ABSTRACT

Title of Dissertation Proposal: MENTAL HEALTH IN UNIVERSITY STUDENTS
IN BANGLADESH: AN EXAMINATION OF
CURRENT PRACTICES, SERVICE USE, AND AN
EXPLORATION OF THE ACCEPTABILITY OF
MHEALTH FOR MENTAL HEALTH AND
MINDFULNESS

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The prevalence of mental health problems, such as depression and suicide, is high in Bangladesh. The incidence of mental health problems in Bangladesh is highest in young adulthood and often occurs in university students. Mobile health apps are effective in Bangladesh for chronic health problems, though there is no current literature on the use of mHealth for mental health promotion in Bangladesh, nor in the university student population in Bangladesh.

The study utilizes a multi-method design informed by Self-Determination Theory and the Technology Acceptance Model to explore motivational factors for mental health practices, such as coping techniques, and use of professional services, such as therapy. The quantitative component includes regression analysis of an online survey delivered to students currently enrolled in universities in Bangladesh to determine current attitudes and practices of mental health services (n=350) and the possibility of using mHealth for mental health (n=311). The qualitative component involves thematic analysis of semi-structured interviews with randomly selected students (n=12) who complete the quantitative portion of the study, regarding their opinion of mHealth for mental health app content.

Results show that subjective perception of needing mental health support was the strongest predictor of clinical service utilization. Additionally, the perception of viewing mental health positively was associated with actual use of clinical services, but the association became insignificant after adjusting for the perceived need. One's social influences predicted perceived need for mental health support; and

knowledge about mental health predicted positive views of clinical mental health care. Intent to use general mHealth is driven by social influence, ease of use, and perceived utility. According to this study, mobile health services are acceptable to this population and can be helpful for students with barriers to accessing traditional mental health services. The qualitative interviews revealed that students felt that guided mindfulness exercises relieved stress, and the potential of having easy access to such exercises on an app on their phone overcame barriers they had previously encountered. These findings suggest that an app with mindfulness exercises may be worth developing and testing in Bangladesh in order to promote student mental health.

MENTAL HEALTH IN UNIVERSITY STUDENTS IN BANGLADESH: AN EXAMINATION OF CURRENT PRACTICES, SERVICE USE, AND AN EXPLORATION OF THE ACCEPTABILITY OF MHEALTH FOR MENTAL HEALTH AND MINDULFNESS

by

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Dedication

This dissertation is dedicated to my nephew, Sami Baten.

You're the greatest (birthday) gift I could've ever received.

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Chapter 1: Introduction

<u>Background of the Problem</u>

The global burden of mental health disorders is devastating and ever-growing. Mental health disorders encompass a variety of health problems, including schizophrenia, depression, epilepsy, dementia, alcohol dependence, and other mental, neurological and substance use disorders (Whiteford et al., 2015), some of which are preventable. Depression alone contributes to 33% of the disease burden worldwide (Collins et al., 2011). Further, an estimated 800,000 people die from suicide globally, and there are up to 20 times as many episodes of suicidal behavior, including suicide attempts and self-harm (Arensman, Scott, Leo, and Pirkis, 2020). The latest statistics from 2016 released by the World Health Organization estimate that the global suicide rate is 10.7 per 100,000 people (WHO, 2019).

There is a well-established association between the wealth of a nation and health outcomes, including mental health. Across different countries, regardless of the health outcome, low-income countries (LIC) have higher mortality rates than middle and high-income countries (WHO, Global Health Risks, 2009). As such, low-income countries face greater mortality risks than high-income countries, though there is often a lack of data to examine rates of mental health outcomes. The Southeast Asia Region, which covers 11 low- and middle-income countries, accounts for 26% of the world's population, and 39% of all suicides globally occur in this region, with a suicide rate of 17.7 per 100,000, which is likely to be an underestimate due to differences in study populations, research methodology, and uncomprehensive data registration systems (Vijayakumar et al., 2020).

One method to examine the development of a country created by the United Nations is the human development index (HDI). This measures people and their capabilities, as well as

economic growth of the country, and is often used to question national policy choices by comparing HDI and gross national income (GNI) across countries.

The HDI ranks Bangladesh, the focus of this study, as 136 out of 180 countries, which raises concerns regarding the health of the people who live there. Bangladesh is home to over 160 million people and has a population density of 1000 people per square kilometer (Shahnaz et al. 2017; Arafat 2017; Mashreky et al. 2013). The main languages spoken in Bangladesh are Bangla and English, and the major religions practiced there are Islam, Hinduism, Christianity, and Buddhism. The life expectancy estimate of 2016 is higher among females by about five years, with the female life expectancy of 75.1 years and males 70.5 years. However, the healthy life expectancy (HALE) is 64.04 for females and 61.69 for males (Hay et al., 2016). When Bangladesh gained independence from Pakistan after the Bangladesh War of Liberation in 1971, the country was drained of resources, impoverished, and prone to natural disasters (Chowdhury et al., 2013). Bangladesh has since made strides to achieve a healthier nation over the last four decades, as indicated by a decreased child and maternal mortality rate (Chowdhury et al., 2013). However, there is still an alarming lack of improvement surrounding mental health problems, including suicide and depression (World Health Organization 2014; Shahnaz et al. 2017; Mashreky et al. 2013; Shah et al. 2017; Arafat et al. 2018; Arafat 2017).

The World Health Organization estimates that the mortality rate for suicide in Bangladesh in 2016 was 6/100,000 people, lower than the worldwide rate (WHO, 2019). However, researchers have found estimates as high as 39.6/100,000 in Bangladesh (Arafat, 2019; Qusar et al., 2009), which is well above the global rate of 10.7/100,000 (Feroz et al., 2012, Qusar et al., 2009). This rate of 39.6/100,000 was determined by conducting a literature review using PubMed, PubMed Central, Google Scholar, and BanglaJOL and searching for the following

keywords (1) suicide in Bangladesh, (2) prevalence of suicide in Bangladesh, (3) methods of suicide in Bangladesh, (4) risk factors of suicide in Bangladesh, and (5) epidemiology of suicide in Bangladesh. Only articles from 2002 to 2018 were included, with 35 articles meeting inclusion criteria (Arafat, 2019). This review reported that the most common methods of suicide in Bangladesh are hanging and poisoning (Arafat, 2019), and suicide occurs most often in those ages under 40 years (Roy et al., 2016). Risk factors for suicide in Bangladesh include female gender, low socioeconomic status, and low literacy levels (Arafat, 2019; Shah et al., 2017). To complement this work, the Bangladesh Health and Injury Survey, a cross-sectional survey (n=819,429 of all age-groups and sexes) collected throughout Bangladesh using face-to-face interviews at a household level, found that suicide was the fourth leading cause of injury-related deaths overall and the second leading cause of injury-related death among those 20-39 years of age (Mashreky et al., 2013).

Rates of mental health disorders are not agreed upon. The National Mental Health Survey, which examined data from 2003-2005, found that 16.05% of adults in Bangladesh suffered from a mental health disorder (WHO-AIMS, 2007). The Institute for Health Metrics and Evaluation (IHME, 2019) estimate that 12.46% of the population in Bangladesh meets the criteria for mental health and substance use disorder (including depression, anxiety, bipolar, eating disorders, alcohol or drug use disorders, and schizophrenia). Others cite mental health disorder rates in Bangladesh as 31% in adults (Hossein et al., 2014), 22.9% in children and 25% in adolescents, though these are specific to a sample in Dhaka (Khan et al., 2020). The rates in Dhaka are similar to the global prevalence of 30% (Patel, 2018; Whiteford et al., 2013).

Young adulthood (typically 17 to 24) is a peak period for the onset of mental disorders (McGorry, Purcell, Goldstone, and Amminger, 2011; Cuijpers et al., 2019). In Bangladesh,

specifically, the third decade of life was found as the most vulnerable period of life (Arafat, 2018). Studies have found that persons of 20–30 years are dying of suicide more than any other age group (Khan, 2002; Arafat, 2017). Qusar et al. (2009) found that, of respondents to his survey, 75% of those who attempted suicide were below 30 years of age.

Despite the prevalence of mental health disorders, there is an astonishing lack of both health care providers that are trained in psychiatric health, as well as healthcare facilities equipped to handle psychiatric patients in Bangladesh (WHO, 2007). A report of the mental health system assessment in Bangladesh using the World Health Organization – Assessment Instrument for Mental Health Systems (WHO) was undertaken in 2007 to examine the current state of affairs in Bangladesh regarding mental health. This assessment found that only 0.5% of the government health care expenditures are allocated to mental health care, and of that percentage, the majority (67%) funds mental health hospitals (WHO, 2007). Further, only 4% of medical doctors are trained in mental health, and even fewer nurses (2%) have specific mental health training (WHO). This is problematic as there appears to be a shortage of needed resources given the magnitude of mental health problems. Given that Arafat's (2016) literature review finds a suicide rate in Bangladesh that is substantially greater than the worldwide average (WHO, 2019), the high percentage of Bangladeshi's who face mental health problems, and the lack of services provided for these problems, it is imperative to find innovative ways to address population needs and ideally prevent the development of mental health problems.

One promising solution involves using mobile health to promote mental wellness and prevent mental health problems as this addresses the shortage of mental health providers and can be implemented broadly throughout the nation. Mobile health applications have been used to deliver services to similar populations (young adulthood, "developing" and low-and middle

income countries), that lack healthcare providers (Costin et al., 2009; Qiang et al., 2012; Bloom et al., 2017). Mobile health apps have been shown to be effective in Bangladesh to connect village doctors to formal doctors (Khan et al., 2015) and for diabetes medication adherence (Islam et al., 2014). Because Bangla is the seventh most spoken language globally, with over 260 million speakers (Ammon, 2010), developing an mHealth platform in Bangla for monitoring and managing depressive symptoms, and promoting mental wellness practices has the potential to benefit millions of lives.

Mental wellness practices include activities that have the potential to improve one's mental health, including reducing stress, bolstering resilience, promoting subjective wellbeing, and enhancing happiness. Markers of mental wellness, or wellbeing, include subjective life satisfaction and meaningful functioning (Helliwell, Layard, and Sachs, 2012). This approach is promising as there is an inverse relationship between gains in mental health and declines in mental disorders over time (Delude, 2015; Keyes, Dhingra, and Simoes, 2010). Research has found several factors that can promote wellness: addressing issues of individual, social, and cultural identities; improving individual and collective resilience; promoting healthy lifestyles through exercise and nutrition; building social safety nets for those who are vulnerable for reasons such as poverty, immigration, gender, ethnicity, and social problems; and promoting a healthy, respectful, and inclusive culture in school environments (Malla et al., 2020; Arango et al., 2018). Despite the known factors that can influence mental wellness, there is no current literature regarding the use of these practices among young adults in Bangladesh, nor any examination of the relationship these activities have to mental wellness in this population.

A large body of evidence indicates that mobile health apps are effective tools for managing chronic disease (Chow et al., 2016; Cho et al., 2018; Thorton et al., 2019), as well as

reducing symptoms of mental health distress (Rickard et al., 2016; Crisp and Griffith et al., 2019). Many mHealth programs have demonstrated efficacy in reducing depressive symptoms (Andrews et al., 2010; Warmerdam et al., 2008; Cuijpers et al., 2011; Griffiths et al., 2006; Meyer et al., 2009; Donker et al., 2013), improving depression literacy (Kiropoulos et al., 2011) and decreasing stigma (Griffiths et al., 2014). Contributing factors to the effectiveness are mHealth's ability to deliver user-oriented material and self-management tools that are flexible to the user's schedule (Rickard et al., 2016). The private nature of mHealth is also appealing to those who fear the stigma surrounding seeking mental health services (Mohr et al., 2013; Rickwood, 2007). This is important to consider in Bangladesh, where mental health care is faced with widespread stigma and discrimination (Hasan and Thornicroft, 2018; Islam et al., 2015).

There are high rates of mobile technology use in low- and middle-income countries (LMIC). The global mobile subscription rate of using a mobile phone was 63%, and the average mobile subscription rate was 59% (GSM Association, 2016; Qiang et al., 2011). Though there is literature examining mHealth interventions in LMIC such as South Africa (Kabanda and Rother, 2019), few studies exist examining mHealth interventions in Bangladesh, and no published research exists regarding mHealth for mental health. Although commercial apps that claim to promote mental health exist in Bangla, there is no evidence that they are rooted in evidence based research, theory or utilize user-centered design (UCD) principles, limiting their potential effectiveness. As such, developing a mental health intervention rooted in the theory that is culturally acceptable for the Bangladeshi community and can be delivered in an app format could have far-reaching effects.

The first step in development is to assess the acceptability of using mHealth for mental health care purposes. Utilizing a user-centered design is considered a best-practice, based on the

premise that consumers will be more likely to use and be engaged with an app if the app is designed and developed for them and with them engaged in the development process. Similarly, mHealth apps that do not engage their participants are ineffective interventions (McCurdie et al., 2012; Olsen et al., 2019). As such it is imperative to understand the user requirements and acceptability of apps in order to increase the efficacy of the intervention, increase usability and thus increase the engagement that is needed for effective mHealth intervention implementations (van der Weegen et al., 2012; Olsen et al., 2019). To date, few commercial apps integrate public health best practices or mHealth interventions that utilize participants during the design process, resulting in reduced effectiveness (Olsen et al., 2019, Kujala et al., 2004).

BlueWatch is an app that has been developed with a user-centered designed approach. It consists of a 12-week program designed to promote mental wellbeing. Components of the intervention include short audio activities, journaling, and self-check exercises. Activities are to be done at the participants' own pace, and users can track their progress using the self-monitoring functionality (Fuller-Tyszkiewicz et al., 2018). BlueWatch was created by health professionals and uses evidence-based content. It uniquely utilizes participants' mood survey data to provide real-time messages to help participants decide when to engage with the app. BlueWatch is one of the few mobile app-based interventions for depression that has examined and published data regarding preferences of and expert usability testing. To examine the apps' usability, 15 participants were separated into three groups: (1) individuals with clinical depression who were the target audience for the app, (2) mental health professionals, and (3) researchers who specialize in the area of eHealth interventions and/or depression research. Participants were assessed using semi-structured interviews and the System Usability Scale (Bangor et al., 2008). The results of this study found that the experts and researchers had mixed reviews, rating the

self-monitoring features and range of established psychological treatment options highly, but expressed concern about the dosage and layout of content; however, these concerns were not shared by the end-users, who rated the app highly (Fuller-Tyszkiewicz et al., 2018). Given these promising results, this study aims to adapt components of the BlueWatch app content culturally and linguistically for use in Bangladesh using a cultural adaptation framework. Using cultural adaptation models in mental health care is rare, though evidence shows its use to deepen the explicit attention to culture and make evidence-based approaches more responsive to the needs and preferences of different populations (Cabassa and Baumann, 2013).

Theoretical Framework

Many apps are built with the purpose of changing user behavior yet lack theory and evidence-based strategies as a means to change behavior (Direito et al., 2014; Pagoto et al., 2013; Singh et al., 2014). This study incorporates the Self Determination Theory (SDT) and the Technology Acceptance Model (TAM) to assess whether a mHealth app for improving mental wellness is acceptable when adapted for a Bangladeshi population. This study begins by assessing motivators of use for mental wellness practices, including mHealth.

Self Determination Theory posits that motivation toward a behavior, in this case, bettering one's mental health by using exercises in an app, stems from three innate and psychological needs: competence, autonomy, and psychological relatedness (Deci and Vansteenkiste, 2004). The construct of competence refers to the feeling that a person has a sense of mastery in their actions. Relatedness refers to the sense of belonging that one feels in relation to others, for example, it encompasses the feeling that one matters to other people, that they are cared for or connected to other people, and a sense of mutual concern. Autonomy refers to self-

endorsed behavior, that one feels able to have a choice in their actions, and that their actions are self-initiated (Deci and Vansteenkiste, 2004).

Autonomy and intrinsic motivation are key influences on mental health (Gagné and Deci, 2014). Autonomy is thought to feed a person's motivation by self-direction and choice (Deci and Ryan, 1985), as well as by fostering self-efficacy (Bandura, 1997). Self-efficacy is an intrinsic reward and motivation toward behavior on its own. Activities are embedded within the BlueWatch app to promote autonomy and increase competence toward self-management. SDT has been used before in mental health apps with game-based principles to engage users in cognitive behavioral-based interventions (Bakker et al., 2016). By being rooted in social determination theory, the goal is to engage users by motivating them, bolstering their choice, and demonstrating their mastery of content within the app.

When developing content for an mHealth app, it is essential to use existing models to examine users' likelihood of acceptance of using technology. The Technology Acceptance Model (TAM) is an information technology framework for understanding users' adoption and use of emerging technologies (Portz et al., 2019). The theory states that a user's perception of the usefulness (i.e., perceived benefits) and the ease of use lead to the person's intent to use the technology. TAM also posits that perceptions of usefulness and ease of use are influenced by external factors, such as individual differences and social influences (Portz et al., 2019). It is also important to consider users' perception of whether or not a mobile intervention can be effective (Hind and Sibbald, 2014).

Therefore, this research project has two components, studying factors related to mental health, in general, and specifically those related to mHealth for mental health, and three study aims with overall research questions as follows: (1) What mental health practices are a sample of

Bangladeshi university students engaging in? (2) To what extent does a sample of Bangladeshi university students use mHealth? (2a) What motivates Bangladeshi students' to use mHealth for mental health? (3) What are Bangladeshi University students' attitudes toward messaging used in an English app developed for mental health promotion?

<u>Definitions of Terms</u>

Table 1.1: Terms used in Introduction.

Acceptability	The willingness of the target population to use the intervention as created.
Adaptive Framework	Systematic steps used when adapting an evidence-based intervention (EBI) for use in a specific population. There are 11 typical program adaptation steps: (a) assess the community, (b) understand the EBI(s), (c) select the EBI, (d) consult with experts, (e) consult with stakeholders, (f) decide on needed adaptations, (g) adapt the original EBI, (h) train staff, (i) test the adapted materials, (j) implement the adapted EBI, and (k) evaluate (Escoffery, C et al., 2019).
App	An application, downloaded by a user to a mobile device.
Culturally appropriate	Ensuring that the specific intended target population, Bangladeshi adults, are readily able to understand and utilize the content of the intervention. BlueWatch was created for a Western audience, and Bangladeshi's may react to seeking mental health support in a different, specific way. Thus, it is imperative that the essence of the treatment is true to theory and that messaging is framed so that the target population understands and is willing to use the intervention.
Low-income country (LIC)	Global economies are currently divided into four income groupings: low, lower-middle, upper-middle, and high. Income is measured using gross national income (GNI) per capita, in US dollars, converted from local currency using the World Bank Atlas method. Estimates of GNI are obtained from economists in World Bank country units, and World Bank demographers estimate the size of the population from a variety of sources, including the UN's biennial World Population Prospects (World Bank, 2019). Low-income economies are defined as those with a GNI per capita, calculated using the World Bank Atlas method, of $3,995 or less

	(IAMCR- International Association for Media and Communication Research, 2019)
Mental Health	Mental health encompasses ones emotional, psychological and social well-being (mentalhealth.gov). This includes both mental health disorders, such as schizophrenia, depression, epilepsy, dementia, alcohol dependence, neurological and substance use disorders, and mental wellness, which encompasses resilience, subjective wellbeing, and happiness.
Messaging	The words and dialogue used in the app content
mHealth	mHealth is defined as health intervention using mobile technologies such as mobile phones, wearable devices, personal digital assistants, tablet PCs, etc. (WHO, 2011)
Quality of life	A person's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns.
Resilience	The capacity of individuals to adapt to adversity or stress, including the capacity to cope with future negative events. Resilience can also be seen at a community level and is recognized as an important factor contributing to the relatively low proportion of people in emergencies who develop long-term mental disorders.
User-centered design (UCD)	User-centered design (UCD) is a general term for methods that focus on designing, in this case, a mobile health app (Abras et al., 2004). Though the ways in which users participate can vary, for this study participants will be 1)asked about their needs 2)participate throughout the design process 3) assessed for language acceptability of the content
Wellbeing	Subjective evaluation of life satisfaction; broader definitions also consider less subjective social and personal circumstances that might contribute to a good life.

Chapter 2: Literature Review

2.1 Global Mental Health Burden

Mental health, which encompasses mental disorders and mental wellness, has been historically overlooked but has gained significant attention in recent years due to the high global burden of disease associated with mental health disorders. The global burden of disease attributable to mental disorders has risen in all countries in the context of major demographic, environmental, and sociopolitical transitions (Patel et al., 2018). Mental health disorders include depression, generalized anxiety disorder, suicide, substance use disorders, self-harm, and schizophrenia, whereas mental wellness encompasses constructs such as resilience, subjective wellbeing, and happiness.

The latest statistics released by the World Health Organization (WHO) estimate that the global rate of suicide in 2016 was 10.7 per 100,000 people (WHO, 2019). Every year, up to 30% of the global population meets the criteria for a mental disorder, and nearly 75% of that number never receives treatment (Patel et al., 2018; Chisholm, Flisher, and Lund, 2007). These statistics are particularly troubling as people with a mental health condition are found to have higher rates of disability and mortality than people without mental health conditions (Pathare, Brazinova, and Levav, 2018). For example, people with major depressive disorders, schizophrenia (and other psychotic disorders), and bipolar disorder have a life expectancy of 10-20 years shorter than the general population (Liu et al., 2017).

It is crucial to emphasize that some mental health problems are preventable and that rigorously studied interventions exist that aim to prevent mental health problems (Cuijpers et al., 2019). There is also much evidence that shows the negative consequences of mental disorders can be mitigated with proper care. Stress management and reduction, and participating in

positive activities (gratitude journaling, performing acts of kindness) (Shin et al., 2016) have been found to increase mental wellness and are just two methods associated with a mitigating negative mental health consequences (Layous et al., 2014). These methods have been integrated into public health interventions focused on mental health promotion, and show promising results. Research shows that interventions can even be used as a tool to decrease the likelihood of mortality due to mental health, for example, a systematic review examined interventions designed to prevent suicide found that school-based awareness programs, restricting access to lethal means, and medication were all associated with significant reductions in suicide attempts and ideation (Zalsman et al., 2016).

A standard method of researching mental wellness is by examining one's wellbeing. The construct of wellbeing constitutes two ideas: (1) subjective life satisfaction and (2) meaningful functioning and human development (Helliwell, Layard, and Sachs, 2012). Research has identified an underlying inverse relationship between gains in mental health and a decline in mental disorders over time (Delude, 2015; Keyes, Dhingra, and Simoes, 2010). However, the two are not mutually exclusive nor always linear. A person may experience symptoms of a mental health disorder, such as depressed mood while maintaining a degree of mental wellness that aligns with their expectations related to life satisfaction (Galderisi, Heinz, Kastrup, Beezhold and Sartorius, 2015).

2.2 Mental Wellness

Mental wellness is influenced at the individual, social, and cultural level, by improving resilience, promoting a healthy diet and physical activity, and bolstering social networks (Malla et al., 2020; Arango et al., 2018). At an individual level, coping strategies are used when navigating difficult situations. There are both adaptive and maladaptive coping strategies

(Campos et al., 2004; Carver, Scheier, and Weintraub, 1989) that were originally categorized as problem-focused coping or emotion-focused coping (Lazarus and Folkman, 1984). Endler and Parker (1990) added a third category of avoidant coping. Researchers agree that venting, denial, substance use, behavioral disengagement, self-distraction, and self-blame are methods of maladaptive coping (Alveal and Barraza, 2015). Adaptive coping consists of positive reframing, planning and seeking social support, active coping, using emotional and instrumental support, acceptance, and humor (Meyer, 2001; Garcia et al., 2018). Religion is sometimes considered maladaptive (Reich, Costa-Ball, and Remor, 2016) and sometimes as adaptive (García, Páez, Cartes, Neira, and Reyes, 2014). Researchers posit that the difference in whether a coping strategy is considered adaptive or maladaptive depends on whether the stressor is controllable or uncontrollable (Park et al., 2004). Problem-focused strategies are appropriate for the first, and emotion-focused strategies are suitable for the latter, thus if one is applying religious emotional coping on a controllable stressor, it may be maladaptive for them.

Research shows that adaptive coping mechanisms are associated with positive mental health outcomes, such as wellbeing (Meyer, 2001; Garcia et al., 2018). In contrast, maladaptive coping mechanisms are associated with negative mental health outcomes, such as perceived stress, depression, anxiety, and lower life satisfaction (Alveal and Barraza, 2015; Garcia et al., 2018). As stated in the Introduction, there is no current literature examining the coping strategies of Bangladeshi young adults. Understanding current coping behavior is critical to developing better interventions to aid Bangladeshi students in the future and build upon what students may already be doing.

Mental wellness interventions are foundationally built to increase participants' ability to cope with stressors in a healthy manner. Preventative interventions that focus on promoting

mental wellness often incorporate mindfulness techniques and cognitive and behavioral therapy methods (Regehr, Glancy, and Pitts, 2013). Mindfulness is a means of training the regulation of attention for mental health promotion and is used widely in university populations (Barnes et al., 2017). In part, its popularity is due to the perception of mindfulness training as a skill rather than a mental health intervention (Galante et al., 2018). Cognitive-behavioral therapy (CBT) encompasses five cognitive-behavioral variables: attention, memory, reasoning, thought, and behavior, and encompasses mindfulness (Harvey et al., 2004). Attention includes factors such as selective attention and mindfulness. Memory includes factors such as overgeneralization of memory and memory distrust. Reasoning includes the factors of interpretation and attribution. Thought includes factors such as rumination and belief. Behavior includes variables such as avoidance and coping (Irie et al., 2019). One systematic review sought to compare the methodologies and found mindfulness training is more effective than CBT, relaxation training, and meditation when examining the outcomes of emotional distress, social and emotional skills, self-perception, and academic performance (Conley et al., 2013).

A meta-analysis examined the effectiveness of these interventions within university students. Regeher and colleagues (2013) pooled 23 cognitive, behavioral, and mindfulness-based intervention studies and found significant reductions in anxiety comparing the treatment to control groups. They examined 16 studies that employed only cognitive-behavioral interventions, and nine mindfulness-based interventions, both of which showed significant improvement over control groups. Six cognitive-behavioral and mindfulness-based studies contributed to a pooled analysis for depression, with significant results for treatment against the control group. The meta-analysis findings suggest that cognitive, behavioral, and mindfulness-based interventions focused on stress reduction significantly reduced symptoms of anxiety (Regeher et al., 2013) and

this finding is supported by other meta-analyses conducted in different populations. For example, a Cochrane Review based on an analysis of 22 studies reported that CBT approaches are effective in addressing generalized anxiety disorders in mixed-age populations with a mean overall age of 47.2 years (Hunot et al., 2007). There is much evidence to support the importance of bolstering mental wellness and known methods that are effective in doing so.

Specific social determinants have been consistently found to have a strong association with poor mental health. Poverty, adverse childhood experiences, and violence are risk factors for both the onset of mental disorders and persisting mental disorders. These risk factors, in turn, impact a person's educational attainment, employment, and productivity, and thus are faced with financial hardship (Patel et al., 2018; Lund et al., 2010). As such, social determinants can be used to identify those who have a propensity for mental disorders, and it is particularly important to promote mental health in populations that are more likely to have high rates of these social determinants.

2.3 Mental Health Services in Low-Income Contexts

The concern for mental health in low and middle-income countries is great, as mental health care services are scarce. Many low-income countries have only one psychiatrist for every 1 to 4 million people (Chisholm et al., 2007; Lund, 2003; Patel et al., 2018). For this reason, global health groups, including WHO, the Lancet, and the World Bank, released a call to action to scale up services in low-income countries, with regard to those with mental disorders. WHO has published the Comprehensive Mental Health Action Plan, which includes specific sustainable development goals (SDG). This calls for countries to ensure healthy lives and wellbeing for all ages by providing services for those with mental health problems and efforts

aimed at prevention. Though this call to action has led to an increase in research on how to promote mental health, translation into practice is low (Patel et al., 2018).

2.4 Known Mental Health Factors in Bangladesh

Bangladesh is one such low-income country that has both serious mental health problems and a lack of mental health services. The Human Development Index (HDI) is used by the World Bank and other global organizations to measure the average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and having a decent standard of living. The HDI ranks Bangladesh as 136 out of 180 countries, which suggests a lack of infrastructure and resources to meet health demands. Bangladesh has one of the highest population densities globally, ranking 11 out of 232 (World Population Review, 2020). The average life expectancy in Bangladesh is 73.2 years, five years less than the life expectancy in the United States, as measured in 2018 using World Bank data (World Bank Data, 2020). The infant mortality rate (per 1,000 live births) in Bangladesh in 2018 was 25.1, five times greater than the rate (5.6 per 1,000) in the United States (World Bank Data, 2020).

After the Bangladesh War of Liberation in 1971 the country was left with few resources, which has contributed to the current lack of infrastructure for health services (Chowdhury et al., 2013). Bangladesh is geographically situated along the Bay of Bengal, below the equator, leaving it prone to natural disasters and high sea levels (Chowdhury et al., 2013). Despite these circumstances, the government increased expenditure on the nation's health, resulting in a decreased rate of child and maternal mortality (Chowdhury et al., 2013), with lower child mortality rates than neighboring countries India and Pakistan (World Bank, 2020). Much of this decrease in mortality is due to the attention placed on infectious disease, family planning, and reproductive health. However, there is an alarming lack of improvement surrounding mental

health problems, including suicide and depression (Arafat et al., 2018; Mashreky et al., 2013; Shah, Ali, Ahmed, and Arafat, 2017; Shahnaz et al., 2017; World Health Organization, 2014).

Different sources cite different prevalence rates of mental health disorders in Bangladesh. As stated in the introduction, IHME estimates that 12.5% of Bangladesh's population meets the criteria for mental health and substance use disorder. However, a systematic review (Hossain, Ahmed, Chowdhury, Niessen, and Alam, 2014) found rates that suggest the prevalence may be higher, especially among youth. Thirteen of the articles in the systematic review reported prevalence of mental disorders in Bangladesh, yet authors of the review found only 5 of the 13 to have reported sufficient data on methodology. These studies found the prevalence of mental health disorders varied from between 6.5% and 31% among adults and 13.4% to 22.9% among children (Hossain et al., 2014). Moreover, a recent study sampled 755 adolescents in Dhaka, the urban capital of Bangladesh, and found that 25.0% of adolescents reported having depressive symptoms (Khan, Ahmed, and Burton, 2020). This is higher than national prevalence rates of adolescent depression in the United States (13%) (NIMH, 2020); however, Bangladesh does not have national data, and so we are not able to extrapolate further, and it is important to note that this 25% is the only representative of one urban sample.

Just as there are discrepancies in mental health disorder rates, there are also varying estimates of suicide rates. Another systematic review focused on suicide in Bangladesh (Arafat, 2017). Based on their review of 35 articles, they estimated the suicide rate in Bangladesh to be 39.6/100,000, which is well above the global rate of 10.7/100,000, with the most cited reason for suicide attempt (approximately 60% of attempts) related to emotional factors related to family (Arafat, 2019). The Bangladesh Health and Injury Survey, a cross-sectional survey (n=819,429) of all age-groups and sexes uses face-to-face interviews at a household level, found that suicide

was the fourth leading cause of injury-related deaths overall and the second leading cause of injury-related death among those 20-39 years of age (Mashreky et al., 2013). The respondents were initially asked whether any deaths had occurred in the household in the last 2 and 3 years. If deaths were identified, the interviewer then clarification regarding the cause of death, and if it was deemed a suicide, information regarding place and method of suicide was collected (Mashreky et al., 2013). Through the varying literature findings, we find that though the rates of mental health conditions are not agreed upon, even the most conservative estimates suggest that the extent of the problem is great and that steps must be taken to alleviate the burden of poor mental health in Bangladesh.

2.5 Mental Health Services in Bangladesh

Despite the prevalence of mental health disorders, there is an astonishing lack of both health care providers that are trained in psychiatric health, as well as healthcare facilities equipped to handle psychiatric patients in Bangladesh (World Health Organization, 2007). A report of the assessment of the mental health system in Bangladesh using the World Health Organization – Assessment Instrument for Mental Health Systems (WHO-AIMS) was undertaken in 2007 to examine the current situation in Bangladesh regarding mental health. Bangladesh lacks a specific mental health authority, nor does it have a human right review body to inspect mental health care facilities. The government's total expenditure on mental health services is less than 0.5% of its total health expenditure. Of that percentage, the majority (67%) is devoted to the country's sole mental health hospital. In addition to this mental health hospital, the country has 50 outpatient mental facilities, but there is no follow-up care provided for patients once they leave the facility (WHO-AIMS). There are 31 reported in-patient psychiatric units in community clinic settings. Bangladesh has 11 community residential facilities, which

house mainly children (73% of patients) and females (81% of patients). Table 2.1 presents data

for which diagnoses are treated by facility type. These data show that mood disorders and

schizophrenia are consistently the highest percentages of diagnoses being treated in Bangladesh.

Further, only 4% of medical doctors in Bangladesh are trained in mental health, and 2%

of nurses have specific mental health training (World Health Organization, 2007). Other primary

care doctors receive almost no refresher training in mental health, and yet only 1-20% of these

primary care physicians make at least one referral to a mental health professional. As such,

Bangladesh has one of the lowest rates of psychiatrists and other mental health practitioners

globally, with 0.5 mental health providers available per 100,000 of the population. There are

even fewer psychiatrists available, 0.07 psychiatrists per 100,000 population (WHO and Ministry

of Health and Family Welfare, 2006; Giasuddin et al., 2015). This is substantially less than the

rate in developed countries like the United States, which has nine psychiatrists per 100,000

people, which is also considered a shortage (MacArthur et al., 2018). The generally accepted rate

of psychiatrists to population ratio for good mental health care is 15 per 100,000 people

(Hawkins, 2018), and Bangladesh falls far short of this rate, highlighting a major gap to fill.

Table 2.1: Percentage of patients treated in mental health facilities in Bangladesh by diagnoses, World Health Organization, 2007

Diagnoses	Outpatient facilities (%)	In-patient units (%)	Mental hospital (%)	Average (%)
Mood disorders	20	37	30	29
Personality disorders	5	1	0	2
Neurotic disorders	20	10	0	10
Schizophrenia	30	42	70	47.3
Substance abuse	16	7	0	7.7
Other	9	4	0	4.3

2.6 Mental Health Attitudes in Bangladesh

Knowledge of and attitudes toward mental health disorders and services are associated with the management and prevention of mental health outcomes (Uddin, Bhar, and Islam, 2019). Rates of mental health literacy are low worldwide, but particularly low in low-income countries (Jorm et al., 1997) such as Bangladesh. In some low-income societies, mental health conditions are thought to be caused by religious, familial, or cultural disobedience (Ndetei, Khasakhala, Mutiso, and Mbwayo, 2011). These beliefs can often turn people away from proper utilization of services and create a negative stigma surrounding mental health care and treatment (Uddin et al., 2019). Public mental health stigma is widespread in Asia (Lauber and Rössler, 2007; Giasuddin, Levav, and Gal, 2015).

Few studies have examined the Bangladeshi public understanding of mental health. A systematic review on this topic found that, at a community level, there is moderate to low awareness regarding mental health disorders, that the attitude toward treatment is negative, and that even those who are affected by a mental health disorder do not think treatment is a priority (Hossain et al., 2014). One study recruited 2,425 adults (ages 18 to 90) for a cross-sectional survey. The study collected data regarding awareness, knowledge, help-seeking attitudes, and practices concerning specific factors of mental health conditions. The study focused on six areas in particular: depression, anxiety, substance abuse, psychosis, dementia, and bipolar disorder (Uddin et al., 2019). Within this sample, only 0.7% (n=17) recognized all mental health conditions, and 56.3% (n= 1,365) reported no knowledge of any mental health condition. Of the mental health conditions that were known, depression was recognized the most (8.5%), followed by anxiety (6.2%), psychosis (3.5%), and last, bipolar disorder (3.3%). The study found awareness to be lowest in older adults and women. Poverty was significantly associated with

decreased knowledge of mental health conditions. This study also found that those who reported being aware of mental health conditions had more positive attitudes toward help-seeking behaviors (Uddin et al., 2019).

2.7 Innovative Services: mHealth

When there is a lack of services and a high demand for mental health services, it is essential to consider other care delivery methods. One such method that has become pervasive in society is mobile health (mHealth) interventions. Mobile health (mHealth) can be defined as mobile computing and communication technologies in health care and public health (Free et al., 2010; 2013). A recent study summarized 23 existing systematic reviews that were published between 2009 to 2016. The review examined the effectiveness of mHealth interventions encompassing reviews of over 10,000 articles (Marcolino et al., 2018). Seventeen of these reviews included interventions in low and middle-income countries. Numerous health outcomes were measured across these studies. Most studies included in the review examined apps developed for management of chronic diseases. Other health outcomes studied included disease management, treatment adherence, and changes in health behavior. This review found that there were benefits of mHealth interventions on smoking cessation, adherence to treatment and care, disease management, increasing physical activity (Fanning, Mullen, and McAuley, 2012), and attendance rates of care appointments (Gurol-Urganci, de Jongh, Vodopivec-Jamsek, Atun, and Car, 2013; Guy et al., 2012). One review assessed six interventions specific to low and middle-income countries and found that five out of six showed benefits to participants (Hall, Fottrell, Wilkinson, and Byass, 2014). This suggests that mHealth is effective in disease management, symptom improvement, and increasing populations' quality of life.

In low and middle-income settings, in particular, there is evidence to support that mHealth can increase the likelihood that health interventions can be delivered to otherwise hard to reach populations (Marcolino et al., 2018). Other advantages of mHealth are convenience, ease, cost-effectiveness, scalability, personalization, and "the ability to send time-sensitive messages with an 'always on' device" (Whittaker et al., 2016). Further, it can reach populations who would otherwise not engage with traditional health services (Hamine et al., 2015). There are also benefits for low-income country governments that need additional support for patient management (Aranda-Jan, Mohutsiwa-Dibe, and Loukanova, 2014). mHealth is widespread in low-income countries, with 60% of the population having access to a mobile phone (Bastawrous and Armstrong, 2013).

2.8 mHealth for Mental Health

The research highlights the lack of traditional mental health care services in Bangladesh, but the promise of innovative practices in reducing depressive and mental health disorder symptoms, such as mobile health, for mental health. A systematic study was conducted examining mental health interventions delivered strictly through mobile health using text messaging and apps (Berrouiguet, Baca-García, Brandt, Walter, and Courtet, 2016). Apps are defined as a discrete and independent software that runs on a mobile device (Heffner, Vilardaga, Mercer, Kientz, and Bricker, 2015; Lui, Marcus, and Barry, 2017). Berrouiguet and colleagues found that health interventions have used text messaging (sometimes combined with applications) for substance abuse (31%), schizophrenia (22%), and affective disorders (17%). The most common way text messages were used were for reminders (14%), information (17%), supportive messages (42%), and self-monitoring procedures (42%) (Berrouiguet et al., 2016). Interventions delivered via SMS have been applied to depression and found promising results

(Aguilera and Muñoz, 2011; Aguilera and Berridge, 2014; Lam and Kahler, 2018). Supportive messages, such as "To change the outside world, all you have to do is change the way you think and feel" and "Stick to your treatment plan; take your medication as prescribed and keep your appointments," are a key component of these interventions. One study found that supportive messages sent twice a day over three months were associated with lower depressive scores (Agyapong, McLoughlin, and Farren, 2013). Positive messaging via SMS shows promising results.

Unfortunately, few evidence-based mobile mental health apps exist in the market (Donker et al., 2013; Bakker, Kazantzis, Rickwood, and Rickard, 2016; Aryana, Brewster, and Nocera, 2018). Mobile apps have more benefits than text messaging, as they can be personalized (Gustafson et al., 2014), visually engage the user, can track progress, and are self-paced (Bricker et al., 2014; Luxton, McCann, Bush, Mishkind, and Reger, 2011). These features make apps a valuable platform for the dissemination of interventions. One systematic review evaluated 5,646 abstracts published between 2008 and 2013 and found eight published studies describing five apps targeting depression, anxiety, and substance abuse that met their inclusion criteria (Donker et al., 2013). The review only included evidence-based mental health apps that could be downloaded from app stores. Results showed across the studies significant reductions in depression, stress, and substance use. Within-group and between-group intention-to-treat effect sizes ranged from 0.29-2.28 and 0.01-0.48 at posttest and follow-up, respectively. This review found that, though there are over 3000 mental health apps available for free on app stores, only eight are based on behavior change theory, and all are in English. Another, more recent systematic review, summarizes an evaluation of mHealth apps used to decrease depressive symptoms, shown in Table 2.2 (Lui et al., 2017). Liu and colleagues found that psychoeducation,

teaching therapeutic skills, positive reinforcement, symptom monitoring, and contact sensing were associated with decreased anxiety and depression symptoms. Multiple meta-analyses suggest that psychological intervention content delivered via a Web- or mobile app can be as efficacious as a face-to-face treatment for depression (Andersson, Cuijpers, Carlbring, Riper, and Hedman, 2014; Andrews, Cuijpers, Craske, McEvoy, and Titov, 2010; Cuijpers, Donker, van Straten, Li, and Andersson, 2010).

Despite these promising findings, and though the market may seem saturated with apps for consumers to choose from, few are based on evidence or theory, and even fewer consider the user-centered design. User-centered design (UCD) is a general term for a method that focuses on designing a mobile health app with input from the end user throughout the design process (Abras et al., 2004). User-centered design is imperative to consider in app development, as mHealth apps tend to have high dropout rates (Richards and Richardson, 2012), which researchers believe to signal that the apps are not sufficiently engaging and user-friendly to maintain participant interest over time (Fuller-Tyszkiewicz et al., 2018).

Table 2.2: Summary of studies that evaluate apps for depression (Lui et al., 2017)

Author	App Name	Therapy Approach	App Features	Findings
Ahmedani et al. (2015)	N/A	Cognitive Behavioral Therapy (CBT) and Motivational interviewing (N)	•Stand-alone •Psychoeducation •Testimonials •Menu of therapeutic skills •Recommends therapeutic skills contingent on user response •Positive reinforcement contingent on user response	1. Significant reduction in mean depression score at two weeks follow-up 2. No significant reduction in disability score
Burns et al. (2011)	Mobilyze!	Behavioral (N)	•Symptom monitoring •Recommends therapeutic skills contingent on user response •Context Sensing	1.Significant reduction in depressive symptoms after eight weeks 2.Less likely to meet criteria for major depressive disorder 3.Significant reduction in comorbid anxiety symptoms
Roepke et al. (2015)	Super Better	CBT (Y)	•Stand alone •Serious Game •Menu of therapeutic skills •Recommends therapeutic skills contingent on user response •Positive reinforcement contingent on user response •Enlist social support	1. More significant reduction in depression in both groups (SB, and SB + CBT) compared to the waitlist at posttest (2-weeks) and follow-up (1 month) 2. Groups with CBT did not perform better than general groups
Watts et al. (2013)	The Get Happy Program	CBT (Y)	•Stand-alone •Psychoeducation •Testimonial •Menu of therapeutic skills	1.Posttest (3 months): Both mobile and computer groups had significant reductions in depressive symptoms, # days lost from work, # days underproductive at work 2.No significant difference between mobile and computer groups

Bakker and colleagues (2016) developed a set of guidelines to ensure proper development

of mental health Apps, based on a systematic review of existing apps and using Fogg's behavior

model, which posits that behavior change as result of motivation, ability, and prompt to action.

Their goal was to present clear, practical, evidence-based recommendations to create rigorous

apps. The following guidelines consisted of 16 suggested criteria to include when developing mental health apps: (1) cognitive-behavioral therapy based; (2) address both anxiety and low mood; (3) designed for use by nonclinical populations; (4) automated tailoring; (5) reporting of thoughts, feelings, or behaviors; (6) recommend activities; (7) mental health information; (8) real-time engagement; (9) activities explicitly linked to specific reported mood problems; (10) encourage non-technology-based activities; (11) gamification and intrinsic motivation to engage; (12) log of past app use; (13) reminders to engage; (14) simple and intuitive interface and interactions; (15) links to crisis support services; and (16) experimental trials to establish efficacy.

Researchers compared available apps against these guidelines and found that, out of 27 apps, an average of 7 criteria were included in apps. The highest number of criteria met in an app was 13, and the lowest met 3 (Bakker et al., 2016). Of these mental health apps that meet the majority of these criteria, few have been developed for use in low-income countries, and none have been developed for a Bangladeshi population.

Further, it is imperative to design appropriate and effective messaging to be used in mHealth interventions. A systemic exploratory review listed what users and mental health professionals would like to see in mental health care apps (Aryana et al., 2018; Gaggioli et al., 2013). They found five key factors that messaging should do effectively. (1) Provide users with individualized therapy assessment tools (2) Facilitate the analysis of real-world behaviors and experiences using sensing technologies (3) Enable users to self-track their emotional states (4) Encourage users to engage with treatment and (5) Help patients to apply relevant skills in their everyday life. To ensure this is done correctly, it is crucial to use appropriate frameworks, theories, and evidence-based practices.

2.9 mHealth usage in Bangladesh

There is a lack of literature examining the use of mHealth for mental health in Bangladesh. Though platforms have shown positive results in promoting healthcare in Bangladesh for various health-related issues: linking village doctors to formal doctors (Khan et al., 2015), diabetes management (Yasmin et al., 2020), nutrition services (Uddin, J. et al., 2017), and maternal and child health (Alam, D'Este, Banwell, and Lokuge, 2017), they have not yet been studied in a mental health capacity. A recent study sought to examine the usability of existing mHealth apps in Bangladesh (Islam et al., 2020). They identified a total of 234 mobile health applications developed for use in Bangladesh, none specifically addressing mental health. Results showed that these apps overall had low usability ratings, a summary can be found in Table 2.3. The authors concluded that the apps were not designed with the user in mind, and there were no data on whether these apps were developed based on empirical evidence (Islam et al., 2020).

Table 2.3: Types of mHealth apps used in Bangladesh (Islam et al., 2020)

Type of App	Frequency (N)	Percent (%)
General Health Information Apps	78	33
Physician Information	24	10
Institutional Apps	27	12
Fitness Apps	24	10
Mother and Child Apps	22	9
Disease-Specific Care Apps	12	5
Herbology Apps	21	9
Food and Nutrition Apps	17	7
Homeopathic Apps	9	4

2.10a BlueWatch --an app based on the Fogg Behavioral Model

Due to the lack of mental health apps in Bangladesh, and the urgency to close the gap of the lack of mental health services, it is crucial to develop a robust mental health app explicitly tailored for the Bangladeshi population. Given that current apps developed for use in Bangladesh have low usability, it is essential to consider the end user in the creation of the app (Schnall et al., 2016; McCurdie et al., 2012). As noted, mental health apps have been shown effective in some populations, though most with available research were created for an English-speaking audience. Using the guidelines created by Bakker et al. (2016), BlueWatch, a more recently created app, meets 14 of the 16 suggested criteria. BlueWatch stands out as one created by a team of researchers, psychiatrists, and psychologists, all of whom have expertise in mHealth delivery of interventions for depression. The creation of the app utilized user-centered design, is grounded in theory, and uniquely has been tested for end-user and expert usability (Fuller-Tyszkiewicz et al., 2018). BlueWatch incorporates behavior change and design principles into the app, following the Fogg Behavior Model (Fogg, 2009). Engagement in a task is dependent on three key factors: (1) motivation, (2) sufficient ability for task performance, and (3) triggering to perform the task. This model further stipulates that all three factors are necessary to enable behavior.

Unlike other self-paced apps, BlueWatch uses the participants' mood survey data to provide real-time messages to help participants work out when best to engage the treatment content. There are three main components of the app: short audio activities, journaling exercises, and self-monitoring functions. Intended outcomes of the app are to improve the wellbeing and resilience of adults. The app is based on cognitive-behavioral therapy (CBT) and consists of multiple modules covering the following topics: psychoeducation, mindfulness, behavioral activation, cognitive restructuring, problem-solving, assertiveness skills, and relapse prevention

(Fuller-Tyszkiewicz et al., 2018). This study aims to focus on examining the content of the short audio activities related to mindfulness, given the amount of data supporting its effectiveness in college populations (Conley et al., 2013; Regeher et al., 2013).

To increase usability and retention, the app includes a welcome module that directs users on how to use the app, as well as how to enable and use essential features such as push notifications, self-monitoring, and feedback on mood reports. Once the user completes watching the welcome video, the app creates a to-do list, highlighting upcoming tasks within the app that the user should complete. This to-do list remains short, so users find it manageable, and updates as the user completes different tasks. The self-monitoring section of the app allows users to monitor their moods based on a brief, 1-minute survey.

