applications are developed to provide security with some basic functions such as locating the user, the SOS button; short message services (SMS) or even video recording. Help Me Please! by Ng Ken Hong et al. (2017) is an application that provides an emergency button on the Android platform designed to send emergency messages with real-time information to target recipients. The aim of this application is to enable people to report emergencies via the SMS. The application receives the current location from the Global Positioning System (GPS), gets the

current time from the mobile device and sends this information to the recipients when the user press the emergency button. At the same time, the program will continue to send emergency alerts to the receivers and update the database according to the user's time interval until the user ceases the feature. Android App for Women Security System by R. Harini and P. Hemashree (2019) is an application that was developed for handheld devices with Android. It is an application that enhanced the security feature by using SMS services, contacts, GPS. This application has a panic button that allows the user to click in an adverse situation when they are in. Pressing this button intimates instantly about her condition to her emergency contacts and to the nearest police station. Looking into the related works mentioned above, it is aware that the panic button application is not a new thing. However, a personalised panic button mobile application which can help the people who are having anxiety to do their self-treatment especially during lock-down or movement control order (MCO) is not exist yet. It is very crucial to have such mechanism or platform that can help and assist the person who is having anxiety to feel comfortable and get an easy feeling during the attack.

IV.   METHODOLOGY

This section briefly described the methodology used in this research and some explanation on selected design of the mobile apps which focusing on two (2) main features which are Endxiety Information and Endxiety Solution. The mobile application was developed using Agile methodology which consists of six (6) phases namely; Meet, Plan, Design, Develop, Test and Evaluation.

Meet Phase – This phase involves knowledge acquisition process in order to consider suitable mobile applications development to solve the related issues in this case.   All   required data are collected involving primary and secondary data. The primary data is collected through some surveys and interviews to gather some opinion and point of view of the respondents towards anxiety attack and its symptoms. The secondary data which was gathered from other related works published in journals and proceeding papers is used to compare and contrast between their work and find the gap in order to ensure that the proposed research is identical.

Plan Phase – During this phase some requirements are gathered which focused on suitable software to be used for the mobile application development as well as recommended hardware requirements to be used in carried out the project. For this purpose, Native mobile application development was chosen. Hence, Flutter is used as the front-end framework as it is an open source software and is operating at zero cost. It is also a cross-platform framework which can run in both iOS and Android operating system.

Design Phase – This phase describes the system's desired characteristics and operations. It transforms all requirements into detailed specifications that cover every aspects of the system. There are three (3) main activities in this phase which involves the system design, database design and user interface design.
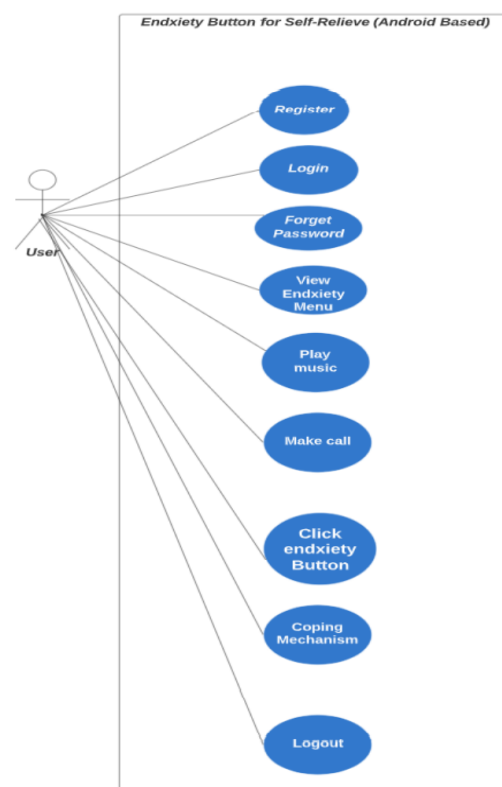
Figure 1 – Use case diagram of Endxiety Self-relief Button mobile application

Figure 1 shows the use case diagram for the Endxiety Self-relief Button mobile application starting from registration module until completes the whole process and functions in the mobile application. The sequence diagrams of each process are also designed in this phase.

Develop Phase – This phase involves five (5) main stages which are the development of algorithms, writing of source code, compiling, testing and debugging. Python language is used to develop the mobile application which works across the iOS and Android platform. The front-end framework is using Flutter while Django Python is used for back-end framework. The Integrated Development Environment (IDE) used is netBeans and xcode.

Test Phase – This phase is an integral part of the life cycle in software development. It includes the process of debugging. All the code flaws that were missing during the development are detected and documented to be fixed. The testing process repeats until all critical problems are removed and the workflow of the software is stable. The testing process includes unit testing, integrated testing, black box testing, white box testing and system testing. When the test cases are written, they are performed by the tester and the predicted outcome is compared to an actual result to validate the process and ensure that it is functioning properly. Emulator and simulator is used for the the testing environment for this project.

Evaluate Phase - This process determines whether the program meets the initial goals and specifications. This is when the shortcomings of the program are tested. The aim of this phase is to deploy the system and train end users of the system. The feedback method and questionnaire is used to evaluate the validity of panic attack self-relief solution based on the symptoms through this mobile application.

V. RESULT AND DISCUSSION

This section elaborates on the Endxiety Self-relief mobile application functions as well as analysing the results based on the

questionnaires distributed among thirty (30) respondents who have the background and experienced of anxiety attack before.
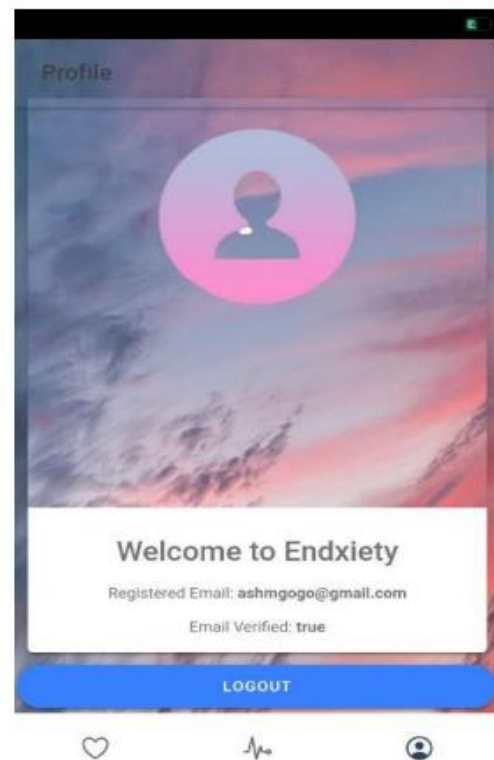

Figure 2 – Profile page

Figure 2 is the profile page for user to redirect as soon as they signed in. The user can logout from the mobile application through this page.
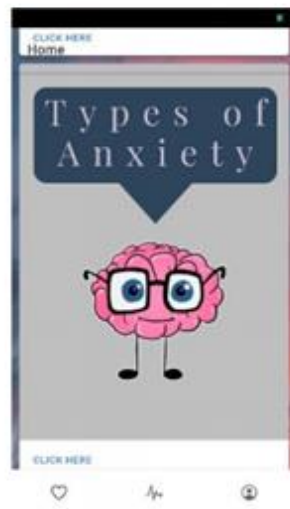
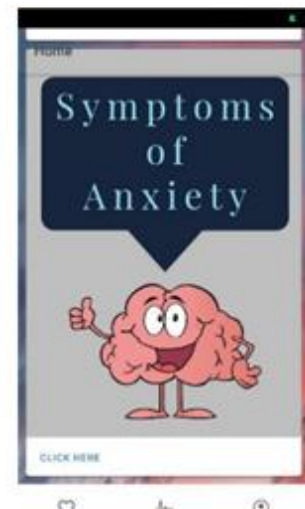Figure 3 – Home Menu 1   Figure 4 – Home Menu 2   Figure 4 – Home Menu 3

Figure 3, Figure 4 and Figure 5 depict the Endxiety Menu at the Home tab of the mobile application. The user can click on the link in respective image shown in the figures to redirect to details of each menu clicked as in Figure 6, Figure 7 and Figure 8. It is an

Endxiety Information page which is one of the features in the mobile application intended to educate the user to understand their anxiety better and have a good acceptance toward themselves.

Figure 6 – What is Anxiety?   Figure 7 – Types of Anxiety   Figure 8 – Symptoms of Anxiety
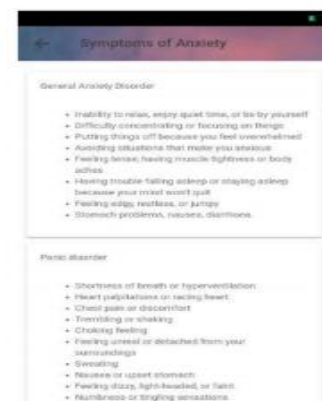
Figure 9 – Endxiety Button   Figure 10 – Coping Mechanism