BlueWatch is the only mHealth app that has published end-user and expert usability results (Fuller-Tyszkiewicz et al., 2018). Using a mixed-methods approach, results found that users found BlueWatch to be visually appealing, organized, and engaging. Users liked that they could learn different types of depression management techniques from the app. Researchers and mental health professionals noted the benefit of different psychological intervention strategies in the app, as in practice, individuals may prefer different treatment options. Though not formally evaluated yet for effectiveness, BlueWatch seems to be the most appropriate app to adapt for use in a Bangladeshi population.

2.10b. Using a Culturally Adaptive Framework to Develop Messaging for a Mental Health Wellness app to be used in Bangladesh

As BlueWatch was created in English, for a young adult (18-25) Australian population (Fuller-Tyszkiewicz et al., 2018), it is important to use a culturally adaptive framework (CAF)

when adapting for a Bangladeshi population. Barrera and Castro (2006) presented a heuristic framework for the cultural adaptation of interventions. There are three stages involved: 1) information gathering, 2) preliminary adaptation tests, and 3) adaptation refinement. Information gathering encompasses both a literature review, as well as conducting quantitative surveys to understand the demographic characteristics and preferences of the target population. It also involves qualitative research with potential participants within the target population or interviewing experts in the field who have experience working with the target population (Dumka, Gonzales, Wood, and Formoso, 1998; Barrera Jr and Castro, 2006; Cabassa and Baumann, 2013). Concluding these interviews and surveys, results are assessed and drafted into a preliminary treatment adaptation. Stage two involves testing these adaptations by conducting pilot tests with small groups. Here participants are typically assessed with quantitative and qualitative measures to identify and discuss difficulties with the program implementation, content, or any possible areas of improvement, as well as the satisfaction with treatment. Finally, in the last stage, a revision based on stage two results occurs and planning for larger-scale evaluation of whether the program can have its desired effects takes place (Barrera Jr and Castro, 2006). This study proposes to complete the first step in this process and send the preliminary treatment adaptation to the creators of BlueWatch.

2.10c Technology Acceptance Model

When developing messaging for a mHealth app, it is essential to use existing models to examine users' likelihood of acceptance of using technology. The Technology Acceptance Model (TAM) is an information technology framework for understanding users' adoption and use of emerging technologies (Portz et al., 2019). The theory states that a user's perception of the usefulness (i.e., perceived benefits) and the ease of use lead to the person's intent to use the

technology. TAM also posits that perceptions of usefulness and ease of use are influenced by external factors such as individual differences and social influences (Portz et al., 2019). It is also important to consider users' perception of whether or not a mobile intervention can be effective (Hind and Sibbald, 2014).

2.11 Target Population in Bangladesh

As the onset of depression occurs in adolescence to early adulthood (Kessler et al., 2007; McGorry, 2011), college students are at particular risk of depressive symptoms, particularly given the amounts of stress they endure in higher education (Eisenberg, Hunt, Speer, and Zivin, 2011). Early management of depressive symptoms is important, as treatments tend to be less effective as the duration of depression increases (Bukh, Bock, Vinberg, and Kessing, 2013). In Bangladesh, early adulthood is also the most vulnerable time for the onset of depressive symptoms (Arafat, 2019).

To date, only two studies have examined the mental health of Bangladeshi university students. Hoque (2015) conducted a cross-sectional survey (n=150) and found students attending University in Dhaka, Bangladesh most commonly experiences anxiety due to academic reasons. 60% of students experienced anxiety, depression, and panic episodes; 24% of the sample experienced only anxiety and depressive episodes; 12% of students experienced only anxiety episodes, and 4% did not have any mental episodes. Students cited academic pressure such as workload and pressure to perform well academically as reasons for their anxiety. The other recent study, led by Ahmmed and colleagues (2020), was a cross-sectional investigation based on 403 undergraduate students of the International University of Business Agriculture and Technology. They found 33.7% of the sample met criteria for depression and identified a myriad

of associated factors, such as health status, economic difficulties, unattainable goals, poor family relations, academic pressure, and survival status of parents to have a significant association with depression of the students (Ahmmed, Babu, and Salim, 2020). However, neither of these studies reported data regarding the number of students who receive mental health help, nor methods of mental health promotion that may use.

Mental health apps are particularly well suited for young adults seeking help for their symptoms, as they report a high need for autonomy (Fuller-Tyszkiewicz et al., 2018; Rickwood, Deane, and Wilson, 2011). Young adults prefer using self-help materials if a medium delivers them that they are familiar with, such as a smartphone (Martinez and Williams, 2010). As such, developing mental health messaging for in-app delivery for college students in Bangladesh has the potential to go a long way in reducing and managing depression symptomatology and preventing depression.

Chapter 3: Manuscript #1 Motivations for Clinical Mental Health Help-Seeking in Bangladeshi University Students

Abstract

The mental health epidemic has played havoc with low-income countries, such as Bangladesh, as mental health issues have been exacerbated due to the COVID-19 pandemic. Given the onset of depression occurs in late adolescence or early adulthood, college students are extremely vulnerable to developing depressive symptoms, which is made more prevalent given the amount of stress they undergo in college. As such, seeking care is essential for this population, yet no studies to date have examined motivation (and barriers) to seeking clinical mental health services in university students in Bangladesh. Using a cross sectional survey (n=350), we assess the relationship between Self- Determination Theory (SDT) constructs of autonomy, relatedness, and competency toward using clinical mental health practices (i.e., using professional resources, taking medication) with (1) positive views, (2) perceived need, and (3) use of clinical mental health services among Bangladeshi university students. Results showed that the perceived need for mental health support was the predictor of the largest magnitude (aOR= 4.99, p =.005) for using clinical services. Having a positive view of clinical services was also predictive of actual clinical service use (aOR=2.87, p =.033); however, that association became insignificant (p= .054) when adjusted for the perceived need for mental health care. Of the SDT constructs, one's social influences were predictive of perceived need for mental health support, surprisingly, perceived stigma of using clinical mental health services was associated with higher odds of using services (aOR= 1.70, p=.022), and knowing more people with mental health problems increased odds of using services (aOR= 1.31, p=.009); higher levels of

knowledge about mental health was predictive (aOR=1.10, p=.001) of having a positive view of clinical mental health care.

Introduction

Mental health disorders have increased in prevalence globally, across diverse demographics, cultures, and political situations (Patel et al., 2018). The mental health burden is particularly high in low and middle-income countries, given that they often lack the resources to meet the demand for mental health services. Mental health is a uniquely difficult subject to approach in low-income countries because of the commonly held belief that mental health conditions arise due to religious, familial, or cultural disobedience (Ndetei, Khasakhala, Mutiso, and Mbwayo, 2011). This belief can create a stigma surrounding the topic of mental health (Uddin et al., 2019) and is particularly widespread in Asia (Lauber and Rössler, 2007; Giasuddin, Levav, and Gal, 2015). Holding this belief is associated with lower utilization of professional mental health services (Koly et al., 2021). As such, it is crucial to assess how to increase positive beliefs toward and use of mental health services among those in low- and middle-income countries.

It is not uncommon for low-income countries to have only one trained psychiatrist available to treat one to four million people (Chisholm et al., 2007; Lund, 2010; Patel et al., 2018). Bangladesh has one of the lowest rates of psychiatrists globally, with .07 psychiatrists available per 200,000 of the population (WHO, 2007; Giasuddin et al., 2015). While there is no widely accepted prevalence rate of mental health disorders in Bangladesh, one study estimates that the prevalence may be as high as 31% among adults (Hossain et al., 2014). Supporting this estimate, the estimated suicide rate in Bangladesh (39.6/100,000) is more than three times the global rate (10.7/100,000) (Arafat, 2019).

Young adulthood generally is a time when mental disorders increase in prevalence. In Bangladesh, early adulthood is also the most vulnerable time for depressive symptoms (Arafat, 2019). Since the onset of depression occurs most often in late adolescence to early adulthood (Kessler et al., 2007; McGorry, 2011), college students are at high risk of developing depressive symptoms, particularly given the amounts of stress they endure in higher education (Eisenberg, Hunt, Speer, and Zivin, 2011) and the link between stress and depression (LeMoult, J., 2020). Early management of depressive symptoms is essential, as treatments tend to be less effective as the duration of depression increases (Bukh, Bock, Vinberg, and Kessing, 2013).

Several studies have examined the mental health of Bangladeshi University students, using various validated scales to assess depression in this population. Hossain and colleagues (2019) assessed depression using the Patient Health Questionaire-9 (PHQ-9) in a sample of 665 Bangladeshi university students and found a prevalence of mild to severe depression to be 74.1%. Using the same questionnaire in a sample of 400 students from two public universities in Bangladesh, Koly et al. (2021) found that 47% of the sample met the criteria for depression and that poor academic performance and excessive use of social media were the most common factors that were associated with depression. Using the PHQ-9 in a sample of first-year students (n=400), Islam and colleagues (2020) found that 69.5% of their sample had moderate to severe depression. Slightly lower rates of depression were found in a sample of graduate students (n= 323); 52% met the criteria for depression according to the PHQ-9 (Kundu et al., 2021). Sayeed and colleagues (2020), using Beck's Depressive Inventory in a cross-sectional study with 404 university students, found 47.5% of the students surveyed met depression criteria, and that 8.7% reported a previous suicide attempt. While these findings demonstrate the incredibly high

prevalence of depression in university students in Bangladesh, there is little literature examining how to reduce this prevalence, nor data about the utilization of mental health services.

Given the high rate of mental disorders and lack of mental health services, it is imperative to find feasible methods to promote mental wellness in low resource settings, especially in with high mental health stigma. To achieve this, it is important to understand the motivations and hesitancies toward seeking and receiving mental health care. A systematic review on mental health help-seeking in Bangladesh found that, at a community level, there is moderate to low awareness regarding mental health disorders, that the attitudes toward treatment are negative, and that treatment is not a priority even those who are affected by a mental health disorder (Hossain et al., 2014). Pinpointing malleable factors associated with positive views of mental health services could go a long way in pivoting these attitudes towards utilizing care to a more positive view. Research shows that having a positive view of clinical mental health services is associated with mental health-seeking behavior (Cheng et al., 2018). In addition, the low awareness of mental health awareness is troubling, as if one does not recognize the need for care, they are less likely to receive care (Bilican, 2013), as such perceived need is an important outcome to examine and is an important first step to receiving care. Promoting mental health awareness and the use of services is paramount, as there is much evidence of the high efficacy of mental health services, such as therapy and taking the appropriate medication (Hollon, Thase and Markowitz, 2002; Hollon et al., 2005). However, although clinical support is efficacious, with the shortage of services in Bangladesh, even people who may want clinical help may not be able to get it.

It is also important to understand nonclinical methods that have been shown to improve an individual's mental health, such as using adaptive coping mechanisms and seeking social support. Mental wellness, defined by the World Health Organization as "a state of well-being in

which one realizes their abilities, can cope with everyday stressors, work productively, and contribute to society" (Patel et al., 2018), can be impacted by improving resilience, promoting a healthy lifestyle, and bolstering social networks (Malla et al., 2020; Arango et al., 2018). Coping strategies can also increase mental wellness, especially when navigating difficult situations (Meyer, 2001; Garcia et al., 2018). Adaptive coping consists of positive reframing, planning and seeking social support, active coping, using emotional and instrumental support, acceptance, and humor (Meyer, 2001; Garcia et al., 2018). Seeking support (social or instrumental), in particular, is important, as there is evidence that external supports reduce the impact that stress can have on psychological wellness (Chao, 2012). People who seek support are more likely to have fewer depressive symptoms and higher well-being when compared to those who do not (Alsubaie et al., 2019; Moses et al., 2016).

There is little literature examining the coping strategies of Bangladeshi university students. One study in a general Bangladeshi adult population found that, during the COVID-19 pandemic, people with highly adaptive coping profiles (defined as those with high extraversion, agreeableness, conscientious, openness, and low neuroticism) had better ability to engage in healthy behavior (Ahmed et al., 2021). Understanding current coping behavior is critical to developing interventions to aid Bangladeshi students in the future and build upon what students may already be doing.

The Self-Determination Theory (SDT) is a useful framework to understand the motivation to engage in a particular behavior. The theory posits that there are different types of motivation: amotivation (not feeling motivated at all), controlled motivation (coined "must-ivation," and autonomous motivation (known as "want-ivation"). Controlled motivation stems from pressure to do something out of external and internal pressure, for example engaging in a

behavior out of fear of punishment. Performing behaviors because of external pressure can result in feeling tension or anxiety. Autonomous motivation consists of actions that are driven by perceived usefulness, "doing something because it is useful and relevant," and value-driven – "doing something because it fits with [one's] values" (Visser, 2017). If one engages in a behavior because they perceive it to be useful, they may feel gratification or a sense of volition afterwards. This study conceptualizes the outcome of "positive views toward clinical mental health services" as a value-driven outcome and conceptualizes "perceived need for mental health support" as a usefulness-driven outcome. The highest level of motivation is intrinsic motivation, meaning the action is interesting and enjoyable to the person. Intrinsic motivation is thought to be the most fulfilling type of motivation in that it meets a persons' need for autonomy, competency, and relatedness (Deci and Vansteenkiste et al., 2004). Therefore, it is crucial to examine motivations for an action in context of both motivations for its use itself, as well as its perceived usefulness and value. One way to examine one's perception of what is useful is to assess whether they perceive the need to engage in a behavior, in this case whether they believe they could benefit from mental health support. The individual's positive views toward the behavior must also be taken into account when determining whether a motivation is value-driven.

SDT states that motivation toward a behavior, in this case, bettering one's mental health by using mental health care, stems from three innate and psychological needs: competence, psychological relatedness, and autonomy (Deci and Vansteenkiste, 2004). The construct of competence refers to the feeling that a person has a sense of mastery in their actions, and can be assessed by examining one's perceived knowledge on the subject. It is important to note that knowledge of mental health often encompasses the knowledge of symptoms and outcomes related to mental health disorders that are used in Western countries and are not prevalent in non-

Western countries (Sue, Zane, Nagayama Hall, and Berger, 2009). As such, when examining

mental health knowledge in a non-Western country such as Bangladesh, it is imperative to

examine only what is culturally pertinent to the sample (Rodrigo, 2015). Relatedness refers to the

sense of belonging that one feels in relation to others; for example, it encompasses the feeling

that one matters to other people, that they are cared for or connected to other people, and a sense

of mutual concern. Autonomy refers to self-endorsed behavior, that one feels able to have a

choice in their actions, and that their actions are self-initiated (Deci and Vansteenkiste, 2004).

Autonomy is thought to feed a person's motivation by self-direction and choice (Ryan and Deci,

1985) and to foster self-efficacy (Bandura, 1997). Relating autonomy, relatedness, and

competency to the constructs of positive views of clinical services, perceived need for mental

health support, and the actual seeking of clinical support can help identify significant motivators

to target when developing messaging to promoting these constructs. Autonomy and intrinsic

motivation have both been found to have key influences on mental health (Gagné and Deci,

2014).

   This study aims to contribute to the literature by assessing university students' current

mental health service utilization and factors that motivate them toward service use. The

perceived need for mental health support is conceptualized as a motivation driven by perceived

usefulness of the support; whether one views clinical services positively is conceptualized as a

value-driven motivation. It is important to note that mental health is a broad spectrum,

encompassing both wellness and disability, and the two are not mutually exclusive, and there is a

large body of evidence that suggests promoting mental wellness can buffer mental health

disorders (Delude, 2015; Keyes, Dhingra, and Simoes, 2010). This study reports the prevalence

of mental disorders and wellness practices in a sample of Bangladeshi university students and

identifies the motivational factors toward self-identification of need for mental health support, positive views of, and clinical help-seeking using the constructs of Self-Determination Theory, see Figure 3.1 for the conceptual model used.

Aims and Hypotheses

This study's main aims: assess the relationship between autonomy, relatedness, and competency toward using clinical mental health practices (i.e., using professional resources, taking medication) with (1) positive views toward clinical mental health services (2) perceived need of mental health support and (3) use of clinical mental health services among Bangladeshi university students. It is hypothesized that greater autonomy, greater relatedness, and greater competency are associated with use of clinical services, positive beliefs toward using clinical services, and perceived need for mental health support.

Methods

Study Sample

An online survey was distributed to current university students who attended university in Bangladesh, aged 18 years or older. Invitations to complete the anonymous survey were emailed to students by the faculty of universities across Bangladesh. Invitations were also posted on social media platforms, such as university Facebook pages. The survey was open for responses for two months, from January 2020 to February 2020, and a total of 350 student responses were recorded in the final dataset.

Survey Development

To create the survey instruments, first native speakers of Bangla were consulted to review the initial English survey and to develop a Bangla translation of the survey. Reviewers noted items that were complex translations, or that had different cultural meanings in Bangla. Next, an

interview guide was created for n=5 cognitive interviews with the target population (university students in Bangladesh) to probe these complex items. During these cognitive interviews, participants were also asked how they defined mental health and to explain their perception of what each survey item was asking. Items that cognitive interview participants had trouble understanding, or that were culturally inappropriate were adapted so they could be easily understood. For example, one item asked, "How often in the past two weeks did you feel down, depressed, or hopeless?" students were confused about what "feeling down" meant, and so this item was culturally adapted, and the phrase was removed from the question. Based on the cognitive interviews, we adapted the survey, and pilot tested the survey with 10 university students. Participants of the pilot tests did not note any difficulties with the items, and the survey was finalized.

Measures

Dependent Variables

There were three primary outcomes: clinical mental health practices, perceived need for mental health support and positive feelings towards mental health. To assess current clinical mental health practices, participants responded to two items "In the past 12 months, have you used medication for a mental health problem" and "In the past 12 months, have you received support (i.e., advice, care) for your mental or emotional health from a mental health professional (i.e., counselor, therapist, psychiatrist)?" If participants answered yes to either of these questions, they were considered to have utilized clinical mental health services.

To assess the perceived need for mental health support, one yes or no item was asked, "In the past 12 months, did you think you needed help for emotional or mental health problems such as feeling sad, anxious, or nervous?''

To assess positive feelings toward using clinical mental health, participants were asked to rate the following two statements on a 1-5 Likert scale (1= strongly disagree, 5= strongly agree): "I feel positive about using clinical mental health services (such as therapy and medication)?" and "I think using clinical mental health services can be helpful for me." These items were averaged to measure how positively students felt toward using clinical mental health and dichotomized into high and low scores of positive views towards use.

Independent Variables

Relatedness toward using clinical mental health services. Relatedness was measured using multiple constructs: perceived stigma, behaviors toward people with a mental health problem, and talking to other people about mental health. Perceived stigma was measured using the 12-item stigma subscale of the Barriers to Access to Care Evaluation scale (BACE) scale (Clement et al., 2012). The scale begins with asking how much of a barrier the items have been in stopping, delaying, or discontinuing professional help. An example item being, "Concern that people I know might find out." Participants responded using a Likert-scale response 0=not (indicating this was not a barrier to care), 3=a lot (indicating a great barrier to care). The final variable was created by taking the mean of these items, and the stigma-related barriers subscale had an α=0.89.

To measure proximity, a modified version of the Reported and Intended Behaviour Scale (RIBS) (Evans-Lacko et al., 2011) measured whether participants know someone with a mental health problem. Reported behavior was measured by asking the following yes/no questions: (1) Are you currently living with, or have you ever lived with, someone with a mental health problem? (2) Are you currently working, or have you ever worked with, someone with a mental health problem? (3) Do you currently have, or have you ever had, a neighbor with a mental

health problem? (4) Do you currently have, or have you ever had, a close friend with a mental

health problem? Two additional questions were created and asked as follows: "Has anyone in

your family ever been diagnosed with a mental health disorder?" and "How many people have

talked to you about the importance of mental health?" were asked to measure whether one speaks

to others about mental health. Responses to the yes/no questions were summed and then

averaged with the answer to "number of people spoken to about the importance of mental health"

to create a (0-4) measure of the proximity with mental health.

Intended behavior towards someone with mental health problems was apprised by a

series of 4 questions, and asks about anticipated behavior, for example, "In the future, I would be

willing to live with someone with a mental health problem." Anticipated behavior was measured

using a 5-point Likert scale (1=Disagree Strongly 5=Strongly Agree). Answers were summed to

create a final score (1-20). Cronbach's alpha in this sample was 0.87.

Autonomy toward using clinical mental health services. Autonomy was measured

using the BACE subscale for instrumental and attitudinal barriers. Participants responded to

statements and indicated how much of a barrier the statements were towards accessing mental

health services using a Likert-scale response 1=not at all (indicating this was not a barrier to

care), 4=a lot (indicating a great barrier to care); responses to items are averaged to create a score

of 1-4. The final score was dichotomized into whether one had (0=) low/neutral or (1=) high

barriers. Attitudinal barriers included items such as "Dislike of talking about my feelings,

emotions or thoughts." Four instrumental barriers specific to technology that were not in the

original scale were added, for example, "Lack of technological or other resources that would

facilitate participation." The revised instrument had high reliability, with a Cronbach's $\alpha = 0.85$.

Competency in using clinical mental health services. Six items from the Mental Health Knowledge Schedule (Evans-Lacko et al., 2010) were used to assess mental health literacy, the six items that related to knowledge of Western-defined mental disorder symptomology were excluded, as they are not culturally relevant to a Bangladeshi population. Respondents were asked on a 0-4 scale of strongly agree to strongly disagree with the following questions: 1) I know what advice to give a friend who had a mental health problem, 2) therapy is an effective treatment for mental health, 3) medication is an effective treatment for mental health, 4) people with a mental health problem want to have paid employment, 5) someone with a severe mental health problem can recover, 6) people with mental health problems typically seek help from a general professional. A seventh item, "people with mental health problems typically seek help from a mental health professional," was added to this scale. Scores were summed to create a final score ranging from 0-28, with higher scores indicating greater mental health expertise.

Current Nonclinical Mental Health Practices. Mental health practices encompass both clinical and nonclinical forms of addressing one's mental health. The measures used were adapted from the Healthcare for Communities Study and Eisenberg et al.'s (2011) research examining mental health service utilization among college students in the United States.

To assess current practices of **seeking nonclinical mental health support**, a series of questions were asked as follows: "In the past 12 months, have you received support (i.e., advice, care) for your mental or emotional health from (1) friends (2) family (3) spouse (4) religious leader (5) teacher or coach (6) other person, or (7) social media/technology?" Responses were summed, and a continuous variable of 0-8 was created, indicating the number of support sources participants used for nonclinical mental health support.

The Brief COPE survey was used to assess students' current coping strategies. The coping strategies were listed as a checklist, and participants indicated if they were currently using any of the methods (Carver, 1997). The survey lists 43 examples of how respondents would respond to a stressor and provides examples of coping strategies, for example, getting emotional support from others or avoiding thinking about the problem. Brief COPE items can be categorized as adaptive coping methods: acceptance, active, altruistic, emotional, informational, planning, positive reframing, and self-care. Responses were categorized into counts (0-8) of adaptive mechanisms used.

A one-item question also assessed lifetime prevalence of suicidal ideation, using an item from the Patient Health Questionnaire- 9, "Have you ever had thoughts that you would be better off dead or thoughts of hurting yourself in some way?" Answer options were either yes, no, or do not wish to answer.

Covariates

Perceived Stress. The Perceived Stress Scale (PSS-4), developed by Cohen et al. (1983), was used to assess stress among students. This is a 4-item self-report instrument designed to measure perceived stress using Likert scale responses (0=never 4=very often) to responses to questions such as "In the last month, how often have you felt that you were unable to control the important things in your life?" Cronbach's alpha of this scale in this sample was acceptable at 0.70. The final score is a sum (0-16).

Depression. The Patient Health Questionnaire-2 (PHQ-2) was used to capture depressive symptomatology (Ganguly et al., 2013). Participants answered two questions related to experiencing depressive symptoms on a scale from 0=never to 3=almost every day. Items were summed, and then depression severity was then scored with a score of 3 as the optimal cut point,

indicating that major depressive disorder was likely. Therefore, in this study, depressive symptomology was dichotomized into high (3 or more points) and low scores (0-2 points).

   Demographic Characteristics. Gender was dichotomized as one identifying as (1) male, (2) female and gender minority. Age was measured as a continuous variable. Family socioeconomic status was measured by asking, "While growing up, how often did your family have enough money to make ends meet?" with responses dichotomized as low SES (0=never, rarely, or sometimes) and high SES (1= most of the time or always). Sexual orientation was categorized as (1) straight/heterosexual (2) sexual orientation minority, which included identifying as gay or lesbian, bisexual, asexual, uncertain, or questioning or prefer to self-describe with the option to write their own answer. Relationship status was measured as a categorical variable: (1) single, (2) in a relationship or married, (3) other, which consisted of divorced, separated, or widowed, or prefer to self-describe. Degree type was measured by asking if students were pursuing a (1) Bachelors, (2) Masters, or (3) Doctorate degree. Time enrolled in university was measured by asking what year of study they were in (1-4+). One item, how religious do you consider yourself, measured self-perception of religiosity on a 0-10 scale with higher scores meaning greater religiosity.

Data Handling

   A validity question was integrated into the survey to ensure participants accurately read questions. All responses from participants who answered the validity question incorrectly were removed from data analysis. Complete case analysis was used for all results.

Statistical Analysis

Participants' demographic characteristics, including age, gender, sexual orientation, childhood socioeconomic background, relationship status, year of schooling, degree of study, and university being attended, were reported using descriptive statistics.

A priori alpha level was set at .05. R^2 was reported for the adjusted logistic regression model to explain the total variance. Analyses were conducted using the statistical package SPSS (SPSS 25, 2017). Pearson's correlations and collinearity diagnostics were used to assess possible multicollinearity between independent variables for each model; all value inflation factors (VIFs) were lower than 2, indicating no collinearity. Although VIFs did not indicated multicollinearity, two variables were highly correlated, perceived stress and depression, in this case, one was retained in the model. The model was then checked using the other variables, with no change in overall model results. Logistic regression was used to examine the bivariate relationship between independent variables with dependent variables, using clinical mental health services and positive views of clinical mental health; odds ratios and p-values with confidence intervals are reported. Based on the p-values of the unadjusted logistic regression, control variables and independent variables with p-values of .20 or less were included in the final regression model, as is suggested by Hosmer and Lemeshow (1989). Adjusted odds ratios were reported for the final model, along with model fit statistics. Reliability analysis was also included, using Cronbach's alpha to report on the reliability of scales used in the study. Two-tailed significance was reported for all analyses.

Results

Table 3.1 shows participant demographics for the total validated, a complete case sample size (n= 350). The overall mean age of the sample was 22.8 years (*SD* 2.17). 57.1% of this

sample identified as male, 41.7% as female, and 1.1% of the sample as a gender minority. Most of the sample identified as heterosexual or straight (94.2%), and 73.4% of the sample identified as their families having enough money to make ends meet all or most of the time while growing up. Much of the sample (76.3%) identified as single regarding relationship status. There was a near equal distribution of first, second, third, and fourth-year or higher student respondents; 83.4% of the sample were pursuing a bachelor's degree. The sample represented 27 universities across Bangladesh, with the majority (62.8%) from Jahangirnagar University. Students identified as moderately religious (M=6.33, SD=2.00). Nearly half the sample (49.4%) reported feeling like they struggled with their mental health in the past year, and overall, students were moderately stressed (M=8.46, SD=3.41). 43.7% of the sample had high depressive symptoms, and 28.3% of the sample had lifetime suicidal ideation. Students had moderate levels of wellness (M= 26.47, SD= 10.08).

The majority of the sample (70.8%) either felt they needed support for their mental health (49.4%) or had high depressive scores (43.7%) or stress scores (28.0%), or had past suicidal ideation (27.9%). Nearly a quarter of the sample had problems with their mental health, but did not perceive they needed help, for example, 76 of the participants (24% of the sample that responded to all pertinent items, n=315) reported they did not need support for their mental health, while at the same time reporting high depressive symptoms, stress, or past ideation. For this reason, the regression analysis is conducted on the full sample data, rather than a subsample of only those who reported needing mental health support.

Overall, as shown in Table 3.2, nearly half the population (49.4%) felt they needed help with their mental health. Respondents sought nonclinical support from an average of two sources. On average, participants engaged in five different types of adaptive coping: self-care

was used most commonly (80.1%), and two types of maladaptive coping, distraction used most

commonly (77.6%). Nearly all participants engaged in at least one mindful activity (96.5%). This

included identifying and prioritizing values, identifying and trying to change negative thoughts,

deep breathing, de-stressing meditation, staying in the moment, focusing on senses, and activities

to promote self-esteem, such as gratitude journaling.

Only 7.1% received clinical support from a therapist psychiatrist or used mental health

medication in the past year. The majority of participants (54.3%) felt positive towards using

clinical practices.

When examining the construct of **relatedness**, participants reported low levels of

perceived stigma (M=.68, *SD*= .65). On average, participants knew and spoke to approximately

two people regarding the importance of mental health and were moderately willing (*M*= 12.69,

SD = 3.99) to interact with someone who has a mental health problem.

When examining the construct of **autonomy**, only 10.9% of the sample perceived high

levels of instrumental and attitudinal barriers to seeking mental health care. Regarding

competency, respondents had moderate knowledge regarding mental health (M=16.00,

SD=4.22), indicating they know how to combat mental health problems and correctly identify

methods of seeking care and prognoses of mental health treatment.

Regression Results

Table 3.3 highlights the logistic regression results for factors predicting positive views

regarding clinical health services. In the unadjusted regression, constructs of relatedness and

competency were associated with greater positive views of clinical mental health services.

Knowing people who have struggled with mental health problems or talking to others about the

importance of mental health was associated with having positive views of clinical mental health

services. However, in the adjusted model, only competency remained statistically significant (aOR=1.10, p=.001). Having higher mental health knowledge, that is, knowing how to help someone with a mental health problem, and having accurate information regarding the efficacy of therapy, medication, and utilization of mental health services was a significant predictor of having positive views regarding clinical health care. The R^2 for the final adjusted model was .078 (p=.001).

In the second logistic regression model, predictors of whether participants self-identify as needing mental health support are shown in Table 3.4. In step 2 of the adjusted model, positive views of clinical mental health services are added as a predictor, but there were no changes in significant findings between step 1 and step 2. Relatedness predictors of perceived stigma and proximity to mental health are significant in all models. In both adjusted models, those who perceived more stigma surround mental health (aOR 1.70, p=.023) and knowing or talking to more people with or about mental health (aOR=1.31, p=.009) had increased odds of self-identifying as needing support for mental health. Females and gender minorities were 78% more likely than males to think they need support for their mental health p=.013). Those with higher scores on perceived stress had a greater likelihood of perceiving the need for mental health support (aOR=1.14, p=.001). The R^2 for the final adjusted model is .163 (p<.001).

The unadjusted and adjusted logistic regression analyses for the outcome of clinical mental health use are presented in Table 3.5. The predictors of positive views toward mental health services and perceived need for mental health support were added in a step-wise fashion. In step 1 of the model, those who are more proximal to mental health, for example, knowing more people who may deal with mental health problems, have a higher adjusted odds ratio of receiving clinical health care (aOR=1.47, p=.043). However, this finding did not remain

significant when the construct of positive views toward clinical mental health services is added as a covariate, and was found to be significantly associated (aOR=2.87, p=.033) to the outcome in step 2. Once the construct of perceived need is added to the model in step 3, we found that this was the largest driver of clinical service use, as those who perceive help were 400% more likely to receive clinical mental health care. For all steps of the model, higher religiosity levels indicated lower odds of receiving clinical health care (aOR= 0.80, p=.041). The R^2 for the final adjusted model was .181 (p<.001).

Discussion

The prevalence of mental health problems of this sample is similar to that of other studies in Bangladeshi university populations at a similar period. For example, depression levels found in this sample are high (44%) and comparable to other prevalence estimates found in Bangladeshi student populations (Koly et al., 2021; Islam et al., 2020; Khan et al., 2020). Wellness scores in this population are moderate, which is higher than what Alie and colleagues (2020) found in a sample of Bangladeshi adults. Though only 7.1% of our sample used clinical services, the vast majority (87.1%) sought nonclinical or informal help. Half the sample (50.8%) preferred getting help from their friends or family as opposed to seeking clinical help. This finding is similar to what Bilican (2013) found, reporting that college students in Turkey preferred to forego psychotherapy in lieu of seeking help from their social network. Over half the sample engaged in an average of 5 out of 8 adaptive coping strategies in reaction to stressors; this finding corroborates other literature, especially during COVID-19, wherein students struggle with their mental health and are willing to try a variety of different techniques to assuage their stress (Ahmed et al., 2021).

As described by Self-Determination theory, we hypothesized that autonomy, relatedness, and competency predict perceived need for mental health support, use of nonclinical practices and clinical services, and positive beliefs toward using clinical services; however, findings only partially confirmed these hypotheses. Relatedness factors are significantly associated with two of the three outcomes (perceived need for mental health support and use of clinical services), and competency was significantly associated with positive views towards using clinical mental health care. Thinking of this in a step-wise fashion, we see that higher competency, particularly mental health literacy, can increase positive views of clinical mental health, and higher relatedness can increase ones' perceived need of services. More positive views of services are not associated with perceived need of services, but does increase the likelihood of using services, though high perceived need is a stronger predictor of use. Though the results are not as fully hypothesized, we gain a valuable understanding of what theoretical factors are associated with recognizing the need for mental health support and insight into coping methods used in the Bangladeshi university student population.

The findings suggest that positive views of mental health care are driven by competency or knowing what to do when faced with a mental health problem. This is similar to findings from college populations in the United States, where mental health literacy was found to be a predictor of positive attitudes toward, and actual help-seeking behavior (Cheng et al., 2018). However, competency was not found to be associated with the recognition of ones' own mental health needs or utilizing care. For these outcomes, relatedness was indicative of perceived need and the use of mental health care. It is theorized that the relatedness concept of knowing other people with mental health problems allows people to have positive attitudes towards seeking mental health, as they are more familiar with the topic (Kearns et al., 2105), in a way showing that

relatedness factors can increase ones' competency with mental health. Previous works show that knowing someone with a mental health problem is associated with help-seeking (Vogel et al., 2007). There is evidence for this in India and Pakistan, where a community-based study found that participants with maternal depression-like receiving psychosocial advice from peers who are similar to them (Singla et al., 2014). Contrary to our expectations, we found that higher levels of stigma were associated with feeling like one needed mental health help. Perhaps this is because only people who have thought about receiving care have also considered the alleged effects of the treatment, and thus feel more stigmatized by the subject than someone who has not considered the issue. One study in Bangladesh found stigma as a significant barrier to help-seeking (Koly et al., 2021), but no studies have looked at this as a predictor of perceived need for care.

While not a main study aim, it was also expected that religiosity would be a protective factor for mental health, as found in other studies based in South Asian countries (Nadeem, Ali, and Buzdar, 2017). Devine, Hinks, and Naveed (2017), for example, found that having a strong religious identity in Bangladesh was associated with higher wellness. Similarly, in the current sample, higher religiosity was correlated with higher overall mental wellness (r=.24, p<.001) and lower perceived stress (r= -.13, p= .016); however, we found higher religiosity levels to be negatively associated with the use of mental health care. This may be because those who view themselves as more religious opt to use religiosity or spirituality as a coping mechanism rather than clinical care, as has been found in other studies (Nuri et al., 2018).

Examining this from a theoretical standpoint, these findings give reason to think that seeking mental health care does not stem from entirely intrinsic motivation but rather internalized motivation. Internalized motivation encompasses doing something because it is

useful and aligns with ones' values. Given the majority of the sample (70.8%) either felt they could use mental health support or was actually dealing with mental health problems (stress, depression, past suicidal ideation), it is important to look at the sample as a whole to examine what influences positive views, perceived need, and use of clinical services. We see that knowledge of mental health drives ones' positive views of mental health services, and that higher levels of stress and being close to people with mental health problems is associated with perceived necessity of mental health support, which is turn is the main driver of actually using clinical health services. Future studies should examine internalized motivation as it relates to seeking mental health care. The outcomes of this study were chosen due to how Self-Determination Theory places perceived usefulness (conceptualized as perceived need) and value (positive views of clinical services) driven motivations on a spectrum of motivation. Future directions should establish a time order in these concepts and examine pathways from these outcomes of positive feelings towards mental health services, perceived necessity, and finally, engagement in mental health care.

Limitations

This study does have limitations. The convenience sampling, cross-sectional survey, and self-report nature of the data collection only allow for associations between variables to be examined, do not allow for broad generalizability, do not allow time order to be established, and open the data up for social desirability bias. Given the title of the study, students knew the content was regarding mental health and may have drawn people who were more well-versed in the subject than the general student body, which may be why we find this sample has low levels of perceived stigma about mental health and high levels of mental health problems.

Practical Implications

Given the use of a culturally adaptive framework when developing the final questionnaire and the extensive process in engaging the community partners with the survey development and data collection phases, this study provides culturally competent evidence that emphasize how crucial it is for Bangladeshi students to identify their mental health care needs. This would necessitate an understanding of the warning signs of depression and stress and ways to manage it before it becomes problematic. Universities can promote educational campaigns across campus, educating students about the warning signs of deteriorating mental health (Mamun, Hbuiyan, and Griffiths, 2020); this is particularly important as researchers have found that depressed students know significantly less about depression management, and students have an overall low level of mental health literacy (Arafat, Mamun and Uddin, 2019). Given that students are open to using adaptive coping strategies already, providing students with the opportunities to engage in these strategies on campus would be beneficial. As relatedness was associated with acknowledgment of need and actual use of clinical services, knowing someone with or talking to someone about mental health problems is protective – and nearly half the sample reports having difficulty with mental health, speaking transparently about the topic could be greatly influential. Providing a safe space for people to talk about mental health openly and share experiences could allow other students to see that they may need help. In short, universities should help students to a) view mental health positively by increasing their knowledge on the topic, including its prevalence of mental health issues among young adults, b) provide safe spaces for students to have an open dialogues about mental health in order to help students recognize that they need to seek help as early as possible for better outcomes and finally c) provide resources for students to receive care should they seek it.

Figure 3.1: Conceptual Model Based on Self-Determination Theory
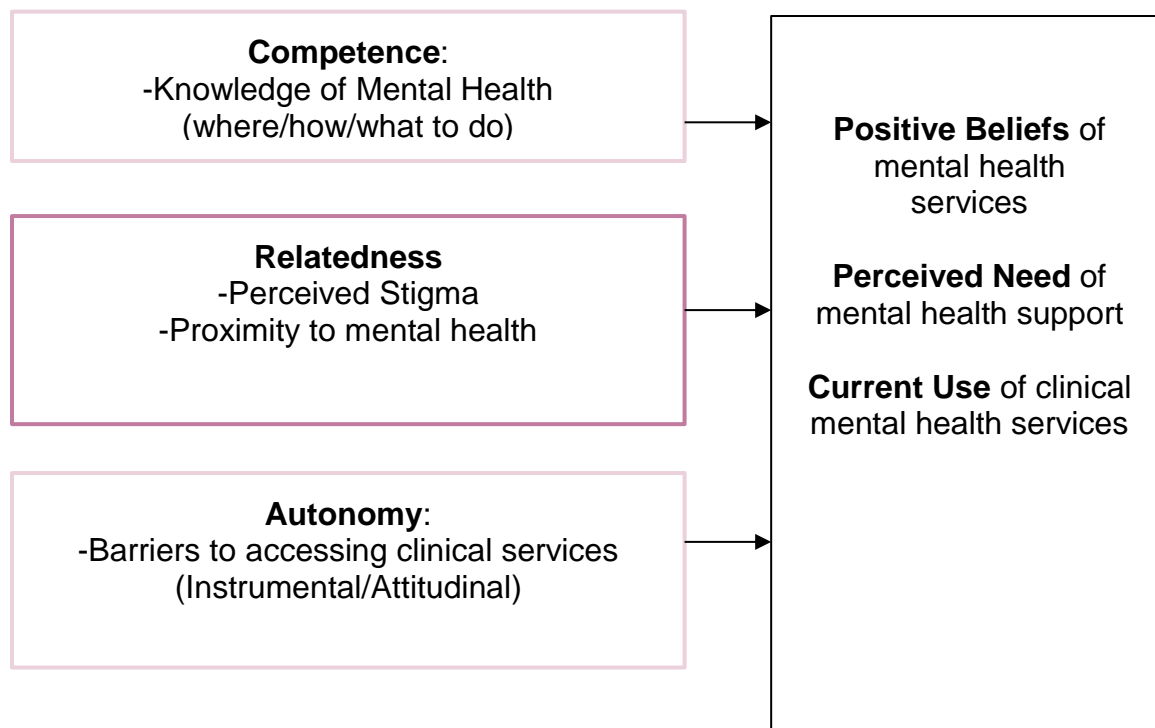
Table 3.1: Participant Demographics n=350

	%/ M (SD)
Age (18-41)	22.80 (2.17)
Gender	
Male	57.1%
Female and Gender Minority	42.9%
Sexual orientation	
Heterosexual/Straight	94.2%
Sexual Orientation Minority (LGBTQA+)	5.8%
Childhood SES [a]	
Low	26.6%
High	73.4%
Relationship Status	
Single	76.3%
Partnered (Relationship, Married)	22.9%
Other	0.9%
Year/Semester in School	
1st-3rd/First year	20.4%
4th-6th/Second year	18.7%
7th-9th/Third year	19.8%
10th-12th/Fourth year	20.4%
12th+/Fourth year+	20.7%
Degree of Study	
Bachelors (BS, BA)	83.4%
Masters (MPH, MBA)	16.6%
University	
Jahangirnagar University	62.8%
Bangladesh U of Business and Technology	6.1%
East-West University	4.4%
University of Dhaka	4.1%
University of Chittagong	3.2%
Other (N <10 per school)	19.5%
Religiosity (1-10)	6.33 (2.00)
Perceived Stress (0-16)	8.46 (3.41)
High Depressive Symptoms (>3)	43.7%
Suicidal Ideation (Lifetime)[b]	28.3%
Wellness (0-50)	26.47 (10.08)
COVID-19 Impact on Mental health	
Made it worse	41.0%
Stayed same	44.5%
Made it better	14.6%

Note. M = mean, SD = standard deviation. [a] Item asked, how often did your family have enough money to make ends meet growing up, low= never, rarely, sometimes high= most of the time, always; [b] 315 respondents answered this item

Table 3.2: Use of Mental Health Practices and Services. n=350

	%/ M (SD)
Perceived need for mental health support	49.4%
Non-Clinical Mental Health	
Number of sources received nonclinical support from (0-7)[a]	2.38 (1.62)
Adaptive coping types (0-8)	4.78 (2.28)
Maladaptive coping types (0-5)	1.89 (1.12)
Participation in mindfulness activities	96.9%
Identifying and prioritizing values	79.7%
Identifying and trying to change negative thoughts	85.4%
Deep breathing, de-stressing, meditation, staying in the moment, focusing on senses	57.4%
Activities to promote self-esteem, such as gratitude journaling	37.4%
Clinical Mental Health	
Received clinical support from a therapist, psychiatrist, or mental health medication (past year)	7.1%
Feel positive about clinical mental health	54.3%
Stigma regarding using clinical mental health services (0-3)	0.67 (.63)
Proximity to mental health (know someone with a mental health problem, talk to people about mental health) (0-4)	1.78 (1.12)
Willingness to interact with someone with a mental health problem (1-20)	12.69 (3.99)
High instrumental and attitudinal barriers to care	10.9%
Mental health knowledge (0-28)	16.0 (4.22)

Note. M = mean, SD = standard deviation, higher score equal greater amounts

[a] Count of where sought nonclinical support from: friends, family, partner, faith leader, counselor, other person, or technology

Table 3.3: Logistic Regression Associating Self-Determination Constructs-Relatedness, Autonomy, and Competency with Positive vs. Negative or Neutral Views of Clinical Mental Health Services, N = 350

	Unadjusted Associations		Adjusted Model	
	OR (95% CI)	*p*	aOR (95% CI)	*p*
Relatedness				
Stigma regarding clinical mental health services (0-3)	0.75 (0.54, 1.04)	.087	0.87 (0.57, 1.33)	.506
Proximity to mental health (0-4)	1.24 (1.02, 1.50)	.030	1.14 (0.93, 1.39)	.221
Willingness to interact with someone with mental health problem (1-20)	0.98 (0.93, 1.04)	.514		
Autonomy				
Instrumental and attitudinal barriers to care (High vs. Low)	0.51 (0.26, 1.02)	.055	0.71 (0.30, 1.68)	.440
Competency				
Mental health knowledge (0-28)	1.11 (1.05, 1.17)	<.001	1.10 (1.04, 1.16)	.001
Control Variables				
Perceived stress (0-16)	0.98 (0.92, 1.04)	.519		
Depressive symptoms (Low/High)	0.75 (0.49, 1.15)	.191	0.84 (0.53, 1.32)	.448
Religiosity (0-10)	1.02 (0.92, 1.14)	.714		
Socioeconomic status growing up (Low to High) [a]	0.91 (0.57, 1.47)	.713		
Gender (Female and Gender minority vs. Male)	0.94 (0.61, 1.43)	.757		
Nagelkerke R squared	–		.078	
p	–		.001	

Note. N = sample size, aOR = adjusted odds ratio, 95% CI = 95% confidence interval, higher score equal greater amounts

[a] Item asked, how often did your family have enough money to make ends meet growing up, low= never, rarely, sometimes high= most of the time, always

Table 3.4: Logistic Regression Associating Self-Determination Constructs-Relatedness, Autonomy, and Competency with Perceived Need for Mental Health Help, N = 350

	Unadjusted Associations		Step 1		Step 2	
	OR (95% CI)	*p*	aOR (95% CI)	*p*	aOR (95% CI)	*p*
Relatedness						
Stigma regarding clinical mental health services (0-3)	1.94 (1.36, 2.76)	<.001	1.69 (1.07, 2.65)	.024	1.70 (1.08, 2.69)	.022
Proximity to mental health (0-4)	1.29 (1.06, 1.56)	.010	1.34 (1.09, 1.64)	.005	1.31 (1.07, 1.61)	.009
Willingness to interact with someone with mental health problem (1-20)	0.99 (0.94, 1.05)	.838				
Autonomy						
Instrumental and attitudinal barriers to care (High vs. Low)	1.88 (0.94, 3.76)	.076	1.03 (0.42, 2.49)	.953	1.07 (0.44, 2.61)	.878
Competency						
Mental health knowledge (0-28)	1.02 (0.97, 1.08)	.335				
Control Variables						
Perceived stress (0-16)	1.16 (1.09, 1.24)	<.001	1.13 (1.06, 1.22)	.001	1.14 (1.06, 1.22)	.001
Depressive symptoms (Low/High)	2.06 (1.34, 3.16)	.001				
Religiosity (0-10)	0.95 (0.85, 1.06)	.350				
Socioeconomic status growing up (Low to High) [a]	0.84 (0.52, 1.35)	.463				
Gender (Female and Gender minority vs. Male)	1.83 (1.19, 2.81)	.006	1.77 (1.12, 2.79)	.015	1.78 (1.13, 2.82)	.013
Positive vs. Negative or Neutral Views of Clinical Mental Health Services	1.32 (0.87, 2.02)	.192	-		1.41 (0.90, 2.23)	.138
Nagelkerke R squared			.153		.160	
p			<.001		<.001	

Note. N = sample size, aOR = adjusted odds ratio, 95% CI = 95% confidence interval, higher score equal greater amounts. [a] Item asked, how often did your family have enough money to make ends meet growing up, low= never, rarely, sometimes high= most of the time, always

Depression was not included in the adjusted model, to address collinearity with perceived stress (r=.45), there were no appreciable changes when depression replaced stress in the adjusted model, of the significant findings: stigma aOR= 1.83 (p=.008), proximity aOR=1.33 (p=.005), depression aOR=1.92 (p=.005), gender aOR=2.00 (p=.003).