Figure 11 – Song Playlist

Figure 12 – Call
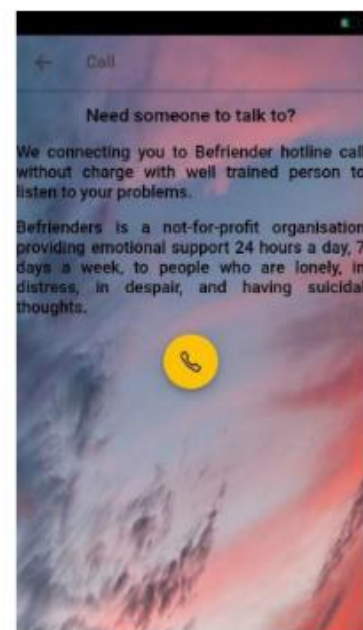
Figure 9, Figure 10, Figure 11 and Figure 12 show the second feature in the mobile application which is Endxiety Solution. It has four (4) main functions which are breathing technique by pressing the Endxiety button (Figure 9), perform 5-4-3-2-1 coping technique to regain control of mind when anxiety trigger taken over (Figure 10), listening to songs for mind relaxation from the Song Playlist (Figure 11) and Call function which can reach help by connecting to hotline number for emotional support including depression and anxiety by one of the non-Governmental Organization (NGO) in Malaysia which is Befrienders Kuala Lumpur (Figure 12).

The remaining part of this section discussed the analysis result of the questionnaire which was developed using Google Form. It is analysed to proof on the validity of the self-relief functions provided by the mobile application. Nine (9) related questions were asked which are focusing on the mobile application functions and how the self-relief treatment assist in handling panic or anxiety attack situation as described below:

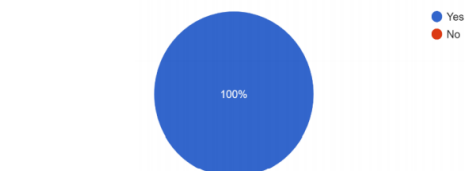**Q1: Are You Able to Register and Login Successfully?**

Figure 13 - Are you able to register and login successfully?

Total of thirty (30) respondents successfully perform the register (sign up) and login (sign in) for this mobile application allowing them to navigate to other pages of the mobile application. Hence, this indicated that the mobile application authentication is successfully function.

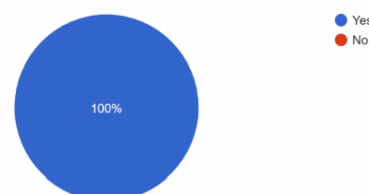**Q2: Can You Play Music for Mind Relaxation?**

Figure 14 - Can you play music for mind relaxation?

All the thirty (30) respondents able to play music for mind relaxation. This indicated that

all the Play, Pause, Previous and Next button in the mobile application is working perfectly.

Q3: Did You Found Those Songs Are Helpful for Mind Relaxation Whenever You Feel Anxious?
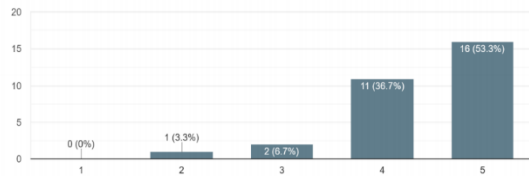

Figure 15 - Did you found those songs are helpful for mind relaxation whenever you feel anxious?

There are majority of 53.3% of the respondents strongly agreed that those songs are helpful for mind relaxation whenever they feel anxious while 36.7% of the respondents just agree those song are helpful for mind relaxing. The minority of 6.7% and 3.3% are neither agree nor disagree and disagree respectively that those songs are helpful for mind relaxation whenever they feel anxious. As half of the respondents positively respond upon the question, it indicated that those songs are helpful for mind relaxation whenever they feel anxious. Perhaps in future, more songs that helpful for mind relaxation will be add on.

Q4: Can You Place the Call Connected to Hotline Befrienders?
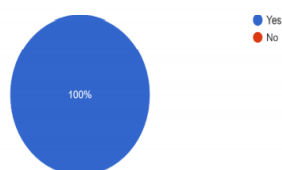

Figure 16 - Can you place the call connected to Hotline Befrienders?

All the thirty (30) respondents able to place the call and connected to the hotline Befrienders. This indicated that the native call number plugin is working perfectly in this mobile application.

Q5: Did You Found Those Befrienders Community Is Helpful to Soothe You During Your Anxiety Attack and Need Someone to Talk To?