Table 3.5: Logistic Regression Associating Self-Determination Constructs-Relatedness, Autonomy, and Competency with the Use of Clinical Services, N = 350

	Unadjusted Associations		Step 1		Step 2		Step 3	
	OR (95% CI)	*p*	aOR (95% CI)	*p*	aOR (95% CI)	*p*	aOR (95% CI)	*p*
Relatedness								
Stigma regarding clinical mental health services (0-3)	1.57 (0.87, 2.81)	.133	1.46 (0.69, 3.10)	.319	1.37 (0.37, 5.02)	.640	1.21 (0.33, 4.41)	.778
Proximity to mental health (0-4)	1.48 (1.02, 2.13)	.037	1.47 (1.01, 2.12)	.043	1.39 (0.96, 2.02)	.085	1.28 (0.86, 1.89)	.223
Willingness to interact with someone with mental health problem (1-20)	1.01 (0.91, 1.12)	.882						
Autonomy								
Instrumental and attitudinal barriers to care (High vs Low)	2.21 (0.78, 6.28)	.136	1.43 (0.37, 5.52)	.603	2.14 (0.57, 8.12)	.263	2.01 (0.53, 7.61)	.305
Competency								
Mental health knowledge (0-28)	1.06 (0.96, 1.17)	.267						
Control Variables								
Perceived stress (0-16)	1.02 (0.90, 1.14)	.801						
Depressive symptoms (Low/High)	1.21 (0.53, 2.72)	.654						
Religiosity (0-10)	0.80 (0.66, 0.97)	.024	0.79 (0.65, 0.97)	.025	.81 (0.66, 0.99)	.036	0.80 (0.65, 0.99)	.041
Socioeconomic status growing up (High vs. Low) [a]	1.16 (0.45, 2.99)	.763						
Gender (Female and Gender minority vs.	1.49 (0.66, 3.36)	.340						
Positive vs. Negative or Neutral Views of Clinical Mental Health Services	2.85 (1.11, 7.33)	.029	-		2.87 (1.09, 7.59)	.033	2.63 (0.98, 7.03)	.054
Perceived Need (Need vs No Need)	5.98 (2.01, 17.79)	.001	-		-		4.99 (1.64, 15.21)	.005
Nagelkerke R squared	–		.083		.112		.181	
p	–		.019		.006		<.001	

Note. N = sample size, aOR = adjusted odds ratio, 95% CI = 95% confidence interval, higher score equal greater amounts

[a] Item asked, how often did your family have enough money to make ends meet growing up, low= never, rarely, sometimes high= most of the time, always

Chapter 4: Motivators for using mHealth, and Exploring the Possibility of mHealth for Mental Health in Bangladesh University Students

Abstract

Mobile health (mHealth) is proven to be efficacious for the management and prevention of mental health problems. It is particularly helpful for the young-adult population, for those who appreciate the autonomy mHealth provides, and in low-income countries where the prevalence of mental health problems is high, but supply of professionals trained in mental health is low. This study used a cross sectional survey to examine the likeliness that university students in Bangladesh (n=311) would use different forms of digital health platforms for mental health promotion and assessed drivers of intention to use and actual use of mHealth generally and mHealth for mental health, through the lens of the Technology Acceptance Model. Results provide evidence that the university student population of Bangladesh is likely to use mHealth to promote their mental health. Social influence, ease of use, and perceived usefulness of mHealth were found to be significant drivers of the intention to use general mHealth, and intention to use mHealth was the greatest influence of actual use of mHealth. Social influence, perceived usefulness, and use of general mHealth are associated with higher intention to use mHealth for mental health. The use of general mHealth is associated with actual use of mHealth for mental health, as are greater non-stigma related barriers to utilize traditional clinical mental health services. Overall, we see that mHealth for mental health use is acceptable in this population and can be helpful for students who perceive barriers to receiving traditional care. We also gain insight on how to promote intention to use mHealth, which in turn promotes actual use of mHealth.

Introduction

Mobile health (mHealth) interventions have become widespread to fill the need for mental health services that are low in supply and high in demand. Mobile health (mHealth) can be defined as the use of mobile computing and communication technologies in health care and public health (Free et al., 2010). The most common uses of mHealth are apps for monitoring and treating chronic conditions, as well as prevention efforts (Marcolino et al., 2018). mHealth interventions have been found beneficial for smoking cessation, adherence to care, health behavior changes, disease management, increasing physical activity (Fanning, Mullen, and McAuley, 2012), and attendance rates of care (Gurol-Urganci, de Jongh, Vodopivec-Jamsek, Atun, and Car, 2013; Guy et al., 2012). Marcolino and colleagues (2018) examined 23 systematic reviews, encompassing over 10,000 articles published from 2009 to 2016, and concluded there is strong evidence to suggest that mHealth is effective in disease management, symptom improvement, and increasing quality of life of populations.

Mental health is another domain in which the use of apps has shown promising results. apps are defined as discrete and independent software that runs on a mobile device (Heffner, Vilardaga, Mercer, Kientz, and Bricker, 2015; Lui, Marcus, and Barry, 2017). Mobile apps have more benefits than text messaging, as they can be more deeply personalized (Gustafson et al., 2014), visually engage the user, track progress, and be self-paced (Bricker et al., 2014; Luxton, McCann, Bush, Mishkind, and Reger, 2011). These features make apps an invaluable platform for the dissemination of interventions. A recent systematic review evaluated 5,646 abstracts published between 2008 and 2013 and found eight papers describing five apps targeting depression, anxiety, and substance abuse that met their inclusion criteria (Donker et al., 2013).

The review only included evidence-based mental health apps that could be downloaded from app stores. Results showed significant reductions in depression, stress, and substance use (Donker et al., 2013). Other meta-analyses support that psychological intervention content delivered via a Web- or mobile app can be as efficacious as a face-to-face treatment for depression (Andersson, Cuijpers, Carlbring, Riper, and Hedman, 2014; Andrews, Cuijpers, Craske, McEvoy, and Titov, 2010; Cuijpers, Donker, van Straten, Li, and Andersson, 2010).

mHealth can increase the likelihood that health interventions can be delivered to otherwise hard-to-reach populations, particularly in low and middle-income settings (Marcolino et al., 2018). One systematic review assessed six interventions that were specific to low and middle-income countries and found that five out of six showed benefits to participants (Hall, Fottrell, Wilkinson, and Byass, 2014). Other advantages of mHealth are convenience, ease, cost-effectiveness, scalability, personalization, and "the ability to send time-sensitive messages with an 'always on' device" (Whittaker et al., 2016). Further, it can reach populations who would otherwise not engage with traditional health services (Hamine et al., 2015).

There are particular benefits for low-income country governments that need additional support for patient management (Aranda-Jan, Mohutsiwa-Dibe, and Loukanova, 2014) as mHealth is widely accessible in low-income countries, with 60% of low-income populations having access to a mobile phone (Bastawrous and Armstrong, 2013). Further, internet and smartphone use are rising globally, in high and low-income countries alike (Islam et al., 2020). Bangladesh is one such low-income country that has shown positive results in the use of mHealth for promoting healthcare in Bangladesh for various health-related issues. The Bangladesh government fosters digital development, and the United Nations recognized its efforts toward building a digital health infrastructure in 2011 (MHFW, 2012); as of the

beginning of 2020, over 99 million people used the internet in Bangladesh (BTRC, 2020), and the majority of them owned smartphones (Islam et al., 2021). While the focus of most interventions in Bangladesh has been on the use of SMS and landlines (Ahmed et al., 2020; Ahmed, Lucas, and Khan, 2014), a handful of studies have examined using apps on smartphones for health (Ahmed et al., 2014). In Bangladesh, apps have been used to link village doctors to formal doctors (Khan et al., 2015), diabetes management (Yasmin et al., 2020), nutrition services (Uddin et al., 2017), and maternal and child health (Alam, D'Este, Banwell, and Lounge, 2017). A systematic review examined all health-related apps in Bangladesh (n=234) and a total of nine categories of apps were mentioned in the report: general health informative apps, physician information apps, institutional apps, fitness apps, mother and child apps, disease-specific care apps, herbal apps, and food and nutrition apps (Islam, Karim, Inan, and Islam, 2020). As such, we see a large number of mobile phone apps being used for health promotion in Bangladesh, yet none are focused on mental health promotion.

Though apps show promise in Bangladesh for other health outcomes, there is a lack of literature examining the use of mHealth for mental health in this population or rates of mHealth use in general. This is particularly important given the high rates of mental health problems in the population and the current lack of infrastructure in Bangladesh to deal with these problems (Arafat, 2019). According to WHO, there is less than one (.07) psychiatrist available for every 100,000 people in Bangladesh (WHO and Ministry of Health and Family Welfare, 2007; Giasuddin et al., 2015). Though there is no national surveillance system that indicates a nationally representative prevalence rate of mental health disorders in Bangladesh, a systematic review estimates the prevalence of mental health disorders to be between 6.5% and 31% among

adults (Hossain et al., 2014). Another systematic review examining rates of suicide estimates the rate to be 39.6/100,000, which is triple the global rate (10.7/100,000) (Arafat, 2019).

The onset of depression typically occurs in adolescence to early adulthood (Kessler et al., 2007; McGorry, 2011). Early adulthood, in particular, is deemed the "most vulnerable time" for the onset of depressive symptoms in Bangladesh (Arafat, 2019). This timeframe, along with the multiple stressors (academic pressure, new social and physical environments) college students face, make the university student population particularly prone to depressive symptoms (Eisenberg, Hunt, Speer, and Zivin, 2011). Recent studies examined the mental health outcomes in Bangladesh university students and found high rates of depression, ranging from 47.5% (Sayeed et al., 2020) to 69.5% (Islam et al., 2020). Evidence supports that the earlier one can manage stress and depressive symptoms, the better overall health outcomes they will have (Bukh, Bock, Vinberg, and Kessing, 2013). Mental health apps are particularly well suited for young adults seeking help for their symptoms, as they report a high need for autonomy (Fuller-Tyszkiewicz et al., 2018; Wilson, Rickwood, Bushnell, Caputi, and Thomas, 2011). Young adults prefer using self-help materials if they are familiar with the medium that delivers them, such as smartphones (Martinez and Williams, 2010).

Though the rates of mental health problems may be high, there is low mental health literacy (Hossain et al., 2014) and high stigma surrounding the topic (Uddin et al., 2019). Hossain and colleagues (2014) found that there is low awareness of mental health disorders and that attitudes toward seeking help for mental health were negative. They found that even those who had a mental health disorder did not prioritize mental health care. This is not uncommon in low-income countries in Asia (Lauber and Rössler, 2007; Giasuddin, Levav, and Gal, 2015), where it is believed that mental health problems are caused by religious or cultural abnormality

(Ndetei, Khasakhala, Mutiso, and Mbwayo, 2011), which in turn is associated with low utilization of clinical services. Because mHealth has been used successfully in Bangladesh for chronic disease management (Islam, Karim, Inan, and Islam, 2020), it is possible that it can also be used to better mental health. At a minimum, the acceptability for mental health should be determined. Developing mental health messaging for in-app delivery for college students in Bangladesh has the potential to reduce, manage, and prevent depression symptomatology.

The Technology Acceptance Model is an information technology framework for understanding users' adoption and use of emerging technologies (Portz et al., 2019). The model proposes that a user's perception of the usefulness (i.e., perceived benefits) and perceived ease-of-use lead to the person's intent to use the technology, and that intention is directly related to actual use. TAM also posits that perceptions of usefulness and ease of use are influenced by external factors, such as social influences (Portz et al., 2019). This study uses this framework to assess where a Bangladeshi population falls on the scale of accepting mHealth for mental health and describing their current mHealth usage.

This paper aims to (1) describe the likeliness that students would use different forms of digital health platforms for mental health promotion (2) assess the relationship between the perceived ease of use, usefulness, and social influence on using mHealth with the intention to use and actual use of mHealth, and (3) assess the relationship between the perceived ease of use, usefulness, and social influence on using mHealth for mental health with the intention to use and actual use of mHealth for mental health.

Methods

Study Sample

Adult university students across Bangladesh were invited to take an anonymous online survey. Students were emailed a flyer invitation to participate in the study by faculty and offered a 1 in 4 chance to win 5 USD (422 Bangladeshi takas) for participating in the survey. In addition to faculty recruitment, flyers were posted on university social media pages. The total sample size included 311 complete responses.

Survey Creation

To develop the survey, 5 cognitive interviews were conducted with the target population, Bangladeshi university students. As part of the creation of the survey instruments, first, native Bangla speakers reviewed and translated the English survey items into Bangla. Items with complex translations, or items with cultural meanings that differed in Bangla, were noted and compiled into an interview guide for the cognitive interviews. The cognitive interviews asked participants to explain how they defined mental health and their interpretation of the survey items. Items that were culturally inappropriate or that students didn't understand were adapted to make it easier for them to understand. For example, the phrase, "feeling down" to denote feeling sad, or depressed in the question, "How often in the past two weeks did you feel down, depressed, or hopeless?" is not used in Bangladesh, and was removed from the question. Based on the cognitive interviews, the questionnaire was adapted, and pilot tested with 10 participants. Pilot test participants reported no difficulties with the items, and the survey was completed.

Measures

Dependent Variables

   Intention to use general mHealth (α =0.88) was assessed by creating a mean score of

three items, 1) I intend to use mobile health service in the future, 2) I will always try to use

digital health services in my daily life and 3) I plan to continue to use digital health services

frequently (Hoque and Sorwar, 2016). Intention to use mHealth for mental health (α =0.89) was

assessed similarly, using the mean of three items "I intend to use mobile mental health services

in the future," "I will always try to use digital mental healthcare in my daily life" and "I plan to

continue to use digital mental health services frequently." Items were scored from 1 (do not

agree) to 7 (totally agree), and then dichotomized into no or low (1-4.44) and moderate or high

(4.45-7) intention, the cutoff was 4.45, as in the scale four was considered "neither agree nor

disagree" and five was considered "slightly agree."

   Current Use. The use of mHealth for general health was assessed by asking if the

following statement was true or false, "I use digital health services to better my health (excluding

use for mental health) currently," an example was given in the question stem, "for example,

using an app to track steps, for weight loss, to increase physical activity." Similarly, mHealth for

mental health was a binary variable as to whether or not participants used mHealth or not, "I use

digital health for mental health currently (for example, following meditation videos)." These

questions have been used in previous literature assessing digital mental health use in LIC

populations (Ben-Zeeva et al., 2016).

Independent Variables

   Barriers toward using clinical mental health services. Barriers toward seeking mental

health services were measured using the Barriers to Access to Care Evaluation (BACE) scale

(Clement et al., 2012). The scale consists of both stigma-related and non-stigma-related items. Participants responded using a Likert-scale response 1=not at all (indicating this was not a barrier to care), 4=a lot (indicating a great barrier to care), to the following question, "Have any of these issues ever stopped, delayed or discouraged you from getting, or continuing with, professional care for a mental health problem?" The respondents answer to what degree a barrier is when given a list of scenarios, such as, "Thinking that professional care probably would not help" or "Concern about what people at work might think, say or do." Responses to items were averaged to create the final score (1-4). The non-stigma (attitudinal and instrumental) barriers subscale of BACE included 22 items and had adequate reliability with an $\alpha = 0.76$. The stigma subscale consisted of 12 items and had an $\alpha = 0.89$.

Variables in relation to general mHealth and mHealth specifically for mental health promotion were included. **Likeliness to use digital health forms** was assessed by asking how likely participants were to (1) Text a helpline/crisis center, (2) Text a professional (i.e., therapist, physician), (3) Use smartphone app for self-paced meditation/non-clinical practices, (4) Use a smartphone app to look up information and symptoms about mental health, (5) Use internet-based self-paced program for meditation/non-clinical practices, and (6) Use internet-based program to video/talk with a professional on a scale of 1 (extremely unlikely) to 5 (extremely likely).

Ease of use for mHealth was assessed by averaging scores of 6 items measured on a 7 point scale: (1= Do not agree, 7= Strongly Agree), example items including: "Learning how to use mobile health services is easy for me," "My interaction with mobile health service is clear and understandable," and "I find mobile health services easy to use" (Hoque and Sorwar, 2016). Cronbach's α for these items was 0.89.

Social influence of mHealth use was assessed by using a mean of the following three items on a 7 point scale: (1= Do not agree, 7= Strongly Agree), (1) People who are important to me think that I should use a mobile health service, (2) People who influence my behavior think that I should use a mobile health service, and (3) People whose opinions that I value prefer that I use mobile health service" (Hoque and Sorwar, 2016). Cronbach's α for these items was 0.94. Social influence on mHealth for mental health was assessed using the mean of three items, measured on a 1 (= Do not agree) to 7 (= Strongly Agree) an example as follows: "People who are important to me think that I should use mobile mental health services." Cronbach's α for these items was 0.95.

Perceived usefulness for general mHealth was assessed by taking the mean of two items: "I find mobile health services useful in my daily life" and "Using mobile health services helps me accomplish things more quickly" (Hoque and Sorwar, 2016). Both were measured on a scale of 1 (Do not agree) to 7 (Totally Agree). Perceived usefulness for mHealth for mental health was assessed by taking the mean of three items and dichotomizing the measure into a 0 (low perceived usefulness) to 1 (high perceived usefulness) scale. An example of a question is as follows "I find that mobile mental health services are or could be useful in my daily life. Cronbach's α for these items was 0.88.

Covariates

Mental and physical health. Wellness was measured using Yaklin and colleagues' (2020) 5-item HERO Wellness Scale. The scale assesses happiness, enthusiasm, resilience, and optimism and had high-reliability scores in the study sample (α=0.87). An example item, "On average, during the last seven days, how optimistic have you felt?" is scored on a 0 (= not at all) to 10 (=extremely) scale. Final scores were created by summing answers to all items and range

from 0-50, with higher scores indicating higher wellness. **Perceived stress** was measured using Cohen et al., 1983, 4-item Perceived Stress Scale and had an acceptable reliability score in the study sample ($\alpha=0.70$). Answers to questions such as, "In the last month, how often have you felt that you were unable to control the important things in your life?" were answered on a 0 (never) to 4 (very often) scale and are summed, with final scores ranging from 0-16, and higher scores indicating higher stress. **Depression** was assessed using the two-item ($r= .53$, $p <.001$) Patient Health Questionnaire (Ganguly et al., 2013). Questions such as "In the past two weeks, have often have you felt down, depressed, or hopeless" were answered from a 0 (never) to 3 (almost every day) scale. Scores are dichotomized into whether one was likely to have a major depressive disorder or not, based on a cutoff point of 3 from the scale items sum. Lifetime **suicidal ideation** was assessed as a binary variable (yes/no) as to whether one ever had thoughts that they would rather be dead. **Physical health** was assessed using one item: how would you rate your overall health (1=Poor, 5= Excellent).

Demographics

Socioeconomic status (SES) while growing up was assessed by asking, "how often did your family have enough money to make ends meet." Respondents answered on a 0 (=never) to 5 (= always) scale and answers were dichotomized to low vs. high SES. Gender was measured with three categories: male, female, and gender minority. Age was measured as a continuous variable. Relationship status was assessed categorically, participants selected if they were single, partnered (in a relationship or married), or other (self-described). Year/Semester in school was categorized as 1st-3rd/First year, 4th-6th/Second year, 7th-9th/Third year, 10th-12th/Fourth year, and 12th+/Fourth year+. The degree of study was dichotomized as either pursuing a (1)

Bachelor's or (2) Master's degree. Geographic location was assessed by asking if participants lived in a rural or urban setting.

Specific digital health indicators of interest were payment methods, where responses indicated if participants had monthly plans, pay as you go, or something else. Participants were also asked about their language preference for digital health and were asked if they preferred their native language of Bangla, English, or something else.

Analysis

Analyses were conducted using complete case analysis, with a final sample size of 311. Means, standard deviations, and frequencies were used to describe the data. Group differences between the primary outcome of interest, use of mHealth for mental health, and demographic variables were assessed using ANOVA and Chi-square tests. Logistic regression was utilized to examine the unadjusted relationships between individual predictors and outcomes of interest. If the unadjusted association was found to be associated at a p-value of .2 or less, the variable was included in a final, adjusted logistic regression model. Models were shown predicting intention to use and actual use of general mHealth and mHealth for mental health. The models predicting actual use included hierarchical regression, with the first step showing unadjusted associations, the second step showing the model without including intention for use, and the final step, step 3, including the intention to use. Model fit statistics were reported.

<div align="center">**Results**</div>

Descriptive statistics are used to describe sample demographics in Table 4.1. Differences between those who use the primary outcome of digital mental health, are examined within demographic variables. The sample was predominantly male (59.2%), identified as heterosexual (93.9%), not in a relationship (76.8%), and seeking a bachelor's degree (83.0%). Growing up,

participants were mostly from families with high socioeconomic status (71.7%) and urban areas (53.7%). The only significant difference among variables of interest between those who use digital mental health and those who do not was whether one used general mHealth and gender. Those who used general mHealth used mHealth for mental health at nearly twice the rate of those who did not (69.5% vs. 34.1%, p <.001), and men were less likely to use mHealth for mental health than women and gender minorities (of those who did not use mHealth for mental health 62.4% were male and 37.6% were female or gender minorities, p =.049).

Students had moderate levels of wellness (M=26.58, SD= 9.94), overall health (M=2.69, SD=.87), and perceived stress (M=8.46, SD=.87); 43.4% of the sample were likely to have depression, and 28.5% reported lifetime suicidal ideation. The majority of students used a monthly plan to pay for their phones (71.7%), owned their phone (99.0%), and used a smartphone (99.7%). In the sample, 43.4% reporting using mHealth for general health, and 26.4% used mHealth for mental health. Though half of the sample (49.8%) did not have a preference between their native language of Bangla and English, 31.5% preferred Bangla, and 18.6% preferred English.

Respondents reported their likeliness of using different forms of digital health for mental health promotion, as shown in Table 4.2. Overall, a large percentage (75.3% to 82.9%) of the sample reported a likeliness to use apps and internet-based programs. The majority of respondents said they would be likely to text a helpline/crisis center (58.8%), or a professional (i.e., therapist, physician) (75.3%), use an app on a smartphone for self-paced meditation/non-clinical practices (75.3%) or to look up information and symptoms about mental health (76.2%), or use internet-based self-paced program for meditation/non-clinical practices (80.2%) or to talk with a professional (82.9%).

A correlation matrix of independent variables used in all models can be found in Table 4.3. When examining the main constructs of the Technology Acceptance Model related to general mHealth, we see significant correlations between social influence and ease of use of general mHealth (r=.316, p<.001) and perceived usefulness (r=.241, p<.001). For the variables related to mHealth for mental health, there are significant correlations between the ease of use for mHealth construct, social influence (r=.256, p<.001), and perceived usefulness (r=.366, p<.001). There are also significant correlations between control variables of interest; wellness is negatively correlated with stress (r=-.560, p<.001) and depression (r=.338, p<.001). Geography and socioeconomic status (SES) are correlated (r=.190, p<.001) in that those who live in urban areas have higher SES. Perceived general health is positively correlated to wellness (r=.382, p<.001) and negatively correlated to stress (r=-.292, p<.001). Perceived stigma as a barrier to mental health care and instrumental and attitudinal barriers to care are highly correlated (r=.765, p<.001).

Regression Results

The outcomes of intention to use and actual use of mHealth in general and mHealth for mental health are examined using logistic regression. Table 4.4 shows results for the outcome of intention to use general mHealth. In the unadjusted results, all of the main constructs of the technology acceptance model: ease of use, social influence, and perceived usefulness of mHealth, are positively associated with intention to use mHealth, as is perceived wellness. In the adjusted model, these constructs remain statistically significantly associated. Those who perceived mHealth to be easy to use (aOR=1.85, p<.001), who had higher approval from their social networks to use mHealth (aOR=1.68, p <.001), and perceived higher usefulness of

mHealth (aOR=4.12, p=.001), have a higher adjusted odds of intending to use mHealth. The R^2 for this final adjusted model is .445 (p<.001).

However, the only TAM construct significantly associated in step 2 of the model is social influence, based on Table 4.5. Once the intention to use mHealth was added to the model in step 3, social influence is no longer significantly associated with the use of mHealth. In the unadjusted analyses shown in Table 4.5, the controls of better health, wellness, and higher socioeconomic status is associated with actual use; in the adjusted model, only socioeconomic status remains associated. In the final step of the model, we see that those with higher intentions to use mHealth use have higher adjusted odds of actual use (aOR=2.10, p=.013). The R^2 for this final adjusted model is .108 (p<.001).

In Table 4.6, for the analysis looking at predictors of intention to use mHealth for mental health, we find that social influence, perceived usefulness, and use of general mHealth are positively associated with the intention to use mHealth for mental health in the unadjusted model. In the adjusted model, these constructs remain significantly associated. Higher social influence (aOR=1.73, p <.001), perceived usefulness (aOR=8.70, p <.001), and use of general mHealth (aOR=2.16, p=.013) is associated with adjusted higher odds of intention to use mHealth for mental health. The R^2 for this final adjusted model is .492 (p<.001).

In Table 4.7, we see that social influence, intention to use, the use of general mHealth, instrumental and attitudinal barriers, and gender are positively associated with using mHealth for mental health. There are no significant changes when comparing step 2 of the model (without intention to use) and step 3. In the final adjusted model, we see that those who use mHealth for their general health have higher odds (aOR=4.19, p<.001) of using mHealth for mental health. Those who perceive higher instrumental and attitudinal barriers to receiving clinical mental

health care have higher adjusted odds of using mHealth for mental health (aOR= 2.05, p=.023), and females have almost twice higher adjusted odds of use when compared to males (aOR=1.88, p=.030). This model statistics show that the model is statistically significant (p< .001) with an R^2 of .204.

Discussion

This study explores the acceptability of using digital health to promote mental health among university students in Bangladesh. While the sample's mental health is comparable to other Bangladeshi university student samples (Koly et al., 2021; Sayeed et al., 2020), with 43.4% of the sample experiencing symptoms of depression, we cannot compare the percentage of students who use smartphones with other studies, as other studies include smartphone use as an eligibility criterion in research pertaining to the digital field (Rashid and Hussain, 2019; Hossain and Ahmed, 2016). In this sample, nearly all students owned a personal smartphone (99.7%). We found a similar percentage of students (43.4%) who self-reported use of mHealth, defined as answering "I use digital health services to better my health (excluding use for mental health) currently" in the affirmative, as Waldman et al. (2018) found 45% of their Bangladesh student sample reported looking up health-related information on the internet. To our knowledge, no other studies have examined mHealth for mental health promotion in Bangladesh; however, our findings show that the majority of students would be likely to use mHealth for mental health.

Our findings also support past research that those who are more cognizant of their health, in this case, those who already use mHealth for general health, are more likely also to be cognizant about their psychological health (Kruk et al., 2019). Specifically, we found that people who use mHealth in general are 4 times more likely to use mHealth for mental health.

Overall, the findings partially confirm the hypotheses that the constructs of the Technology Acceptance Model (perceived ease of use, usefulness, and social influence) are essential precursors of intention to use and actual use of mHealth in general and mHealth for mental health. We found TAM constructs were particularly useful in predicting the intention to use mHealth both generally and for mental health, as can be seen by the model fit statistics, which included control variables (Nagelkerke R^2= .445-.492).

Interestingly, TAM constructs were predictive of intention to use both general mHealth and mHealth for mental health, but not for actual use of either (in adjusted models); this may be because university students in Bangladesh are unaware of or do not have the types of mHealth that they would prefer to use. This aligns somewhat with TAM, as the model posits that intention mediates the connection from these constructs to actual use. Therefore, theoretically, ease of use, social influence, and perceived usefulness should be stronger predictors of intentions. We also found intention to be a strong predictor of actual use in the unadjusted analysis. These findings suggest that it is necessary for people to think that a product (in this case, mHealth) is approved by their social network, easy to use, and valuable for them in order for them to form an intent to use the product and that intention is an important precursor to action. The current research finds that Bangladeshi students would like to use mHealth for mental health. However, future research should examine whether mHealth products that promote mental health exist for them to use.

The results suggest that increasing the use of mHealth, in general, would promote mHealth for mental health use as well. One way to do this, according to our results, is to increase the visibility of mHealth products among peer groups, as social influence is predictive for general and mental health specific mHealth use (and intention towards use). Utilizing user-center design to ensure the product is easy to use and meets the users' needs is also imperative, as ease

of use and perceived usefulness of an App are associated with intention to use and actual use of

general mHealth generally and the intention to use mHealth for mental health. From an

implementation science perspective, this information is critical when developing health

communication strategies around health promotion (Cabassa and Baumann, 2013). University

administration can use these findings to encourage transparency regarding health promotion

directly, which may indirectly impact mHealth for mental health use.

The results show that university students are open to mHealth for mental health use in

Bangladesh and that mHealth may be particularly useful for those who may not otherwise seek

clinical care as those with higher instrumental and attitudinal barriers are twice as likely to use

mHealth for mental health. A mental health promotion program on a digital platform would

benefit this subgroup of people who may not seek clinical care due to barriers such as difficulty

scheduling an appointment with a mental health care professional on their own. This information

can be key in marketing, as the app can be framed so that it can be used autonomously. To our

knowledge, no current app exists that is developed with empirical evidence for a Bangladeshi

student population; as such next steps would entail developing and pilot testing such an app.

Limitations

Limitations of this study stem from the cross-sectional design and convenience sample.

Due to the study's design, results are not able to determine causality, nor are they generalizable

to the Bangladesh university student populations at large. Since the study's topic was mental

health promotion, it is possible that respondents were inclined toward this approach, and those

who were not interested in mental health promotion did not participate. We cannot conclude that

a digital mental health promotion program would be of interest to all university students in

Bangladesh; however, we can say that this type of program shows promise for students who may not be inclined to receive clinical mental health care.

Conclusion and Future Directions

The study is the first of its kind to examine the acceptability of mHealth for mental health in Bangladesh. Results show promising results that students are quite open to using mHealth as a tool to better their mental health and highlights the influence that social networks might have in this decision-making. As these results provide evidence of the acceptability of using mHealth for mental health, future research should pilot test messaging for a self-paced mental health app, like a meditation app or online intervention in Bangla. Universities should promote these mental wellness programs for their students.

Table 4.1: Participant demographics (*n=311*)

	%/ M (SD)			
	Overall	Do not use digital health for MH	Use digital health for MH	χ^2/ ANOVA *p*-value
Age (18-41)	22.7 (1.86)	22.8 (1.74)	22.6 (2.18)	.588
Gender				.049
Male	59.2%	62.4%	50.0%	
Female and Gender Minority	40.8%	37.6%	50.0%	
Sexual Orientation				.693
Heterosexual/Straight	93.9%	93.5%	94.8%	
Sexual minority (LGBTQA+)	6.1%	6.5%	5.2%	
Childhood SES [a]				.731
Low	28.3%	28.8%	26.8%	
High	71.7%	71.2%	73.2%	
Relationship Status[b]				.651[b]
Single	76.8%	78.2%	73.2%	
Partnered (Relationship, Married)	22.2%	21.0%	25.6%	
Other (Self-describe)	1.0%	0.9%	1.2%	
Year/Semester in School				.093
1st-3rd/First year	20.6%	22.4%	15.9%	
4th-6th/Second year	19.4%	16.7%	26.8%	
7th-9th/Third year	20.0%	18.9%	23.3%	
10th-12th/Fourth year	19.4%	18.9%	23.2%	
12th+/Fourth year+	20.6%	23.3%	13.4%	
Degree of Study				.174
Bachelors (BS, BA)	83.0%	81.2%	87.8%	
Masters (MPH, MBA)	17.0%	18.8%	12.2%	
Geographic Location				.298
Rural	46.3%	44.5%	51.2%	
Urban	53.7%	55.5%	48.8%	
Wellness (0-50)	26.58 (9.94)	26.2 (9.73)	27.5 (10.48)	.316

Perceived Stress (0-16)	8.46 (3.42)	8.42 (3.48)	8.53 (3.24)	.805
High Depressive Symptoms (>3)	43.4%	45.4%	37.8%	.233
Suicidal Ideation (Lifetime)	28.0%	28.4%	26.7%	.771
Rating of overall health (1=Poor, 5= Excellent)	2.69 (.87)	2.69 (.89)	2.68 (.86)	.920
Mobile Phone Plan				.978
Monthly Plan	71.7%	71.6%	72.0%	
Pay as you go	16.7%	16.6%	17.1%	
Other	11.6%	11.8%	11.0%	
Phone Ownership				.783
Personal phone	99.0%	99.1%	98.8%	
Shared phone	1.0%	0.9%	1.2%	
Type of Phone				.549
Smartphone with internet capability	99.7%	99.6%	100.0%	
Phone without internet capability	0.3%	0.4%	0.0%	
General mHealth Use	43.4%	34.1%	69.5%	<.001
mHealth for mental health Use	26.4%		-	
Language Preference for digital health				
Bangla	31.5%			
English	18.6%			
Bangla or English	49.8%			

Note. *M* = mean, *SD* = standard deviation, [a] Item asked, how often did your family have enough money to make ends meet growing up, low= never, rarely, sometimes high= most of the time, always; [b] this Chi-square is not valid as N < 5 for some cells

Figure 4.1: Likeliness of using digital health forms for mental health promotion. n= 311

LIKELINESS TO USE MHEALTH FOR MENTAL HEALTH

■ Extremely Unlikely   ■ Somewhat Unlikely   ■ Somewhat Likely   ■ Extremely Likely

	Extremely Unlikely	Somewhat Unlikely	Somewhat Likely	Extremely Likely
TEXT A HELP LINE/ CRISIS CENTER	6.7	7.8	45.5	13.3
TEXT A PROFESSIONAL (THERAPIST, PHYSICIAN)	6.3	4.3	49.4	25.9
SMARTPHONE APP FOR SELF PACED MINDFULNESS/ NON-CLINICAL PRACTICES	4.2	6.2	52.0	23.3
SMARTPHONE APP TO LOOK UP HEALTH INFO	4.2	5.3	49.3	26.9
USE INTERNET BASED SELF PACED PROGRAM FOR MINDFULNESS/NON-CLINICAL PRACTICES	4.2	5.9	55.6	24.6
USE INTERNET BASED PROGRAM TO VIDEO/TALK WITH A PROFESSIONAL	3.6	2	54.7	28.2

Note: Neither likely nor unlikely is not shown in the diagram.

Table 4.2: Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.Social Influence of General mHealth[a]	-	.316**	.241**	.803**	.295**	-.049	.102	-.063	-.189**	.048	-.104	-.059	.026	.012
2.Ease of Use of General mHealth[a]		-	.371**	.256**	.366**	.102	.138*	-.108	-.052	.159**	.109	-.126*	-.214**	-.217**
3.Perceived Usefulness of General mHealth (high=1, low=0)			-	.194**	.442**	.019	.084	-.064	-.090	.023	-.037	.005	-.144*	-.106
4.Social Influence of mHealth for Mental Health[a]				-	.327**	-.028	.066	-.042	-.209**	.007	-.061	-.095	.088	.052
5.Perceived Usefulness of mHealth for Mental Health (high=1, low=0)					-	.096	.043	-.012	-.104	-.049	.018	.048	-.016	.013
6.General Health Rating [b]						-	.382**	-.292**	-.170**	.056	.145*	-.217**	-.195**	-.180**
7.Wellness [c]							-	-.560**	-.190**	-.017	.080	-.338**	-.253**	-.247**
8.Perceived Stress [d]								-	.173**	.013	.000	.448**	.261**	.240**
9.Gender (female=1, male=0)									-	.142*	.101	-.028	.031	.057
10.Geography (urban=1, rural=0)										-	.190**	-.097	-.124*	-.091
11.SES (high=1, low=0)											-	-.055	-.165**	-.197**
12. Depression (high=1, low=0)												-	.247**	.257**
13.Stigma Related Barriers to Care [e]													-	.765**
14.Attitudinal and Instrumental Barriers to Care [e]														-
M (SD)	4.15 (1.84)	5.35 (1.16)	5.37 (1.20)	4.10 (1.82)	5.15 (1.18)	2.69 (0.88)	26.58 (9.94)	8.46 (3.42)	0.41 (0.49)	1.54 (0.50)	0.72 (0.45)	0.43 (0.50)	0.70 (0.64)	0.87 (0.46)

Note: [a] range is 1-7, [b] range is Poor to Excellent, [c] range is 0-50, [d] range is 0-16, [e] range is 1-4; higher score equal greater amounts for all variables

Table 4.3: Logistic Regression Associating Technology Acceptance Model Constructs with Intention (high vs. low) to Use mHealth, N = 311

	Unadjusted Associations		Adjusted Model	
	OR (95% CI)	*p*	aOR (95% CI)	*p*
Ease of Use of mHealth (1-7)[a]	2.29 (1.79, 2.93)	<.001	1.85 (1.35, 2.53)	<.001
Social Influence of mHealth (1-7)[a]	1.79 (1.54, 2.09)	<.001	1.68 (1.40, 2.01)	<.001
Perceived usefulness of mHealth (High vs Low)	9.76 (4.70, 20.35)	<.001	4.12 (1.79, 9.51)	.001
Controls				
Rating of General Health (Poor to Excellent)[a]	1.23 (0.94, 1.61)	.135	1.38 (0.95, 2.02)	.093
Wellness (0-50)[a]	1.02 (1.00, 1.05)	.042	1.00 (0.97, 1.04)	.848
Perceived Stress (0-16)[a]	0.97 (0.91, 1.04)	.449		
Socioeconomic Status Growing Up (High vs Low)	0.67 (0.39, 1.13)	.131	0.56 (0.27, 1.16)	.119
Urban vs. Rural	1.27 (0.80, 2.01)	.313		
Gender (Male vs. Female)	0.77 (0.48, 1.23)	.270		
Nagelkerke R squared	–		.445	
p	–		<.001	

Note. [a]higher score equal greater amounts, OR=odds ratio, aOR = adjusted odds ratio, 95% CI = 95% confidence interval

Table 4.4: Logistic Regression Associating Technology Acceptance Model Constructs with Use of mHealth, N = 311

	Step 1		Step 2		Step 3	
	OR (95% CI)	*p*	aOR (95% CI)	*p*		
Ease of Use of mHealth (1-7)	1.21 (0.99, 1.47)	.064	1.07 (.86, 1.33)	.562	0.97 (0.77, 1.23)	.810
Social Influence of mHealth (1-7)	1.14 (1.01, 1.30)	.032	1.15 (1.01, 1.32)	.041	1.08 (0.93, 1.25)	.319
Perceived Usefulness of mHealth (High vs Low)	1.39 (.74, 2.61)	.300				
Intention to Use mHealth	2.29 (1.41, 3.72)	.001	-		2.10 (1.17, 3.78)	.013
Controls						
Rating of General Health (Poor to Excellent)	1.49 (1.14, 1.94)	.004	1.37 (1.03, 1.85)	.034	1.34 (0.99, 1.80)	.054
Wellness (0-50)	1.03 (1.01, 1.05)	.014	1.02 (0.99, 1.05)	.322	1.01 (0.98, 1.05)	.358
Perceived Stress (0-16)	0.95 (0.89, 1.02)	.145	1.00 (0.92, 1.09)	.939	1.00 (0.92, 1.08)	.933
Socioeconomic Status Growing Up (High vs Low)	1.72 (1.03, 2.87)	.038	1.64 (0.96, 2.82)	.070	1.81 (1.04, 3.12)	.035
Urban vs. Rural	1.27 (0.81, 1.99)	.301				
Gender (Male vs. Female)	1.17 (0.74, 1.84)	.504				
Nagelkerke R squared			.083		.108	
p	–		.003		<.001	

Note. [a]higher score equal greater amounts, OR=odds ratio, aOR = adjusted odds ratio, 95% CI = 95% confidence interval

Table 4.5: Logistic Regression Associating Technology Acceptance Model Constructs with Intention to Use mHealth for Mental Health, n=311

	Unadjusted Associations		Adjusted Model	
	OR (95% CI)	*p*	aOR (95% CI)	*p*
Ease of Use of mHealth	1.79 (1.44, 2.23)	<.001	1.39 (.99, 1.73)	.058
Social Influence of mHealth for Mental Health	1.89 (1.61, 2.21)	<.001	1.71 (1.43, 2.04)	<.001
Perceived Usefulness of mHealth for Mental Health (High vs. Low)	15.24 (7.69, 30.20)	<.001	8.92 (4.18, 19.04)	<.001
Use of General mHealth	2.33 (1.45, 3.76)	.001	2.16 (1.18, 3.97)	.013
Barriers to Seeking Traditional Clinical MH Services				
Stigma Related Barriers	0.98 (0.69, 1.40)	.910		
Instrumental/Attitudinal Barriers	1.00 (0.61, 1.65)	.990		
Controls				
Rating of Mental Health (Need Help vs Not)	0.99 (0.63, 1.56)	.964		
Wellness (0-50)	1.02 (0.99, 1.04)	.189		
Perceived Stress (0-16)	0.98 (0.91, 1.04)	.469		
Socioeconomic Status Growing Up	0.74 (0.44, 1.23)	.245		
Urban vs. Rural	0.97 (0.62, 1.54)	.909		
Gender (Reference: Male)	0.67 (0.42, 1.06)	.090	1.12 (0.60, 2.08)	.726
Nagelkerke R squared	–		.492	
p	–		<.001	

Note. [a]higher score equal greater amounts, OR=odds ratio, aOR = adjusted odds ratio, 95% CI = 95% confidence interval

Table 4.6: Logistic Regression Associating Technology Acceptance Model Constructs with Use of mHealth for Mental Health, N =311

	Step 1		Step 2		Step 3	
	OR (95% CI)	p	aOR (95% CI)	p	aOR (95% CI)	p
Ease of Use of mHealth	1.20 (0.95, 1.51)	.123	1.12 (0.86, 1.48)	.401	1.11 (.84, 1.47)	.451
Social Influence of mHealth for Mental Health	1.18 (1.02, 1.37)	.024	1.14 (.96, 1.36)	.124	1.11 (.92, 1.34)	.259
Perceived Usefulness of mHealth for Mental Health (High vs. Low)	1.93 (1.00, 3.73)	.052	1.40 (.65, 3.04)	.395	1.26 (.55, 2.89)	.589
Intention to Use mHealth for Mental Health	2.29 (1.31, 4.01)	.004	-		1.31(.62, 2.77)	.487
Use of General mHealth	4.41 (2.56, 7.60)	<.001	4.33 (2.47, 7.61)	<.001	4.19 (2.37, 7.41)	<.001
Barriers to Seeking Traditional Clinical Mental Health						
Stigma Related Barriers	1.23 (0.84, 1.81)	.286				
Instrumental/Attitudinal Barriers	1.72 (1.00, 2.97)	.050	2.06 (1.11, 3.82)	.022	2.05 (1.10, 3.80)	.023
Controls						
Rating of Mental Health (Need Help vs Not)	1.32 (0.79, 2.18)	.288				
Wellness (0-50)	1.01 (0.99, 1.04)	.315				
Perceived Stress (0-16)	1.01 (0.94, 1.09)	.805				
Socioeconomic Status Growing	1.10 (0.63, 1.94)	.731				
Urban vs. Rural	0.76 (0.46, 1.27)	.299				
Gender (Female vs. Male)	1.66 (1.00, 2.77)	.050	1.91 (1.08, 3.36)	.026	1.88 (1.07, 3.23)	.030
Nagelkerke R squared	–		.202		.204	
p	–		<.001		<.001	

Note. N = sample size, aOR = adjusted odds ratio, 95% CI = 95% confidence interval, higher score equal greater amounts

Chapter 5

Manuscript 3: Acceptability of Mindfulness App Content for Promoting Mental Health in a Sample of University Students in Bangladesh

Abstract

Mental health problems are growing rapidly and have been exacerbated during the COVID-19 pandemic, particularly in low-income countries, such as Bangladesh. Not only are mental health problems proliferating, but access to mental health care is more difficult due to new barriers imposed by the pandemic. University students are uniquely impacted by mental health concerns, given their stressors. Mindfulness techniques are an evidence-based method to promote mental health across populations, yet its acceptability has not been examined among Bangladeshi university students. Further, these techniques can be used on a digital health platform, such as an app, to decrease barriers to use, as the university student population widely uses smartphones. This paper used qualitative methods to examine the acceptability of mindfulness exercises on an app for the university student population in Bangladesh. In-depth interviews (n=12) were conducted to elicit student reactions to linguistically (Bangla) and culturally adapted mindfulness exercises. The thematic analysis generated two themes (1) feasibility of mindfulness via app, (2) responses to mindful exercises. The results showed favorable attitudes towards the mindfulness content, as students expressed both positive psychological and physiological reactions. Students welcomed the concept of using these exercises on an app and felt it overcomes barriers from their previous experiences regarding help-seeking. This evidence suggests the value of developing and testing an app with mindfulness exercises for mental health promotion in university students in Bangladesh.

Introduction

As the global mental health burden rises, particularly in the aftermath of COVID-19, mHealth can fill in the gaps where services may otherwise not be available. The global burden of disease attributable to mental disorders has risen in all countries in the context of major demographic, environmental, and sociopolitical transitions (Patel et al., 2018). The mental health of people has been severely impacted by COVID, particularly in low-income countries, where the additional stress exacerbates what mental health infrastructure exists (Kola, 2020). There is evidence of increased mental health distress symptoms and burgeoning uncertainty caused by the pandemic (Kola, et al., 2021). In Bangladesh, a population-based study surveying over 10,000 people found a high prevalence of depression and suicide, 33% and 5%, respectively (Mamun, Sakib, Gonzal, et al., 2020). There has also been an increase in the suicide rate in neighboring India, which is thought to be linked directly to COVID-19 (Nola, Kohrt, Hanlon, et al., 2021). The need for prevention efforts to curb the incidence of clinical mental health problems is essential.

These statistics are particularly troubling as people with a mental health condition have higher rates of disability and mortality when compared to people without mental health conditions (Pathare, Brazinova, and Levav, 2018). For example, people with major depressive disorders, schizophrenia (and other psychotic disorders), and bipolar disorder have a life expectancy of 10-20 years shorter than the general population (Liu et al., 2017). The population impacted by suicide the most in Bangladesh is young adults (Arafat, 2019). Globally, young adulthood is accepted to be the time that mental health problems, such as depression, arise (McGorry, 2011). People in college are particularly vulnerable, as they fall into this young adult age group and are also in a period of adjustment facing stressors related to university life, such as academic pressures, and living away from their families, and being in a new environment

(Eisenberg, Hunt, Speer, and Zivin, 2011). As reported by recent studies, Bangladesh university students suffer from high rates of depression, ranging from 47.5% (Sayeed et al., 2020) to 69.5% (Islam et al., 2020).

The concern for mental health in low and middle-income countries is great, as mental health care services are scarce. Low-income countries often only have one psychiatrist to treat one to four million people (Chisholm et al., 2007; Lund, 2010; Patel et al., 2018). In Bangladesh, only 4% of all medical doctors have training in mental health, and there is one psychiatrist available for .07 of 200,000 of the Bangladeshi population, which ranks Bangladesh among the lowest rates of psychiatrists in the world (WHO, 2007; Giasuddin et al., 2015). Further, general physicians rarely refer their patients to mental health specialists (WHO, 2007).

The Bangladeshi population may also face stigma surrounding accessing mental health services, as there is evidence that this exists in Asia at large. In Asia, there is documented widespread stigma surrounding mental health; however, few studies have examined the Bangladeshi views on mental health. In a systematic review on this topic, it was found that a majority of the community does not recognize mental illness, that attitudes regarding treatment are negative, and that even those with mental illness do not see treatment as a priority (Hossain et al., 2014). Evidence from studies in the US suggests that Muslims may underutilize professional mental health services due to stigma (Din et al., 2017; Ciftci, Jones, and Corrigan, 2013). There are also documented cases of Muslims from LIC, such as Pakistan, preferring to go to religious "healers" to treat mental health conditions, believing their symptoms stem from problematic faith (Farooqi, 2006; Irfan et al., 2017). As Bangladesh is a Muslim majority country, increasing methods that are less prone to stigma is essential, and interventions may be well suited for this population.

Behavioral strategies and mindfulness techniques are often a part of preventive interventions aimed at promoting mental health (Regehr, Glancy, and Pitts, 2013). The practice of mindfulness is widely used for mental health promotion and for training the regulation of attention (Barnes et al., 2017). The popularity of mindfulness training can be partly explained by its perceived status as a skill rather than a mental health intervention (Galante et al., 2018). According to a systematic review that examined outcomes of emotional distress, social skills, self-perception, and academic achievement, mindfulness training shows superior results to cognitive behavioral therapy (CBT), relaxation training, and meditation (Conley et al., 2013). A meta-analysis explored the impact mindfulness interventions had on university students (Regeher et al., 2013). They found that anxiety symptoms were significantly reduced by mindfulness-based interventions focused on stress reduction. These findings demonstrate the importance of supporting mental wellness and that there are well-researched methods that are effective at doing so. Mindfulness has also been used effectively in a mHealth platform among university students in Asian countries, such as China, particularly to reduce anxiety symptoms during COVID-19 (Sun et al., 2021). These findings are promising, as mHealth for mental health is one method that can be used to allow access to care in low-income country settings like Bangladesh.