Figure 17 - Did you found those Befrienders Community is Helpful to soothe you during your anxiety attack and need someone to talk to?
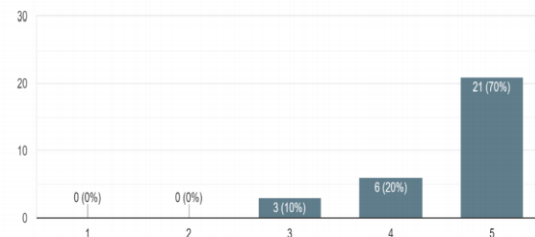
There are majority of 70% of the respondents strongly agreed that they found Befrienders community is helpful to soothe them during their anxiety attack and in need someone to talk to while 20% of the respondents just agreed. The minority of 10% is neither agrees nor disagree that Befrienders community is helpful to soothe them during their anxiety attack and in need someone to talk to. As more than half of the respondents positively respond upon the question, it indicated that the Befrienders community is helpful to soothe them during their anxiety attack and in need someone to talk to. Perhaps in future Befrienders community can provide chat service or video call service so that this mobile application can enhance the functionality with plugin of chat messaging and video calling.

Q6: Can You Press the Start and End Button for Endxiety Button?
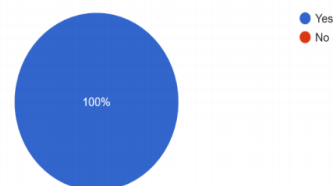

Figure 18 - Can you press the Start and End button for Endxiety button?

Total of thirty (30) respondents can press the Start and End of Endxiety button. This indicated that the button is working perfectly.

Q7: Did You Found the Endxiety Button Is Helpful for You to Breathe Properly During the Anxiety Attack?
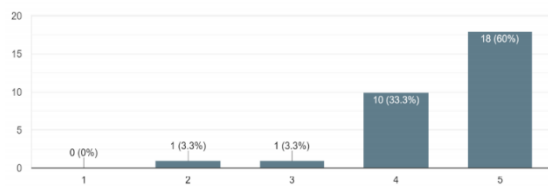

Figure 19 - Did you found the Endxiety button is helpful for you to breathe properly during the anxiety attack?

There are majority of 60% of the respondents strongly agreed that they found the Endxiety button is helpful for them to breathe properly during the anxiety attack while 33.3% of the respondents just agreed. The minority of 3.3% are both neither agree nor disagree and disagree that they found the Endxiety button is helpful for them to breathe properly during the anxiety attack. As more than half of the respondents positively respond upon the question, it indicated that the Endxiety button is helpful for respondents to breathe properly during the anxiety attack.

Q8: Did You Found the Focus Coping Mechanism Is Helpful for You to Endure the Anxiety Attack?

Figure 20 - Did you found the focus coping mechanism is helpful for you to endure the anxiety attack?
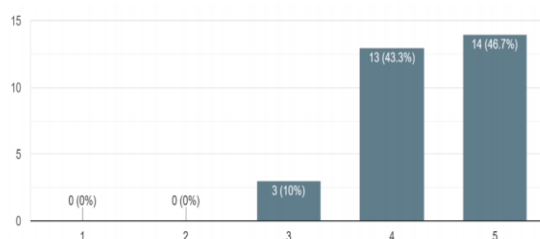
There are 46.7% and 43.4% of respondents strongly agreed and just agree respectively that the focus coping mechanism is helpful for them to endure the anxiety attack. While the remaining 10% is neither agree nor disagree that the focus coping mechanism is helpful for them to endure the anxiety attack. The focus coping mechanism is taken from the coping mechanism called 5-4-3-2-1 grounding

techniques. The respondents can endure the anxiety attack by regaining control of their mind when they performed the task listed.
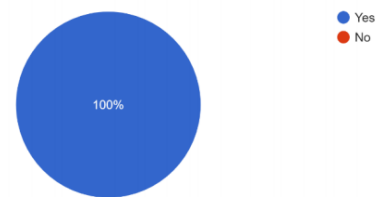
Q9: Are You Able to Logout Successfully?

Figure 21 - Are you able to logout successfully?

Total of thirty (30) respondents can logout successfully. This indicated that the logout button is perfectly working.

VI.   CONCLUSION

As the mobile application has successfully implemented, it is proved that the output from the research project give benefits to at least these three (3) categories which are; (i) User - the mobile application benefits for diagnosed anxiety people whom experienced real-time anxiety attack reached for self-help or well-trained people without hesitation, (ii) Community - the mobile application helped the community with knowledge of anxiety disorder and anxiety attack. Thus, helped people who suffered with it during the attack, and (iii) Time - the application reduced the time for diagnosed anxiety people to always keep in touch physically with their medical officer for counseling session.

Several future works have been outline to improve the mobile application such as providing instructions that pop out to guide first time user navigate through the mobile application, an interactive Endxiety button could be replaced with better gesture touch once the ionic released a better version of its current feature and lastly, to provide the mobile application in iOS operating system and available to be downloaded through Playstore (Android) and Appstore (iOS).

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