One method that shows promise for promoting mental health is using mHealth. In LMIC, the use of mobile phones is widespread (Kola, 2020), as is the use of smartphones (phones using mobile internet networks) (Kale et al., 2016; Kola, 2020). Evidence supports that mHealth can increase the likelihood that health interventions can be delivered to otherwise hard-to-reach LMIC populations (Marcolino et al., 2018). Other advantages of mHealth are convenience, ease, cost-effectiveness, scalability, personalization, and "the ability to send time-sensitive messages with an 'always on' device" (Whittaker et al., 2016). Further, mHealth can reach populations who

would otherwise not engage with traditional health services (Hamine et al., 2015). It can also tackle social stigma, as accessing an app on a mobile phone can be done in private without fear of others watching. These benefits can contribute to early intervention, which is essential, as the earlier a person can manage stress and depressive symptoms, the better their overall health outcomes will be (Bukh, Bock, Vinberg, and Kessing, 2013).

Apps have been shown successfully to increase mental health wellness outcomes and decrease symptomatology of mental health problems. Mobile apps are beneficial, as they can be personalized (Gustafson et al., 2014), visually engage the user, track progress, and be self-paced (Bricker et al., 2014; Luxton, McCann, Bush, Mishkind and Reger, 2011). A systematic review of over 5,646 abstracts published between 2008 and 2013 found eight papers describing five apps targeting depression, anxiety, and substance abuse that met their inclusion criteria (Donker et al., 2013). Results showed, across the studies, significant reductions in depression, stress, and substance use. A recent meta-analysis of meta-analyses suggests that psychological intervention content delivered via a web- or mobile app can be as efficacious as a face-to-face treatment for depression (Andersson, Cuijpers, Carlbring, Riper, and Hedman, 2014; Andrews, Cuijpers, Craske, McEvoy, and Titov, 2010; Cuijpers, Donker, van Straten, Li, and Andersson, 2010). Bakker and colleagues (2016) developed guidelines to ensure proper development of mental health Apps, based on a systematic review of existing apps and using Fogg's behavior model. Mental health apps are popular among young adults, as they provide autonomy to the use, which young adults rate as highly important in their consideration of motivations for behaviors (Fuller-Tyszkiewicz et al., 2018; Wilson, Rickwood, Bushnell, Caputi, and Thomas, 2011) and offer great promise to under resourced settings, like Bangladesh.

The BlueWatch app stands out as it was created by a team of researchers, psychiatrists, and psychologists, all of whom have expertise in mHealth delivery of interventions for depression and fulfills 14 of Bakker's criteria. The app's creation utilized user-centered design, was grounded in theory and uniquely has been tested for end-user and expert usability (Fuller-Tyszkiewicz et al., 2018). One component of the app includes short audio activities that engage users in mindfulness activities. The intended outcomes of the app are to improve the well-being and resilience of adults experiencing depressive symptomatology. The app is based on cognitive-behavioral therapy (CBT).

As there is evidence that interventions that work for some populations may not be effective for others, it is essential to use a culturally adaptive framework to assess BlueWatch in a Bangladeshi population. Barrera and Castro (2006) present a heuristic framework for the cultural adaptation of interventions. There are three stages: 1) information gathering, 2) preliminary adaptation tests, and 3) adaptation refinement. Information gathering encompasses both a literature review and conducting quantitative surveys to understand the demographic characteristics and preferences of the target population. It also involves qualitative research with potential participants within the target population or interviewing experts in the field who have experience working with the target population (Dumka, Gonzales, Wood, and Formoso, 1998; Barrera Jr and Castro, 2006; Cabassa and Baumann, 2013). This study aims to address the first component of this framework, information gathering, to examine if a linguistically and culturally adapted version of the mindfulness exercises used in BlueWatch are viewed as acceptable for use in a Bangladeshi University population.

The research questions being answered in this paper are:

1. How do students respond to mindfulness exercises for university students in Bangladesh (feasibility)?

2. What are Bangladeshi university students' perceptions of using mindfulness exercises on a mHealth app platform (acceptability)?

To assess users' likelihood of accepting technology, existing models are crucial for developing messaging for mHealth Apps. As such, the interview questions were guided by the Technology Acceptance Model, which helps researchers understand how users adopt and use emerging technologies (Portz et al., 2019). According to the conceptual model, a user's perception of the usefulness (i.e. the perceived benefits) and the ease of use of a technology determines that person's willingness to use it. TAM posits that a person's individual differences and social influences shape their perceptions of usefulness and ease of use. Accordingly, the interview guide included questions that probed these concepts.

Methods

Sampling and Recruitment

Participants (n=12) were purposively recruited from a list of university students who participated in an online survey about university student attitudes toward mental health in Bangladesh. In that survey, students noted if they consented to be contacted for a potential in-depth interview to discuss the topic of mental health. Participants were stratified by gender and randomly selected from within gender groups. Participants were aware that the lead researcher was a Ph.D. student. Data saturation was reached after ten interviews, but because the remaining two interviews were already scheduled, 12 interviews were conducted. The eligibility criteria were that 1) participants were 18 years or older, 2) participants were currently enrolled in a

university within Bangladesh, and 3) participants had access to the internet to conduct a Zoom interview.

Procedure

Semi-structured interviews (n=12) were conducted by two people, the lead author and a research assistant. The lead author was fluent in Bangla, and the research assistant was a recent graduate of a university in Bangladesh and also a native Bangla speaker. The research assistant led the interviews in Bangla, using an interview guide that had developed for this study and refined through cognitive interviews (n=5) with Bangladeshi university students. The lead author asked clarification questions as necessary as the interviews progressed. The lead researcher and research assistant debriefed after each interview, and ultimately the lead researcher's clarification questions were minimal as the research assistant conducted the interviews appropriately, and three interviews (n=3) were conducted solely by the research assistant. Interviews lasted between 40 and 65 minutes and were audio recorded, and transcribed for thematic analysis. Ethical approval for this study was given by the University of Maryland's Institutional Review Board and administrative faculty within the Bangladesh universities.

During the interview, participants were given an overview of what mindfulness is and were asked to follow three mindful exercises. After each exercise, participants were asked how they felt after completing the exercise and during the exercise, what thoughts ran through their head during the exercise, what they liked and would like to change about the exercise, and if they could see themselves using an app with exercises like these in the future. After the final exercise, participants were asked if they would recommend an app with these exercises to a friend and the reasons behind why they would or would not use an app similar to this.

Exercise 1

The first exercise was 2.5 minutes long and was designed for participants to train their observant side and to focus on being present with their surroundings. For example, participants were given the following directions "*I want you to focus on your preferred hand. Spread this hand so that the fingers aren't touching and the hand is flat. Lay this flat hand on a surface such as a table. Focus on the appearance of your hand.*" The exercise included questions that prompt the participant to closely consider themselves in the moment, such as, "*Focus on how your hand feels right now. Does the surface feel cold to touch?*"

Exercise 2

The second exercise used breathing techniques to diffuse negative thoughts and was four minutes long. It started with an introduction, "*Using the breath to focus is another effective way to get back to the here and now. It also helps you to slow down, relax and diffuse negative thoughts by controlling where you direct your attention,*" and then guided participants through the exercise. "*When you are ready, take some nice big, deep breaths in through the nose and out through the mouth. And [breathe] in. Notice how your body softens as you do this. On the next out-breath slowly close your eyes.*" The exercise provided imagery for the participant, "*think of your breathing as waves going into shore as you breathe in.*"

Exercise 3

The last, and longest exercise (9 minutes), guided participants through a body scan to de-stress. It too began with a brief introduction of the exercise, "*The present exercise will walk you through a relaxation technique that seeks to remove tension from your whole body. We will systematically work our way through focusing on different parts of your body in order to bring relief.*" The exercise then went through a full-body scan, starting at the toes, "n*ow directing your attention to the toes of your feet. Tune in to the sensations in your toes.*"

Qualitative Analysis

Thematic analysis was used to analyze these data. Thematic analysis allowed for flexible

and detailed data synthesis (Braun and Clarke, 2006; Nowell, Norris, White, and Moules, 2017).

One highlight of thematic analysis is that it allows researchers freedom not to be wedded to

theoretical commitments of grounded theory (Braun and Clarke, 2006). For this paper, thematic

analysis was used with a contextualist method, which encompassed characteristics of both

essentialism and constructionism. This method recognized that the way an individual interprets

their experiences impacts the way they view social contexts. The purpose of thematic analysis in

this study was to "provide a rich thematic description of the entire data set," contributing to

readers having "a sense of predominant or important themes" (Braun and Clarke, 2006). As such,

"predominant themes" were likely to be those that show up frequently in the data, instead of

themes that may be rich in detail but less prevalent across the data set (Braun and Clarke, 2006).

Braun and Clarke (2006) outline a six-step method for conducting thematic analysis, which was

utilized for this analysis.

The author engaged in Step 1 of the process, becoming familiar with the data by

attending the interviews, listening to the audio recording of the interviews repeatedly, and

reading through the word-for-word transcription of the interviews multiple times. Immediately

after each interview, potential patterns from the interview were summarized, as suggested by

(Braun and Clarke, 2006). The interviews were translated and transcribed into English by the

research assistant, and the lead researcher checked transcripts for fidelity purposes.

In Step 2, the interview transcripts were uploaded to Dedoose, a web-based qualitative

software, where initial semantic codes were generated, with a code being defined as "the most

basic segment, or element, of the raw data or information that can be assessed in a meaningful

way regarding the phenomenon" (Boyatzis, 1998). In this step, the author coded for as many

potential themes/patterns as possible, codes were extracted of data inclusively, kept the

surrounding context, and coded lines were coded in multiple ways if pertinent (Braun and

Clarke, 2006). During this step, potential themes that the author noticed in the data were

recorded using reflexive journaling (Nowell et al., 2017).

After all data were initially coded and collated, the third step of searching for themes took

place. This involved analyzing the codes and considering how they form overarching themes

(Braun and Clarke, 2006). Nowell and colleagues (2017) suggest diagramming connections

between themes in this stage to increase credibility; the thematic map for this sample can be

found in Figure 1. The fourth step, reviewing themes, involved examining the list of themes

generated in the previous step (Nowell et al., 2017; Braun and Clarke, 2006). As the interviewees

were asked structured questions after listening to mindfulness exercises, to gain an understanding

of specific thoughts and feelings, this step of review and refinement was not as prominent in the

methodology of this study. In this process, codes were added, merged, or deleted as seen fit, as

the overall goal was to have only codes relevant to the dataset remaining. As such, we were left

with concise, distinct themes (Nowell et al., 2017).

In the fifth step, themes were named according to what the data indicate (Braun and

Clark, 2006; Nowell et al.,2017). The themes were reviewed with a senior qualitative researcher,

and the coding scheme was further refined based on conversations surrounding the themes and

data, as this increased the credibility of the process (Nowell et al., 2017). Peer-debriefing

strategies were used while maintaining the participants' confidentiality, exploring the possibility

of different perspectives on the data and interpretation, and keeping data interpretation's

objective. The final step is evidenced by this paper, where the methodology and results are

shared in a detailed manner (Braun and Clarke, 2006).

Results

Participants were on average 22.7 years old, most self-described as being heterosexual. There was representation from first, second-, and third-year students and students who were in their fourth year of school or beyond. Most students in this sample pursued a Bachelor's degree, though Master's students are also represented. The majority (70.0%) of students interviewed felt they could use support for their emotional or mental health in the past year were moderately stressed, and three students reported past suicidal ideation. Almost all students owned smartphones, and 70.0% used mHealth for their physical health. 40.0% of the sample reported currently using digital health for their mental health, for example, following meditation videos online.

First, it should be noted that, though mindfulness was defined in a technical sense and students were given examples of different forms of mindfulness, it was evident from student responses that the sample thought of mindfulness primarily as a deep breathing and meditation exercise.

Two major themes and six overall subthemes emerged from the interview data. The first theme encompassed participants' perceptions on the feasibility of using mindfulness itself and mindfulness via an app. Participants considered how practical it would be if mindfulness exercises could be performed via an app, if an app was made available to them. They highlighted barriers to using mindfulness practices from their previous experience, their potential to use an app for mindfulness in the future, and difficulties they had with the exercises. The second theme pertained to students' responses to the exercises. Subthemes included student suggestions for how to increase the acceptability of the exercises, their descriptions of emotional, physiological,

and cognitive reactions to the exercises (i.e., feeling calm or focused), and their overall perceptions of the exercises, see figure 5.1 for the thematic map created.

Theme 1: Feasibility of mindfulness via app

Students noted barriers they encountered to engaging in mindfulness activities in the past. Students identified the role of language as being a barrier for use, in the case that the language in an exercise did not align with their preference. The majority of the sample preferred their native language of Bangla, but also noted the importance in having a choice to pick between Bangla and English as the best option for the college student population at large. Students noted whether the experience felt beneficial enough to them to want to continue doing similar exercises in an app format, and further, the process by which they would promote the use of such an app to their friends. The interviews also shed light on difficulties that participants faced while being guided through the mindfulness exercises. These findings highlight the overall feasibility of using an app for mindfulness.

1.1 Barriers to past use

Students who had previous experience with mindfulness noted various barriers to sustained use. They expressed wanting to use mindful activities to relieve stress but that they were unable to find quality materials with guided meditations. Students reported using YouTube as a primary source for mindfulness exercises, though they had issues finding quality exercises for mindfulness on this platform, as illustrated by one student who explained, "I tried a couple of meditation videos on YouTube which were boring so I quit watching them." Another student noted that it was sometimes hard to access YouTube; they said "I have done some meditation sessions by myself on YouTube. However, I could not do it regularly as YouTube wasn't available all the time." Bangladesh is prone to electrical shortages, internet systems are

sometimes not readily available, and YouTube videos can be restricted if deemed offensive by the government.

Another significant barrier to past use, and a key factor to consider when considering feasibility, is the language of the mindfulness exercises. Students noted that audio for meditation is hard to find in the native language preference of Bangla. One student demonstrated this, saying:

> *"I know that there are some relaxation audios on YouTube, which try to find out to feel relaxed, but sometimes we don't find any good content. So, this app can work for us if it's well-functioned. Breathing exercises are always good for feeling relaxed. However, when we try to do this exercise in YouTube, maximum instructions are given there in English. If someone who's not very good at English uses it, can find it hard to understand the meaning of some words. This can cause tension rather than finding peace. There's no point of thinking of a dictionary if you're using a relaxation method."*

Most students said they would prefer to have the option of choosing the language of the app. Students noted that some people might be more comfortable listening to the exercises in Bangla, one student said *"people can choose the language on their preference. I personally like Bangla as it's our native language and it's easier for us to focus in this language."* Though the majority of the sample said they would prefer an app in Bangla for their own use, they made sure to note that other people may want to use English, and highlighted the importance of being able to choose the language of your choice. One student summed this thought up, saying:

> *"It will be better if there are two versions. If we think in the context of Bangladesh, there are two types of people, some of them will prefer Bangla and some of them will English.*

As the mental health is really an important topic for every Bangladeshi people, so it's

better to have both options."

Barriers to using mindfulness techniques seem to stem from the lack of availability of

quality exercises in students' language of preference, because the exercises simply do not exist in

an easy-to-use way. The majority of students interviewed noted being more comfortable using an

app in their native language of Bangla. However, students also noted that this might not be the

case for all university students in Bangladesh, when thinking about the broader population of

who may use the app, students advocated for having the option to choose between Bangla or

English. Though there was mention of using YouTube to follow meditation videos, students

were unable to find videos in Bangla, and also had limited access to YouTube. In the event that

an app was developed, students would be able to download mindfulness exercises to use at any

time, and access Bangla mindfulness exercises whenever they wanted.

1.2 Potential future use.

Participants note that they would use and recommend an app with these exercises in their

future and friends. They mention their reasons for wanting to use an app with mindfulness

exercises. Some participants indicated they wanted to use such exercises in response to mental

health problems to help them get relief from anxiety, depression, and stress. Others wanted to use

it as a mental wellness maintenance tool, for example, to help them with relaxation and sleep or

to keep negative thoughts away. Direct quotes from the participants included:

"I think these exercises will work well to get relief from anxiety. For me, I think it has

worked really well to keep my mind busy on focusing a specific thing by keeping all the

negative thoughts away."

"In our daily lives, we have a lot of work and study pressure. At this time, if we don't

have enough time to see a movie or series, then these type of short meditation sessions

can help us to feel more relaxed. Moreover, if you could add some music in the

background, it would be easier for us to keep our focus."

"Honestly, I almost fell asleep. I am feeling relaxed. Actually, I was tensed last night so

couldn't sleep properly, and now I'm thinking that if I did this exercise yesterday, I could

have slept well."

"If I am mentally stressed or depressed, I think this type of exercise can help me to get

some relief. Sometimes I lost my focus while doing something. So, if I can learn how to

keep my focus on a specific thing through an App, it will be very beneficial for me. On top

of that, if I can forget about my mental stress or ignore all the negative thoughts for some

time, it will be really helpful."

Though all participants (n=12) indicated wanting to use an app with mindful activities in

the future, they had more specific reasoning when it came to endorsing it to others. Many

students said that they wanted to try the app first, and if they felt it was beneficial to them in

overcoming their problems, only then would they recommend it for their friends to use.

Participants imagined how they would tell their friends about the app; most said they would

gradually introduce the app; for example, they would first share their mental health struggles and

then tell their friends how the app helped them. Others said they would tell specific friends who

have talked to them previously about wanting help to promote their mental health. One

participant felt that, by having a concrete app to share, it would be easier for friends to use that

for mindfulness exercises instead of searching for themselves. Quotes from participants are shown below.

> *"At first, I'll try it by myself and see if it works for me or not. I can discuss it with my friends when we hangout and maybe one day I'll try to make them practically focus on this matter. If they feel interested, then they'll definitely try it out. So, I'll try to convince my friends to use this app in the middle of our conversations when we go out. First I'll use it practically, then suggest my friends to use it."*

> *"I won't suggest any of my friends to use this app on the first day if they are facing problems related to mental health or they aren't feeling good. But after talking to me, if they feel that they need a sustainable solution or something that will accompany them, then I can suggest them to use this App. It depends on their preference."*

> *"Well, if I talk about my gym buddies, there were times when we did exercises related to mental health which didn't have any guidelines. So, if I want to start, I'll start with those who believe that they need to work on mental health and those who doesn't think like that, I can start talking to them about this topic gradually."*

Participants noted they would only endorse the product if it proved effective for them. They also offered nuanced approaches depending on their relationship with their friend. If they knew that their friend would be open to a sustainable solution, they would be able to bring up the topic of this app easily, if they were in the midst of a mental health crisis, they would not bring up the app right away until they felt their friend was open to it.

1.3 Noted difficulties with the exercises.

We found that some students had difficulty while listening to the exercises. Some expressed that the level of detail and length of the exercises were not appropriate for someone who was a beginner to mindfulness activities; they felt this led to a lack of focus during the exercise. This was particularly true during exercise 3, the body scan, given the length of the exercise. Students also felt irritated with themselves for their lack of focus. Also, specific to exercise 3, one student expressed discomfort when the guided body scan asked them to focus on their feet. Another (n=1) expressed feeling odd when focusing on their forehead and neck during exercise 3. Importantly, though participants experienced discomfort, they nonetheless expressed positive feelings toward the exercises overall.

> *"Well, I feel heavy, you know. I think it's too much detailed for a starter. The interesting thing is when it mentioned to focus on my neck and shoulder, I felt like some was strangling me and trying to suffocate me. I don't know why I felt that. And when it said to focus on my forehead, I felt like I've opened a third eye. But I'm feeling a bit heavier right now, and if I go to bed now, I think I'll fall asleep."*

> *"When I brought focus on my upper body parts, I started to feel heavy then. I was struggling while focusing on my lower body parts. I started to feel a bit irritating as I couldn't focus."*

It is interesting to note that when students were asked whether they would like to change the exercise in any way, the overwhelming response was to say that the exercises did not require any changes. However, as shown in the illustrative quotes above, some recommendations were explicitly stated, and others were illuminated in their responses to the question, how did you feel during the exercise. The explicit changes students recommended are described in detail in theme

3. Overall, the main difficulty that students seemed to face was drifting focus, though it is noted in the instructions throughout the exercises that it is normal if ones' mind wanders throughout the exercise. Part of the difficulty of loss of focus had to do with the length of the exercises. This highlights the need to allow participants the option to choose their preference of the duration (short, long) and level (beginner, intermediate, advanced) at which they would like to engage with the App.

Theme 2: Responses to mindful exercises

Some participants gave a detailed description of their perception of how they felt during the exercises. For example, many participants enjoyed the feeling that they could connect to what the exercise guided them to do. Other participants did not explain the mechanics behind why they had a positive experience but did share the positive emotions they were feeling throughout and after partaking in the exercises. These subthemes were interrelated, as students would explain that they felt calm during the exercise (a physiological reaction) and that feeling calm was the reason they had an overall positive experience. The overwhelming majority of responses to the mindfulness exercises were positive, though some participants did face difficulties (as noted in theme 1) and noted suggestions for how to improve the exercises.

2.1 Perceptions of mindful exercises.

Students explained their perceptions of the mindfulness exercises. Some described that the app could help with mental health maintenance, given many are not able to see a professional whenever they may want, saying "As we can't go to a professional every other day, I think this app will be very effective if we get to do the exercises with these types of instructions." Another student discussed the benefits of having an app with mindfulness exercises given the inability to seek informal help, "As we can't open up with someone all the time or can't find the solution for

our mental health problem, then this app can be effective to be in practice." Others noted that

they liked how the exercises caused them to focus in general and specifically focus on

themselves in ways they had never done before. One student described, "I like the way it focused

on different body parts step by step as we usually don't notice every little detail about ourselves."

They enjoyed connecting to what the exercises were guiding them to do; for example, students

could easily connect their breath to waves, as they could visualize the waves easily. Illustrative

quotes of the students are below.

> *"What I found new here is to connect my imagination with waves. I have actually*
>
> *watched a video of ocean last night or the night before that. The video was taken by a*
>
> *drone. So, I was actually imagining the blue ocean and the shore while breathing. I could*
>
> *connect it with my breathing process, and at one point I could feel that I was [in] the*
>
> *ocean."*

Students reported many mechanisms by with they felt the exercises impacted them. They

noted being able to visualize and focus on the task the exercise guided them to do. When they

visualized the exercises, they felt they gained more focus not only while doing the exercises, but

also afterward since they felt more relaxed. One student said, *"Well, it's hard to tell how*

beneficial was it by doing the exercises just one day. However, what I noticed from today's

experience are it helps to feel light and to keep focus on a specific thing. For example, when I

started this interview, I wasn't fully focused, but once I started doing the exercises, I realized

that my capability of focusing on a specific thing was getting better. I feel like I can concentrate

better now."

2.2 Emotional, Physiological, and Cognitive Reactions

After each exercise, in response to asking how students were feeling, many participants described what emotions they felt. Some participants mentioned feeling at peace and relaxed; some mentioned feeling relieved of stress. Some students described their physiological response to the exercises, saying their bodies felt relaxed, and their heartbeat was slowed as a result of the exercise. Other participants (n=1) noted that they did not feel any impact, stating, "I feel okay; I don't feel any different." Examples of what the students said follow:

"It was beneficial for me. I was feeling a bit relaxed and lightheaded. When we feel relaxed, our heartbeats normally. At first, my heartbeat was really fast, but I think it's stable now. If these exercises can make my heart stable, then they can make others as well. And this is a good thing."

"Well, as I mentioned that I didn't know anything about this interview before. I was feeling stressed whether I would be able to say anything or not, but after doing these exercises, I am feeling like all of my tensions just went away."

Overall, while explaining how they felt during or after the exercise, students reported feeling their positive physiological reactions, feeling less tense, and calm and relaxed. However, it is important to note that there were some participants who noted discomfort during the exercises too, these comments were covered in depth in a subtheme 1.3.

2.3 Suggestions to improve mindfulness exercises

Students noted multiple methods to improve the mindfulness exercises. Recommendations included suggestions for a logo, changes to content, clarifying specific wording in the guided exercise, or changing parts of the audio to include soothing music or

sounds. Students discussed content changes that they felt would be beneficial, such as clarifying the guided instructions' wording, or changing the length of exercises, such as shortening the body scan. They also noted design preferences, particularly regarding aesthetic preferences- using attractive colors and fonts, user-friendly, and minimized advertisements- for a potential app interface. Further, multiple (n=3) interviewees recommended adding nature sounds (sounds of waves). Students drew attention to where they felt there were gaps in the exercises as well; for example, in the third exercise, one student felt more focus should have been put on the upper body during the body scan.

"As it creates an impact on the whole body, I think every point of this exercise is important. However, I feel like it needs to add more focus on the neck and shoulder areas."

"I think if you could add ocean wave sound in the background, it would have been really great. That's my personal opinion."

"[The app should be] a user-friendly App, [with] visible letters that attracts people, use attractive colors or font, [and] reduce advertisements."

Given that multiple students explicitly mentioned that adding audio of ocean waves throughout the second exercise would be beneficial, this should be included in future pilot testing for the app development. Students brought up aspects of visual app design, though they were not asked about that explicitly, this highlights the need for users to find app interfaces aesthetically pleasing and easy to use, highlighting the necessity for an app developed with user-centered design.

Discussion

Overall, there is much promise for the use of mindfulness activities in an app in this sample of Bangladeshi university students. To answer the first research question, "How do students respond to mindfulness exercises, regarding feasibility, for university students in Bangladesh?" the answer across all interviews is affirmative. They provided an overall indication that using an app for mindfulness is not only feasible, but that they would use an app with such exercises in the future and even recommend it to friends if they thought it was helpful. The findings highlight that an app with quality, empirically driven content in students' native Bangla language could build a bridge from the past barriers faced by students.

Additionally, using an app for exercises would allow students to download content to their phones rather than rely on the internet, which students report having issues with in Bangladesh. Students also provided valuable suggestions for improving the exercises, including noting areas they felt were difficult for them to follow, the importance of the duration of exercises, and noting the importance of appropriate language for the exercises. The drive to have an app in one's native language has been seen in past research (Kiropoulos et al., 2011), as is the option of having language preferences that the users can control (Torous et al., 2019), though the acceptability of a Bangla app for mental health has not been examined before. Student responses highlighted the desire to have a customizable app.

Participants answered the second research question, "What are Bangladeshi university students' perceptions of using mindfulness exercises on a mHealth app platform?" with positive perceptions toward such use. Delving into each exercise, students noted feeling a positive effect from the exercises. Positive experience varied significantly; some students noted liking the idea of these exercises on an app because they are not able to see a professional or informal help

readily and see the app as bridging this gap in terms of mental health promotion. Others noted that it helped them to feel relaxed, calm, and focused. Some mentioned they would use this as a preventative measure to promote their mental wellness, and the majority claimed they would use it in response to stress. These findings support past research that finds mHealth effective for mental health promotion (Donker et al., 2013) and used for stress management efforts (Bukh, Bock, Vinberg, and Kessing, 2013).

Of the three exercises, exercise 2, "breathing to diffuse negative thoughts," was overwhelmingly viewed most favorably- no participants had difficulties following this exercise, though a couple did suggest including sounds of ocean waves in the audio. This exercise also had the most mentions of feeling relaxed and refreshed afterward. The third exercise, "de-stressing with a body scan," was viewed least favorably of the three, although overall, it was viewed positively. Participants noted that the length of this exercise (approximately 9 minutes) was longer than desired and that it was hard to concentrate on the task for that length of time. One response, unique to the participant, noted feeling uncomfortable focusing on their feet, given the lack of cleanliness of the surrounding area in their room.

Limitations

There are a number of limitations that should be considered regarding these findings. Students who were interviewed were recruited after taking a survey regarding mental health attitudes. As such, this sample may already view mental health in a positive mindset, and thus, would welcome the possibility of using an app to help with their mental health. This may not be true of the general student population, as there is evidence that mental health stigma in low-income countries in Asia is high (Giasuddin, Levav, and Gal, 2015). This study sought to examine the messaging of mindfulness exercises, focusing on whether students would use a

guided mindfulness exercise with similar messaging on an app based platform; however, when conducting interviews, only the message was able to be tested. As neither wire diagrams nor a pilot app was provided to students, their responses regarding whether or not they would use an app with similar activities were based purely on their familiarity with apps and their imaginations of how a similar app might work. Examining the acceptability and generating feedback about mindfulness messaging is just the first step of the cultural adaptation process outlined by Barrera and Castro (2006) of information gathering. Next, steps must include the preliminary adaption tests based on these findings and, finally, adaptation refinement.

Implications for future research and practice

Given the positive feedback provided by students after these exercises, future research should develop and pilot-test an app with mindfulness messaging for the university student population in Bangladesh. As the cultural and linguistic adaptation of BlueWatch was viewed positively in this sample, with the exception of students expressing discontent with the body scan exercise, given the length and other feelings of discomfort, it may be appropriate to use BlueWatch as a template for the design of such an app. Given that students report motivations for use as both preventative and for early intervention to manage stressors, students could choose how often they want to be prompted to use the app. As students noted the length of exercises as a factor in considering whether or not they would engage in a mindfulness exercise, students could first be prompted to measure their stress level and second asked how much time they have available to complete a mindful exercise. The students would then be directed to a short, medium, or long exercise based on these answers.

Conclusion

This research supports the narrative that mindfulness exercises can be appealing on an app and that it is appealing to a university student population in Bangladesh. Based on these in-depth interviews, we can conclude that students perceived benefits to mindfulness exercises and that they want to use quality exercises in their native language of Bangla. Given the high prevalence of mental health problems in Bangladesh (Mamun, Sakib, Gonzal, et al., 2020), and that young adult college populations are disproportionately impacted (Sayeed et al., 2020; Islam et al, 2020), these results that a mindfulness app is acceptable for such a population is quite promising.

Similar to past research, this sample noted the appeal of having a personalized app (Gustafson et al., 2014), that is aesthetically pleasing (Bricker et al., 2014). Students report they would not only use an app with mindfulness exercises if it existed but that they would also refer their friends to use such an app if they felt it benefitted them. To our knowledge, this is the first study to examine the acceptability of mindfulness practices in a Bangladeshi university student population. Further research should consist of app development for pilot testing of messages and user-centered design. Should this further testing show promise, the app should be refined and shared across universities in Bangladesh.

Figure 5.1: Thematic Map

Feasibility

Barriers To Past Use

- Internet connectivity

-Language barrier

Potential Future Use

-Would recommend others

-Would use themselves in future

Noted Difficulties with Exercises:

-Discomfort, Loss of focus, Length

Responses to exercise

Perceptions of Exercises

-Alternative to external support

-Feeling autonomy

-Can relate to exercise

Emotional/ Physiological/ Cognitive Reaction

-Calm, focused, felt good

Suggestions to Improve Exercises

-Wording changes/clarifications

-Audio changes (adding nature sounds)

Table 5.1: Participant Demographics n=10 (demographics missing for n=2)

	%/ M (SD)
Age (in years)	22.7 (1.83)
Gender	
Male	40.0%
Female	60.0%
Sexual orientation	
Heterosexual/Straight	70.0%
Sexual Orientation Minority (Bisexual)	30.0%
Year/Semester in School	
1st-3rd/First year	30.0%
4th-6th/Second year	20.0%
7th-9th/Third year	10.0%
10th-12th/Fourth year	0.0%
12th +/ Fourth year +	40.0%
Degree of Study	
Bachelors (BS, BA)	70.0%
Masters (MPH, MBA)	30.0%
Perceived need for mental health support (past year)	70.0%
Perceived Stress (0-16)	10.2 (3.99)
Suicidal Ideation (ever)	30.0%
Smartphone ownership	90.0%
Use of mHealth (not including for mental health)	70.0%
Use of mHealth for mental health	40.0%

Note: Though the total sample size is n=12, only 10 participants provided demographic information; based on participant names,

gender is perceived to be 50% male and 50% female

Chapter 6: Discussion of Dissertation

Overview and Summary

Untreated mental health problems are known to have severe consequences and are common among young adults, university students, and low-income countries (McGorry. 2011; Eisenberg et al., 2011; Patel et al., 2018). In Bangladesh, the young-adulthood population has the highest prevalence of mental health problems, such as suicide (Arafat, 2019). Though evidence suggests a lack of clinical mental health professionals in Bangladesh, less is known about the demand for these services, including motivations and barriers to seeking both clinical and informal support for mental health problems. Further, there is a large base of evidence that technology can play a significant role in health promotion. mHealth has been used in Bangladesh for a variety of health problems, but no studies have yet examined the acceptability of using mHealth for mental health. Mindfulness-based apps specifically have been successful in decreasing stress and depressive symptomology in university student populations (Conley et al., 2013; Regeher et al., 2013). This dissertation consisted of related studies that aimed to 1) examine motivators and detriments of using clinical mental health services, 2) assess the acceptability of using mHealth for mental health, and 3) describe the cultural acceptability of mindfulness messaging for app use in a sample of university students in Bangladesh. Study findings illuminate the mental health problems among Bangladeshi university students, in addition to the possibility to use mHealth interventions to mitigate such problems.

The quantitative component of the dissertation consisted of an online survey taken by current university students in Bangladesh. Multivariate logistic regression was used to analyze the cross-sectional survey data. Guided by the Self-Determination Theory, manuscript one assessed the relationship between autonomy, relatedness, and competency toward using clinical

mental health practices (i.e., using professional resources, taking medication) with (1) positive views of mental health services, (2) perceived need, and (3) use of clinical mental health services among Bangladeshi university students. Complete case analysis was used, and the final sample included 350 responses. Results showed that the perceived need for mental health support was the predictor of the largest magnitude for using clinical services. Having a positive view of clinical services was predictive of actual clinical service use; however, that association became insignificant when adjusted for the perceived need for mental health care. Of the SDT constructs, one's social influences (conceptualized as relatedness) were predictive of perceived need for mental health support; knowledge about mental health (conceptualized as competency) was predictive of having a positive view of clinical mental health care.

Manuscript two aimed to (1) describe the likelihood that students would use different digital health platforms to benefit their mental health, (2) identify the relationship between the perceived ease of use, usefulness, and social influences on using mHealth with the intention to use and actual use, and (3) assess the relationship between the perceived ease of use, usefulness, and social influence on using mHealth for mental health with the intention to use and actual use of mHealth for mental health. Using complete case analysis of the survey data, the final sample size was 311. We found that the university student population in Bangladesh is likely to use mHealth to support their mental health as our sample reported high rates of acceptability. Social influence, ease of use, and the perceived utility of mHealth seem to be key drivers of intent to use general mHealth. Higher intentions to use mHealth to manage mental health are related to social influence, perceived usefulness, and using mHealth in general. mHealth for mental health usage seems more likely to occur among those who use general mHealth and when greater attitudinal and instrumental barriers to accessing in-person clinical mental health services are

present. This study showed that mHealth is acceptable in this population and can be useful to students who face barriers to receiving traditional mental health care. It also offered insight into how to encourage intentions to use mHealth (focusing on showing users the practical usefulness of the app and promoting acceptability among peers), which in turn promotes its actual use.

The third paper used qualitative methods, in-depth interviews (n=12), to examine the acceptability of mindfulness exercises delivered through an app for University students in Bangladesh. In-depth interviews (n=12) were conducted to understand the acceptability of linguistically (Bangla) and culturally adapted mindfulness exercises. The thematic analysis generated three themes (1) familiarity with mindfulness, (2) characteristics and determinants of mindfulness exercises, and (3) suggested improvements for mindfulness exercises. Student responses indicated favorable attitudes toward mindfulness content, as they demonstrated positive psychological and physiological reactions. These App-based exercises worked well for the students. Students felt that having guided mindfulness exercises overcame barriers (i.e., language barrier, internet connectivity, lack of access to professional or informal help at any time) they had previously encountered when seeking help. Based on this evidence, an app with mindfulness exercises is worth developing and testing in Bangladesh to promote mental health among university students. Given promising evidence of the efficacy of mindfulness apps in reducing distress (Conley et al., 2013; Regeher et al., 2013), and the overall positive reviews of the mindfulness content found in this dissertation, developing an app in Bangla should be a top priority to promote the mental wellness of the university student population.

Implications

The dissertation research was novel in its exploration of motivators and barriers of clinical mental health service use and understanding what non-clinical methods of support for

mental health were used. Further, it is the first research to our knowledge to examine the acceptability of using mHealth for mental health and culturally adapted mindfulness exercise for a Bangladeshi university population. Given the high rates of mental health problems found in this study, and shown by past research (Sayeed et al., 2020; Islam et al., 2020), and that we found a university sample that reported an affinity for using non-clinical mental health support, it is essential to develop interventions accordingly. However, further research is necessary to fully understand what approach best suits the needs of university students. Though past research shows that there are few mental health professionals in Bangladesh (WHO-AIMS, 2007), we do not know rates of service utilization. As such, there is a need to disentangle if the primary issue a lack of mental health services or is there perhaps a low demand for services? Though this was not examined in this study, future studies should ask students if they tried to seek mental health care before, if they could receive care after seeking it, and if mental health care provider shortage for mental health care was an issue. Alternatively, it may be stigma that should be targeted.

From the dissertation research, we see what factors may impact the motivation for seeking clinical support, and the biggest motivator for clinical use is that one perceives needing help. Our findings highlight that perceived need is associated with getting help and that those who are able to self-identify as needing help are more likely to receive clinical health care than those who do not. However, we also see that the vast majority (87.9%) of those who think they could use mental health support do not receive clinical care. To understand the barriers to care in this sample, we examined barriers in two ways, non-stigma-related barriers and stigma-related barriers, and examined their relationship with using clinical mental health, perceiving a need for mental health care, and attitudes toward mental health care. We found that neither of these conceptualizations of barriers was associated with accessing clinical services. As such, a more

granular approach may be necessary, and by delving within that instrument itself, as shown in the Appendix C, we see that there are certain items the majority of the sample felt were barriers to care.

Looking at the individual items in the barrier questionnaire, we find many common barriers to accessing mental health care across the sample. Considering majority prevalence's only, respondents listed the following as barriers (a little bit of a barrier to a lot of a barrier) to receiving clinical mental health care: 94.5% wanted to solve the problem independently. 76.5% thought the problem would get better by itself, 65.4% dislike talking about their feelings, 69.9% preferred getting help from family and friends, and 57.1% preferred alternative (traditional/religious healing) care. When examining instrumental barriers, nearly half of the sample (48.2%) said that being "unsure where to get professional help," and 56.1% said "not being able to afford the financial costs involved" was a barrier to receiving mental health care. Of the stigma-related barriers, 63.8% were concerned about what family might say, 56.9% felt embarrassed or ashamed, and nearly half (49.6%) were concerned that they might be seen as weak for having a mental health problem.

Suppose we focus on the barriers of students who perceive that they need mental health support (n=173) (while noting that of the people who have depressive symptomatology (n=153) in accordance to the PHQ-2, 40.5% did not think they needed support for their emotional or mental health). In that case, we see that 37.9% of people who felt they needed help listed not knowing where they could receive professional care as a significant barrier to receiving care. Similarly, 38.3% of the sample felt they did not have enough time to seek professional care, and 57.9% reported they would instead seek support from family or friends than from a mental health professional.

These findings support implementing a two-pronged approach, bolstering both the clinical services on campus and evidence-based non-clinical practices to curb poor mental health. These sample statistics offer critical points of intervention, though examining the associations between these barriers and clinical health service utilization with a larger sample size may provide more statistically meaningful results. Our results suggest that to increase clinical service utilization, increasing the perceived need for mental health support and viewing mental health positively is important. Because relatedness factors, such as one's proximity to mental health, seem to increase the likelihood that one recognizes their own mental health need, the administration should promote transparency about how common it is to have mental health problems on college campuses. Similarly, because having more knowledge about mental health (i.e., knowing symptoms of depression or how to seek mental health support) is associated with positive beliefs toward clinical mental health, a mental health literacy campaign on campus could be beneficial. To promote non-clinical mental health support, self-care techniques and recognizing the signs of mental health stressors might be recommended based on these frequencies (for example, a change in sleeping patterns and appetite). University administration should also highlight any counseling centers they may have on campus, and both create and mandate students attend a mental health first aid when they begin their coursework. Future research should consider key informant interviews with college mental health providers to understand how students hear of their services, and if students encounter utilization issues, such as being on a waiting list to be seen by a provider.

Another method to promote non-clinical support for mental health is by using an app with mindfulness exercises. The results of the second paper show that students in this sample are open to using mHealth for mental health if the app is socially acceptable, easy to use, and perceived as

useful. Only 26.4% of the sample population used mHealth for mental health, perhaps because quality programs catered to this population do not yet exist. The current study did not ask for a description of the mHealth programs used by students to promote their mental health, but this may be a noteworthy future direction. Though we did not ask this question outright, using qualitative methods in the third manuscript, we found that students have used YouTube to look up mental health mindfulness exercises – such as guided meditations and focused breathing. However, students noted the difficulty in finding quality products in Bangla, their native language. They also noted videos on YouTube not always being available due to internet connectivity issues, which would not be a barrier if using an app with downloadable material to be used at any time. The mindful messaging was met with overall positive feedback, with specific recommendations (such as choosing between Bangla or English and choosing the length of the exercise given their availability) that can be incorporated before pilot testing an App. Ultimately, creating and pilot testing an app designed with the user in mind to deliver guided mindfulness exercises at a duration and time that students wanted them could yield beneficial results for the mental health of the Bangladeshi university population.

Limitations

There are a number of limitations to this study. Given the data collection used convenience sampling, cross-sectional surveys, and self-report data collection, the data are only able to show associations between variables, the data cannot be generalized broadly, the data cannot be ordered by time, and the data are at risk of social desirability bias. Due to the study title and focus, students may have been drawn to the subject who were more knowledgeable than the general student body, which may explain the low stigma levels and high level of mental

health problems in this sample, though the prevalence of mental health problems such as depression are similar to those in other studies in Bangladesh university student samples.

This is particularly true for the qualitative interviews, where only students who took the survey and expressed interest in being further interviewed were selected as participants. As such, we cannot conclude that all university students in Bangladesh will benefit from a digital mental health promotion program, though the results do show promise. Further, in the qualitative study, merely the acceptability of mindfulness messaging was tested, as the messages were not placed in an app format, student feedback was only regarding how they felt about the mindfulness exercises, therefore we could not fully gauge the acceptability of using mindfulness in an app format. Rather, it was left to the student's familiarity with previous app use to indicate whether or not they would use such mindful exercises in an App. To truly test the acceptability, an app must be developed and pilot tested, ideally developed with a user-centered design approach.

Appendix A: Methods

Overview

This study had three components and utilized a multi-method approach. The first component involved cognitive interview testing of the survey content. The second component included a cross-sectional survey that students completed online. The survey included current mental health practices, attitudes toward engaging in mental health practices, current use and attitudes toward mHealth in general and mHealth for mental health. The third component included in-depth interviews with randomly selected participants who completed the quantitative portion of the study, regarding the acceptability of messaging in an app used to promote mental wellness. The work is guided by the conceptual model shown in Figure 1, which is rooted in the Self Determination Theory and the Technology Acceptance Model.
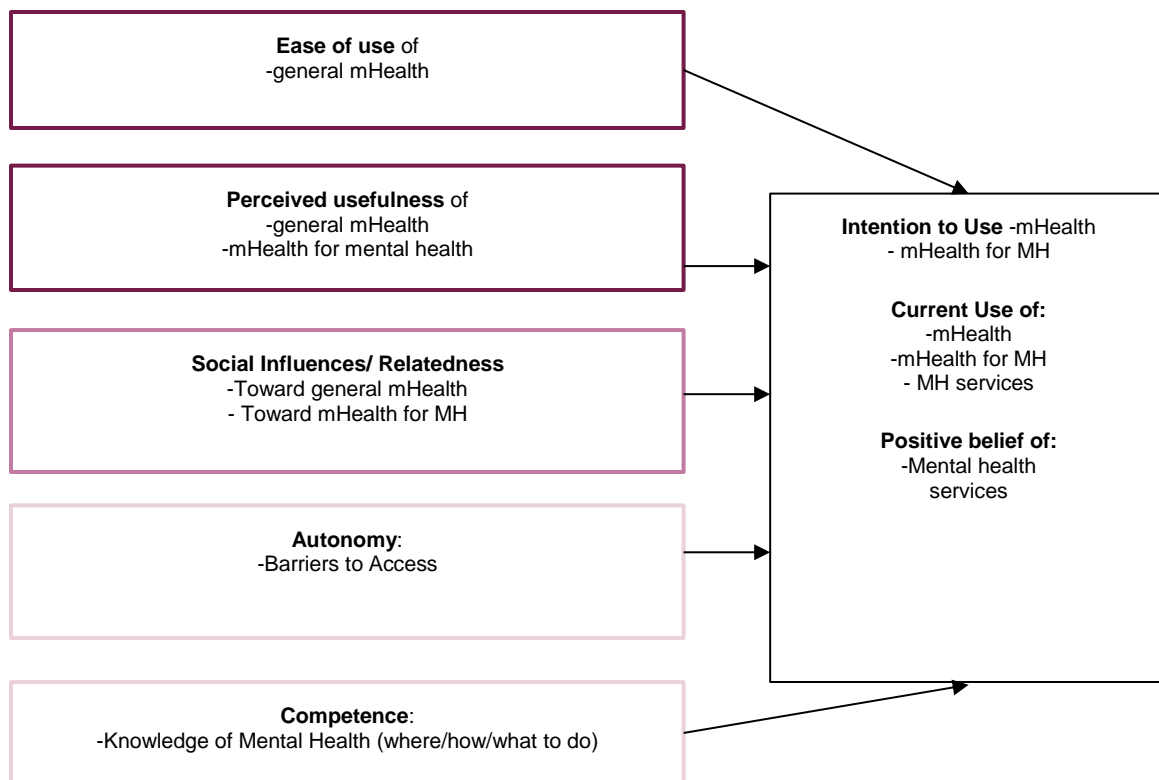

Figure A.1: Overall conceptual model guiding the dissertation proposal

The work was presented in three papers. Paper 1 is focused on the survey results regarding general mental health services and practices. It focused on the current mental health practices that the sample of Bangladeshi university students engaging in. Specifically, it reports how often respondents utilize clinical and nonclinical mental health services and/or practices, as well as the coping mechanisms used. The paper also reports on what motivates Bangladeshi university students to use mental health services and/or practices. In particular, it examines which constructs of the self-determination theory (autonomy, relatedness, and a competency toward performing mental health practices) are associated with the intention to use clinical mental health services and positive attitudes toward using clinical mental health services, as well as the interrelationship of constructs of the self-determination theory associated with use of nonclinical mental health practices.

Paper 2 focuses on the survey results regarding attitudes toward using digital health for mental health. It reports on the current usage practices of mHealth among a sample of Bangladeshi university students. It examined which of the constructs of Technology Acceptance Model (perceived usefulness, ease of use, social influence) associated with intention to use mHealth and current use of mHealth in general and mHealth for mental health. Further, it reports on what motivates Bangladeshi students' toward using mHealth for mental health.

Paper 3 focuses on the results of the qualitative in-depth interviews. It reports on what Bangladeshi University students' attitudes toward messaging used in English apps developed for mental health promotion are. Specifically, we examined if the messaging of BlueWatch culturally appropriate for Bangladeshi University students.

Methods for Component 1: Cognitive interviewing

Cognitive Interviews

To ensure the Bangla survey captures the meaning of the English surveys, in a culturally appropriate way, a cognitive interview guide was developed and reviewed by four native Bangla speaking individuals (Dr. Pathan, Dr. Rahman, Ms. Baten, and Ms. Syed). We identified any questions from the survey that were deemed to not have a straightforward translation from English to Bangla and incorporated them into the cognitive interview guide. Translations were discussed individually with me, until the best wording was decided and discrepancies between different translators resolved. See Appendix D.1. The interview guide included the questions in English, and Bangla messaging that was translated by a former student at BRAC University in Bangladesh (Naima Tasnim). We conducted cognitive interviews (N=5) to so that the questions capture the meanings that they were intended to.

Pilot Test

After cognitive interviewing and survey modifications, the revised survey materials were translated from English to Bangla by a native Bangladeshi speaker (Naima Tasnim). The Bangladeshi version was then back-translated to English by Nurun Baten (another native Bangladeshi speaker), and the English versions were compared for equivalence of meaning (Brislin, 1970), and there were negligible differences. After revising the survey based on the results of the cognitive interview guide, we pilot tested the survey (n=10) and met with the pilot testers after they took the survey, to elucidate any of their questions regarding the survey. Based on their notes, we adapted the final version of the survey. Appropriate revisions were made after pilot testing, for example moving particular demographic questions that one participant deemed "risky" (sexual orientation) to the end of the survey.

Methods for component 2: Quantitative Procedure

Sampling Procedure

The proposed study used a convenience sample of adult students currently attending

university in Bangladesh. Eligibility consisted of current undergraduate, master's, and doctoral

students ages 18 and older (N=350). A Qualtrics survey was developed, and the link was shared

with the faculty contacts within BRAC University, Jahangirnagar University, and Bangladesh

University of Business and Technology. The contacts (Naima Tasnim- Research Assistant and

Dr. Sabina Rashid Professor at BRAC University, Dr. Farzana Islam -Vice-Chancellor of

Jahangirnagar University, Dr. Fayaz Khan, Assistant Professor at BUBT) distributed the link to

email listservs. Participants could optionally enter a raffle, where 150 students (42% of the

targeted sample size) were randomly selected for a USD 5 (the equivalent of approximately 420

takas in Bangladeshi currency) bKash gift.

The Qualtrics survey included an eligibility screener and 188 questions (see Appendix

D.2), including a fidelity question, and was open from January to February 2021. Participants

were able to see their progress through the survey and received encouraging messages when they

are halfway and three-fourths of the way through the survey. To be eligible, participants had to

be current university students, above the age of 18. Data collection remained open for two

months. To ensure respondents only take the survey one time, the "prevent ballot box studding"

feature of Qualtrics was be turned on.

Quantitative Measures

Demographic Characteristics. As shown in Appendix D.2, standard measures were

used to collect data on gender, age, neighborhood grown up in, family socioeconomic status,

school, religiosity, sexual orientation, relationship status, degree type, time enrolled in

university, academic discipline. These were important to assess as rates of mental health outcomes, such as mood and anxiety disorders, differ by gender, with a higher prevalence in women (Riecher-Rössler, 2017). Mental health outcomes have different ages of onsets (Jones, 2013). Higher education levels are associated with an increased likelihood of receiving mental health services (Steele, 2007). Neighborhood factors and socioeconomic status are associated with depression; coming from poorer neighborhoods and lower SES increases the risk of having depression (Menec et al., 2010). Marital and relationship status have also been associated with depression; for example, married men are less likely to have depression (Kamiya et al., 2013).

Mental Well-Being. The 5-item HERO Wellness Scale was used to measure subjective psychological wellbeing (Yaklin et al., 2020). The 5-item scale assessed well-established positive psychology traits such as happiness, enthusiasm, resilience, and optimism. Internal consistency was calculated from baseline data (N = 84) using Cronbach's alpha for the 5-item HERO composite = .93. The corrected item-total correlations were adequate (>.50), ranging from .67 (resilience) to .86 (mental wellness). The HERO Wellness scale and the WHO-5 Well Being Index were chosen to measure wellness and establish concurrent validity for the HERO scale. Pearson correlation coefficients were computed to assess the direction and magnitude of the relationship between the HERO composite scale scores and WHO-5 Well-Being Index scores at baseline (N = 84). There was a statistically significant positive correlation (r = .79, p < .001).

Questions such as, "On average, during the last 7 days, how happy have you felt?" were measured using a 10-point Likert scale 0- Not at all happy 10- extremely happy. The raw score was calculated by totaling the figures of the five answers. To calculate the total score, all chosen numbers were summed. The total possible score ranged from 0 to 50. A higher score indicated a higher mental wellness.

Perceived Stress. The <u>Perceived Stress Scale</u> (PSS-4) was used to assess stress among students. It is a 4-item self-report instrument designed to measure "the degree to which situations in one's life are appraised as stressful" (Cohen et al., 1983). Psychometric properties of the long version (PSS) of the survey have been examined in adult populations with past suicide attempts and have high internal consistency of the items (Cronbach's alpha 0.82) (Lee, 2012; Mitchell et al., 2008).

Depression. The <u>Patient Health Questionnaire</u>- 2 (PHQ-2) was used to capture depressive symptomatology (Ganguly et al., 2013). The 9-item version of this survey was used in an Indian (in the same geographic subcontinent as Bangladesh) adolescent population and found to have excellent 1-month test-retest reliability (r= .875) and internal consistency (Cronbach's alpha .835). A scale of 0 = never to 3 = almost daily is used to gauge whether or not participants experience depression symptoms. In the depression severity assessment, items are summed and 3 is the optimal cutoff point, signaling that people are suffering from major depression. Therefore, in this study, depressive symptoms were divided into two categories: high (3 points or more) and low (0-2 points).

Barriers to Accessing Mental Health Care. The <u>Barriers to Access to Care Evaluation scale (BACE)</u> scale consists of 30 items that examine both non-stigma and stigma related to mental health service utilization subscales (Clement et al., 2012), encompassing anticipated discrimination, social stigma, disclosure concerns, stereotypes, internalized stigma and stigma by association. The majority of the items have good test-retest reliability (with 22 out of 30 items having weighted kappa values from 0.61 to 0.80, 11 items having values from 0.41 to 0.60 indicating moderate agreement, and only one item- concern about being seen as weak for having

a mental health problem- had a low kappa of 0.35). The Cronbach's alpha value for the treatment scale was 0.89, indicating good internal consistency.

Attitudes and Perceptions of Mental Health. The Mental Health Knowledge Schedule was used to assess *stigma-related mental health knowledge* among the general public (Evans-Lacko et al., 2010). The schedule consists of 12 questions, encompassing six *stigma-related mental health areas: help-seeking, recognition, support, employment, treatment, and recovery*, and six items that inquire about *knowledge of mental health condition*s. The overall test-retest reliability of the scale is 0.71, using Lin's concordance statistic. Cronbach's alpha for a general adult population was 0.65, indicating good reliability of items.

Additionally, participants were asked the following questions on a 1-5 scale (1= not at all, 5= completely): "How positively do you feel about using clinical mental health services (therapy, medication)?" regarding clinical services. For mental health practices, there are two items regarding positive beliefs: "How positively do you feel about participating in nonclinical mental health practices, such as mindfulness-based strategies, meditation, or any listed in the coping activity list?" (coping items from the *Brief COPE, described later in this section, were shown*) and "How helpful do you think participating in mental health practices (show list) would be to you?"

The Reported and Intended Behaviour Scale (RIBS) (Evans-Lacko et al., 2011) scale was used to assess how participants treat people who may have a mental disorder. It consists of 8 questions, and asks about current behavior, for example, "Are you currently living with, or have you ever lived with, someone with a mental health problem?" as well as anticipated behavior "In the future, I would be willing to live with someone with a mental health problem." Anticipated behavior is measured using a 5-point Likert scale (1- Disagree Strongly 5- Strongly Agree). The

test-retest reliability was based on a weighted kappa ranged from 0.62-1.0, which suggests

moderate/substantial agreement between the two time points. The overall Cronbach's alpha was

0.85 in middle-income adults.

      mHealth. Three questions were used to assess the **perceived usefulness of mHealth** in

general. These questions have been used in previous research examining factors influencing

mHealth acceptance among an elderly Bangladesh population (Hoque and Sorwar, 2016).

Questions were worded so that respondents can answer regarding perceived benefits of current

use, or perceived benefits of hypothetical use. The same three questions were adapted to assess

the usefulness of mHealth for mental health. All items use a 6-point Likert scale from (1)

"strongly disagree" to (7) "strongly agree." These six questions are below:

1. I find mobile health services useful in my daily life.

2. Using mobile health services helps me accomplish things more quickly.

3. Using mobile health services increases my productivity.

4. I find (that) mobile mental health services (could be) useful in my daily life.

5. Using mobile mental health services (could) help me accomplish things more quickly.

6. Using mobile mental health service (could) increase(s) my productivity

      Ease of Use of mHealth. Six items measured ease of use regarding how easily one feels

they can use a mobile health platform. These items were only be asked of respondents who

answered that they currently use a mHealth platform. Items have been used previously to assess

information technology acceptance in Bangladesh (Venkatesh, Morris, Davis, and Davis, 2003)

and specifically acceptance of health information technology in an Asian population

(Kijsanayotin, Pannarunothai, and Speedie, 2009). All items use a 6-point Likert scale from (1) "strongly disagree" to (7) "strongly agree."

1. Learning how to use mobile health services is easy for me.

2. My interaction with mobile health service is clear and understandable.

3. I find mobile health services easy to use.

4. It is easy for me to become skillful at using mobile health services.

5. I have the resources necessary to use mobile health services.

6. I have the knowledge necessary to use mobile health service to use mobile health service.

Social Influence on mHealth Use. Three items examined the influence of people in their close social networks, as it related to mHealth use. These questions have been used before in an Asian population (Kijsanayotin et al., 2009). Items were included to capture social influence on mHealth for mental health use. All items use a 6-point Likert scale from (1) "strongly disagree" to (7) "strongly agree."

1. People who are important to me think that I should use a mobile health service/mobile mental health services.

2. People who influence my behavior think that I should use mobile health services mobile mental health services.

3. People whose opinions that I value prefer that I use mobile health service /mobile mental health services.

Intention to Use mHealth. Three items are used to capture intention to use general mHealth services, and four items capture intention for mHealth for mental health services. Intention to use services is the precursor of behavior adoption according to the Technology

Acceptance Model. These items have been used to capture information technology acceptance in

Bangladesh (Venkatesh et al., 2003) and readiness to use mHealth for mental health among a

low-income Muslim population (Ben-Zeev et al., 2017). All items use a 6-point Likert scale from

(1) "strongly disagree" to (7) strongly agree.

1. I intend to continue using mobile health service in the future.

2. I will always try to use mobile health services in my daily life.

3. I plan to continue to use mobile health services frequently.

Current Mental Health Practices. Mental health practices encompass both clinical and

nonclinical forms of addressing one's mental health. This was measured using items adapted

from the questionnaire used in the Healthcare for Communities Study (Wells et al., 2003), and

found in Eisenberg et al.'s research examining mental health service utilization among college

students in the United States (Eisenberg, Hunt, Speer, and Zivin, 2011). Questions covered

current practices regarding medication, therapy, and nonclinical assistance (social support from

others). The Brief COPE survey was used to assess **current coping strategies** used by students,

common coping strategies used by university students were listed, and students checked if they

currently use any of these methods (Carver, 1997). Brief COPE uses items that can be grouped

into different types of coping strategies: instrumental support, emotional support, active coping,

planning, acceptance, self-distraction, denial, humor, self-blame, behavioral disengagement,

venting, positive reframing, substance use, and religion. These factors can be grouped as

productive and non-productive types of coping. Productive types of coping are instrumental

support, emotional support, active coping, planning, acceptance, positive reframing. Non-

productive types of coping are self-distraction, denial, self-blame, behavioral disengagement, and

substance use. Brief COPE has been used in South Asian populations and has been found to have high reliability, with a Cronbach's alpha of 0.70 (Mohanraj et al., 2014).

Current Use of mHealth. Ten questions assessed the current use of mHealth. Respondents answered questions as they pertain to mHealth generally and then specifically regarding mental health. All items have been used in peer-reviewed studies previously (Ben-Zeeva et al., 2016).

1. I use mobile health service currently (Yes, No, Do Not wish to answer)

2. I use mobile health for mental health currently (Yes, No, Do Not Wish to Answer)

3. How often do you use your mHealth programs (1= Never to 10= All the time)

A table summarizing the scales used in the survey can be found in Appendix D3.

Component 3: Qualitative Procedure

Qualitative Methods: Acceptability of app Content for Promoting Mental Health

The research questions that guide Paper 3 are:

● What are Bangladeshi University students' attitudes toward messaging used in an English app developed for mental health promotion?

    ○ Is the messaging of BlueWatch culturally appropriate for Bangladeshi University students?

Sampling

The proposed sample for this study consists of a random subsample of students recruited from those who complete an online survey and agreed to further participation. The initial survey sample used convenience sampling of adult students currently attending university in Bangladesh. Eligibility consisted of all undergraduate, master's, and doctoral students ages 18 and older. Twelve randomly selected students were invited to participate in in-depth interviews.

All students (N=12) who participate in the qualitative portion received an additional 5 USD. Formative usability trials show that samples of five participants can identify 80% of issues with app usability (Lewis, 1994; Virzi, 1992).

Methods

A semi-structured interview guide, see Appendix E was used to examine students' acceptance, intention to use, readiness to use, based on the specific content of the BlueWatch App. Mindfulness content, voice-guided activities, were shared with the students during in-depth interviews. Three exercises were assessed for content acceptability with students, given there would be a time constraint in assessing all components of the App. The activities ask participants to use mindfulness techniques and guided meditation. A college mental health psychiatrist was consulted to assess the risk and benefits of these activities, and the exercises were deemed to have negligible risk and thus appropriate to be used in the research study. Interviews were led by the research assistant, a recent university graduate from a Bangladeshi university, and were conducted over Zoom, in Bangla. The audio of the interviews were recorded and translated into English by the PI and research assistant.

Analysis Plan

Quantitative Analysis

Paper 1. This paper examined the following research questions:

- What current mental health practices are a sample of Bangladeshi university students

  engaging in?

  - How often are students utilizing clinical and nonclinical mental health services

    and/or practices?

  - What coping mechanisms are students using?

- What motivates Bangladeshi university students to use mental health practices?

  - Are constructs of the self-determination theory (autonomy, relatedness, and

    competency toward performing mental health practices) associated with the

    intention to use clinical mental health services?

  - Are constructs of the self-determination theory associated with positive beliefs

    toward using clinical mental health services?

  - Are constructs of the self-determination theory associated with using nonclinical

    mental health practices?

Descriptive statistics (e.g., frequencies, means, and standard deviations) were used to analyze the distributions of all study variables. Associations between the constructs of Self-Determination Theory and the likelihood of using a mental health service was also examined. This involved multiple regression analysis using SPSS v25; there were three main outcomes (See Figure A.1):

1. Perceived need of mental health support

2. Current use of mental health professional services (therapy, medication)

3. Positive beliefs of mental health professional services

These outcomes were operationalized as binary variables, whether one perceived a need, has positive views of, or engages in the use of clinical services or not and was analyzed using logistic regression. General mental health practices were examined by creating a sum of the number of coping practices students partake in.

Bivariate analysis (using ANOVA and Pearson's chi-squared) was used to examine the relationship between the independent variables, the measures related to the Self-Determination Theory (autonomy, competence, and relatedness), and the dependent variables. The construct of autonomy was examined by measuring barriers to access mental health services, as measured by the BACE scale. Competence was assessed by measuring mental health knowledge, measured using MAKS. Relatedness was measured by examining reported and intended behaviors toward people with a mental health disorder. Mental wellness, depression, anxiety, and stress can both influence the main independent and dependent variables; thus, they were be controlled for in the analysis. Variables and constructs are organized in Table A.1. Collinearity was assessed within independent variables by performing principal component analysis redundant variables were removed from the final model based on results.

The study examined reliability (measured by Cronbach's alpha) testing of the above scales, as there is no published literature examining their use in a Bangladeshi population.

Table A.1: Constructs and variables to be used in paper 1, assessing associations in the Self-Determination Theory

Category	Variables
Barriers to Accessing Mental Health Services (IV) Alpha=.916	● Mean of Stigma related subscale (of BACE); 11 items: 0-3 scale ● Mean of Non-stigma related subscale (of BACE); 19 items: 0-3 scale

Knowledge of Mental Health (IV)	● Knowledge of mental health (MAKS) (Help-seeking, recognition, support, employment, treatment recovery) subscale mean; 6 items:1-5 scale.
Reported and Intended Behaviors toward people with a mental health disorder Alpha=.872	● Mean of RIBS scale; 8 items: 1-5 scale.
Positive belief of mental health (IV)	● How positively do you feel about participating in nonclinical mental health practices, such as mindfulness-based strategies, meditation, or any listed in the coping activity list (show list here)? 1-5 scale ● How positively do you feel about using clinical mental health services (therapy, medication)? 1-5 scale
Demographic and Control Variables	● Age, gender, neighborhood, education, family SES, marital status ● Depression, perceived stress, anxiety, mental wellbeing (Scale Means) ● Religiosity
Current mental health practices Dependent Variable (DV)	● Clinical mental health practices: Medication Use, psychotherapy ● Nonclinical mental health practices: (Healthy) Number of healthy coping practices (Unhealthy) Number of unhealthy coping practices

Paper 2. Paper 2 examined 1) student's readiness levels and current use of mHealth, and 2)

readiness to use mHealth for mental health, and 3) potential motivators for using mHealth for

mental health. Overall research questions were:

- What are current usage rates of mHealth among survey respondents?

    ○ Are constructs of the Technology Acceptance Model (perceived usefulness, ease

    of use, social influence) associated with intention to use mHealth?

    ○ Are constructs of the Technology acceptance model (perceived usefulness, ease of

    use, social influence) associated with current use of mHealth?

- What motivates Bangladeshi students' toward using mHealth for mental health?

    ○ What are current usage practices of mHealth for mental health?

○ Are constructs of the Technology Acceptance Model (perceived usefulness, ease of use, social influence) associated with intention to use mHealth for mental health?

■ Is the perceived ease of use of mHealth apps associated with 1) intention to use such mHealth Apps, 2) intention to use mHealth for mental health Apps, and 3) current mHealth usage?

■ Do social factors have an influence on ones' 1) intention to use mHealth for mental health apps and 2) current mHealth usage?

■ Is perceived usefulness of mHealth for mental health associated with 1) intention to use and 2) current use of mHealth for mental health.

Descriptive statistics (e.g., frequencies, means, and standard deviations) were used to describe the distributions of all study variables. Independent variables included ones' perceived usefulness, ease of use, social influences. The primary outcomes thus were "current use" and "intention to use" mHealth for mental health (see Figure A.1). Independent variables included ones' perceived usefulness, ease of use, social influences for mHealth use generally, and mHealth for mental health.

The bivariate analysis examined directional relationships between the three constructs of the Technology Acceptance Model, 1) social influence, 2) ease of use, and 3) perceived usefulness of the technology in question. Data was analyzed using regression to examine the constructs of TAM as predictors of current use. Constructs from general mHealth use were used as independent variables in association with current use and intention to use mHealth for mental health. The key points of examination were whether general use and comfort using general mHealth are indicative of mHealth for mental health use or intentions.

Table A.2: Constructs and variables used to assess TAM constructs in relation to mHealth and

mHealth for mental health

Construct	Operationalization
Social Influence on general mHealth (IV)	Mean of 3 items on a 7 pt scale: (1= Do not agree, 7= Totally Agree) ● People who are important to me think that I should use a mobile health service. ● People who influence my behavior think that I should use a mobile health service. (1= Do not agree, 7= totally agree). ● People whose opinions that I value prefer that I use mobile health service
Ease of Use of general mHealth (IV)	Mean of 6 items on a 7 pt scale: (1= Do not agree, 7= Totally Agree) ● Learning how to use mobile health services is easy for me. ● My interaction with mobile health service is clear and understandable. ● I find mobile health services easy to use. ● It is easy for me to become skillful at using mobile health service ● I have the resources necessary to use mobile health services. ● I have the knowledge necessary to use mobile health services.
Perceived usefulness of general mHealth (IV)	Mean of: (1= Do not agree, 7= Totally Agree) ● How helpful do you think using a mobile device to provide general support would be? (1= not helpful at all 7= extremely helpful) ● I find mobile health services useful in my daily life. (1= Do not agree, 7= Totally Agree) ● Using mobile health services helps me accomplish things more quickly. (1= Do not agree, 7= Totally Agree) ● Using mobile health services increases my productivity. (1= Do not agree, 7= Totally Agree)
Social influence on mHealth for mental health (IV)	Mean of: (1= Do not agree, 7= Totally Agree) ● People who are important to me think that I should use mobile mental health services. ● People who influence my behavior think that I should use mobile mental health services. ● People whose opinions that I value prefer that I use mobile mental health service
Ease of Use of mHealth for mental health (IV)	Mean of: (1= Do not agree, 7= Totally Agree) ● Learning how to use mobile health services is easy for me. ● My interaction with mobile health service is clear and understandable. ● I find mobile health services easy to use. ● It is easy for me to become skillful at using mobile health service ● I have the resources necessary to use mobile health services. ● I have the knowledge necessary to use mobile health services.
Perceived usefulness of mHealth mental health (IV)	Mean of: (1= Do not agree, 7= Totally Agree) ● How helpful do you think using a mobile device to provide mental or behavioral support would be? (1=not helpful at all, 7= extremely helpful) ● I find (that) mobile mental health services (could be) useful in my daily life. (1= Do not agree, 7= Totally Agree)

	● Using mobile mental health services (could) help me accomplish things more quickly. (1= Do not agree, 7= Totally Agree) ● Using mobile mental health service (could) increase(s) my productivity (1= Do not agree, 7= Totally Agree)
Demographic (Control Variables)	● Age, gender, neighborhood, education, family SES, marital status ● Depression, perceived stress, anxiety, mental wellbeing (Scale Means) ● Religiosity
Intention to use general mHealth Dependent Variable (DV)	Mean of: (1= Do not agree, 7= Totally Agree) ● I intend to continue using mobile health service in the future. (1= Do not agree, 7= totally agree) ● I will always try to use mobile health services in my daily life. (1= Do not agree, 7= totally agree) ● I plan to continue to use mobile health services frequently. (1= Do not agree, 7= totally agree)

Intention to use mHealth for mental health
Dependent Variable (DV)
	● How interested would you be in using the following for mental health or behavioral support? (1= not interested, 7= extremely interested)
	  ● Texting
	  ● Smartphone application
	  ● Web-based intervention
	● I intend to use mobile mental health services in the future. (Y/N)
	● I will always try to use mobile mental health service in my daily life
	● I plan to use mobile mental health service frequently (Y/N)

Current use of mHealth Dependent Variable (DV)	2 measures of this outcome: ● I use mHealth services currently (Y/N) ● I spend a lot of time on mobile health services. (1= Do not agree, 7= totally agree)
Current of use mHealth for mental health Dependent Variable (DV)	2 measures of this outcome: ● I use mHealth for mental health currently (Y/N) ● How often do you use mHealth for mental health programs? (1=Never, 10=All the time)
Current use of mHealth Dependent Variable (DV)	2 measures of this outcome: ● I use mHealth services currently (Y/N) ● I spend a lot of time on mobile health services. (1= Do not agree, 7= totally agree)

Qualitative Analysis

Thematic analysis was used to analyze this data. The thematic analysis allowed for

flexible and detailed data (Braun and Clarke, 2006; Nowell, Norris, White, and Moules, 2017).

One highlight of thematic analysis is that it allows researchers freedom not to be wedded to

theoretical commitments of grounded theory (Braun and Clarke, 2006). For this paper, a thematic

analysis was used according to a contextualist method, which encompasses characteristics of

both essentialism and constructionism. This method recognizes that the way an individual

interprets their experiences impacts the way they view social contexts. The purpose of thematic

analysis in this study is to "provide a rich thematic description of the entire data set,"

contributing to reader's having "a sense of predominant or important themes" (Braun and Clarke,

2006). As such, "predominant themes" are likely to be those that show up frequently in the data,

as opposed to themes that may be rich in detail but less prevalent across the data set. Braun and

Clarke (2006) outline a six-step method for conducting thematic analysis, outlined below.

Step 1: Familiarizing Myself with my Data

To familiarize myself with the data, the PI was present for the majority of the interviews on

Zoom. As recommended by Braun and Clarke (2006) the audio of the interviews were listened to

repeatedly, as was reading through transcripts. During and immediately after each interview,

potential patterns were summarized (Braun and Clarke, 2006). An English translation of the

interview was uploaded to Dedoose software for the next steps.

Step 2: Generating Initial Codes

Interview transcripts were uploaded to Dedoose, where initial semantic codes were generated,

with a code being defined as "the most basic segment, or element, of the raw data or information

that can be assessed in a meaningful way regarding the phenomenon" (Boyatzis, 1998). In this

step, the researcher coded for as many potential themes/patterns as possible, extracts of data were

coded inclusively, while keep the surrounding context, and lines of text were coded in different

ways when appropriate (Braun and Clarke, 2006). This step was tracked by using reflexive

journaling (Nowell et al., 2017).

Step 3: Searching for Themes

The dataset was analyzed according to themes. This involved analyzing the codes and considering how they form overarching themes (Braun and Clarke, 2006). As Nowell and colleagues (2017) suggested, a diagram was created showing connections between themes.

Step 4: Reviewing Themes

The list of themes was further refined by examining the coded data under the lens of each theme (Nowell et al., 2017; Braun and Clarke, 2006). In this process, codes were added, merged, or deleted codes as fit, with the goal that only codes relevant to the dataset remain. This resulted in concise, distinct themes (Nowell et al., 2017).

Step 5: Defining and Naming Themes

In this step, I named the themes according to what the data indicate, in a sense giving them a title (Braun and Clark, 2006; Nowell et al.,2017). Themes were reviewed with peer researchers and a member of the dissertation committee to discuss the reasoning behind each theme, and increase the credibility of the process (Nowell et al., 2017). Peer-debriefing strategies were used while maintaining the confidentiality of my participants, to explore the possibility of different perspectives on the data and interpretation, to keep data interpretation's objective.

Step 6: Producing the Report

This dissertation serves as the final step, having wrote the methodology and results in a concise yet detailed manner (Braun and Clarke, 2006).

Appendix B

Table A.3: Breakdown of Mental Health Coping Profiles by gender (n=350)

	%			χ^2 *p*-value
	Total	Male	Female	
Adaptive Coping	98.7%	99.0%	98.1%	.451
Self-Care	80.1%	77.6%	83.2%	.180
Planning	64.4%	65.2%	63.4%	.707
Positive Reframing	63.6%	39.5%	32.3%	.152
Acceptance	61.7%	58.6%	65.8%	.154
Emotional Support	56.1%	55.7%	56.5%	.877
Active	60.4%	59.5%	61.5%	.701
Altruistic	60.4%	59.5%	61.5%	.701
Informational Support	45.8%	49.0%	41.6%	.154
Maladaptive Coping	90.0%	87.6%	93.2%	.077
Distraction	77.6%	75.2%	80.7%	.207
Denial/Disengagement	52.8%	52.4%	53.4%	.843
Self-Blame	28.0%	31.4%	23.6%	.096
Venting	23.7%	20.0%	28.6%	.054
Substance Use	6.7%	6.7%	6.8%	.950
Spiritual Coping	73.0%	71.9%	74.5%	.572
Humor Coping	61.5%	60.0%	63.4%	.511
Participation in Mindful Activities	96.5%	96.7%	96.3%	.838
Identifying and prioritizing values	78.4%	77.6%	79.5%	.880
Identifying and trying to change negative thoughts	84.1%	84.3%	82.9%	.773
Deep breathing, de-stressing, meditation, staying in the moment, focusing on senses	57.4%	53.8%	62.1%	.104
Activities to promote self-esteem, such as gratitude journaling	37.6%	36.8%	38.5%	.590

Table A.4: Participant Demographics by perceived need of mental health care N=350

| | %/ M (SD) | | | |
	Overall	Did not feel they needed care	Felt they needed care	χ^2/ ANOVA p-value
Age (18-41)	22.80 (2.17)	22.71 (1.86)	22.92 (2.46)	.353
Gender				.006
Male	56.6%	64.20%	48.60%	
Female	42.0%	35.30%	49.20%	
Gender minority	1.3%	0.50%	2.20%	
Sexual orientation				.232
Heterosexual/Straight	87.6%	92.10%	95.30%	
Sexual orientation minority (LGBTQA+)	6.0%	7.90%	4.70%	
Childhood SES [a]				.524
Low	27.8%	26.30%	29.30%	
High	72.2%	73.70%	70.70%	
Relationship Status				.521
Single	76.0%	77.40%	74.60%	
Partnered (Relationship, Married)	22.9%	22.10%	23.80%	
Other (Self-describe)	1.1%	0.50%	1.70%	
Year/Semester in School				.747
1st-3rd/First year	20.9%	21.80%	19.90%	
4th-6th/Second year	19.0%	16.50%	21.50%	
7th-9th/Third year	19.8%	19.10%	20.40%	
10th-12th/Fourth year	20.1%	21.30%	18.80%	
12th+/Fourth year+	20.3%	21.30%	19.30%	
Degree of Study				.819
Bachelors (BS, BA)	83.8%	84.20%	83.30%	
Masters (MPH, MBA)	16.2%	15.80%	16.70%	
		.851		

Jahangirnagar University	62.8%	63.60%	62.00%	
Bangladesh U of Business and Technology	6.1%	5.80%	6.40%	
East West University	4.4%	4.60%	4.10%	
University of Dhaka	4.1%	5.20%	2.90%	
University of Chittagong	3.2%	2.90%	3.50%	
Other (N <10 per school)	19.5%	13.4%	21.3%	
Religiosity (1-10)	6.33 (2.00)	6.39 (2.11)	6.26 (1.89)	.517
Perceived Stress (0-16)	8.46 (3.41)	7.67 (3.40)	9.30 (3.22)	<.001
Depressive Symptoms (High vs Low)	43.9%	35.40%	52.80%	.001
Suicidal Ideation (Lifetime)	28.3%	19.30%	38.60%	<.001
Wellness (0-50)	26.12 (10.37)	27.61 (10.37)	24.56 (10.16)	.005
COVID-19 Impact on Mental health				<.001
Made it worse	41.0%	31.1%	51.4%	
Stayed same	44.5%	52.7%	34.8%	
Made it better	14.6%	15.3%	13.8%	

Note. *M* = mean, *SD* = standard deviation. Responses of N/A or Do not wish to answer are not shown if under 5%.

[a] Item asked, how often did your family have enough money to make ends meet growing up, low= never, rarely, sometimes high= most of the time, always

Table A.5: Pearson's Correlation Matrix for Clinical Independent Variables (N=350)

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Felt they needed MH help [a]	-	.10	.19**	.12*	.09	-.02	.21**	.17**	.05	-.16**	.26**	.18**	-0.04
2. Perceived Usefulness	-	-	-.08	.04	.07	-.04	-.05	-.07	.19**	.10	-.04	-.06	-0.03
3. Stigma	.-	--		.06	-.04	-.05	.68**	.65**	-.07	-.26**	.27**	.25**	0.03
4. Proximity to MH	-	-	-	-	.28**	.09	.03	.13*	.20**	.00	.05	.01	-0.06
5. Speak to others about MH	-	-	-	-	-	.12*	-.04	.09	.24**	.14**	-.15**	-.14**	-0.04
6. Willingness to interact with someone with a MH problem[b]	-	-	-	-	-	-	-.06	.02	.09	.07	-.00	-.07	-0.08
7. Instrumental Barriers to Care	-	-	-	-	-	-	-	.52**	-.08	-.20**	.20**	.23**	0.03
8. Attitudinal Barriers to Care	-	-	-	-	-	-	-	-	-.09	-.31**	.26**	.23**	-0.05
9. MH knowledge	-	-	-	-	-	-	-	-	-	.12*	-.08	-.02	-.12*
10. Wellness	-	-	-	-	-	-	-	-	-	-	-.56**	-.38**	.27**
11. Perceived Stress	-	-	-	-	-	-	-	-	-	-	-	.45**	-.15**
12. Depression	-	-	-	-	-	-	-	-	-	-	-	-	-0.09
13. Religiosity	-	-	-	-	-	-	-	-	-	-	-	-	-
Range	0-1	1-5	0-3	0-5	0-3	1-20	0-3	0-3	0-28	0-50	0-16	0-1	0-10
Skew (SE)	.05 (.13)	-.77 (.13)	1.02 (.13)	.58 (.13)	-.48 (.13)	-.43 (.13)	.97 (.13)	.13 (.13)	-.36 (.13)	-.32 (0.13)	-.16 (0.13)	.25 (0.13)	-.57 (0.13)
Kurtosis (SE)	-2.01 (.25)	.56 (.26)	.47 (.25)	-.87 (.25)	-1.13 (.26)	-.10 (.25)	.41 (.25)	.40 (.25)	.07 (.25)	-.38 (.25)	-.37 (.25)	-1.95 (.25)	.48 (.25)
Reliability (α)	-	-	.89	-	-	.87	.81	.71	-	.87	.70	-	-

Note: All variables are operationalized from low to high, MH= mental health, SES=socioeconomic status, [a] past year, [b] higher score indicates more willingness, ** = p-value significant at 0.01 (2-tailed), * = p-value significant at .05 (2-tailed)

Appendix C

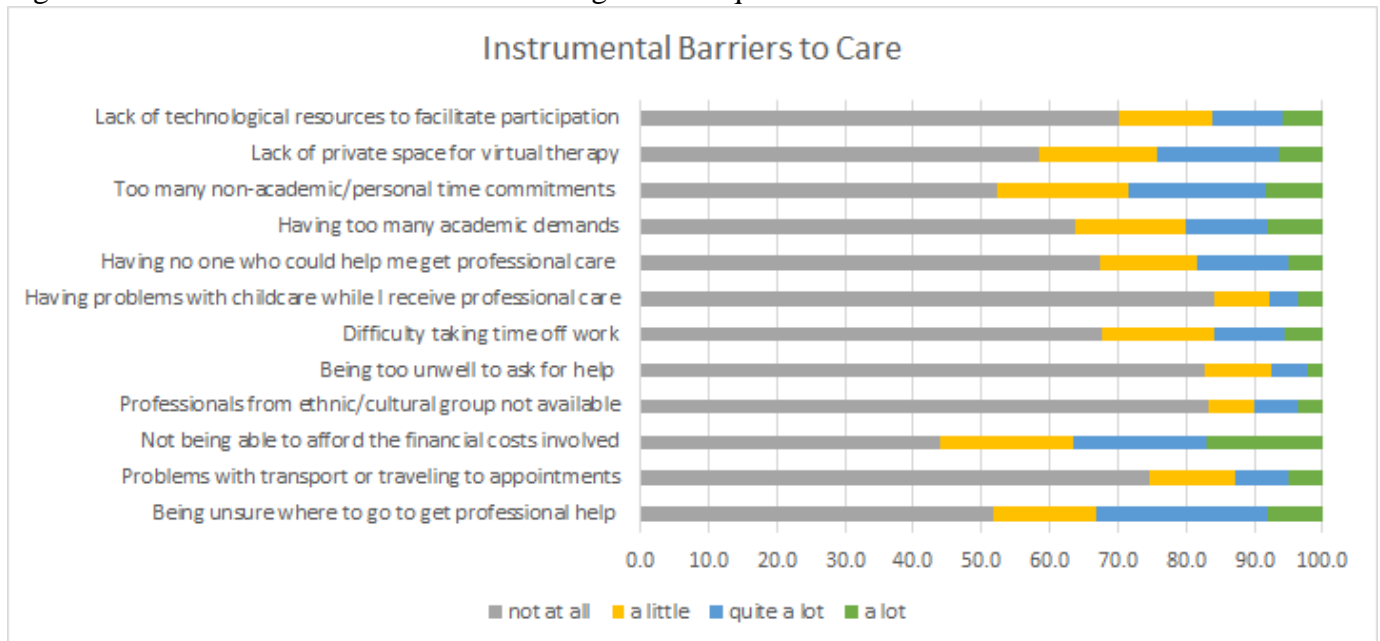Figure A.2: Instrumental Barriers to Accessing Care Frequencies

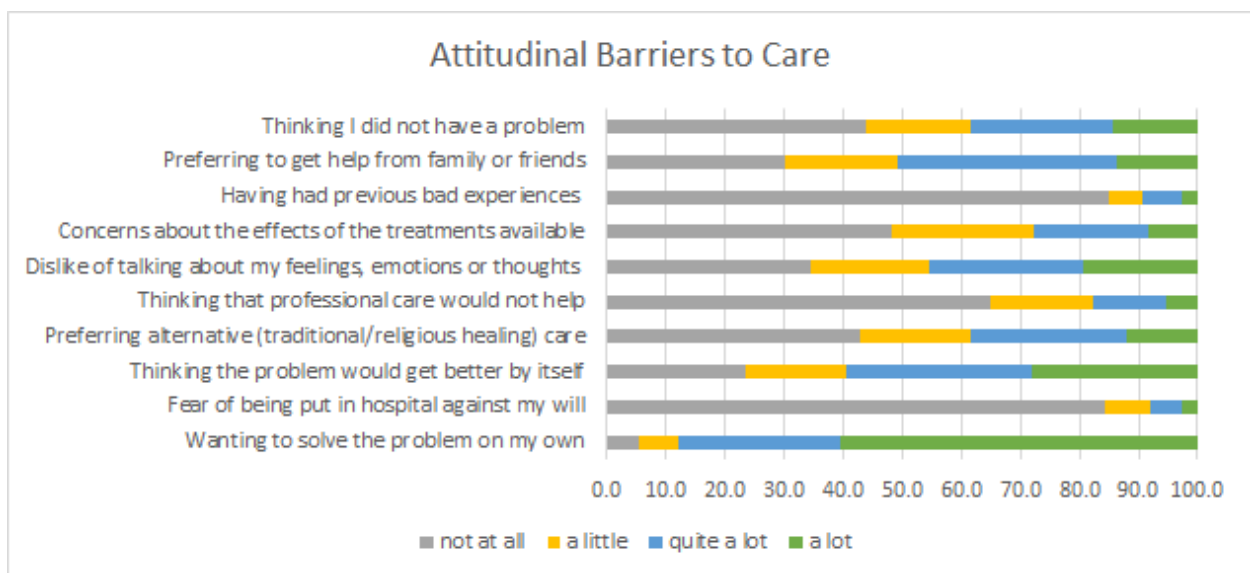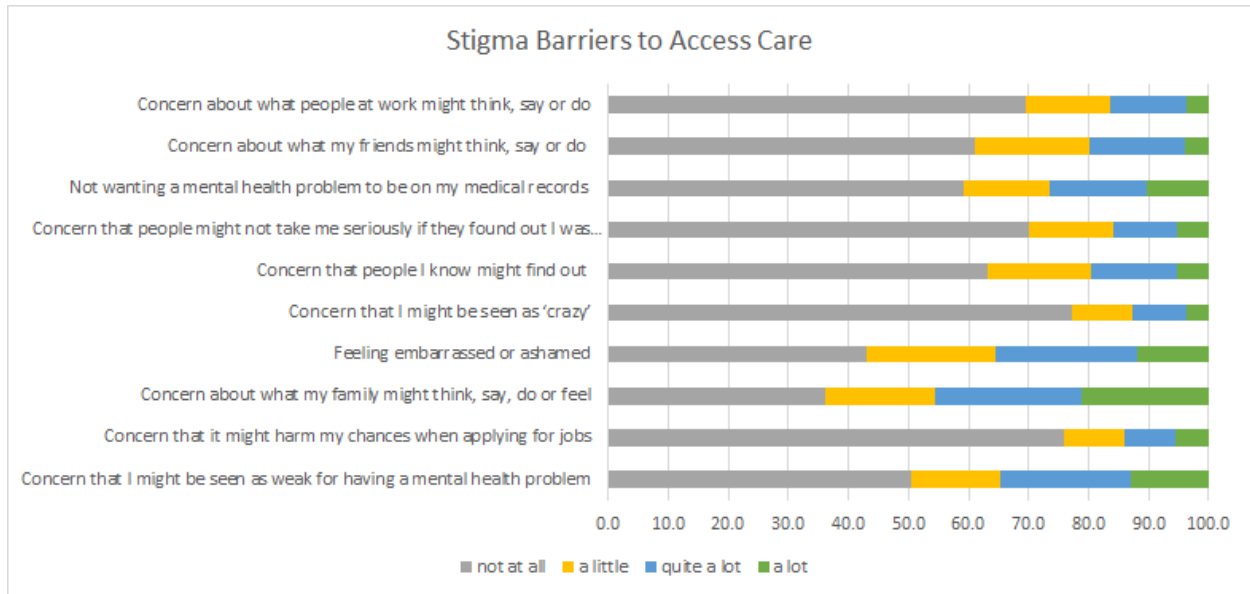Figure A.3: Attitudinal Barriers to Accessing Care Frequencies

Figure A.4: Stigma Related Barriers to Accessing Care Frequencies

Appendix D

D.1 Survey Instruments

Cognitive Interview Guide: Scales
Thank you for agreeing to speak with me today. We are trying to make sure some questions that we have in our survey are well understood and make sense. We are asking you to help us make these questions clearer. First, we would like to ask you just a few questions about yourself.

আমাদের সাথে কথা বলার জন্য ধন্যবাদ আপনাকে। আমরা আপনাকে এমন কিছু প্রশ্ন করতে চাই আমাদের জরিপের জন্য যা আপনি সহজেই বুঝতে পারবেন। এই প্রশ্নগুলো সহজ করার জন্য আমাদের আপনার সাহায্যের প্রয়োজন। প্রথমত, আমরা আপনাকে আপনার সম্পর্কে কিছু প্রশ্ন জিজ্ঞেস করবো।

INTERVIEW CODE: _____

Section 1: Demographics

No.	Questions and filters	Coding categories/Space for open-ended responses	
	INTERVIEWER: RECORD THE START TIME	_____ : _____	
1.	How old are you? আপনার বয়স কত?	_____	AGE IN COMPLETED YEARS
2.	Are you currently attending a University in Bangladesh? আপনি কি এখন বাংলাদেশের কোনো বিশ্ববিদ্যালয়ে পড়াশুনা করছেন?	Yes No	**IF NO ☐ END INTERVIEW**
3.	Which University are you attending? আপনি কোন বিশ্ববিদ্যালয়ে পড়াশুনা করছেন?		
4.	What year of University are you in? আপনি বিশ্ববিদ্যালয়ের কোন বছর/সেমিস্টারে আছেন?	___ ____ (record highest level)	Record highest completed grade
5.	What subject are you studying? আপনি কোন বিষয়ে পড়াশোনা করছেন?		
6.	Do you speak English or Bangla? আপনি কি বাংলা বা ইংরেজি বলতে বা লিখতে পারেন?	_____	**IF NO ☐ END INTERVIEW**

NOW I WOULD LIKE TO ASK YOU SOME QUESTIONS ABOUT WHAT WELL-BEING MEANS TO UNIVERSITY STUDENTS IN BANGLADESH. WE WILL ASK YOU FOR YOUR ANSWER TO SOME QUESTIONS. THEN WE WANT TO KNOW HOW WELL YOU UNDERSTOOD THE QUESTION AND THE REASONS YOU ANSWERED THE QUESTION THE WAY YOU DID. IF YOU DIDN'T UNDERSTAND, THEN, WHY WERE YOU NOT ABLE TO UNDERSTAND IT? PLEASE ALWAYS FEEL FREE TO TELL ME WHAT YOU DID NOT UNDERSTAND OR GIVE ADVICE ON HOW TO MAKE IT BETTER.

এখন আমরা আপনাকে বাংলাদেশের বিশ্ববিদ্যালয়ের ছাত্র/ছাত্রীদের কাছে সুখে থাকা মানে কি এই সম্পর্কে কিছু প্রশ্ন জিজ্ঞেস করবো। এরপর আমরা জানতে চাইবো আপনি কত ভালভাবে এই প্রশ্নগুলো বুঝতে পেরেছেন এবং আপনার এই উত্তরগুলো দেয়ার কারন কি। যদি আপনি কিছু বুঝতে না পারেন তাহলে বলবেন কেন বুঝতে পারেননি। আপনি কোন প্রশ্ন না বুঝলে অনুগ্রহ করে আমাদেরকে জিজ্ঞাসা করবেন অথবা আমাদেরকে বলবেন কিভাবে প্রশ্ন করলে আপনি বুঝতে পারবেন।

Section 1: HERO WELLNESS

For this part of the interview, I will read you a statement and then ask you how much you agree or disagree with the statement. For each statement I will read the answer choices to you. সাক্ষাৎকারের এই পর্যায়ে আমরা আপনাকে কিছু বিষয় পড়ে শোনাবো এবং জিজ্ঞেস করবো আপনি বিষয়টির সাথে কতটুকু একমত। প্রত্যেকটি বিষয়ের সাথে উত্তরগুলোও আমরা আপনাকে পড়ে শোনাবো।

7.	For each of the following questions I would like you to answer the question, and then tell me how easy you thought it was to understand আপনি অনুগ্রহ করে পরবর্তী প্রশ্নগুলোর উত্তর দিবেন এবং আমাদের জানাবেন প্রত্যেকটি প্রশ্ন বুঝতে আপনার কতটুকু সহজ লেগেছে।			
8.		*Circle one response*		INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER
		Not at all happy (মোটেও খুশি নয়)	0	
		Mildly happy (হালকা খুশি)	2	
		Moderately happy (মোটামুটি খুশি)	5	
	On average, during the last 7 DAYS, how happy have you felt? গত ৭ দিনের মধ্যে আপনি কতটুকু খুশি ছিলেন?	Highly Happy (অনেক খুশি)	7	
		Extremely happy (অত্যন্ত খুশি)	10	
9.	How would you repeat that question to a friend? আপনি এই প্রশ্নটি আপনার বন্ধুকে কিভাবে জিজ্ঞেস করবেন?			
10.	What does "happy" mean to you? আপনার কাছে খুশি থাকা মানে কি?			
11.	On average, during the last 7 DAYS, how enthusiastic have you felt? গত ৭ দিনের মধ্যে আপনি কতটুকু উৎসাহিত অনুভব করেছেন?	*Circle one response*		INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER
		Not at all (মোটেও নয়)	0	
		Mildly (হালকা)	2	
		Moderately (মোটামুটি)	5	
		Highly (অনেক)	7	
		Extremely (অত্যন্ত)	10	
12.	What made you say that? What does it mean to be enthusiastic? আপনার কাছে উৎসাহিত থাকার মানে কি?			
13.	On average, during the last 7 DAYS, how resilient (able were you to overcome obstacles) have you felt?	*Circle one response*		INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER
		Not at all (মোটেও নয়)	0	

	গত ৭ দিনের মধ্যে আপনি কতটুকু বাঁধা অতিক্রম করতে সক্ষম হয়েছেন বলে মনে করেন?	Mildly (হালকা)	2	
		Moderately (মোটামুটি)	5	
		Highly (অনেক)	7	
		Extremely (অত্যন্ত)	10	
14.	What does "resilient" mean to you? বাঁধা অতিক্রমে সক্ষম হওয়া বলতে আপনি কি বুঝেন?			
15.	On average, during the last 7 DAYS, how optimistic have you felt? গত ৭ দিনের মধ্যে আপনি কতটুকু আশাবাদী ছিলেন?	*Circle one response*		INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER
		Not at all (মোটেও নয়)	0	
		Mildly (হালকা)	2	
		Moderately (মোটামুটি)	5	
		Highly (অনেক)	7	
		Extremely (অত্যন্ত)	10	
16.	What does "optimistic" mean to you? আপনার কাছে আশাবাদী হওয়ার মানে কি?			
17.	On average, during the last 7 DAYS, how would you rate your mental wellness? গত ৭ দিনের মধ্যে আপনার মানসিক সুস্থতার হার কেমন ছিল?	*Circle one response*		INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER
		Not at all (মোটেও ভাল নয়)	0	
		Mildly (হালকা ভাল)	2	
		Moderately (মোটামুটি ভাল)	5	
		Highly (অনেক ভাল)	7	
		Extremely (অত্যন্ত ভাল)	10	
18.	What do you think this question is asking you about? আগের এই প্রশ্নটি থেকে কি জানতে চাওয়া হচ্ছে বলে আপনি মনে করেন?			
19.	What does "mental wellness" mean to you? "মানসিক সুস্থতা" বলতে আপনি কি বুঝেন?			

Section 2: Mental Health Service Utilization

20.	In the past 12 months, have you visited any mental health professional for any reason?" গত ১২ মাসে আপনি কি কোন কারনে মানসিক স্বাস্থ্যসেবা নিয়েছেন?	

21.	What do you think of when you hear "mental health"? "মানসিক স্বাস্থ্য" বলতে আপনি কি বুঝেন?	
22.	Who do you think of when you think of a "mental health professional"? "মনোরোগ বিশেষজ্ঞ" বলতে আপনি কি বুঝেন?	
23.	How many visits, if any, have you had in the past 12 months for therapy or counseling for your mental or emotional health? আপনার মানসিক স্বাস্থ্যের চিকিৎসা বা পরামর্শের জন্য গত ১২ মাসে কতবার স্বাস্থ্যসেবা নিয়েছেন?	INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER
24.	In the past 12 months, have you taken any of the most common types of medications for your mental health, (like mood stabilizers, antidepressants, Antipsychotics, Psychostimulants, Anti Anxiety) at least several times per week at any point? গত ১২ মাসে, আপনি কি মানসিক রোগের জন্য কোনরকম ঔষধ গ্রহণ করেছেন (যেমন মেজাজ স্থিতিশীল রাখার জন্য, অ্যান্টিডিপ্রেসেন্টস, অ্যান্টিসাইকোটিকস, সাইকোস্টিমুল্যান্টস, দুশ্চিন্তা রোধক)?	INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER
25.	In the past 12 months, have you received counseling or support for your mental or emotional health from any of the following sources? গত ১২ মাসে আপনি কি কারোর কাছ থেকে বা কোন কিছু থেকে আপনার মানসিক স্বাস্থ্যের জন্য পরামর্শ বা সহায়তা পেয়েছেন?	Friend (বন্ধু-বান্ধব) Family member (পরিবারের সদস্য) Religious counselor or other religious contact (ধর্মীয় উপদেশক) Support group (সমর্থক দল) Other nonclinical source (specify) অন্যান্য নন-ক্লিনিকাল পদ্ধতি (নির্দিষ্ট করে উল্লেখ করুন)	INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER
26.	What does "counseling" and "support" mean to you? মানসিক স্বাস্থ্য "পরামর্শ" এবং "সাহায্য" বলতে আপনি কি বুঝেন?		INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER
27.	I just asked you about mental health visits, medications, and sources of mental health care. Were any of these questions hard to understand? আমি এতক্ষন ধরে আপনাকে মানসিক রোগের চিকিৎসা, ঔষধ এবং বিশেষজ্ঞের সাহায্য নেয়া সম্পর্কে জিজ্ঞাসা করেছি। এই প্রশ্নগুলি বুঝতে আপনার কি কোন সমস্যা হয়েছিল?		INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER
28.	In the past 12 months, did you think you needed help for emotional or mental health problems such as feeling sad, anxious, or nervous? বিগত ১২ মাসে আপনি কি আপনার মানসিক সমস্যা নিয়ে কারোর কাছে সাহায্য বা পরামর্শ নেবার প্রয়োজন বোধ করেছেন? (যেমন বিষণ্নতা বা দুশ্চিন্তা নিয়ে অথবা নারভাস হয়ে)		INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER
SECTION 3: MENTAL HEALTH		
29.	How often you have been bothered by these problems in the past two weeks. Feeling sad, depressed, or hopeless? গত দু'সপ্তাহে আপনি কতবার বিষণ্ন, হতাশ অথবা নিরাশ অনুভব করেছেন?		INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR

			CLARIFIED/QUALIFIED THEIR ANSWER
30.	Has being concerned that "you might be seen as 'crazy'" ever stopped, delayed, or discouraged you from getting, or continuing with, professional care for a mental health problem? মানুষ আপনাকে "পাগল" ভাববে, এই চিন্তা করে কখনও কি এমন হয়েছে যে আপনি মানসিক স্বাস্থ্যসেবার জন্য কোন বিশেষজ্ঞের কাছে যাননি বা যেতে দেরি করেছেন বা যাওয়া বন্ধ করেছেন বা অনুৎসাহিত হয়েছেন?	Not at All (মোটেও নয়) A little (একটু) Quite a Lot (কিছুটা) A lot (অনেক) N/A (প্রযোজ্য নয়)	INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER
31.	What does the term "crazy" mean to you? কাউকে "পাগল" ভাবা নিয়ে আপনি কি মনে করেন?		INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER
32.	What made you choose that answer? আপনার এই উত্তরটি বেছে নেওয়ার কারন কি?		
33.	How would you answer: If a friend had a mental health problem, I know what advice to give them to get professional help. আপনি কিভাবে এই প্রশ্নের উত্তর দিবেনঃ যদি আমার কোন বন্ধুর মানসিক সমস্যা থাকে, তবে মানসিক স্বাস্থ্যসেবা পাওয়ার জন্য তাদের কী পরামর্শ দিতে হবে তা আমি জানি।	Agree Strongly (দৃঢ়ভাবে একমত) Agree Slightly (কিছুটা একমত) Neither agree nor disagree (একমতও না আবার দ্বিমতও পোষণ করছি না) Disagree slightly (কিছুটা দ্বিমত পোষণ করছি) Don't Know (জানি না)	INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER
34.	What do you consider "professional help?" আপনার কি মনে হয় কারা মনোরোগের চিকিৎসা করে থাকেন?		
35.	How would you answer: Medicine can be an effective treatment for people with mental health problems? আপনি কিভাবে এই প্রশ্নের উত্তর দিবেনঃ আপনার কি মনে হয় যে ঔষধ সেবন করা মনোরোগের জন্য একটি কার্যকর চিকিৎসা হতে পারে?	Agree Strongly (দৃঢ়ভাবে একমত) Agree Slightly (কিছুটা একমত) Neither agree nor disagree (একমতও না আবার দ্বিমতও পোষণ করছি না) Disagree slightly (কিছুটা দ্বিমত পোষণ করছি)	INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER

		Don't Know (জানি না)	
36.	What was your thought process when answering this question? এই প্রশ্নের উত্তর দেওয়ার সময় আপনি কি চিন্তা করেছিলেন?		
37.	How would you answer this question: Psychotherapy (e.g., counseling or talking therapy) can be an effective treatment for people with mental health problems. আপনি কিভাবে এই প্রশ্নের উত্তর দিবেনঃ আপনার কি মনে হয় যে সাইকোথেরাপি (যেমন, কাউন্সেলিং বা টকিং থেরাপি) মনোরোগের জন্য একটি কার্যকর চিকিৎসা হতে পারে?	Agree Strongly (দৃঢ়ভাবে একমত) Agree Slightly (কিছুটা একমত) Neither agree nor disagree (একমতও না আবার দ্বিমতও পোষণ করছি না) Disagree slightly (কিছুটা দ্বিমত পোষণ করছি) Don't Know (জানি না)	INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER
38.	What made you answer in this way? আপনার এই উত্তরটি বেছে নেওয়ার কারন কি?		
39.	Most people with mental health problems go to a healthcare professional to get help. সাধারণত মানসিক সমস্যা সমাধানের জন্য বেশিরভাগ মানুষ চিকিৎসকের কাছে যান। এই সম্পর্কে আপনার মতামত কি?	Agree Strongly (দৃঢ়ভাবে একমত) Agree Slightly (কিছুটা একমত) Neither agree nor disagree (একমতও না আবার দ্বিমতও পোষণ করছি না) Disagree slightly (কিছুটা দ্বিমত পোষণ করছি) Don't Know (জানি না)	INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER
40.	What was your thought process when answering this question? এই প্রশ্নের উত্তর দেওয়ার সময় আপনি কি চিন্তা করেছিলেন?		
41.	Now, I will use the term "nonclinical mental health practices." When I say this, what I'm getting at is things that people can do that increase their mental wellness that DOES NOT involve the use of a professional (such a therapist or physician) or medication. Some examples can include: going outside, exercising, praying, meditation, talking to friends or family for support, reading. এখন, আমি "নন-ক্লিনিকাল মানসিক স্বাস্থ্যসেবা" পদ্ধতিগুলি নিয়ে আলোচনা করব। অর্থাৎ আমি এখানে এমন কিছু মানসিক স্বাস্থ্যসেবা পদ্ধতির কথা বলছি যা মানুষ কোনধরনের বিশেষজ্ঞ বা ঔষধ ছাড়াই তাদের মানসিক সুস্থতা অর্জন করতে পারে। যেমনঃ বাইরে যাওয়া, ব্যায়াম করা, নামায পড়া, ধ্যান করা, বন্ধু-বান্ধব বা পরিবারের সাথে কথা বলা, বই পড়া ইত্যাদি।		
42.	Is there anything else that you do, or you think other people do, to help their mental wellness? মানসিক সুস্থতা লাভের জন্য উপরোক্ত পদ্ধতিগুলি ছাড়া আপনার মনে হয় আর অন্যকিছু আছে?		

43.	How would you answer the following: How do you feel about participating in nonclinical mental health practices? আপনি কিভাবে এই প্রশ্নের উত্তর দিবেনঃ নন-ক্লিনিকাল মানসিক স্বাস্থ্যসেবা সম্পর্কে আপনি কি মনে করেন?	1 (Very Negatively/খুবই নেতিবাচক) 2 (Slightly Negative/ কিছুটা নেতিবাচক) 3 (Neutrally/ ইতিবাচকও না আবার নেতিবাচকও না) 4 (Slightly Positive/কিছুটা ইতিবাচক) 5 (Very Positively/ খুবই ইতিবাচক) N/A (প্রযোজ্য নয়)	INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER
44.	What do you think this question is asking? আগের এই প্রশ্নটি থেকে কি জানতে চাওয়া হচ্ছে বলে আপনি মনে করেন?		
45.	How would you answer: How confident are you that you would be able to use nonclinical mental health practices? আপনি কিভাবে এই প্রশ্নের উত্তর দিবেনঃ নন-ক্লিনিকাল মানসিক স্বাস্থ্যসেবা সম্পর্কে আপনি কতটুকু আত্মবিশ্বাসী যে এই পদ্ধতিগুলি মানসিক সমস্যা সমাধানের জন্য ব্যবহার করতে পারবেন?	1 (Not at all/মোটেও আত্মবিশ্বাসী নয়) 2(A little confident/একটু আত্মবিশ্বাসী) 3 (Moderately confident/মোটামুটি আত্মবিশ্বাসী) 4 (Very confident/খুবই আত্মবিশ্বাসী) 5 (Absolutely confident/একদম আত্মবিশ্বাসী)	INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER
46.	What do you think this question is asking you about? আগের এই প্রশ্নটি থেকে কি জানতে চাওয়া হচ্ছে বলে আপনি মনে করেন?		
47.	How skilled do you think you are in using nonclinical mental health practices? নন-ক্লিনিকাল মানসিক স্বাস্থ্যসেবা পদ্ধতিগুলি ব্যাবহারের ক্ষেত্রে আপনি নিজেকে কতটুকু দক্ষ বলে মনে করেন?	1 Not at all/মোটেও দক্ষ নয় 2 A little skilled/ একটু দক্ষ 3 Moderately skilled/কিছুটা দক্ষ 4 Very skilled/খুবই দক্ষ 5 Absolutely skilled/একদম দক্ষ	INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER
48.	What does this question mean to you? আগের এই প্রশ্নটি থেকে কি জানতে চাওয়া হচ্ছে বলে আপনি মনে করেন?		

49.	How much do you agree with the following statement: I intend to continue using non-clinical mental health practices in the future. নিম্নলিখিত বিবৃতিতে আপনি কতটুকু একমতঃ আমি ভবিষ্যতে নন-ক্লিনিকাল মানসিক স্বাস্থ্যসেবা পদ্ধতিগুলি ব্যাবহার করা চালিয়ে যাব।	Do not Agree/একমত নই (1) Moderately Disagree/মোটামুটি দ্বিমত পোষণ করছি (2) Slightly Disagree/কিছুটা দ্বিমত পোষণ করছি (3) Neither Agree Nor Disagree/ একমতও না আবার দ্বিমতও পোষণ করছি না (4) Slightly Agree/কিছুটা একমত (5) Moderately Agree/মোটামুটি একমত (6) Totally Agree/সম্পূর্ণ একমত (7) N/A (প্রযোজ্য নয়)	INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER
50.	How would you ask this to a friend? আপনি এই প্রশ্নটি আপনার বন্ধুকে কিভাবে জিজ্ঞাসা করবেন?		

Section 3-- Mobile Health

Now, I'm going to ask you some questions regarding the use of "digital health." Digital health encompasses many things, including -- the use of information from cell phones and computers to improve one's health. An example could be, the use of an app on your phone that encourages you to walk. Here is the first question:

এখন, আমি আপনাকে "ডিজিটাল স্বাস্থ্যসেবা" নিয়ে কিছু প্রশ্ন জিজ্ঞেস করবো।"ডিজিটাল স্বাস্থ্যসেবা" বলতে অনেক কিছুই বোঝায়, যেমন কম্পিউটার বা মোবাইল ফোন থেকে শরীর ভাল রাখার বা উন্নতি করার জন্য যেকোনো তথ্য নেয়া। উদাহরণস্বরূপ, আপনার মোবাইল ফোনে এরকম একটি এ্যাপ ব্যাবহার করা যা আপনাকে হাঁটতে বা দৌড়াতে অনুপ্রেরনা দিবে।

51.	"I use a digital health service currently" "আমি বর্তমানে ডিজিটাল স্বাস্থ্যসেবা ব্যাবহার করি" Yes/No হ্যাঁ/না	INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER **IF PARTICIPANT DOESN'T USE DIGITAL HEALTH SERVICE → END INTERVIEW**
52.	I'm trying to get a better understanding of how people use terms like digital health and mobile health. Can you tell me, what does "digital health service" mean to you? মানুষ কিভাবে ডিজিটাল স্বাস্থ্যসেবা ব্যাবহার করে তা আমরা আরও ভাল করে বোঝার চেষ্টা করছি। আপনি কি বলতে পারেন যে, "ডিজিটাল স্বাস্থ্যসেবা" বলতে আপনি কি বুঝেন?	INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER
53.	How helpful do you think using a mobile device to provide general health support would be?	1 Not at all/মোটেও উপকারী নয় 2 A little helpful/একটু উপকারী 3 Moderately helpful/মোটামুটি উপকারী	INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR

	সাধারণ স্বাস্থ্যসেবার ক্ষেত্রে মোবাইল ফোন ব্যবহার করা কতটুকু উপকারী বলে আপনি মনে করেন?	4 Very helpful/খুবই উপকারী 5 Absolutely helpful/একদম উপকারী	CLARIFIED/QUALIFIED THEIR ANSWER
54.	How did you interpret this question? আগের এই প্রশ্নটি থেকে কি জানতে চাওয়া হচ্ছে বলে আপনি মনে করেন?		
55.	How helpful do you think using a mobile device to provide mental health support would be? মানসিক স্বাস্থ্যসেবার ক্ষেত্রে মোবাইল ফোন ব্যবহার করা কতটুকু উপকারী বলে আপনি মনে করেন?	1 Not at all/মোটেও উপকারী নয় 2 A little helpful/একটু উপকারী 3 Moderately helpful/মোটামুটি উপকারী 4 Very helpful/খুবই উপকারী 5 Absolutely helpful/একদম উপকারী	INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER
56.	What does this question mean to you? আগের এই প্রশ্নটি থেকে কি জানতে চাওয়া হচ্ছে বলে আপনি মনে করেন?		
57.	How likely would you be to use a texting to better your mental health on the following platforms : আপনার মানসিক স্বাস্থ্যের উন্নতির জন্য আপনি টেক্সটিং পদ্ধতিটি কতটুকু ব্যবহার করতে চান?	1 Not at all/মোটেও ব্যবহার করতে চাই না 2 A little likely/একটু ব্যবহার করতে চাই 3 Moderately likely/মোটামুটি ব্যবহার করতে চাই 4 Very likely / অনেক বেশি ব্যবহার করতে চাই 5 Absolutely Likely/ Ekthom	
	How likely would you be to use a smartphone to better your mental health on the following platforms : আপনার মানসিক স্বাস্থ্যের উন্নতির জন্য আপনি স্মার্টফোন এ্যাপ কতটুকু ব্যবহার করতে চান?		
	How likely would you be to use a internet to better your mental health on the following platforms : আপনার মানসিক স্বাস্থ্যের উন্নতির জন্য আপনি ইন্টারনেট কতটুকু ব্যবহার করতে চান?		

58.	What comes to mind when you think of a "mindfulness-based strategy" "মননশীলতা ভিত্তিক কৌশল" বলতে আপনি কি বুঝেন?	INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER
59.	Some people define mindfulness strategies as the following: focus one's awareness on the present moment, while calmly acknowledging and accepting one's feelings, thoughts, and bodily sensations. Mindfulness examples: focusing on your breath, tastes, and smells of what you're eating, the feel of the ground beneath your feet. How would you describe this to a friend? অনেকেই মননশীলতা ভিত্তিক স্বাস্থ্যসেবা বলতে মনে করেঃ মানুষের বর্তমান মুহুর্তের সকল অনুভূতি, চিন্তাভাবনা এবং শারীরিক সংবেদনগুলি ধীরস্থিরভাবে গ্রহণ করার চেষ্টা করা। মননশীলতার উদাহরণঃ আপনার শ্বাস-প্রশ্বাস, মুখের স্বাদ এবং খাবারের ঘ্রাণ, পায়ের নীচে মাটি অনুভব করার অনুভূতিগুলোর উপর মনোনিবেশ করা। আপনি কিভাবে এই জিনিসটি আপনার বন্ধুর কাছে বর্ণনা করবেন?	INTERVIEWER: INDICATE IF SUBJECT NEEDED STATEMENT REPEATED; OR CLARIFIED/QUALIFIED THEIR ANSWER

D.2 Quantitative Survey

Mental Health in Bangladesh

অংশগ্রহণকারী চেক বক্স ইলেকট্রনিকভাবে

◯ I consent (1)

◯ I do not consent (2)

Skip To: End of Survey If C6 = I do not consent

End of Block: CONSENT

Start of Block: Eligibility

Q1 আপনার বয়স কি ১৮ বছর বা তার বেশি ? Are you 18 years or older? (Y/N)

◯ হ্যাঁ (1) Yes

◯ না (2) No

Skip To: End of Survey If Q1 = না

Q2 আপনি কি এখন বাংলাদেশের কোনো বিশ্ববিদ্যালয়ে পড়াশুনা করছেন? Are you currently enrolled in university

◯ হ্যাঁ (1) Yes

◯ না (2) No

Skip To: End of Survey If Q2 = না

End of Block: Eligibility

Start of Block: Demographics

*

Q3 আপনার বয়স কত? How old are you (in years)?

_____

Q7 আপনি কোথায় বড় হয়েছেন? Did you grow up in a rural area or urban area?

গ্রাম বা মফস্বল

 (1)Rural শহর (2) Urban

Q8 আপনি কোন বিশ্ববিদ্যালয়ে বর্তমানে পড়াশুনা করছেন? What University do you currently attend? University of Dhaka (1)

University of Rajshahi (4)

Bangladesh Agricultural University (5)

Bangladesh University of Engineering and Technology (6)

University of Chittagong (7)

Jahangirnagar University (8)

Islamic University (9)

Shahjalal University of Science and Technology (10)

Khulna University (11)

National University (12)

Bangladesh Open University (13)

Bangabandhu Sheikh Mujib Medical University (14)

Bangabandhu Sheikh Mujibur Rahman Agricultural University (15)

Hajee Mohammad Danesh Science and Technology University (16)

Mawlana Bhashani Science and Technology University (17)

Patuakhali Science And Technology University (18)

Sher-e-Bangla Agricultural University (19)

Chittagong University of Engineering and Technology (20)

Rajshahi University of Engineering and Technology (21)

Khulna University of Engineering and Technology (22)

Dhaka University of Engineering and Technology (23)

Noakhali Science and Technology University (24)

Jagannath University (25)

Comilla University (26)

Jatiya Kabi Kazi Nazrul Islam University (27)

Chittagong Veterinary and Animal Sciences University (28)

Sylhet Agricultural University (29)

Jessore University of Science and Technology (30)

Pabna University of Science and Technology (31)

Begum Rokeya University, Rangpur (32)

Bangladesh University of Professionals (33)

Bangabandhu Sheikh Mujibur Rahman Science and Technology University (34)

Bangladesh University of Textiles (35)

University of Barisal (36)

Rangamati Science and Technology University (37)

Bangabandhu Sheikh Mujibur Rahman Maritime University, Bangladesh (38)

Islamic Arabic University (39)

Chittagong Medical University (40)

Rajshahi Medical University (41)

Rabindra University, Bangladesh (42)

Bangabandhu Sheikh Mujibur Rahman Digital University, Bangladesh (43)

Sheikh Hasina University (44)

Khulna Agricultural University (45)

Bangamata Sheikh Fojilatunnesa Mujib Science and Technology University (46)

Sylhet Medical University (47)

Bangabandhu Sheikh Mujibur Rahman Aviation And Aerospace University (BSMRAAU) (48)

BRAC U (50)United International University (51)

Titumir College, Mohakhali, Dhaka (52)

North South University (53)

International University of Business Agriculture Technology / IUBAT (54)

Independent University (55)

East West University (56)

Daffodil International University (57)

Bangladesh university of business and technology(BUBT) 58

Other :

7. Q9 আপনি বিশ্ববিদ্যালয়ের কোন বছর/সেমিস্টারে আছেন? What semester/year of school/university are you in?

○ 1st-3rd / First year (১ম-৩য়/প্রথম বর্ষ) (1)

○ 4th-6th / Second year (৪র্থ-৬ষ্ঠ/ দ্বিতীয় বর্ষ) (4)

○ 7th-9th /Third year (৭ম-৯বম/ তৃতীয় বর্ষ) (5)

○ 10th-12th /Fourth year (১০ম-১২তম/ চতুর্থ বর্ষ) (6)

○ 12th+ /Fourth year+ (১২তম+/ চতুর্থ বর্ষ+) (7)

Q10 আপনি কোন ডিগ্রিতে পড়ছেন? What degree are you studying

○ Bachelors (BS, BA)/ স্নাতক (বিএস, বিএ) (1)

○ Masters (MPH, MBA)/ মাস্টার্স (এমপিএইচ, এমবিএ) (4)

○ Doctorate (PhD, MBBS)/ ডক্টরেট (পিএইচচডি, এমবিবিএস) (5)

Q11 বড় হওয়ার সময় আপনার আর্থিক পরিস্থিতিটি বর্ণনা করুন। আপনার পরিবারের মৌলিক চাহিদাগুলি পরিচালনা/পূরণ করার জন্য পর্যাপ্ত পরিমাণ অর্থ ছিল কি? Please describe your

financial situation, **while growing up.** How often did your family have enough money to make ends meet to manage/meet the basic needs of the family

○ কখনই ছিল না (1) Never

○ খুবই কম ছিল (2) Rarely

○ কখনও কখনও ছিল (3) Sometimes

○ বেশিরভাগ সময়ই ছিল (4) Most of the time

○ সবসময়ই ছিল (5) Always

Q12 আপনার বর্তমান আর্থিক পরিস্থিতিটি বর্ণনা করুন। আপনার মৌলিক চাহিদাগুলি পরিচালনা/পূরণ করার জন্য পর্যাপ্ত পরিমাণ অর্থ আছে কি?

Please describe your financial situation, **currently.** How often do you have enough money to manage/meet the basic needs?

○ কখনই ছিল না (1) never

○ খুবই কম ছিল (2) rarely

○ কখনও কখনও ছিল (3) sometimes

○ বেশিরভাগ সময়ই ছিল (4) most of the time

○ সবসময়ই ছিল (5) always

8. Q14 আপনি নিজেকে কতটুকু ধার্মিক বলে মনে করেন?
    How religious do you consider yourself?

মোটেও ধার্মিক নয়   অনেক বেশি ধার্মিক
Not at all   The most

0   1   2   3   4   6   7   8   9   10

আমি... ()	

Q15 আপনি নিজেকে কতটুকু আধ্যাত্মিক মনে করেন?
How spiritual do you consider yourself

	মোটেও আধ্যাত্মিক নয় Not at all	অনেক বেশি আধ্যাত্মিক The most
	0 1 2 3 4 5 6 7 8 9 10	

আমি... ()	

End of Block: Demographics

Start of Block: HERO WELLNESS

Q16 নীচের প্রতিটি প্রশ্নের জন্য একটি নম্বর চিহ্নিত করুন.

আপনার পছন্দ অনুসারে সঠিক উত্তর মার্কারটি ক্লিক করুন এবং সরান। উদাহরণস্বরূপ, প্রথম প্রশ্নের জন্য, সর্বোচ্চ মান (10) সর্বাধিক সুখী হওয়া ইঙ্গিত করে, অন্যদিকে সর্বনিম্ন মান (0), মোটেও খুশি না হওয়ার ইঙ্গিত দেয়।

মোটেও নয়	হালকা	মোটামুটি	অনেক	অত্যন্ত
0 1 2 3 4 5 6 7 8 9 10				

গত ৭ দিনের মধ্যে আপনি কতটুকু খুশি ছিলেন? On average, during the last 7 DAYS, how happy have you felt?	
গত ৭ দিনের মধ্যে আপনি কতটুকু উৎসাহিত অনুভব করেছেন? On average, during the last 7 DAYS, how enthusiastic have you felt?	
গত ৭ দিনের মধ্যে আপনি কতটুকু বাঁধা অতিক্রম করতে সক্ষম হয়েছেন বলে মনে করেন? On average, during the last 7 DAYS, how resilient have you felt?	
গত ৭ দিনের মধ্যে আপনি কতটুকু আশাবাদী ছিলেন? On average, during the last 7 DAYS, how optimistic (hopeful) have you felt?	
গত ৭ দিনের মধ্যে আপনার মানসিক সুস্থতার হার কেমন ছিল? (On average, during the last 7 DAYS, how would you rate your mental wellness?)	

End of Block: HERO WELLNESS

Start of Block: BRIEF COPE

9. Q17 How do you cope or deal with stress or anxiety?
আপনি কিভাবে মানসিক চাপ বা দুশ্চিন্তার সাথে মোকাবিলা করেন?

These items deal with ways you've been coping with the stress in your life. There are many ways to try to deal with problems. These items ask what you've been doing to cope with this one. Obviously, different people deal with things in different ways, but I'm interested in how

you've tried to deal with it. Please check whether you do these items. Don't answer on the basis of whether it seems to be working or not—just whether or not you're doing it.

নিম্নলিখিত আইটেমগুলি সাধারণত মানুষ তাদের মানসিক চাপ/দুশ্চিন্তার সাথে যেসব পদ্ধতিতে মোকাবেলা করে তা নিয়ে আলোচনা করে। মানিসিক চাপ মোকাবিলার জন্য অনেকগুলি উপায় রয়েছে। এই আইটেমগুলির মাধ্যমে আপনি কিভাবে আপনার সমস্যাগুলো মোকাবেলায় করছেন তা নিয়ে জানা হবে। এক একজন মানুষ এক এক পদ্ধতিতে তাদের মানসিক সমস্যাগুলো সামলিয়ে নেয়, তবে এখানে আপনি কীভাবে আপনার সমস্যাগুলো মোকাবিলা করার চেষ্টা করেছেন/করছেন তা জানতে আমি আগ্রহী। আপনি অনুগ্রহ করে নিম্নের এই আইটেমগুলি করছেন/করেছেন কিনা তা চেক করে দেখুন। এই পদ্ধতিগুলা আপনার মানসিক স্বাস্থ্যের উন্নতির জন্য কোন ধরনের কাজ করছে কি করছে না তার উপর ভিত্তি করে উত্তর দিবেন না, শুধুমাত্র আপনি এই পদ্ধতিগুলো ব্যবহার করেছেন/করছেন কিনা তার উপর ভিত্তি করে উত্তর দিবেন।

1) Turning to work or other activities (e.g., baking or playing games) to take my mind off things / মন ভাল করার জন্য চাকরি বা অন্যান্য কাজের (যেমনঃ বেকিং করা বা গেম খেলা) উপর মনোনিবেশ করা (COPE_1)

2) Focusing on what I have control over (e.g., reorganizing things around me), even though doing so doesn't solve the problem/ যেসব জিনিস আমার নিয়ন্ত্রনের মধ্যে আছে (যেমনঃ আমার আশেপাশের জিনিসগুলো পুনর্গঠন করা) সেগুলোর উপর ফোকাস করা যদিও এর মাধ্যমে আমার সমস্যার কোন সমাধান হবে না (COPE_RU_35)

3) Concentrating my efforts on doing something about the situation I'm in/ আমি যেই পরিস্থিতিতে আছি তা ঠিক করার জন্য যেসব কাজ করছি/করা দরকার সেগুলোর উপর মনোনিবেশ করছি (COPE_2)

4) Saying to myself "this isn't real"/ নিজেকে "এটা বাস্তব নয়" বলা (COPE_3)

5) Using humor (e.g., reading funny posts on social media) to make myself feel better/ নিজের মন ভাল করার জন্য মজার/হাস্যকর কোন মাধ্যম ব্যবহার করা (যেমনঃ সোশ্যাল মিডিয়ায় মজার কোন পোস্ট পড়া) (COPE_RU_29)

6) Spending time outside (e.g., gardening or spending time in nature)/ বাহিরে সময় কাটানো (যেমনঃ বাগান করা বা প্রকৃতির সাথে সময় কাটানো) (COPE_RU_39)

7) Using alcohol or other drugs to make myself feel better/ নিজের ভাল লাগার জন্য এলকোহল বা অন্যকোন ঔষধ ব্যবহার করা (COPE_4)

8) Getting emotional support from others/ অন্যদের কাছ থেকে মানসিক সহায়তা নেয়া (COPE_5)

9) Trying different ways to cope and see which one would work best to solve the problem/ সমস্যা সমাধানের জন্য কোন উপায়টি সবচেয়ে ভাল কাজ করবে তা দেখার জন্য বিভিন্ন উপায় চেষ্টা করা (COPE_RU_51)

10) Providing emotional support to others (e.g., checking on family/friends)/ অন্যদের মানসিক সহায়তা দেয়া (যেমনঃপরিবারের সদস্যদের/বন্ধুবান্ধবদের খোঁজখবর নেয়া) (COPE_RU_49)

11) Doing volunteer work to help others in need/ অভাবীদের সাহায্য করার জন্য স্বেচ্ছাসেবীর কাজ করা (COPE_RU_48)

12) Giving up trying to deal with it/ সমস্যা মোকাবেলা করার চেষ্টা ছেড়ে দেওয়া (COPE_6)

13) Utilizing helpful resources online or through media (e.g., Apps)/ অনলাইন বা মিডিয়ার মাধ্যমে উপকারী কোন জিনিস ব্যবহার করা (যেমনঃ এ্যাপস) (COPE_RU_45)

14) Saying things to let my unpleasant feelings escape/ আমার অপ্রীতিকর অনুভূতিগুলি এড়ানোর জন্য যেকোন জিনিস বলা (COPE_9)

15) Getting help and advice from other people/ অন্যান্য মানুষের কাছ থেকে সহায়তা এবং পরামর্শ নেওয়া (COPE_10)

16) Avoiding thinking about the problem/ সমস্যা নিয়ে চিন্তা করা বাদ দেয়া (COPE_RU_33)

17) Telling myself that the problem will go away on its own/ সমস্যাটি নিজের থেকে চলে যাবে এই বলে নিজেকে শান্তনা দেয়া (COPE_RU_34)

18) Trying to see it in a different light, to make it seem more positive/ সমস্যাটিকে আরও ইতিবাচকভাবে দেখার জন্য অন্যভাবে দৃষ্টিকোণ করা (COPE_12)

19) Helping others improve their situation/ অন্যদের পরিস্থিতি ভাল করার জন্য তাদের সাহায্য করা (COPE_RU_46)

20) Engaging in religious or mindfulness practices/ ধর্মীয় বা মননশীলতাভিত্তিক কার্যকলাপ চর্চা করা (COPE_RU_36)

21) Criticizing myself/নিজেকে নিয়ে সমালোচনা করা (COPE_13)

22) Getting comfort and support from social media or other online forums/ সোশ্যাল মিডিয়া বা অন্যান্য অনলাইন ফোরাম থেকে কোনধরনের সান্ত্বনা বা সহায়তা নেয়া (COPE_RU_43)

23) Exercising (e.g., running or doing yoga)/ ব্যায়াম করা (যেমনঃ দৌড়ানো বা যোগব্যায়াম করা) (COPE_RU_40)

24) Trying to come up with a strategy about what to do/ সমস্যা মোকাবিলা করার জন্য কি করা উচিত তা নিয়ে কোন কৌশল বের করা (COPE_14)

25) Preparing for the worst/ নিজেকে সবচেয়ে খারাপ পরিস্থিতি সম্মুখের জন্য প্রস্তুত রাখা/করা (COPE_RU_31)

26) Making jokes about it/ নিজের পরিস্থিতি নিয়ে রসিকতা করা (COPE_18)

27) Making donations (e.g., food, money, or blood) to help others in need/ অভাবীদের অনুদান (যেমনঃ খাবার, অর্থ বা রক্ত) দিয়ে সাহায্য করা (COPE_RU_47)

28) Doing something to think about it less, such as watching TV or movies, surfing the internet, reading, daydreaming, sleeping, or shopping/ সমস্যা নিয়ে কম চিন্তা করার জন্য অন্য কোন কাজ করা, যেমন টিভি বা সিনেমা দেখা, ইন্টারনেট ব্যবহার করা, বই পড়া, দিবাস্বপ্ন দেখা, ঘুমানো বা কেনাকাটা করা (COPE_19)

29) Getting adequate rest or sleep/ পর্যাপ্ত পরিমাণে ঘুমানো বা বিশ্রাম নেয়া (COPE_RU_42)

30) Adapting my strategies to deal with the problem or changing situations, if needed/ সমস্যা মোকাবিলা করা বা প্রয়োজনে পরিস্থিতি পরিবর্তনের জন্য আমার কৌশলগুলির সাথে খাপখাইয়ে নেয়া (COPE_RU_50)

31) Accepting the reality of the fact that it has happened/ এমনটি আসলেই ঘটেছে এই বাস্তবতাটি মেনে নেয়া (COPE_20)

32) Expressing my negative feelings/ নিজের নেতিবাচক অনুভূতিগুলো প্রকাশ করা (COPE_21)

33) Trying to find comfort in my religion or spiritual beliefs/ নিজের ধর্ম বা আধ্যাত্মিক বিশ্বাস থেকে সান্ত্বনা পাওয়ার চেষ্টা করা (COPE_22)

34) Using technology (e.g., text, social media, or video conferencing tools) to keep in touch with others/ অন্যদের সাথে যোগাযোগ রাখার জন্য টেকনোলজি (যেমনঃ মেসেজ করা, সোশ্যাল মিডিয়া বা ভিডিও কনফারেন্সিং সরঞ্জাম) ব্যবহার করা (COPE_RU_44)

35) Avoiding reading/watching news that remind me of the problem/ সমস্যার কথা না মনে করার জন্য খবর দেখা বা পড়া এড়িয়ে চলা (COPE_RU_32)

36) Taking supplements or natural remedies to strengthen the immune system/ নিজের শরীরের রোগ প্রতিরোধ ক্ষমতা বাড়ানোর জন্য পরিপূরক বা প্রাকৃতিক ঔষধ গ্রহণ করা (COPE_RU_41)

37) Learning to live with it/ যা হয়েছে তা নিয়ে বাঁচতে শেখা (COPE_24)

38) Thinking hard about what steps to take/ কি কি পদক্ষেপ নেয়া উচিত তা নিয়ে অনেক চিন্তা করা (COPE_25)

39) Seeking information (e.g., keeping up with the news)/ তথ্য অনুসন্ধান করা (যেমনঃ কথায় কি হচ্ছে সবকিছু নিয়ে খবর রাখা) (COPE_RU_30)

40) Reflecting on the meaning of life/ নিজের জীবনের অর্থ নিয়ে চিন্তা করা (COPE_RU_37)

41) Eating healthfully/ স্বাস্থ্যসম্মত খাবার খাওয়া (COPE_RU_38)

42) Finding peace with uncertainty/ অনিশ্চয়তার মধ্যে মনের শান্তি খুঁজে পাওয়া (COPE_RU_52)

43) Are there additional activities that you or people you know may take part in, to help cope?/ এগুলো ছাড়া আর কি কোনো উপায় আছে যা আপনি বা আপনার পরিচিত কেউ অনুসরণ

করছেন/করছে নিজেদের সমস্যা মোকাবিলা করার জন্য?

এইসব সমস্যা মোকাবিলা করার জন্য এগুলো ছাড়া আর কি কোনো উপায় আছে যা আপনি বা আপনার পরিচিত কেউ অনুসরণ করছেন/করছে   অনুগ্রহ করে উল্লেখ করুন:

(45) Are there additional activities that you or people you know may take part in, to help cope?/

_____

End of Block: BRIEF COPE

Q19
নীচের বিবৃতি রেট করুন --

	মোটেও করতে পারি না	মোটামুটি করতে পারি)	(অত্যন্ত ভালভাবে করতে পারি)

0   10   20   30   40   50   60   70   80   90   100

আমি সর্বাত্মক চেষ্টা করে ব্যর্থ হওয়ার পরেও উঠে দাঁড়াতে পারি (I can bounce back after I tried my best and failed	⬩
যখন পরিস্থিতি অনেক খারাপ থাকে তখন আমি চেষ্টা করা চালিয়ে যেতে পারি (. I can get myself to keep trying when things are going really badly)	⬩
যখন আমি কঠিন পরিস্থিতির মধ্যে থাকি, তখন আমার মনের বল ঠিক রাখতে পারি (. I can keep up my spirits when I suffer hardships)	⬩
কঠিন প্রতিকূলতা পার করার পরে আমি নিজেকে নিয়ে সন্দেহ করা থেকে বিরত থাকতে পারি (. I can get rid of self-doubts after I have had tough setbacks)	⬩

Q20 নির্দেশাবলীঃ এই স্কেলের প্রশ্নগুলি গত মাসের আপনার অনুভূতি এবং চিন্তাভাবনা সম্পর্কে জিজ্ঞাসা করবে। সবচেয়ে ভাল উপায় হচ্ছে আপনি যদি এই প্রশ্নগুলোর উত্তর দ্রুত দেয়ার চেষ্টা করেন।

Instructions: The questions in this scale ask you about your feelings and thoughts during the last month. The best approach is to answer fairly quickly.

0 = Very Often/খুবই ঘনঘন 1 = Fairly Often/মাঝে মধ্যেই   2 = Sometimes/কখনও কখনও   3 = Almost Never/ওইভাবে না   4 = Never/কখনই না

1. In the last month, how often have you felt that you were unable to control the important things in your life? (গত মাসে আপনি কতবার অনুভব করেছেন যে আপনি আপনার জীবনের গুরুত্বপূর্ণ বিষয়গুলি নিয়ন্ত্রণ করতে পারছেন না?)	0 1 2 3 4
2. . In the last month, how often have you felt confident about your ability to handle your personal problems? (গত মাসে আপনার ব্যক্তিগত সমস্যাগুলি পরিচালনা করার ক্ষেত্রে নিজের দক্ষতা নিয়ে আপনি কতবার আত্মবিশ্বাসী বোধ করেছেন?)	0 1 2 3 4
3. In the last month, how often have you felt that things were going your way? (গত মাসে আপনি কতবার অনুভব করেছেন যে সবকিছু আপনি যেভাবে চেয়েছিলেন সেভাবেই হচ্ছে?)	0 1 2 3 4
4. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? (গত মাসে আপনি কতবার অনুভব করেছেন যে আপনার পরিস্থিতি এতটাই কঠিন হয়ে যাচ্ছে যা আপনি কাটিয়ে উঠতে পারছেন না?)	0 1 2 3 4

Q21 গত ২ সপ্তাহের মধ্যে, আপনি কতবার

	মোটেও না (1) Not at all	বেশ কিছুদিন (2) Several days	অর্ধেকেরও বেশি দিন (3) More than half the days	প্রায় প্রতিদিনই (4) Almost every day
যেকোন কাজ করার ক্ষেত্রে আগ্রহ না আনন্দ কম ছিল (1) Had little interest or pleasure in doing things	◯	◯	◯	◯
মন খারাপ ছিল, হতাশ বা নিরাশ অনুভব করেছিলাম (4) Been feeling down, depressed, or hopeless	◯	◯	◯	◯

Q22 কখনও কি চিন্তা করেছেন যে আপনি বরং মরে যাবেন বা কোনভাবে নিজেকে আঘাত করবেন?

Have you ever had thoughts that you would rather be dead or having thoughts about hurting yourself in some way?

○ হ্যাঁ (1) Yes

○ না (4) No

○ বলতে ইচ্ছুক নই (5) Don't wish to share

Q23 সাধারণভাবে আপনি আপনার স্বাস্থ্যের অবস্থা কেমন বলতে চান
In general, would you say that the condition of your health is:

○ খারাপ (1) (1) Poor

○ মোটামুটি (2) (4) Fair

○ ভাল (3) (5) Good

○ খুব ভাল (4) (6) very good

○ অত্যন্ত ভাল (5) (7) excellent

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10. Q24 কোভিড-১৯ আপনার মানসিক স্বাস্থ্যের উপর কিরকম প্রভাব ফেলেছে? How has COVID-19 impacted your mental health?

○ উন্নতি হয়েছে (1) it improved it

○ একইরকমই ছিল/কোনধরনের প্রভাব ফেলেনি (4) stayed the same/ no impact

○ আরও খারাপ প্রভাব ফেলেছে (5) made it worse

End of Block: suicide ever, general health, covid impact on mental health

Start of Block: Health service utilization

7. Q25

গত ১২ মাসে আপনি কি কোন কারনে স্বাস্থ্যসেবা নিয়েছিলেন?   In the past 12 months, have you had visited any health professional for any reason?

○ হ্যাঁ (1) Yes

○ না (4) No

Q26
  বিগত ১২ মাসে আপনি কি আপনার কোন ধরনের মানসিক সমস্যা (যেমন বিষন্নতা   বা দুশ্চিন্তা নিয়ে অথবা নারভাস হওয়া) নিয়ে কারোর কাছে সাহায্য বা পরামর্শ নেবার   প্রয়োজন বোধ করেছেন?
In the past 12 months, did you think **you** needed help for emotional or mental health problems such as feeling sad, blue, anxious, or nervous?''

○ হ্যাঁ (1) Yes

○ না (4) No

27.   In the past 12 months, have you received support (e.g. advice, care) for your mental or emotional health from any of the following sources? Check all that apply.
গত ১২ মাসে আপনি কি কারোর কাছ থেকে বা কোন কিছু থেকে আপনার মানসিক স্বাস্থ্যের জন্য পরামর্শ বা সহায়তা পেয়েছেন?
a.   Friend(s) /বন্ধু-বান্ধব
b.   Family member (parent, sibling, relative)/ পরিবারের সদস্যঃ মা-বাবা, ভাই-বোন, আত্মীয়স্বজন
c.   Spouse, partner, significant other (ex. boyfriend, girlfriend)/ স্বামী-স্ত্রী, অন্য কোন প্রিয়জন (যেমনঃ প্রেমিক/প্রেমিকা)
d.   Religious/Faith counselor or other religious contact / ধর্মীয় উপদেশক
e.   Mental health professional (ex. counselor, therapist, psychiatrist)/ মনোরোগ বিশেষজ্ঞ (যেমনঃ কাউন্সিলর, থেরাপিস্ট, সাইক্রিয়াটিস্ট)
f.   Teacher/professor/coach/advisor / (শিক্ষক/অধ্যাপক/কোচ/উপদেষ্টা)

g.   Other nonclinical source/ অন্যান্য নন-ক্লিনিকাল পদ্ধতি: _____

h.   "None of the above"/ উপরের কোনটিই নয়

Q28 গত ১২ মাসে, আপনি কি মানসিক রোগের জন্য কোনরকম ঔষধ গ্রহণ করেছেন (যেমনঃ মেজাজ স্থিতিশীল রাখার জন্য, অ্যান্টিডিপ্রেসেন্টস, অ্যান্টিসাইকোটিকস, সাইকোস্টিমুল্যান্টস, দুশ্চিন্তা রোধক)?   In the past 12 months, have you regularly taken any of the most common types of medications to help your mental health (Antianxiety, Antidepressants, Antipsychotics, Mood stabilizers, Psychostimulants medicines)?

○ হ্যাঁ (1) yes

○ না (4) no

○ বলতে ইচ্ছুক নই (5) do not wish to answer

End of Block: Health service utilization

Q29

এখন আমরা আপনাকে "মননশীলভিত্তিক কার্যক্রম" সম্পর্কে কিছু প্রশ্ন   জিজ্ঞেস করবো। মননশীলভিত্তিক কার্যক্রম বলতে বোঝায়: ·   আপনার যেকোন পরিস্থিতিতে পুরোপুরিভাবে উপস্থিত থাকার ক্ষমতা ·   আপনি কোথায় কোন পরিস্থিতিতে আছেন এবং সেই পরিস্থিতিতে কি করছেন সেগুলো নিয়ে অবগত থাকা এবং ·   আপনার চারপাশে যা হচ্ছে সেগুলো দ্বারা অতিরিক্ত প্রভাবিত বা অভিভূত না হওয়া। অনুগ্রহ করে হ্যাঁ, না বা জানি না নির্বাচন করুন। Now we will ask questions regarding if you engage in different types of "mindful" practices. Mindfulness is the ability to be fully present, aware of where we are and what we're doing, and not overly reactive or overwhelmed by what's going on around us. Do you currently participate in any of the following, please mark yes, no, or don't know:

	হ্যাঁ (1) yes	না (2)no	জানি না (3)do not know
1) (আপনার কাছে প্রয়োজনীয় জিনিসগুলো কি এবং সেগুলোকে আপনি কিভাবে সাজাবেন তা সনাক্ত করা) (1) Identifying what your values are and prioritizing them	○	○	○
2) (নিজের নেতিবাচক চিন্তাভাবনা বের করা এবং সেগুলো পরিবর্তনের চেষ্টা করা) (4) Identifying and trying to change your negative thoughts	○	○	○
3) আপনার দীর্ঘ শ্বাস-প্রশ্বাস, মুখের স্বাদ এবং খাবারের ঘ্রাণ অনুভব করার অনুভূতিগুলোর উপর মনোনিবেশ করা, ডি-স্ট্রেসিং বা ধ্যান করা, বর্তমানে যা হচ্ছে সেসব মুহূর্তের উপর মনোনিবেশ করা) (5) Deep breathing, de-stressing, meditation, staying in the moment, focusing on your senses (taste, smell, touch)/	○	○	○
4) আত্মসম্মান প্রচারের জন্য কোন কাজ করা যেমন, গ্র্যাটিচুড জার্নালিং (যে বিষয়গুলির জন্য আপনি কৃতজ্ঞ বা খুশি, সেগুলি সম্পর্কে লেখা) (6)	○	○	○

Have any of these issues <u>ever stopped, delayed or discouraged you</u> from getting, or continuing with, professional care for a mental health problem?
কখনও কি এমন হয়েছে যে নিম্নলিখিত কারনগুলোর জন্য আপনি মানসিক স্বাস্থ্যসেবার জন্য কোন বিশেষজ্ঞের কাছে যাননি বা যেতে দেরি করেছেন বা যাওয়া বন্ধ করেছেন বা অনুৎসাহিত হয়েছেন?

Please pick one number on <u>each</u> row to indicate the answer that best suits you. (For 'not applicable' e.g. if it is a question about children and you do not have children, please cross the Not applicable box.)
অনুগ্রহ করে নিম্নের প্রত্যেকটি সারি থেকে একটি করে নম্বর নির্বাচন করুন যা আপনার উত্তরের জন্য সবচেয়ে উপযুক্ত ("প্রযোজ্য নয়" উত্তরটি তখনই বাছাই করবেন যখন অন্য উত্তরগুলো আপনার উত্তরের সাথে মিলবে না যেমন, প্রশ্নটি যদি আপনার সন্তানকে/দের নিয়ে হয় এবং আপনার যদি কোন সন্তান না থাকে, তখন "প্রযোজ্য নয়" বক্সটিতে মার্ক করবেন)

This has stopped, delayed or discouraged me (এগুলোর কারনে আমি যাইনি বা যেতে দেরি করেছি বা যাওয়া বন্ধ করেছি বা অনুৎসাহিত হয়েছি যেতে):	NOT AT ALL/ মোটেও নয়	A LITTLE/একটু	QUITE A LOT/ কিছুটা	A LOT/ অনেক	Do not wish to answer /উত্তর দিতে ইচ্ছুক নই
1) Being unsure where to go to get professional help/ বিশেষজ্ঞের সাহায্য কোথায় পাওয়া যাবে তা নিয়ে অনিশ্চিত থাকা	0	1	2	3	
2) Wanting to solve the problem on my own/ নিজের সমস্যা নিজেই সমাধান করতে চাওয়া	0	1	2	3	
3) Concern that I might be seen as weak for having a mental health problem/ মানসিক সমস্যা থাকার কারনে মানুষ আমাকে দুর্বল ভাবতে পারে এই নিয়ে চিন্তিত থাকা	0	1	2	3	

4) Fear of being put in hospital against my will/ আমার ইচ্ছার বিরুদ্ধে আমাকে হাসপাতালে নিয়ে যাওয়ার ভয়ে থাকা	0	1	2	3	
5) Concern that it might harm my chances when applying for jobs/ এটি আমার চাকরির জন্য আবেদন করার সম্ভাবনা কমিয়ে দিতে পারে এই নিয়ে উদ্বিগ্ন থাকা	0	1	2	3	
6) Problems with transport or traveling to appointments (Ex. Not having a driver, not wanting to call a ride share App)/ অ্যাপয়েন্টমেন্টর জন্য যেতে পরিবহন ব্যবস্থা নিয়ে কোনধরনের অসুবিধা থাকা (যেমনঃ নিজের গাড়ির কোনো চালক না থাকা, কোনো রাইড শেয়ারিং সার্ভিস না ব্যবহার করতে চাওয়া)	0	1	2	3	
7) Thinking the problem would get better by itself/ সমস্যা নিজের থেকেই ঠিক হয়ে যাবে এই চিন্তা করা	0	1	2	3	
8) Concern about what my family might think, say, do or feel/ আমার পরিবারের মানুষ কি চিন্তা করবে এই নিয়ে উদ্বিগ্ন থাকা	0	1	2	3	
9) Feeling embarrassed or ashamed/ বিব্রত বা লজ্জা বোধ করা	0	1	2	3	
10) Preferring to get alternative forms of care (e.g. traditional/religious healing or alternative/complementary therapies)/ সেবাযত্নের বিকল্প কোনো উপায় অবলম্বন করতে চাওয়া (যেমনঃ ঐতিহ্যগত/ধর্মীয় চিকিৎসা বা বিকল্প/পরিপূরক থেরাপি)	0	1	2	3	

11) Not being able to afford the financial costs involved/ এরসাথে জড়িত আর্থিক ব্যয় বহন করতে সক্ষম না থাকা	0	1	2	3	
12) Concern that I might be seen as 'crazy'/ মানুষ আমাকে "পাগল" ভাববে এই নিয়ে উদ্বিগ্ন থাকা	0	1	2	3	
13) Thinking that professional care probably would not help/ বিশেষজ্ঞের চিকিৎসা কোনো ধরনের কাজ করবে না এই চিন্তা করা	0	1	2	3	
14) Concern that I might be seen as a bad parent/ আমাকে একজন খারাপ পিতা বা মাতা দেখাবে এই নিয়ে উদ্বিগ্ন থাকা	0	1	2	3	
15) Professionals from my own ethnic or cultural group not being available/ আমার নিজস্ব নৃগোষ্ঠী বা সাংস্কৃতিক গোষ্ঠী থেকে কোনো বিশেষজ্ঞ না থাকা	0	1	2	3	
16) Being too unwell to ask for help/ অনেক অসুস্থ থাকার কারনে সাহায্য চেতে না পারা	0	1	2	3	
17) Concern that people I know might find out/ যাদেরকে আমি চিনি তারা জেনে যাবে এই নিয়ে উদ্বিগ্ন	0	1	2	3	
18) Dislike of talking about my feelings, emotions or thoughts/ আমার অনুভূতি, আবেগ বা চিন্তাধারা নিয়ে কারোর সাথে কথা বলা অপছন্দ	0	1	2	3	
19) Concern that people might not take me seriously if they found out I was having professional care/ আমি বিশেষজ্ঞের সাহায্য নিচ্ছি এটা মানুষ	0	1	2	3	

জানলে তারা আমাকে গুরুত্বের সাথে নিবে না এই নিয়ে উদ্বিগ্ন থাকা					
20) Concerns about the effects of the treatments available (e.g. medication side effects)/ মনোরোগের যেসব চিকিৎসা আছে সেগুলোর প্রভাব কিরকম হবে তা নিয়ে চিন্তিত থাকা (যেমনঃ ঔষুধের পার্শ্ব প্রতিক্রিয়া)	0	1	2	3	
21) Not wanting a mental health problem to be on my medical records/ আমি আমার মেডিক্যাল রেকর্ডে কোনো ধরনের মানসিক সমস্যার কথা উল্লেখ করতে চাই না	0	1	2	3	
22) Having had previous bad experiences with professional care for mental health/ মনোরোগের চিকিৎসার জন্য বিশেষজ্ঞের সাথে পূর্ববর্তী অভিজ্ঞতা খারাপ ছিল	0	1	2	3	
23) Preferring to get help from family or friends/ পরিবারের সদস্য বা বন্ধুবান্ধবের কাছ থেকে সাহায্য নিতে চাচ্ছি	0	1	2	3	
24) Concern that my children may be taken into care or that I may lose access or custody without my agreement/ আমার সম্মতি ছাড়া সন্তানদের আমার কাছ থেকে দূরে নিয়ে যাবে এই নিয়ে উদ্বিগ্ন থাকা	0	1	2	3	
25) Thinking I did not have a problem (Ex. Thinking any issues you may be facing were not "that bad" or not a problem)/ আমার কোনধরনের সমস্যা নেই তা	0	1	2	3	

চিন্তা করা (যেমনঃ আপনি এমন কোনো পরিস্থিতির সম্মুখীন হয়েছেন যা আপনার জন্য তেমন কোনো সমস্যা না)					
26) Concern about what my friends might think, say or do/ আমার বন্ধুরা আমাকে নিয়ে কি চিন্তা করবে, বলবে বা করবে তা নিয়ে উদ্বিগ্ন থাকা	0	1	2	3	
27) Difficulty taking time off work/ চাকরি বা কাজের থেকে ছুটি বা বিরতি না নিতে পারা	0	1	2	3	
28) Concern about what people at work might think, say or do/ আমার সহকর্মীরা আমাকে নিয়ে কি চিন্তা করবে, বলবে বা করবে তা নিয়ে উদ্বিগ্ন থাকা	0	1	2	3	
29) Having problems with childcare while I receive professional care/ বিশেষজ্ঞের সাহায্য নেয়ার পাশাপাশি আমার সন্তানের যত্ন নিতে সমস্যা হওয়া	0	1	2	3	
30) Having no one who could help me get professional care/ আমার এমন কেউ নেই যে আমাকে বিশেষজ্ঞের সহায়তা পেতে সাহায্য করবে	0	1	2	3	
31) Having too many academic demands/ বিদ্যালয়-সংক্রান্ত অনেক দাবি থাকা	0	1	2	3	
32) Too many non-academic/personal time commitments/ অনেক বেশি ব্যক্তিগত প্রতিশ্রুতিতে আবদ্ধ থাকা	0	1	2	3	

33) Lack of private space for virtual therapy/ ভার্চুয়াল থেরাপির জন্য ব্যক্তিগত সময় বা জায়গার অভাব	0	1	2	3	
34) Lack of technological or other resources that would not facilitate participation/ টেকনোলোজি বা অন্যকোনো জিনিসপত্র না থাকা যেগুলো ছাড়া অংশগ্রহণ করা যায় না	0	1	2	3	

a. Other, please describe/ অন্যকিছু থাকলে অনুগ্রহ করে উল্লেখ করুন:

_____

End of Block: BACEv3

Mental Health Knowledge Schedule (MAKS)

11. **Instructions:** For each of statements 1– 6 below, respond by **ticking one box only**. Mental health problems here refer, for example, to conditions for which an individual would be seen by a healthcare staff/professional.
নির্দেশাবলীঃ নীচে প্রতিটি বিবৃতির (1– 6) জন্য, কেবলমাত্র একটি বক্সে টিক দিন। মানসিক স্বাস্থ্যের সমস্যাগুলো এখানে এমনভাবে উল্লেখ করা হয়েছে যার চিকিৎসার জন্য মানুষ একজন স্বাস্থ্যসেবা বিশেষজ্ঞের কাছে যায়।

		Agree strongly /দৃঢ়ভাবে একমত	Agree slightly/কিছুটা একমত	Neither agree nor disagree/এ কমতও না আবার দ্বিমতও পোষণ করছি না	Disagree slightly/ কিছুটা দ্বিমত পোষণ করছি	Disagree strongly/দৃঢ়ভাবে দ্বিমত পোষণ করছি	Don't know /জানি না
I	Most people with mental health problems want to have paid employment (মানসিক স্বাস্থ্য সমস্যায় আক্রান্ত বেশিরভাগ মানুষ বেতনসহ চাকরি পেতে চায়)						
II	If a friend had a mental health problem, I know what advice to give them to get professional help (যদি আমার কোন বন্ধুর মানসিক সমস্যা থাকে, তবে মানসিক স্বাস্থ্যসেবা পাওয়ার জন্য তাদের কী পরামর্শ দিতে হবে তা আমি জানি)						
III	Medicine can be an effective treatment for people with mental health						

	problems (ঔষুধ সেবন করা মনোরোগের জন্য একটি কার্যকর চিকিৎসা হতে পারে)						
IV.	Counseling or talking therapy can be an effective treatment for people with mental health problems (কাউন্সেলিং বা টকিং থেরাপি মনোরোগের জন্য একটি কার্যকর চিকিৎসা হতে পারে)						
V.	People with severe mental health problems can fully recover (যারা গুরুতর মানসিক সমস্যায় আক্রান্ত তারা পুরোপুরিভাবে সেরে উঠতে পারে)						
VI.	Most people with mental health problems go to a general health doctor/ professional to get help (মানসিক সমস্যা সমাধানের জন্য বেশিরভাগ মানুষ সাধারণ স্বাস্থ্যসেবা বিশেষজ্ঞের কাছে যান)						
VII.	Most people with mental health problems **actually** go to a mental health professional to get help (মানসিক সমস্যা সমাধানের জন্য বেশিরভাগ মানুষ **আসলেই** মনোরোগ বিশেষজ্ঞের কাছে যান)						

Start of Block: RIBS

Q33 নির্দেশাবলীঃ নিম্নলিখিত প্রশ্নগুলিতে আপনার পরিচিত কোন মানুষ যদি মানসিক রোগে আক্রান্ত হয় (যেমন, কেউ তার সমস্যার জন্য কোন বিশেষজ্ঞের সহায়তা নিয়েছিল/নিচ্ছে), তাদেরকে নিয়ে আপনার অভিজ্ঞতা এবং মতামত সম্পর্কে জিজ্ঞেস করা হবে।

The following questions ask about your experiences and views in relation to people who have mental health problems (for example, people seen by healthcare staff).

	হ্যাঁ (1) Yes	না (2) No	/জানি না (3) Don't know
(আপনি বর্তমানে মানসিক রোগে আক্রান্ত এমন কোন ব্যক্তির সাথে একসাথে বসবাস করছেন বা আগে থেকেছেন?) (1) Are you currently living with, or have you ever lived with, someone with a mental health problem?	◯	◯	◯
(আপনি বর্তমানে মানসিক রোগে আক্রান্ত এমন কোন ব্যক্তির সাথে একসাথে কাজ করছেন বা আগে করেছেন?) (4) Are you currently working with, or have you ever worked with, someone with a mental health problem?	◯	◯	◯
(আপনার এমন কোন প্রতিবেশি আছে/ছিল যে মানসিক রোগে আক্রান্ত আছে/ছিল?) (5) Do you currently have, or have you ever had, a neighbor with a mental health problem?	◯	◯	◯
(আপনার এমন কোন ঘনিষ্ট বন্ধু আছে/ছিল যে মানসিক রোগে আক্রান্ত আছে/ছিল?) (6) Do you currently have, or have you ever had, a close friend with a mental health problem? (	◯	◯	◯
(আপনার পরিবারের কোন সদস্য কি কখনও মনোরোগে আক্রান্ত হয়েছিল?) (7) Has anyone in your family ever been diagnosed with a mental health disorder?	◯	◯	◯

30. How many people have talked to you about the importance of mental health?

এই পর্যন্ত কতজন মানুষ আপনার সাথে মানসিক স্বাস্থ্যের তাৎপর্য নিয়ে কথা বলেছে?

     a. Zero

     b. 1

     c. 2-3

     d. 4+

31. Instructions: For each of the following questions, please respond by **ticking one box only.**

নির্দেশাবলীঃ নিম্নের প্রত্যেকটি প্রশ্নের জন্য অনুগ্রহ করে একটিমাত্র বক্সে টিক চিহ্ন দিন।

		Agree strongly /দৃঢ়ভাবে একমত	Agree slightly/কিছুটা একমত	Agree slightly / একমতও না আবার দ্বিমতও পোষণ করছি না	Disagree slightly/ কিছুটা দ্বিমত পোষণ করছি	Disagree strongly/ দৃঢ়ভাবে দ্বিমত পোষণ করছি	Don't know/ জানি না
	In the future, I would be willing to live with someone with a mental health problem (ভবিষ্যতে আমি মানসিক রোগে আক্রান্ত এমন কারোও সাথে একসাথে বসবাস করতে ইচ্ছুক)						
	In the future, I would be willing to work with someone with a mental health problem (ভবিষ্যতে আমি মানসিক রোগে আক্রান্ত এমন কারোও সাথে একসাথে কাজ করতে ইচ্ছুক)						

	In the future, I would be willing to live nearby to someone with a mental health problem (ভবিষ্যতে আমি মানসিক রোগে আক্রান্ত এমন কারোর কাছাকাছি বসবাস করতে ইচ্ছুক)						
	In the future, I would be willing to continue a relationship with a friend who developed a mental health problem (ভবিষ্যতে আমি মানসিক রোগে আক্রান্ত এমন কোন বন্ধুর সাথে আমার বন্ধুত্ব চালিয়ে যেতে ইচ্ছুক)						

Start of Block: Mobile phone use

Q37

আপনি কোন ধরণের ফোন ব্যবহার করেন? যেগুলো প্রযোজ্য অনুগ্রহ করে সবগুলোতে টিক চিহ্ন দিন

Which type of phone do you use?

○ স্মার্টফোন (1) Smartphone

○ এমন ফোন যেটাতে ইন্টারনেট ব্যবহার করা যায় না (4) Basic phone (No internet)/

○ আমার কোন ফোন নেই (5) I do not have a phone

Skip To: End of Block If Q37 = আমার কোন ফোন নেই

30. Q38

মালিকানার ধরণ   Type of ownership

○ ব্যক্তিগত (1) Personal

○ কারোর সাথে মিলেমিশে ফোন ব্যবহার করা (4) Shared

○ আমার কোনও ফোন নেই (5) I don't own a phone

Q40

আমি আমার মোবাইল ফোন ব্যবহার করিঃ যেগুলো প্রযোজ্য অনুগ্রহ করে সবগুলোতে টিক চিহ্ন দিন

30. I use my mobile phone to: Please check all that apply

☐   a.   কল করার জন্য (1) Make Calls

☐   b.   মেসেজ পাঠানোর জন্য (এসএমএস, হয়াটসঅ্যাপ, মেসেঞ্জার) (4) Send Messages –(SMS, WhatsApp, Messenger) people/

☐   c.   ইন্টারনেট ব্যবহার করার জন্য (5) Use the Internet

☐   d.   বিভিন্ন অ্যাপ ব্যবহার করার জন্য (সোশিয়্যাল মিডিয়া সহ) (6) Use apps (including social media

☐   e.   ভিডিও দেখার জন্য (7) Watch videos

☐   f. ভিডিও চ্যাট করার জন্য (ফেসটাইম, যুম ইত্যাদি) (8) Video chat (Facetime, Zoom, etc _____

Q41 আমি নিম্নের সোশিয়্যাল মিডিয়ার মাধ্যমগুলো ব্যবহার করিঃ যেগুলো প্রযোজ্য অনুগ্রহ করে সবগুলোতে টিক চিহ্ন দিন

30. I use the following Social media: Please check all that apply

☐   ফেসবুক   (1) Facebook

☐   হয়াটসঅ্যাপ (4) WhatsApp

☐   টুইটার   (5) Twitter

☐   ইন্সতাগ্রাম (6) Instagram

☐   অন্যকিছু থাকে উল্লেখ করুনঃ _____ (7)

Other_____

Q42 পেমেন্টের পদ্ধতি (ইন্টারনেট ব্যবহার করার জন্য) payment method for phone

◯ যতক্ষণ ব্যবহার করবেন ততক্ষনের জন্য পেমেন্ট করবেন (6) pay as you go

◯ প্রত্যেক মাসের জন্য আলাদা পেমেন্ট করেন (9) monthly plan

◯ অন্যান্য (10) other

End of Block: Mobile phone use

Start of Block: DIGITAL HEALTH

Q43 "ডিজিটাল স্বাস্থ্যসেবা" বলতে বোঝায় কম্পিউটার, মোবাইল ফোন, অ্যাপ, ইন্টারনেট, ট্যাবলেট বা পরিধানযোগ্য কোন ডিভাইস যেমন অ্যাপল-এর ঘড়ি থেকে শরীর ভাল রাখার বা উন্নতি করার জন্য যেকোনো তথ্য নেয়া।
DIGITAL HEALTH is a term that involves the use of either a-- mobile phone, App, computer, internet, tablet, a wearable device like an Apple Watch,—to better ones health

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30. Q44 আমি বর্তমানে ডিজিটাল স্বাস্থ্যসেবা (মানসিক স্বাস্থ্যসেবার জন্য ব্যবহার করা বাদ দিয়ে) ব্যবহার করি (যেমন, আপনার মোবাইল ফোনে এরকম একটি এ্যাপ ব্যবহার করা যা আপনাকে আপনার হাঁটার স্টেপ ট্র্যাক করার জন্য, ওজন হ্রাস বা শারীরিক ক্রিয়াকলাপ বাড়ানোর জন্য সাহায্য করবে)ঃ I use digital health services to better my health (**excluding use for mental health**) currently (for example, using an app to track steps, for weight loss, to increase physical activity):

○ হ্যাঁ (1) Yes

○ না (4) No

○ বলতে ইচ্ছুক নই (5) DO not wish to answer

Q45 আমি বর্তমানে **মানসিক স্বাস্থ্যসেবার** জন্য ডিজিটাল স্বাস্থ্যসেবা ব্যবহার করি (যেমন, ধ্যান করার ভিডিওগুলো অনুসরণ করা)
30. I use digital health **for mental health** currently (for example, following meditation videos)

○ হ্যাঁ (1) Yes

○ না (4) No

○ বলতে ইচ্ছুক নই (5) IDK

Q46 আপনি কতবার আপনার ডিজিটাল স্বাস্থ্যসেবার   প্রোগ্রাম/প্রোগ্রামগুলো ব্যবহার করেন?

30. How often do you **use** your digital health programs(s)?

○ কখনই না (1) never

○ মাসে এক বার (4) once a month

○ মাসে কয়েকবার (5) several times a month

○ সপ্তাহে একবার (6) one a week

○ সপ্তাহে বেশ কয়েকবার (7) several times a week

○ দিনে একবার (8) once a day

○ দিনে বেশ কয়েকবার (9) several times day

○ ঘন্টায় একবার (10) once an hour

○ ঘন্টায় কয়েকবার (11) several times an hour

○ সব সময় (12) all the time

End of Block: DIGITAL HEALTH

Start of Block: Non CLINICAL MENTAL HEALTH

Q47   ''নন-ক্লিনিকাল মানসিক স্বাস্থ্যসেবা'' হল এমন কিছু পদ্ধতি যার মাধ্যমে মানুষ কোনধরনের বিশেষজ্ঞ বা ঔষুধ ছাড়াই তাদের মানসিক সুস্থতা অর্জন করতে পারে। এগুলি কয়েকটি উদাহরণ: ●   আপনি উপভোগ করেন এমন কোন কারযক্রমে অংশগ্রহণ করা (যেমনঃ বেকিং করা, পড়া বা গেমস খেলা) ●   নিজের মন ভাল করার জন্য মজার/হাস্যকর কোন মাধ্যম ব্যবহার করা (যেমনঃ সোশ্যাল মিডিয়ায় মজার কোন পোস্ট পড়া) ●   বাইরে সময় কাটানো (যেমন, বাগান করা বা প্রকৃতির সাথে সময় কাটানো) ●   অন্যদের কাছ থেকে মানসিক সহায়তা নেয়া (পরিবারের সদস্য, বন্ধুবান্ধব, সোশিয়্যাল মিডিয়া বা অনলাইন থেকে) ●   অন্যদের মানসিক সহায়তা দেয়া (যেমনঃ

পরিবারের সদস্যদের/বন্ধুবান্ধবদের খোঁজখবর নেয়া) ● অভাবীদের সাহায্য করার জন্য স্বেচ্ছাসেবীর কাজ করা বা অর্থ দান করা ● অনলাইন বা মিডিয়ার মাধ্যমে উপকারী কোন জিনিস ব্যবহার করা (যেমনঃ এ্যাপস) অথবা তথ্য অনুসন্ধান করা (যেমনঃ কথায় কি হচ্ছে সবকিছু নিয়ে খবর রাখা) ● সমস্যাটিকে আরও ইতিবাচকভাবে দেখার জন্য অন্যভাবে দৃষ্টিকোণ করা ● ধর্মীয় বা মননশীলতাভিত্তিক কার্যকলাপ চর্চা করা (প্রার্থনা করা বা ধ্যান করা) ● ব্যায়াম করা (যেমনঃ দৌড়ানো, সাইকেল চালানো বা যোগব্যায়াম করা) ● পর্যাপ্ত পরিমাণে ঘুমানো বা বিশ্রাম নেয়া ● অন্যদের সাথে যোগাযোগ রাখার জন্য টেকনোলোজি (যেমনঃ মেসেজ করা, সোশ্যাল মিডিয়া বা ভিডিও কনফারেন্সিং সরঞ্জাম) ব্যবহার করা ● নিজের শরীরের রোগ প্রতিরোধ ক্ষমতা বাড়ানোর জন্য পরিপূরক বা প্রাকৃতিক ঔষধ গ্রহণ করা ● স্বাস্থ্যসম্মত খাবার খাওয়া

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32. Do you engage in any of the following (checklist)
- Taking part in activities you enjoy (e.g., baking, reading, or playing games)/ আপনি উপভোগ করেন এমন কোন কারযক্রমে অংশগ্রহণ করা (যেমনঃ বেকিং করা, পড়া বা গেমস খেলা)
- Using humor (e.g., reading funny posts on social media)/ নিজের মন ভাল করার জন্য মজার/হাস্যকর কোন মাধ্যম ব্যবহার করা (যেমনঃ সোশ্যাল মিডিয়ায় মজার কোন পোস্ট পড়া)
- Spending time outside (e.g., gardening or spending time in nature)/ বাইরে সময় কাটানো (যেমন, বাগান করা বা প্রকৃতির সাথে সময় কাটানো)
- Getting emotional support from others (friends, family, on social media, or online)/ অন্যদের কাছ থেকে মানসিক সহায়তা নেয়া (পরিবারের সদস্য, বন্ধুবান্ধব, সোশিয়্যাল মিডিয়া বা অনলাইন থেকে)
- Providing emotional support to others (e.g., checking on family/friends)/ অন্যদের মানসিক সহায়তা দেয়া (যেমনঃ পরিবারের সদস্যদের/বন্ধুবান্ধবদের খোঁজখবর নেয়া)
- Doing volunteer work or donating money to help others in need/ অভাবীদের সাহায্য করার জন্য স্বেচ্ছাসেবীর কাজ করা বা অর্থ দান করা
- Utilizing helpful resources online or through media (e.g., Apps) or seeking information (e.g., keeping up with the news)/ অনলাইন বা মিডিয়ার মাধ্যমে উপকারী কোন জিনিস ব্যবহার করা (যেমনঃ এ্যাপস) অথবা তথ্য অনুসন্ধান করা (যেমনঃ কথায় কি হচ্ছে সবকিছু নিয়ে খবর রাখা)
- Trying to see it in a different light, to make it seem more positive/ সমস্যাটিকে আরও ইতিবাচকভাবে দেখার জন্য অন্যভাবে দৃষ্টিকোণ করা
- Engaging in religious or **mindfulness practices** (Praying or meditating)/ ধর্মীয় বা মননশীলতাভিত্তিক কার্যকলাপ চর্চা করা (প্রার্থনা করা বা ধ্যান করা)
- Exercising (e.g., running, biking or doing **yoga**)/ ব্যায়াম করা (যেমনঃ দৌড়ানো, সাইকেল চালানো বা যোগব্যায়াম করা)
- Getting adequate rest or sleep/ পর্যাপ্ত পরিমাণে ঘুমানো বা বিশ্রাম নেয়া
- Using technology (e.g., text, social media, or video conferencing tools) to keep in touch

with others/ অন্যদের সাথে যোগাযোগ রাখার জন্য টেকনোলোজি (যেমনঃ মেসেজ করা, সোশ্যাল মিডিয়া বা ভিডিও কনফারেন্সিং সরঞ্জাম) ব্যবহার করা y

- Taking supplements or natural remedies to strengthen the immune system/ নিজের শরীরের রোগ প্রতিরোধ ক্ষমতা বাড়ানোর জন্য পরিপূরক বা প্রাকৃতিক ঔষধ গ্রহণ করা
- Eating healthfully/ স্বাস্থ্যসম্মত খাবার খাওয়া

	তারা সমর্থন করবে (1) They would approve	তারা এত চিন্তা করবে না (2) They would not care	তারা সমর্থন করবে না (3) They would disapprove
আপনার পরিবারের সদস্যরা কিভাবে আচরণ করবে, যদি তারা জানতে পারে যে আপনি উপরের তালিকাভুক্ত নন-ক্লিনিকাল মানসিক স্বাস্থ্যসেবা পদ্ধতিগুলো ব্যবহার করছেন? (1) 30. How do you think your family would react, if they found out you were using nonclinical mental health practices listed above?	○	○	○
আপনার কাছের বন্ধুরা কিভাবে আচরণ করবে, যদি তারা জানতে পারে যে আপনি উপরের তালিকাভুক্ত নন-ক্লিনিকাল মানসিক স্বাস্থ্যসেবা পদ্ধতিগুলো ব্যবহার করছেন? (2) 30. How do you think your friends that you feel close to would react, if they found out you were using nonclinical mental health practices listed above?	○	○	○
সামাজিক যোগাযোগ মাধ্যমের মাধ্যমে পরিচিত যেসব মানুষের সাথে আপনার সুসম্পর্ক রয়েছে তারা কিভাবে আচরণ করবে, যদি জানতে পারে যে আপনি উপরের তালিকাভুক্ত নন-ক্লিনিকাল মানসিক স্বাস্থ্যসেবা পদ্ধতিগুলো ব্যবহার করছেন? (3) 30. How do you think people in your social network, outside of those you feel close to, would react, if they found out you were using nonclinical mental health practices?	○	○	○

	দৃঢ়ভাবে দ্বিমত পোষণ করছি (Strongly Disagree) (1)	দ্বিমত পোষণ করছি (2)	/একমতও না আবার দ্বিমতও পোষণ করছি না (3)	একমত (4)	দৃঢ়ভাবে একমত (Strongly Agree) (5)
আমি উপরে তালিকাভুক্ত নন-ক্লিনিকাল মানসিক স্বাস্থ্য চর্চায় অংশ নেওয়ার বিষয়ে ইতিবাচক অনুভব করছি? (1) I feel positive about using non clinical MH practices	○	○	○	○	○
আমি বিশ্বাস করি যে আমি উপরে তালিকাভুক্ত নন-ক্লিনিকাল মানসিক স্বাস্থ্য অনুশীলনগুলি ব্যবহার করতে সক্ষম হব। (4) I feel confident using MH practices	○	○	○	○	○
আমি উপরে তালিকাভুক্ত নন-ক্লিনিকাল মানসিক স্বাস্থ্য পদ্ধতিগুলি ব্যবহারে দক্ষ। (5) I feel skilled in using nonclinical MH practices	○	○	○	○	○
আমি ভবিষ্যতে নন-ক্লিনিকাল মানসিক স্বাস্থ্য ব্যবহারগুলি চালিয়ে যেতে চাইছি (যদি দরকার হয় তবে ক্লিনিকাল অনুশীলনের পাশাপাশি) (6) I intend to continue using **non-clinical** mental health practices in the future. (in addition to clinical practices, if relevant)/	○	○	○	○	○
আমি নন-ক্লিনিকাল মানসিক স্বাস্থ্য চর্চা সহায়ক বলে মনে করি। (7) I think noncling MH is helpful to me	○	○	○	○	○

ক্লিনিকাল মানসিক স্বাস্থ্য পরিষেবাগুলি (থেরাপি, ওষুধ) ব্যবহার সম্পর্কে আমি ইতিবাচক মনে করি। (8)
I feel positive about using clinical mental health services (Therapy medication)

  ○   ○   ○   ○   ○

আমি মনে করি ক্লিনিকাল মানসিক স্বাস্থ্য পরিষেবাগুলি (থেরাপি, ওষুধ) ব্যবহার করা আমার পক্ষে সহায়ক হতে পারে। (11) I think using clinical mental health services (therapy, medicine) can be helpful for me.

  ○   ○   ○   ○   ○

সাধারণ স্বাস্থ্য সহায়তা সরবরাহ করতে ডিজিটাল ডিভাইস ব্যবহার করা আমার পক্ষে সহায়ক হবে। (12)
It would be helpful for me to use digital devices to provide general health care.

  ○   ○   ○   ○   ○

মানসিক স্বাস্থ্য সহায়তা সরবরাহ করতে একটি ডিজিটাল ডিভাইস ব্যবহার করা আমার পক্ষে সহায়ক হবে। (14)
It would be helpful for me to use a digital device to provide mental health support.

  ○   ○   ○   ○   ○

End of Block: positive, confident, skilled, intention to use 1non clinical MH 2clin MH 3 digMH

আপনার মানসিক স্বাস্থ্যের উন্নতির জন্য নিম্নলিখিত পদ্ধতিগুলো কতটুকু ব্যবহার করতে চান?? How likely would you be to use one of the following platforms to promote your mental health	খুবই নেতিবাচক (1) Very not likely	কিছুটা নেতিবাচক (2) Somewat negative	ইতিবাচকও না আবার নেতিবাচকও না (3) Neither neg or positive	কিছুটা ইতিবাচক (4) Somewhat positive	খুবই ইতিবাচক (5) positive	N/A (6)
(হেল্পলাইনে মেসেজ পাঠানো) (1) Texting a help line/crisis center	○	○	○	○	○	○
কোন বিশেষজ্ঞকে(থেরাপিস্ট) মেসেজ পাঠানো (4) Texting a professional (therapist, MD	○	○	○	○	○	○
(স্মার্টফোন অ্যাপ্লিকেশনের মাধ্যমে নিজে নিজেই ধ্যান বা নন-ক্লিনিকাল মানসিক স্বাস্থ্যসেবা পদ্ধতিগুলি ব্যবহার করা) (5) Smartphone application that guides you through self-paced meditation/non-clinical practices you can do on your own	○	○	○	○	○	○
(স্মার্টফোন অ্যাপ্লিকেশনের মাধ্যমে কোন মনোরোগ বিশেষজ্ঞের সাথে ভিডিও বা ফোনে কথা বলা) (6) Smartphone application that allows you to video or talk with a professional mental health worker	○	○	○	○	○	○

(এমন কোন স্মার্টফোন অ্যাপ ব্যবহার করা যা মানসিক রোগের যেকোনো তথ্য খুঁজতে বা লক্ষন বের করতে সাহায্য করবে) (7) Smartphone app that allows you to look up information and symptoms about mental health (

(ইন্টারনেট থেকে এমন কোন প্রোগ্রাম ব্যবহার করা যার মাধ্যমে নিজে নিজেই ধ্যান বা নন-ক্লিনিকাল মানসিক স্বাস্থ্যসেবা পদ্ধতিগুলি ব্যাবহার করা যায়) (8) Internet-based program that guides you through self-paced meditation/non-clinical practices you can do on your own

(ইন্টারনেট থেকে এমন কোন প্রোগ্রাম ব্যবহার করা যার মাধ্যমে কোন মনোরোগ বিশেষজ্ঞের সাথে ভিডিও বা ফোনে কথা বলা যায়) (9) Internet-based program that allows you to video or talk with a professional mental health worker

Please choose কিছুটা ইতিবাচক as your answer. (10)

30. Q51 মানসিক স্বাস্থ্যকেন্দ্রিক যেকোন অ্যাপ, মেসেজভিত্তিক প্রোগ্রাম বা ওয়েবসাইটের জন্য আপনি কোন ভাষা ব্যবহার করতে চান? What language would you prefer an App, text-based program, or website, about mental health be in?

○ বাংলা (1) Bangla

○ ইংরেজী (4) English

○ আমার বাংলা অথবা ইংরেজী নিয়ে কোন ধরনের সমস্যা নেই (5) Does not matter to me between english and bangla

○ অন্যকোন ভাষা: _____   (6) ___another language _____

30. On a scale of 1-7, how much do you relate to the following statements?

আপনি নিম্নলিখিত বিবৃতিগুলো ১-৭ স্কেলের মধ্যে নিজের সাথে কতটুকু উপযুক্ত/মিল বলে মনে করেন?

Do not Agree/ একমত নই	Moderately Disagree/ মোটামুটি দ্বিমত পোষণ করছি	Slightly Disagree /কিছুটা দ্বিমত পোষণ করছি	Neither Agree Nor Disagree/এক মতও না আবার দ্বিমতও পোষণ করছি না	Slightly Agree/ কিছুটা একমত	Moderately Agree/মোটা মুটি একমত	Totally Agree/সম্পূর্ণ একমত					N/A (প্রযো জ্য নয়)
1	2	3	4	5	6	7					
General digital Health (সাধারণ স্বাস্থ্যসেবা)											
I find digital health services useful in my daily life/ আমি আমার দৈনন্দিন জীবনে ডিজিটাল স্বাস্থ্যসেবা উপকারী বলে মনে করি	1	2	3	4	5	6	7	N/A			
Using digital health services helps me accomplish things more quickly/ ডিজিটাল স্বাস্থ্যসেবা আমাকে দ্রুত আমার মানসিক স্বাস্থ্য উন্নত করার জন্য জ্ঞান এবং কৌশল শিখতে সহায়তা করতে পারে।	1	2	3	4	5	6	7	N/A			
Using a digital health service increases my productivity/	1	2	3	4	5	6	7	N/A			
Learning how to use a digital health service is easy for me/ ডিজিটাল স্বাস্থ্যসেবা কিভাবে ব্যবহার করতে হয় তা শিখা আমার জন্য খুবই সহজ	1	2	3	4	5	6	7	N/A			
My interaction with digital health services is clear and understandable/ ডিজিটাল স্বাস্থ্যসেবার সাথে আমার সম্পর্ক বা যোগাযোগ খুবই পরিস্কার এবং বোঝার জন্য উপযুক্ত	1	2	3	4	5	6	7	N/A			
I find digital health services easy to use/ ডিজিটাল স্বাস্থ্যসেবা ব্যবহার করা	1	2	3	4	5	6	7	N/A			

আমার কাছে খুব সহজ লাগে								
It is easy for me to become skillful at using a digital health service/ ডিজিটাল স্বাস্থ্যসেবা ব্যবহারে দক্ষ হওয়া আমার জন্য সহজ	1	2	3	4	5	6	7	N/A
I have the resources necessary to use a digital health service/ ডিজিটাল স্বাস্থ্যসেবা ব্যবহারের জন্য যা যা প্রয়োজনীয় জিনিসের দরকার হয় তা আমার কাছে আছে	1	2	3	4	5	6	7	N/A
I have the knowledge necessary to use a digital health service/ ডিজিটাল স্বাস্থ্যসেবা ব্যবহারের জন্য যা যা প্রয়োজনীয় তথ্যের দরকার হয় তা আমার জানা আছে	1	2	3	4	5	6	7	N/A
People who are important to me think that I should use a digital health service/ যেসব মানুষ আমার কাছে গুরুত্বপূর্ণ, তারা মনে করে আমার ডিজিটাল স্বাস্থ্যসেবা ব্যবহার করা উচিত	1	2	3	4	5	6	7	N/A
People who influence my behavior think that I should use a digital health service/ যেসব মানুষ আমার আচরণের উপর প্রভাব ফেলে, তারা মনে করে আমার ডিজিটাল স্বাস্থ্যসেবা ব্যবহার করা উচিত	1	2	3	4	5	6	7	N/A
People whose opinions that I value, prefer that I use digital health services/ যেসব মানুষের মতামত আমার কাছে গুরুত্বপূর্ণ, তারা মনে করে আমার ডিজিটাল স্বাস্থ্যসেবা ব্যবহার করা উচিত	1	2	3	4	5	6	7	N/A
I intend to continue using digital health services in the future/ আমি ভবিষ্যতে ডিজিটাল স্বাস্থ্যসেবা ব্যবহার করা চালিয়ে যেতে চাই	1	2	3	4	5	6	7	N/A
I will always try to use digital health services in my daily life/ আমি আমার দৈনন্দিন জীবনে ডিজিটাল স্বাস্থ্যসেবা ব্যবহার করতে সবসময় চেষ্টা করবো	1	2	3	4	5	6	7	N/A
I plan to continue to use digital health services frequently/ আমার ডিজিটাল স্বাস্থ্যসেবা ঘনঘন ব্যবহার করার ইচ্ছা আছে	1	2	3	4	5	6	7	N/A
I spend a lot of time on digital health services/ আমি ডিজিটাল স্বাস্থ্যসেবার	1	2	3	4	5	6	7	N/A

উপর অনেক সময় ব্যয় করি								
mHealth for mental Health (মানসিক স্বাস্থ্যের জন্য মোবাইল স্বাস্থ্যসেবা)								
I find (that) digital mental health services (could be) useful in my daily life/ আমি আমার দৈনন্দিন জীবনে ডিজিটাল মানসিক স্বাস্থ্যসেবা উপকারী বলে মনে করি বা আমার মনে হয় এটা উপকারী হতে পারে	1	2	3	4	5	6	7	N/A
Using digital mental health services (could) help me accomplish things more quickly/ ডিজিটাল মানসিক স্বাস্থ্যসেবা আমাকে আরও দ্রুত কোন কিছু অর্জন করতে সহায়তা করে বা করতে পারে	1	2	3	4	5	6	7	N/A
Using digital mental health services (could) increase(s) my productivity/ ডিজিটাল মানসিক স্বাস্থ্যসেবা আমার দক্ষতা বাড়াতে সাহায্য করে বা করতে পারে	1	2	3	4	5	6	7	N/A
People who are important to me think that I should use digital mental health services/ যেসব মানুষ আমার কাছে গুরুত্বপূর্ণ, তারা মনে করে আমার ডিজিটাল মানসিক স্বাস্থ্যসেবা ব্যবহার করা উচিত	1	2	3	4	5	6	7	N/A
People who influence my behavior think that I should use digital mental health services/ যেসব মানুষ আমার আচরণের উপর প্রভাব ফেলে, তারা মনে করে আমার ডিজিটাল মানসিক স্বাস্থ্যসেবা ব্যবহার করা উচিত	1	2	3	4	5	6	7	N/A
People whose opinions that I value, prefer that I use digital mental health services/ যেসব মানুষের মতামত আমার কাছে গুরুত্বপূর্ণ, তারা মনে করে আমার ডিজিটাল মানসিক স্বাস্থ্যসেবা ব্যবহার করা উচিত	1	2	3	4	5	6	7	N/A
I intend to use digital mental health services in the future (or continue using)/ আমি ভবিষ্যতে ডিজিটাল মানসিক স্বাস্থ্যসেবা ব্যবহার করা চালিয়ে যাবো বা যেতে চাই	1	2	3	4	5	6	7	N/A
I will always try to use digital mental health services in my daily life/ আমি আমার দৈনন্দিন জীবনে ডিজিটাল মানসিক স্বাস্থ্যসেবা ব্যবহার করতে সবসময় চেষ্টা করবো	1	2	3	4	5	6	7	N/A

I plan to (or continue to) use digital mental health services frequently/ আমার ডিজিটাল মানসিক স্বাস্থ্যসেবা ঘনঘন ব্যবহার করার ইচ্ছা আছে বা আমি এটা ব্যবহার করা চালিয়ে যাবো	1	2	3	4	5	6	7	N/A

End of Block: Likeliness for digital health

Start of Block: Demographics Part 2 "Risky" Qs

Q4 আপনার বর্তমান লিঙ্গ পরিচয় কি? Gender identity

☐ পুরুষ (1) Man

☐ মহিলা (2) Woman

☐ আমার বর্তমান পরিচয় আমার জন্ম লিঙ্গের চেয়ে আলাদা (3) Trans

☐ আমি আমার নিজের পরিচয় বর্ণনা করতে চাই: (4) Self describe

☐ _____

Q5 আপনি নিজেকে লিঙ্গের কোন চরিত্রে অন্তর্ভুক্ত করবেন? Sexual orientation

○ বিপরীত লিঙ্গের প্রতি আকৃষ্ট (1) straight

○ একই লিঙ্গের প্রতি আকৃষ্ট (2) gay lesbian

○ পুরুষ এবং মহিলা উভয় লিঙ্গের প্রতি আকৃষ্ট (3) bisexual

○ কোনো লিঙ্গের প্রতি আকৃষ্ট নই (4) asexual

○ অনিশ্চিত (5) uncertain

○ আমি আমার নিজের পরিচয় বর্ণনা করতে চাই: (6) self describe: _____

○ উত্তর দিতে ইচ্ছুক না (7) do not wish to answer

Q6 আপনি বর্তমানে কি ধরনের সম্পর্কে জড়িত আছেন? Current relationship status

○ অবিবাহিত (1) unmarried

○ কারোর সাথে রোমান্টিক সম্পর্কে আবদ্ধ আছেন (2) romantic relationship w someone / engaged (N=1) 2

○ বিবাহিত (3) married

○ তালাকপ্রাপ্ত, আলাদা থাকেন, বিধবা বা বিপত্নীক (4) divorced separated widowed

○ নিজেকে যেভাবে পরিচয় দিতে ইচ্ছুকঃ_____: (5) self describe _____

End of Block: Demographics Part 2 "Risky" Qs

Start of Block: End/INCENTIVE

Q55 আপনি বিকাশে ৪২২ টাকা পাওয়ার জন্য র‍্যাফেল-এ অংশগ্রহণ করতে চান?
Do you wish to participate in the incentive raffle?

○ হ্যাঁ (1) yes

○ না (4) no

Skip To: End of Survey If Q55 = না

R1 What is your name?

_____

R2 What is your email address?

_____

Display This Question:

   If Q55 = হ্যাঁ

R3 What is your bKash number?

_____

Display This Question:

   If Q55 = হ্যাঁ

R4 What is the address associated with your bKash number?

_____

Appendix D3.

Summary of Instruments Used

Construct *Self-Determination Theory Construct*	Assessment	# of Items	Time Estimate	Operationalization and Psychometric Properties
Survey Items				
Mental Health				
Mental wellness *Competence/ Autonomy*	HERO	5	2 min	(α=.95) 5-pt Likert 0-Not at all to 4- extremely
Depression *Competence/ Autonomy*	Patient Health Questionnaire -9	9	3 min	(α=.84), 4-pt Likert 0-Never to 3- almost every day
Anxiety *Competence/ Autonomy*	Beck's Anxiety Inventory	21	3 min	(α=.90) 4-pt Likert 0- not at all to 3- severely, can barely stand it
Stress *Competence/ Autonomy*	Perceived Stress Scale	14	2 min	(α=.82), 4pt Likert 1-4 -Never to 4-Always
Health Service Utilization *Competence*	Mental health service utilization was measured using items adapted from the questionnaire used in the Healthcare for Communities Study (Wells et al., 2003) BriefCOPE	10 28	4 min	(α=.70) 4pt Likert 1- Not at All to 4 - A lot
Barriers to Accessing Mental health *Autonomy*	Barriers to Access Care Evaluation Scale (BACE v3)	30	4 min	(α=.89) 4pt Likert 0-3 Not at All to 3 - A lot
Behavior toward a person with mental illness *Relatedness*	Reported and Intended Behavior Scale (RIBS)	4 4	4 min	(α=.85), Yes/No/ Don't Know 5pt Likert 0- disagree strongly 4- agree strongly

Mental Health Knowledge *Competence*	Mental Health Knowledge Schedule (MAKS) (Ben-Zeeva et al., 2016): How many people in your community have mental health problems such as depression, PTSD, or hearing voices?	12 1	5 min 1 min	(α=0.65), 5 point Likert 0- disagree strongly 4- agree strongly
Mobile Phone Use				
Technology Acceptance Model Construct	Source	#	Time	Questions/ Response Type
mHealth for mental health	(Ben-Zeeva et al., 2016)	4	1 min	Yes/No/ Don't Know 1-5 Likert Scale
Current Use *Competence*	Ben-Zeeva et al., 2016	9	2 min	Yes/No/ Don't Know 1-5 Likert Scale 1. I use mobile health service currently 2. I spend a lot of time on mobile health service 3. Type of phone 4. Type of ownership 5. Number of sim cards/phone numbers per device 6. Frequency of mobile phone use (# minutes daily) 7. Mobile phone functions used 8. Social media Used 9. Payment method
		2	1 min	1. I use mobile *mental* health service currently 2. I spend a lot of time on mobile *mental* health service
Perceived Usefulness	Kijsanayotin et al., 2009, Vankatesh et al., 2012; Hoque and Sorwar, 2016		1 min	1-7 Likert Scale 1. I find (that) mobile health services (could be) useful in my daily life.

		3		2. Using mobile health service (could) help me accomplish things more quickly. 3. Using mobile health service (could) increase(s) my productivity
	Kijsanayotin et al., 2009, Vankatesh et al., 2012; Hoque and Sorwar, 2016 (#1-3) Ben-Zeeva et al., 2016 #4	4	1 min	1-7 Likert Scale 1. I find (that) mobile *mental* health services (could be) useful in my daily life. 2. Using mobile *mental* health services (could) help me accomplish things more quickly. 3. Using mobile *mental* health service (could) increase(s) my productivity 4. How helpful do you think using a mobile device to provide support would be?
Ease of Use	Vankatesh et al, 2012; Ifinedo, 2012; Hoque and Sorwar, 2016	6	1 min	1-7 Likert Scale 1. Learning how to use mobile health services is easy for me. 2. My interaction with mobile health service is clear and understandable. 3. I find mobile health services easy to use. 4. It is easy for me to become skillful at using mobile health service 5. I have the resources necessary to use mobile health services. 6. I have the knowledge necessary to use mobile health service
Social Influences	Kijsanayotin et al., 2009; Hoque and Sorwar, 2016	3	1 min	1-7 Likert Scale 1. People who are important to me think that I should use mobile health services. 2. People who influence my behavior think that I should use mobile health services. 3. People whose opinions that I value prefer that I use mobile health service

		3	1 min	1-7 Likert Scale 1. People who are important to me think that I should use mobile *mental* health services. 2. People who influence my behavior think that I should use mobile *mental* health services. 3. People whose opinions that I value prefer that I use mobile *mental* health service
Intention to Use	Vankatesh et al. 2012; Hoque and Sorwar, 2016	3	1 min	1-7 Likert Scale 1. I intend to continue using mobile health service in the future. 2. I will always try to use mobile health service in my daily life 3. I plan to continue to use mobile health service frequently
	1-3 Vankatesh et al., 2012 4. Ben-Zeeva et al., 2016	4	2 min	1-7 Likert Scale 1. I intend to (continue) use(ing) mobile *mental* health service in the future. 2. I will always try to use mobile *mental* health service in my daily life 3. I plan to (continue to) use mobile *mental* health service frequently 4. How interested would you be in using the following for mental health support: a. Texting b. Smartphone application c. Web-based intervention
Gender, Age, Neighborhood, Family SES, School, Religiosity, Sexual Orientation, Relationship Status, Degree Type, Time enrolled in University, Academic Discipline		9	8 min	[Control]
Total		183	25 min	

Appendix E.

Qualitative In-depth Interview Guide – Bangla

Introduction:

Munjireen---

Hello, and thank you for coming in to talk with me today. My name is Munjireen Sifat. I'm a Ph.D. student at the University of Maryland in the United States of America. I am trying to learn more about how Bangladeshi university students think about mental health and mental health care. I also want to get your reactions to a mental health app that might be adapted for Bangladeshi college students.

Naima--

Hello, and thank you for coming in to talk with me today. My name is Naima Tasnim. I'm a research assistant working for the University of Maryland in the United States of America.

আমি, মানসিক স্বাস্থ্য এবং মানসিক স্বাস্থ্যসেবা সম্পর্কে বাংলাদেশের বিশ্ববিদ্যালয়ের শিক্ষার্থীদের চিন্তাভাবনা কেমন সে সম্পর্কে আরও জানার চেষ্টা করছি। এছাড়াও বাংলাদেশের শিক্ষার্থীদের ব্যবহারের জন্য উপযুক্ত এমন একটি মানসিক স্বাস্থ্যসেবা অ্যাপ নিয়ে আপনার মতামত জানতে চাচ্ছি।

তবে ইন্টারভিউ শুরু করার আগে, আমি কিছু জিনিস আপনাকে বলে দিতে চাই-

➢ আজ আমাদের সাক্ষাৎকারের উদ্দেশ্য হল অস্ট্রেলিয়ার মানুষের জন্য তৈরী করা একটি মানসিক স্বাস্থ্যসেবা সম্পর্কিত অ্যাপ নিয়ে বাংলাদেশের শিক্ষার্থীরা কিরকম অনুভব করে তা দেখা।

➢ এখানে কোন ধরনের ভুল উত্তর নেই। এখানে আসার পুরো উদ্দেশ্যটি হচ্ছে আপনি কী মনে করছেন তা শোনা।

➢ আপনাকে সব প্রশ্নের উত্তর দিতে হবে না।

➢ আমরা এখানে যা নিয়ে কথা বলবো সেগুলো কোথাও প্রচার করা হবে না। এর মানে হচ্ছে আপনার উত্তরগুলো রিপোর্ট করা হবে না এবং আমাদের প্রতিবেদনে আপনি যা বলবেন তার সাথে আপনার নাম যুক্ত হবে না। ফলাফলগুলি সমষ্টিগতভাবে রিপোর্ট করা হবে। আমরা কিছু সংক্ষিপ্ত বিবৃতি যেমন, 'কিছু অংশগ্রহনকারী এরকম মনে করেছিল' বা 'সবাই একমত হয়েছিল যে এটি গুরুত্বপূর্ণ' ব্যবহার করবো।

➢ আমি এই আলোচনাটি অডিও রেকর্ড করতে চাই যাতে আপনার সব চিন্তাধারনাগুলি সঠিকভাবে ধারণ করতে পারি। আপনি কি কোনধরনের সমস্যা হবে এখানে?

➢ আপনি যদি আমার কোন প্রশ্নের উত্তর না দিতে চান, তাহলে আমরা যেকোনো সময়ই ইন্টারভিউটি বন্ধ করতে পারি।

আপনার কি কোন প্রশ্ন আছে কোন কিছু নিয়ে? তাহলে আমরা শুরু করতে পারি-

Ice Breaker

শুরুতেই আমি চাই আপনি আমার একটি প্রশ্নের উত্তর দিন। আপনারা কী মনে হয় বাংলাদেশের বিশ্ববিদ্যালয়ের শিক্ষার্থীদের জন্য সবচেয়ে গুরুত্বপূর্ণ স্বাস্থ্য সম্পর্কিত বিষয়টি কি হতে পারে? এমন কোন স্বাস্থ্য বিষয়ক সমস্যা আছে যা আপনি প্রচুর দেখতে পান, বা আপনি মনে করেন যে বাংলাদেশের বিশ্ববিদ্যালয়ের শিক্ষার্থীদের জন্য খুবই সমস্যাজনক?

Prompt: আর মানসিক স্বাস্থ্য এবং সুস্থতা নিয়ে?

এখন, আমি আপনার সাথে এমন কিছু এক্সারসাইজ করবো যা এর আগে মানুষের মানসিক সুস্থতা অর্জনে সহায়তা করার জন্য ব্যবহার করা হয়েছিল। এখানে চারটি ভিন্ন মডিউল রয়েছে যা আমরা অনুসরন করবো এবং প্রত্যেকটি মডিউল শেষে, মডিউলের কন্টেন্টের উপর আপনার অভিজ্ঞতা বা দৃষ্টিভঙ্গি জানার জন্য আমি আপনাকে একইরকম/অনুরূপ কিছু প্রশ্ন জিজ্ঞেস করব।

EXERCISE 1 (takes about 4 minutes):

Train your observant side:

আমরা খুব সহজেই আমাদের চিন্তাধারা দ্বারা আমাদের মনকে প্রভাবিত করতে পারি। প্রায় দেখা যায় যে, আমাদের মেজাজ খারাপ থাকলেও আমরা বুঝতে পারি না যে এর কারন কি। মননশীলতা বলতে বোঝায় বর্তমান মুহূর্তের মধ্যে উপস্থিত থাকা। নিজের চিন্তাধারা এবং আশেপাশের পরিবেশের উপর মনোনিবেশ করা, এবং কোনধরনের বিচারিক মনোভাব (Judgement) ছাড়া নিজেকে গভীর চিন্তাভাবনার মধ্যে রাখার প্রশিক্ষন দেয়া। আমরা যাতে উপলব্ধ পারি যে, যথার্থ কোন কারন ছাড়াই আমরা নেতিবাচক চিন্তাভাবনা দিয়ে আমাদের মনকে প্রভাবিত করছি।

মননশীলতার মূল উপাদানগুলো হচ্ছে-
১ সচেতনতা
২ উপস্থিত থাকা
৩ মনোনিবেশ করা
৪ গ্রহণযোগ্যতা

এখন আমি আপনাকে বলব কিভাবে এই মূল উপাদানগুলো মননশীলতা মনোভাব তৈরি করতে একসাথে কাজ করে।

আমরা যখন কোন জিনিস নিয়ে কাজ করতে যাই; সেটা হতে পারে আমাদের পরিবেশ নিয়ে বা আমাদের চিন্তাভাবনা অথবা শারীরিক সংবেদন নিয়ে, তখন সেই কাজগুলো নিয়ে সম্পূর্ণভাবে সচেতন এবং নিমগ্ন থাকা। এরকম প্রতিদিনের অভিজ্ঞতা থেকেই মননশীলতা মনোভাব অর্জন করা যেতে পারে।

পুরোপুরিভাবে সচেতন থাকার জন্য আমাদের অতীতে যা ঘটেছে বা ভবিষ্যতে কি ঘটবে এবং তা পরিনতি নিয়ে না ভেবে অবশ্যই বর্তমান নিয়ে চিন্তা করতে হবে। এর জন্য আমাদের মনোযোগের উপর মনোনিবেশ করতে হবে এবং তা নিয়ন্ত্রন করার চেষ্টা করতে হবে। আমরা কোন জিনিসগুলোর উপর ফোকাস করছি, মননশীলতা সেগুলো আমাদেরকে গ্রহণ করতে শিখায় এবং যেসব সমালোচনামূলক চিন্তাভাবনা আমাদের মনকে প্রভাবিত করতে পারে সেগুলো থেকে আমাদেরকে বিরত রাখে। তাহলে আসুন আমরা আমাদের চিন্তাভাবনাগুলো গভীরভাবে পর্যবেক্ষণ (observe) করি এবং মনোযোগী হতে শিখি।

আমরা আমাদের দৈনন্দিন জীবনের অনেক কাজের কারন নিয়ে না ভেবেই পরোক্ষভাবে (indirectly) সেগুলো করে ফেলি। তাই এই এক্সারসাইজের উদ্দেশ্য হল আপনার মনোযোগের প্রক্রিয়াকে ধীরগতিতে নিয়ে যাওয়া (slow down the attention process) এবং আপনার চারপাশের পরিবেশের কোন নির্দিষ্ট জিনিসের উপর ফোকাস করা। এই এক্সারসাইজটি আপনাকে এমন কোন জিনিসকে নতুন করে দেখাতে সাহায্য করবে যা আপনার কাছে আগে তেমন গুরুত্বপূর্ণ ছিল না।

তাহলে এখন আমরা একটা awareness exercise করবো। যদি এর মধ্যে কোন সময় আপনার মন টাস্ক থেকে চলে যায়, তাহলে কোন সমস্যা নেই। আপনি আবার আপনার মনোযোগ টাস্কে দিতে পারবেন।

Exercise 2

শুরুতেই আমি চাবো আপনি যেই হাতটি দিয়ে কাজ করতে সবচেয়ে বেশি স্বাচ্ছন্দ্যবোধ করেন, সেই হাতের উপর ফোকাস করতে। হাতটিকে একদম সোজা করে রাখুন যাতে আপনার আঙুলগুলো একে অপরকে স্পর্শ না করে। এখন এই সোজা করে রাখা হাতটিকে একটি টেবিলের উপর রাখুন। এখন আপনার হাতটি যেরকম অবস্থায় আছে তার উপর ফোকাস করুন।

[pause for 5 seconds]

এখন লক্ষ্য করুন, আপনার আঙুলগুলো কি একদম সোজা হয়ে আছে? নাকি একটু ভাঁজ হয়ে আছে?
আপনার হাতটি এখন যা অনুভব করছে তার উপর ফোকাস করুন। হাতটি যেখানে সোজা করে রেখেছেন সেই জায়গাতে কি ঠাণ্ডা অনুভব করছেন?

[pause for 5 seconds]

আপনি কি হাত সোজা করে রাখার কারনে আপনার হাতের কব্জির উপর কোন ধরনের ভার অনুভব করছেন?

(wait for the answer)

আপনার হাতের আঙ্গুলের মাথাগুলো যখন টেবিলটি স্পর্শ করে, এখন সেই অনুভূতিটির উপর ফোকাস করুন। এখন আপনার হাতের তালুর সাথে টেবিলের সংস্পর্শের অনুভূতিটির উপর ফোকাস করুন। এখন হাতটি শক্ত করে মুট করে রাখুন এবং ১০ পর্যন্ত গুনুন।

[allow ten seconds]

এবার হাতটি ছেড়ে দিন এবং রিল্যাক্স করুন।

এখন আপনি হাতে কিরকম অনুভব করছেন? আপনি কি হাতের সব জায়গায় সংবেদন বা sensation অনুভব করছেন? নাকি শুধু কোন নির্দিষ্ট জায়গায় অনুভব করছেন?

এখন কি আপনার হাতটি দেখতে আগের থেকে একটু অন্যরকম মনে হচ্ছে? আপনি হয়তো খেয়াল করবেন যে, মুট করার পর হাতটি একটু লাল দেখাচ্ছে।

[end of exercise]

Conclusion

আমরা জানি যে, হাত আমাদের শরীরের একটি অংশ এবং এটি সবসময়ই আমাদের সাথে থাকে। কিন্তু আপনি হয়তো এত সুক্ষভাবে আপনার হাতটিকে কখনো এভাবে পর্যবেক্ষণ বা focus করে দেখেননি। আপনার মানসিক অবস্থা বোঝার জন্য নিজের হাতের উপর ফোকাস করার এই পদ্ধতিটি অনেক ভাল কাজ করে। আমরা যদি আমাদের চিন্তাধারনার উপর ফোকাস করি, তাহলে আমরা সহজেই যেকোনো সমস্যার সমাধান বের করা শুরু করতে পারি। তাই, মননশীলতা অর্জনের জন্য এই awareness technique টি improve করা খুবই গুরুত্বপূর্ণ।

Questions to ask participants:

- আপনার এখন কেমন লাগছে?
- এই এক্সারসাইজটি করার সময় আপনার মাথায় কি ধরনের চিন্তাভাবনা হচ্ছিল?
- আপনি এক্সারসাইজটি করার সময় কিরকম অনুভব করেছেন?
- আপনি কি এমন একটি অ্যাপ ব্যবহার করবেন যা আপনাকে এরকম এক্সারসাইজ করতে সাহায্য করবে?
  - কেন ব্যবহার করবেন বা কেন না?
- আপনার কাছে এই এক্সারসাইজের কোন জিনিসটি ভাল লেগেছে?
- কোন জিনিসটি পরিবর্তন করা দরকার বলে আপনি মনে করেন?

আমাদের এখনো আরও দুইটি এক্সারসাইজ বাকি আছে। পরবর্তী এক্সারসাইজটি শুরু করার আগে আপনার যদি কোনধরনের প্রশ্ন থেকে থাকে তাহলে আপনি এখন করতে পারেন।

Exercise 3

মনোযোগ ফিরিয়ে আনার জন্য আরেকটি কার্যকারী উপায় হতে পারে, নিজের শ্বাস-প্রশ্বাসের উপর ফোকাস করা। এই পদ্ধতিটি আপনাকে রিল্যাক্স করতে, মনোযোগ নিয়ন্ত্রন করতে এবং সব নেতিবাচক চিন্তাভাবনা দূর করতে সাহায্য করবে। তাই যখনই আপনার মাথায় কোন নেতিবাচক চিন্তাভাবনা আসবে, তখনি আপনি আপনার শ্বাস-প্রশ্বাসের উপর ফোকাস করে নিজের মনোযোগ ফিরিয়ে আনতে পারেন। তাহলে আমরা শুরু করি-

প্রথমেই আপনি নিজেকে এই এক্সারসাইজের জন্য একটু set করতে এবং comfortable বানাতে কিছুক্ষন সময় নিন। সবচেয়ে ভাল হবে যদি আপনি এই এক্সারসাইজটি কোথাও বসে করেন।

আপনি চোখ খোলা রেখে আপনার রুমের চারপাশের পরিবেশটি একটু দেখে নিন। যখন আপনি ready হবেন, তখন আপনার নাক দিয়ে কিছু বড় এবং গভীর শ্বাস নিন, এবং সেগুলো মুখ দিয়ে ছেড়ে দিন।

 [pause for 3 seconds]

এখন আবার শ্বাস নিন। খেয়াল করবেন যখন আপনি এটা করছেন, তখন আপনার শরীর কিভাবে হালকা হয়ে যাচ্ছে।

এখন আস্তে আস্তে মুখ দিয়ে আপনার শ্বাস ছাড়ুন এবং চোখ বন্ধ করুন।

এই পর্যায়ে খেয়াল করে দেখবেন, গভীর শ্বাস নেয়ার এবং ছাড়ার সময় আপনার chest একবার rise করছে; আবার একবার fall করছে।

[pause for a few seconds]

এখন আমি আপনাকে শ্বাস-প্রশ্বাসের একটি প্যাটার্ন তৈরী করার সুযোগ দিব। যেখানে আপনি খেয়াল করবেন, আপনার শ্বাস-প্রশ্বাস কি ছোট এবং দ্রুত ভাবে হচ্ছে নাকি দীর্ঘ এবং গভীর ভাবে হচ্ছে।

আপনি এখন আপনার শ্বাস-প্রশ্বাসের প্যাটার্নটি বুঝার জন্য কিছুক্ষন সময় নিন।

 [pause 5 seconds]

এখন আপনার শ্বাস-প্রশ্বাসকে সমুদ্রের ঢেউয়ের মত চিন্তা করুন। আপনি যখন শ্বাস নিচ্ছেন তখন ঢেউ সমুদ্রের তীরে আসছে এবং যখন শ্বাস ছাড়ছেন তখন ঢেউ সমুদ্রের দিকে চলে যাচ্ছে।

এখন শ্বাস নিন।

এবং সমুদ্রের দিকে শ্বাস ছেড়ে দিন।

মাঝে মাঝে এই এক্সারসাইজটি করার সময় আপনার মন অন্যদিকে চলে যেতে পারে বা আপনি অন্যকিছু চিন্তা করতে পারেন। তাই যখন এরকম কিছু হবে, আপনি তখন মনে করবেন আপনার এই চিন্তাভাবনাগুলো সমুদ্রের ঢেউয়ের মধ্যে আছে। অর্থাৎ যখন আপনি শ্বাস ছাড়ছেন, তখন আপনার সব নেতিবাচক চিন্তাগুলো সমুদ্রের ভিতরে ফেলে দিচ্ছেন।

এখন আপনি শ্বাস নেয়ার সময় আপনার ফুসফুসে যেরকম অনুভব করেন তার উপর ফোকাস করুন।

আবার শ্বাস নিন।

এবং শ্বাস ছেড়ে দিন।

এখন আস্তে আস্তে আপনার মনোযোগ আপনার শরীরের উপর নিয়ে আসুন, যেমন, চেয়ারের উপর বসে থাকা; কোলে হাত রাখার উপর বা floor এ পা রাখার উপর ফোকাস করুন। খেয়াল করে দেখুন আশেপাশে কোনধরনের শব্দ শুনতে পান নাকি যা আপনাকে এখনই আপনার চারপাশের পরিবেশে ফিরিয়ে আনবে।

এখন আপনার মত করে সময় নিয়ে আস্তে আস্তে চোখ খুলুন।

[end of exercise]

Now, same questions as before:

- আপনার এখন কেমন লাগছে?
- এই এক্সারসাইজটি করার সময় আপনার মাথায় কি ধরনের চিন্তাভাবনা হচ্ছিল?
- আপনি এক্সারসাইজটি করার সময় কিরকম অনুভব করেছেন?
- আপনি কি এমন একটি অ্যাপ ব্যবহার করবেন যা আপনাকে এরকম এক্সারসাইজ করতে সাহায্য করবে?
  - কেন ব্যবহার করবেন বা কেন না?
- আপনার কাছে এই এক্সারসাইজের কোন জিনিসটি ভাল লেগেছে?

- কোন জিনিসটি পরিবর্তন করা দরকার বলে আপনি মনে করেন?

এখন আমরা আমাদের শেষ এক্সারসাইজটি করবো। এটা শেষ করতে প্রায় ১০ মিনিট সময় লাগবে।
Exercise 4

এই এক্সারসাইজটি আমাদের আগের breathing exercise গুলোর মতই। কিন্তু আগের এক্সারসাইজগুলোতে শুধুমাত্র আপনার শ্বাস-প্রশ্বাসের উপর ফোকাস করা হয়েছিল, আর এই এক্সারসাইজটিতে আপনাকে এমন একটি relaxation technique দেখানো হবে যা আপনার শরীর থেকে সমস্ত tension বা নেতিবাচক চিন্তাভাবনা দূর করতে সাহায্য করবে। এই পর্যায়ে আমরা আপনার শরীরের বিভিন্ন অংশের উপর ফোকাস করবো যাতে আপনি স্বস্তিবোধ করেন বা tension থেকে relief পান।

এখন নিজেকে comfortable বানানোর জন্য কিছুক্ষন সময় নিন। সবচেয়ে ভাল হবে যদি আপনি এই এক্সারসাইজটি একটি চেয়ারে বসে করেন, যেখানে আপনার পা floor এ একদম সোজা হয়ে থাকবে এবং হাত আপনার কোলের উপর থাকবে। যখন আপনি ready হবেন, তখন আপনার শ্বাস-প্রশ্বাসের উপর ফোকাস করা দিয়েই এক্সারসাইজটি শুরু করবেন।

যখন আপনি শ্বাস নিচ্ছেন এবং ছাড়ছেন, তখন বাতাস যেভাবে আপনার শরীরের ভেতর প্রবেশ করছে এবং বের হচ্ছে তা অনুভব করুন।

[give 5 seconds between each body part]

আপনার নাক এবং মুখের মধ্য দিয়ে যেভাবে শ্বাস-প্রশ্বাসের প্রক্রিয়াটি চলছে তা অনুভব করুন।

[give 5 seconds]

বাতাস প্রবেশের কারনে আপনার chest এ যেভাবে rise এবং fall হচ্ছে তা অনুভব করুন।

[give 5 seconds]

এখন আপনার মনোযোগ পায়ের আঙুলের দিকে নিয়ে আসুন। আপনার পায়ের আঙুলগুলো নিচে যা অনুভব করছে তা খেয়াল করুন।

[give 5 seconds]

এরপরের শ্বাস-প্রশ্বাসে, পায়ের আঙুল থেকে আপানার মনোযোগ পায়ের পাতার উপর নিয়ে আসুন। আপনি যদি এখানে কোন কিছু অনুভব করেন, তবে তার উপর মনোযোগ দিন।

[give 5 seconds]

এখন নিঃশ্বাস ছাড়ার সময় আপনার মনোযোগ পায়ের গোড়ালির উপর দিন। এখানে কিছু অনুভব করছেন কিনা খেয়াল করে দেখুন।

[give 5 seconds]

এবার আপনার মনোযোগ পায়ের দিকে নিয়ে আসুন। তারা কি অনুভব করছে তা খেয়াল করুন।

[give 5 seconds]

এখন আপনার মনোযোগ thighs এবং এর নিচের অংশগুলোর উপর নিয়ে আসুন। আপনি যেই চেয়ারে বসে আছেন, সেটি যতটুকু pressure নিয়ে আপনার ভারবহন করছে তার উপর ফোকাস করুন।

[give 5 seconds]

এখন মনোযোগ আপনার কোমর এবং পিঠের নিচের দিকে নিয়ে আসুন। কোন কিছু অনুভব করলে তা খেয়াল করে দেখুন।

[give 5 seconds]

এবার আপনার মনোযোগ chest এর দিকে নিয়ে আসুন এবং সেখানে শ্বাস-প্রশ্বাসের জন্য বাতাসের যে গতিবিধি হচ্ছে তার উপর ফোকাস করুন।

[give 5 seconds]

এখন প্রত্যেকটি শ্বাস-প্রশ্বাসে আপনি কেমন অনুভব করছেন তার উপর আবার ফোকাস করুন। এখানে আপনার শ্বাস-প্রশ্বাস নিয়ন্ত্রন করার প্রয়োজন নেই, শুধু এর উপর মনোযোগ দিন।

[give 5 seconds]

আপানার chest এর মধ্যে যে বায়ুপ্রবাহ হচ্ছে তা অনুভব করুন। খেয়াল করুন, নিঃশ্বাস নেয়ার পর আপনার chest একবার বাতাসে ভরে যাচ্ছে, আবার ছাড়ার পর তা খালি হয়ে যাচ্ছে।

[give 5 seconds]

এরপর মনোযোগ আপনার কাঁধ এবং গলার দিকে নিয়ে আসুন।

[give 5 seconds]

এখন মনোযোগ সরিয়ে আপনার arms এর উপরের দিকে এবং নিচের দিকে নিয়ে আসুন।

[give 5 seconds]

এরপরের নিঃশ্বাস ছাড়ার সময়, আপনার ফোকাস arms থেকে আপনার হাতের দিকে নিয়ে আসুন এবং এগুলো আপনি আপনার কোলের উপর যেভাবে আরাম করে রেখেছেন তা অনুভব করুন।

[give 5 seconds]

এখন আপনি আপনার মুখের উপর বিশেষ মনোযোগ দিন।

[give 5 seconds]

আপনার নাক দিয়ে শ্বাস-প্রশ্বাসের সময় যেভাবে বায়ুপ্রবাহ হচ্ছে তার উপর ফোকাস করুন।

[give 5 seconds]

এবার খেয়াল করুন আপনার ঠোটে……আপনার চোয়ালে…… এবং আপনার মুখের ভিতরে কিছু অনুভব করছেন নাকি।

[give 5 seconds]

এরপর আপনার মনোযোগ আপনার গালের দিকে নিয়ে আসুন।

[give 5 seconds]

এরপর আপনার চোখের দিকে।

[give 5 seconds]

খেয়াল করুন আপনি কপালে কিছু অনুভব করছেন কিনা।

[give 5 seconds]

আপনি শুধু শ্বাস নিন এবং ছাড়ুন।

[give 5 seconds]

ধরুন আপনার শ্বাস-প্রশ্বাস, আপনার হাতের আঙ্গুলের মাথা থেকে শুরু করে পায়ের আঙ্গুলের নিচ পর্যন্ত, পুরো শরীরের ভিতর দিয়ে প্রবাহিত হচ্ছে।

[give 3 seconds]

এখন আপনার মনোযোগ আবার আপনার নাকের………এবং আপনার বুকের ভিতরের বায়ু প্রবাহের মধ্যে ফিরিয়ে আনুন।

[give 3 seconds]

যখন আপনি নিজেকে ready মনে করবেন, তখন আপনার চোখ বন্ধ করুন এবং রুমে আপনার আশেপাশে যা কিছু আছে তার উপর মনোযোগ দিন।

[give 5 seconds]

আপনি এখন কেমন অনুভব করছেন তা বোঝার জন্য কিছুক্ষন সময় নিন।

[give 5 seconds]

<p align="center">**[end of exercise]**</p>

Questions to ask participants:

- আপনার এখন কেমন লাগছে?
- এই এক্সারসাইজটি করার সময় আপনার মাথায় কি ধরনের চিন্তাভাবনা হচ্ছিল?
- আপনি এক্সারসাইজটি করার সময় কিরকম অনুভব করেছেন?
- আপনি কি এমন একটি অ্যাপ ব্যবহার করবেন যা আপনাকে এরকম এক্সারসাইজ করতে সাহায্য করবে?
  - কেন ব্যবহার করবেন বা কেন না?
- আপনার কাছে এই এক্সারসাইজের কোন জিনিসটি ভাল লেগেছে?
- কোন জিনিসটি পরিবর্তন করা দরকার বলে আপনি মনে করেন?
- উপরের প্রত্যেকটি এক্সারসাইজের জন্য যতটুকু সময় নির্ধারণ করা হয়েছে, সেগুলো কি আপনার কাছে ঠিক মনে হয়েছে?
- আপনি কি কয়েকদিন পর পর এরকম একটি এক্সারসাইজ নিজে করতে পারবেন?

Final Question

- আপনি যদি কখনও এরকম অ্যাপ ব্যবহার না করে থাকেন, তাহলে আমাদের বলুন এটা ডাউনলোড করতে আপনার কি কি করা লাগবে?
- আপনি কিভাবে আপনার বন্ধুকে এরকম একটি অ্যাপ ব্যবহার করার জন্য convince করবেন?

Closing

Those were all the questions I have for you today/tonight. Is there anything that you have not had the opportunity to share with me that you would like to before we wrap up?

Again, thank you very much for participating in this interview. I have enjoyed getting to know you and appreciate your time. Your feedback has been extremely helpful. If you have any questions or want any additional information, please do not hesitate to ask. I am happy to offer you resources if you are interested in learning more about mental health and how to improve your mental health.

Appendix F.

<div align="center">

In-Depth Interview Guide – English

</div>

Introduction:

Munjireen--

Hello, and thank you for coming in to talk with me today. My name is Munjireen Sifat. I'm a Ph.D. student at the University of Maryland in the United States of America. I am trying to learn more about how Bangladeshi university students think about mental health and mental health care. I also want to get your reactions to a mental health app that might be adapted for Bangladeshi college students.

Naima--

Hello, and thank you for coming in to talk with me today. My name is Naima Tasnim. I'm a research assistant working for the University of Maryland in the United States of America. I am trying to learn more about how Bangladeshi university students think about mental health and mental health care. I also want to get your reactions to a mental health app that might be adapted for Bangladeshi college students.

Before we get started, I want to go over a few things:

- The purpose of our interview today is to see how Bangladeshi students feel about an app related to mental health that was developed for people in Australia.

- There are no wrong answers. The whole purpose of being here is to hear what you think.

- You do not have to answer every question.

● Everything we talk about here is confidential. That means your responses will not be reported, and your name will not be associated with anything you say in our reports. findings will be reported in aggregate. We will make summary statements like 'Some participants felt this way' or 'Everyone agreed that this is important'

● I would like to audio record the discussion so I can go back and make sure I captured all of your thoughts correctly. Are you comfortable with being audiotaped?

● As a reminder, we can stop the interview at any time if you are uncomfortable answering any questions.

Do you have any questions before we begin?

<u>Ice Breaker</u>

I would like you to answer a question for me. What do you think are the most important health topics for Bangladeshi University Students? Is there any health problem that you see a lot of, or you think is very problematic for Bangladeshi University Students?

Prompt: What about mental health and wellbeing?

Now, I'm going to share with you some exercises that have been used in the past to help people with their mental wellness. There are four different modules that we will be going through, and I'll be asking similar questions after each module to get your perspective on the content.

EXERCISE 1 (takes about 4 minutes):

Train your observant side:

It's very easy to get swept up in our thoughts, taking them at face value and allowing them to influence our mood. Often, we find ourselves in a bad mood without even realizing the reason why we're in such a bad state. mindfulness is about being present in the moment. it's about training yourself to focus your attention on your thoughts and surroundings and, more importantly, allow these thoughts to occupy your mind without judgment. That is, we can accept that negative thoughts are occurring without having to buy into them emotionally.

The key ingredients for mindfulness are:
1. awareness
2. being present
3. focus and
4. acceptance

Let me explain how these key ingredients work together to produce mindfulness.

Being fully aware of and immersed in the thing we are attending to, whether it is your environment, your thoughts, or bodily sensations, is a great way to get the most out of your daily experiences.

In order to be fully aware, we must be present in the Here and Now, rather than dwelling on the past or thinking about future events and their consequences. To do this, we need to try to focus and be able to control where we direct our attention. Finally, mindfulness teaches acceptance of what we're focusing on rather than the judgment of what we say or feel, as these judgments are often critical and adversely affect our mood. So let's delve deeper into the observing side of the mind and learn to be mindful.

In our daily lives, we are so often inundated with information that much of what we take in is done automatically or with little thought. So, the purpose of this exercise is to slow down the attention process, and really become aware of something in our environment. As you will see, this level of attention can give you new insights into something you normally take for granted.

SO let's try an awareness exercise. If at any time your mind wanders away from the task, that's fine, just redirect your attention to the exercise.

Exercise
I want you to focus on your preferred hand. Spread this hand so that the fingers aren't touching, and the hand is flat. Lay this flat hand on a surface such as a table. Focus on the appearance of your hand.

[pause for 5 seconds]

Do the fingers lie flat? Or are some of them slightly bent?
Focus on how your hand feels right now. Does the surface feel cold to touch?

[pause for 5 seconds]

 Is there weight on your wrist because your hand is flat?

focus on the feeling in your fingertips as they touch the surface. Now, focus on how the surface feels against the palm of your hand. Scrunch your hand and grasp tightly, hold, and count to 10.

[allow ten seconds]

relax your hand.

How does your hand feel now? Do you have Sensations all over your hand? or is it localized to a specific area?

Does the appearance of your hand look different than before?

You might notice that it is red because of the tension.

[end of exercise]

Conclusion
Okay, hands are with us all the time, but I bet you rarely spend time focusing on your hands in this level of detail. however, this focus is useful when we want to understand our mood states, for instance. By focusing on the thought, we can start to formulate a solution. So, for mindfulness, this awareness technique is a really important skill to develop.

Questions to ask participants:
- How do you feel right now?
- What thoughts ran through your head during this exercise?
- How did you feel throughout the exercise?
- Would you use an app that walked you through something like this?
  - Why or why not?
- What do you like about this?
- What would you change?

We have two more exercises to go through, do you have any questions before we begin the next one?

Ok, let's begin.

Script: Using the breath to focus is another effective way to get back to the here and now. It also helps you to slow down, relax and diffuse negative thoughts by controlling where you direct your attention.

Script: So when you are experiencing negative thoughts. You can use your breathing as an alternative thing to focus on. So let's practice, take a moment to set yourself up and get comfortable.

Script: It's best to do this exercise seated.

Script: With your eyes open. To begin with, become aware of the space around you in the room.

Script: When you are ready, take some nice big, deep breaths in through the nose and out through the mouth.

[pause for 3 seconds]

Script: And In. Notice how your body softens as you do this.

Script: On the next out-breath slowly. Close your eyes.

Script: I'd like you to notice the rise and fall of your chest and how this creates a rising and falling sensation. As you breathe in and out.

Script: Really become aware of the rhythm of your breathing a short and shallow

[pause for a few seconds]

Script: Or long and deep

Script: I'll give you a moment to develop a rhythm.

[pause 5 seconds]

Script: Now think of your breathing as waves going into shore as you breathe in.

Script: And out to sea as you exhale

[one-second pause]

Script: Breathe in.

[one-second pause]

Script: Breathe out to see

Script: Sometimes you'll have thoughts and distractions on doing this exercise.

Script: When this happens, I want you to imagine these thoughts as existing on these waves.

Script: When you breathe out. If you have a negative thought, put it out to sea

Script: On the breath in focus on the feeling of drawing breath into your lungs.

Script: Breathe in again.

[one-second pause]

Script: Breathe out

[one-second pause]

Script: Gently bringing your attention back to the body. To those points of physical contact with a chair, feet on the floor, your hands in your lap.

Script: Start to notice any sounds around

Script: Anything that brings you back into the immediate environment around you right now.

Script: And in your own time, gently open your eyes.

Now, same questions as before:

- How do you feel right now?
- What thoughts ran through your head during this exercise?
- How did you feel throughout the exercise?
- Would you use an app that walked you through something like this?
    - Why or why not?
- What do you like about this?
- What would you change?

And now, on to our final exercise. This one takes a bit longer (10 minutes)

Script: This is an alternative to the breathing exercises we have covered so far.

Script: Whereas those earlier exercises focused specifically on your breathing the present exercise will walk you through a relaxation technique that seeks to remove tension from your whole body.

Script: We will systematically work our way through focusing on different parts of your body in order to bring relief.

Script: This exercise takes about 10 minutes to go through.

Script: So take a moment now to get comfortable.

Script: It's best to do this body scan exercise sitting down.

Script: sitting in your chair, feet flat on the floor and hands resting in your lap.

Script: When you're ready, and in the usual way begin by focusing on your breathing.

Script: Feel how the air moves in and out of your body as you breathe in and out.

[give 5 seconds between each body part]

Script: Notice how the breath feels as it moves through your nose and mouth.

Script: The sensation of the rise and fall of your chest.

Script: Now directing your attention to the toes of your feet. Tune in to the sensations in your toes.

Script: Notice, just how they feel.

Script: On the next breath, shift the attention from the toes to the bottom of your feet.

Script: Staying here and attention to any sensations, you find

Script: Now on an out breath, move your attention to your ankles.

Script: Notice what sensations are present.

Script: Next, move the focus of your attention into your legs, notice just how they feel.

Script: Now moving your attention up into your thighs and bottom.

Script: Notice the pressure of the chair supporting you.

Script: And now moving your attention on your hips and lower back.

Script: Notice any sensations present

Script: Now moving up into your chest and

Script: Notice the sensations of movement as you breathe in and out.

Script: See again how each breath feels

Script: Not trying to control your breathing.

Script: Simply pay attention.

Script: Now just in the air flowing through you.

Script: Feeling your chest.

Script: And emptying out again.

Script: Up into your shoulders and neck.

Script: Now moving your attention down into your upper and lower arms.

Script: Next on an out breath, shift focus from Your arm down into your hands. And seeing how they feel as a rest in your lap.

Script: moving Up now, paying Particular attention to your face.

Script: Moving your intention into your nostrils.

Script: Air passing in and out as you breathe.

Script: Noticing also any sensations in your lips.

Script: And jaw.

Script: And inside your mouth.

Script: Moving your attention to your cheeks.

Script: And your eyes.

Script: Explore next sensations in your forehead

Script: Just your breath flowing in and out.

Script: Imagining the breath following all the way into your body.

Script: Into the tips of your fingers.

Script: And right down into your toes.

Script: Imagining your breath flowing up and down your body as your praise naturally

 Script: Bringing your attention back to the air and your nostrils.

Script: The Rise and Fall of your chest.

Script: And when you feel ready

Script: closing your eyes and once again taking the room.

Script: Take a moment right now to appreciate how you feel.

Questions to ask participants:

- How do you feel right now?
- What thoughts ran through your head during this exercise?
- How did you feel throughout the exercise?
- Would you use an app that walked you through something like this?
    - Why or why not?
- What do you like about this?
- What would you change?
- How was the length of all the above exercises? Could you see yourself doing one exercise every few days?
- Do you think doing these exercises is beneficial to your mental health?

Final Question
1. Do you think doing these exercises is beneficial to your mental health?
2. If you have never used the App, tell me what would get you to download this?
3. How would you convince a friend to use it?

Closing
Those were all the questions I have for you today/tonight. Is there anything that you have not had the opportunity to share with me that you would like to before we wrap up?
Again, thank you very much for participating in this interview. I have enjoyed getting to know you and appreciate your time. Your feedback has been extremely helpful. If you have any questions or want any additional information, please do not hesitate to ask. I am happy to offer you resources if you are interested in learning more about mental health and how to improve your mental health.

Appendix G.

English Consent Form- Cognitive Interview

CONSENT TO PARTICIPATE

Project Title	MENTAL HEALTH IN UNIVERSITY STUDENTS IN BANGLADESH: AN EXAMINATION OF CURRENT PRACTICES, SERVICE USE, AND ACCEPTABILITY OF MHEALTH FOR MENTAL HEALTH
Purpose of the Study	*This research is being conducted by **Munjireen Sifat** at the University of Maryland, College Park. We are inviting you to participate in this research project because you are over 18 and attending a university in Bangladesh. The purpose of this research project is to understand acceptable language to use in survey development pertaining to mental wellness and digital health.*
Procedures	*The procedures involve completing an interview over Zoom or Skype that will take approximately an hour. Before starting the interview, you will be provided a link to the online consent form. You will pick a pseudonym of your choosing, and if you are willing, the interview will be audio recorded. The data will be collected through the audio recording and by the notetaker in this session. Here is a sample question-* **What does "happy" mean to you?** **(Bangla Transliteration:) Apnar kacche khushi thaka mane ki?**
Potential Risks and Discomforts	*The known risks to you are minimal.* You are welcome to skip any question you do not wish to answer. You are always welcome to reach out to us directly if you have any concerns. *There is a risk that you might feel uncomfortable answering some of the questions. If you do feel this way, please reach out to the following resources:* *BRAC University Counseling Center:* *Email: counseling@bracu.ac.bd* *Shahjalal University of Science and Technology Counseling:* *E-mail: dscg@sust.edu* *Independent University of Bangladesh Counseling Services:* *E-mail: psc@iub.edu.bd* *Innovation for Well-Being Foundation Hotline and Resources* *Phone: 01726 427219* *Website: www.iwellbeing.org* *Email: info@iwellbeing.org* *Researcher Contact Information* ***Munjireen Sifat*** 2242 Valley Dr, College Park, MD 20742 ***msifat@terpmail.umd.edu***

Potential Benefits	*There are no direct benefits to participants. It is anticipated that the findings from this research will benefit other individuals. The data collected contain an assessment of understanding the translation of English survey questions to Bangla, which will be used to contribute to the development of a Bangla version of these surveys. These surveys will be used by me in the next portion of this project and will be welcome to be used by other researchers in the future.*
Confidentiality	*There is potential for breach in confidentiality, however, every effort will be made to protect your personal information. Any personal identifying information will be kept separate from other study related information, we will not have use your name in the transcripts or recordings. Only the PI and members of the research team will have access to any data files related to this project. If you agree to being audio-recorded, the files will be stored on the PI's secure network server at UMD with password-protected access.* *We will collect your e-mail address to be able to deliver the $5 gift incentive. Email addresses will be over written and electronically destroyed 1-week after the receiving confirmation that the incentive was successfully delivered. Similarly, if you consent to being audio-recorded, we will permanently destroy the recordings one week upon transcription of the audio.* *If we write a report or article about this research project, your identity will be protected to the maximum extent possible. Your information may be shared with representatives of the University of Maryland, College Park or governmental authorities if you or someone else is in danger or if we are required to do so by law.*
Compensation	*You will be provided with $5 for completing the interview. At the end of the interview, you will be asked to provide information for a bKash transfer. You will be responsible for any taxes assessed on the compensation.*
Right to Withdraw and Questions	*Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.* *Your decision to participate or not participate in this research will have no positive or negative affect on your grades or standing at your University.* *If you decide to stop taking part in the study, if you have questions, concerns, or complaints, or if you need to report an injury related to the research, please contact the investigator:* ***Munjireen Sifat*** 2242 Valley Dr, College Park, MD 20742

	msifat@terpmail.umd.edu
Participant Rights	*If you have questions about your rights or wish to report a research-related injury, please contact:* University of Maryland College Park Institutional Review Board Office 1204 Marie Mount Hall College Park, Maryland, 20742 E-mail: irb@umd.edu Telephone: 301-405-0678 *For more information regarding your rights as a research participant, please visit:* https://research.umd.edu/irb-research-participants *This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.*
Permission to Audio-tape Sessions	*We ask that we audio-tape the interview with your permission to be used for quality assurance, and so that we can accurately document your answers to interview questions. If you agree, you checking the box indicates that you give researchers permission to make and retain the audiotape for this study. If you do not agree, you can still participate in the study.*
	PARTICIPANT CHECKS BOX ELECTRONICALLY
Statement of Consent	*Your checking of the box indicates that you are* 18 years of age or older*; you have read this consent form or have had it read to you; your questions have been answered to your satisfaction and you voluntarily agree to participate in this research study. You can download a copy of this consent form.* *If you agree to participate, please check the box below.*
	PARTICIPANT CHECKS BOX ELECTRONICALLY

Appendix H.
Bangla Consent Form – Cognitive Interview
অংশগ্রহণের জন্য সম্মতি

প্রকল্পের শিরোনাম	বাংলাদেশে বিশ্ববিদ্যালয়ের শিক্ষার্থীদের মানসিক স্বাস্থ্য: বর্তমান অনুশীলন, সেবা ব্যবহার এবং মানসিক স্বাস্থ্যের গ্রহণযোগ্যতার একটি গবেষণা
গবেষণার উদ্দেশ্য	*কলেজ পার্কের মেরিল্যান্ড বিশ্ববিদ্যালয়ের **মুনতাজারীন সিফাত** এই গবেষণাটি পরিচালনা করছেন। আমরা আপনাকে এই গবেষণা প্রকল্পে অংশগ্রহণের আমন্ত্রণ জানাচ্ছি কারণ আপনার বয়স ১৮ বছরের বেশী এবং আপনি বাংলাদেশের একটি বিশ্ববিদ্যালয়ের শিক্ষার্থী। এই গবেষণা প্রকল্পের উদ্দেশ্য হচ্ছে মানসিক সুস্থতা এবং ডিজিটাল স্বাস্থ্য সম্পর্কিত জরিপ উন্নয়নে গ্রহণযোগ্য ভাষা উপলব্ধি করা।*
পদ্ধতি	*গবেষণার কার্য-পরিচালনার জন্য Zoom বা Skype এর মাধ্যমে এক একটি সাক্ষাৎকার সম্পন্ন করতে প্রায় এক ঘণ্টা সময় লাগবে। সাক্ষাৎকার শুরু করার আগে, আপনাকে অনলাইন সম্মতি ফর্মের একটি লিঙ্ক দেওয়া হবে। আপনি আপনার পছন্দের একটি ছদ্মনাম বেছে নেবেন, এবং আপনি যদি ইচ্ছুক হন, তাহলে সাক্ষাৎকারটি অডিও রেকর্ড করা হবে। এই অধিবেশনে অডিও রেকর্ডিং এবং নোটটেকার দ্বারা তথ্য সংগ্রহ করা হবে। এখানে একটি নমুনা প্রশ্ন আছে-* ***"সুখী" বলতে কি বোঝায়?*** *(বাংলা অনুবাদ:) আপনার কাছে খুশি থাকা মানে কি?*
সম্ভাব্য ঝুঁকি এবং অসুবিধা/ অস্বচ্ছন্দতা	আপনার জন্য এখানে ন্যূনতম ঝুঁকি রয়েছে। আপনি যদি কোন প্রশ্নের উত্তর না দিতে চান তাহলে সেই প্রশ্নটি এড়িয়ে যেতে পারেন। আপনার যদি কোন ধরনের উদ্বেগ থাকে তাহলে সরাসরি আমাদের সাথে যোগাযোগ করতে পারেন। এখানে আপনি কিছু প্রশ্নের উত্তর দিতে অস্বস্তি বোধ করতে পারেন। আপনি যদি এরকম অনুভব করেন তাহলে অনুগ্রহ করে নিম্নলিখিত সংস্থা/গবেষকের সাথে যোগাযোগ করুনঃ *ব্র্যাক ইউনিভার্সিটি কাউন্সেলিং সেন্টার:* *ইমেইল:* counseling@bracu.ac.bd *শাহজালাল বিজ্ঞান ও প্রযুক্তি বিশ্ববিদ্যালয় কাউন্সেলিং:* *ই-মেইল:* dscg@sust.edu *ইন্ডিপেন্ডেন্ট ইউনিভার্সিটি অফ বাংলাদেশ কাউন্সেলিং সার্ভিসেস:* *ই-মেইল:* psc@iub.edu.bd *কল্যাণ ফাউন্ডেশন হটলাইন ও সম্পদের জন্য উদ্ভাবন* *ফোন: ০১৯২৬ ৪২৭২১৭* *ওয়েবসাইট:* www.iwellbeing.org *ইমেইল:* info@iwellbeing.org *গবেষক পরিচিতি তথ্য*

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সম্ভাব্য সুবিধা	*অংশগ্রহণকারীদের জন্য সরাসরি কোন সুবিধা নেই। আশা করা হচ্ছে যে, এই গবেষণার ফলাফল অন্যান্য ব্যক্তিদের উপকারে আসবে। সংগৃহীত তথ্যে ইংরেজি জরিপ প্রশ্নের বাংলা অনুবাদ বোঝার একটি মূল্যায়ন রয়েছে, যা এই জরিপের বাংলা সংস্করণের উন্নয়নে অবদান রাখতে ব্যবহার করা হবে। এই প্রকল্পের পরবর্তী অংশে জরিপগুলো আমার দ্বারা ব্যবহার করা হবে এবং ভবিষ্যতে অন্যান্য গবেষকদের ব্যবহার করতে স্বাগত জানানো হবে।*
গোপনীয়তা	*আপনার ব্যক্তিগত তথ্য রক্ষার জন্য সর্বাধিক প্রচেষ্টা করা হবে। যে কোন ব্যক্তিগত সনাক্তকরণ তথ্য অন্যান্য গবেষণা সম্পর্কিত তথ্য থেকে আলাদা রাখা হবে। শুধুমাত্র পিআই এবং গবেষক দলের সদস্যরা এই প্রকল্প সম্পর্কিত যে কোন ডাটা ফাইলে প্রবেশাধিকার পাবেন। আপনি যদি অডিও-রেকর্ড হতে সম্মত হন, ফাইলগুলি পাসওয়ার্ড-সুরক্ষিত অ্যাক্সেস সহ UMD-এর নিরাপদ নেটওয়ার্ক সার্ভারে সংরক্ষণ করা হবে।* *আমরা আপনার ই-মেইল ঠিকানা সংগ্রহ করব যাতে ৫ ডলার উপহার প্রণোদনা প্রদান করা যায়। প্রণোদনাটি সফলভাবে বিতরণ করা হয়েছে তা নিশ্চিত হওয়ার এক সপ্তাহ পরে ইমেল ঠিকানাগুলি ওভাররাইট করা হবে এবং ইলেকট্রনিকভাবে ধ্বংস করা হবে।* *যদি আমরা এই গবেষণা প্রকল্প সম্পর্কে একটি প্রতিবেদন বা প্রবন্ধ লিখি, আপনার পরিচয় সর্বোচ্চ মাত্রায় সুরক্ষিত রাখা হবে। আপনার তথ্য মেরিল্যান্ড বিশ্ববিদ্যালয়, কলেজ পার্ক বা সরকারী কর্তৃপক্ষের প্রতিনিধিদের সাথে শেয়ার করা হতে পারে যদি আপনি বা অন্য কেউ বিপদে থাকেন অথবা যদি আমাদের আইন অনুযায়ী তা করতে হয়।*
প্রতিদান	*সাক্ষাৎকার সম্পন্ন করার জন্য আপনাকে ৫ ডলার প্রতিদান দেয়া হবে। সাক্ষাৎকার শেষে, আপনাকে একটি BKASH জন্য তথ্য প্রদান করতে বলা হবে। প্রতিদানের উপর মূল্যায়িত যে কোন করের জন্য আপনি দায়বদ্ধ থাকবেন।*
প্রত্যাহার এবং প্রশ্ন তোলার অধিকার	*এই গবেষণায় আপনার অংশগ্রহণ সম্পূর্ণ স্বেচ্ছাধীন। আপনি কোন ধরনের অংশগ্রহন না করারও সিদ্ধান্ত নিতে পারেন। আপনি যদি এই গবেষণায় অংশগ্রহণের সিদ্ধান্ত নেন, তাহলে আপনি যে কোন সময় অংশগ্রহণ করা বন্ধ করে দিতে পারেন। আপনি যদি এই গবেষণায় অংশগ্রহণ না করার সিদ্ধান্ত নেন অথবা আপনি যদি যে কোন সময় অংশগ্রহণ করা বন্ধ করেন, তাহলে আপনাকে কোন ধরনের জরিমানা করা হবে না বা আপনি অন্যকোন সুযোগ হারাবেন না।* *আপনি যদি এই গবেষণায় অংশ নেওয়া বন্ধ করার সিদ্ধান্ত নেন, যদি আপনার কোন প্রশ্ন, উদ্বেগ বা অভিযোগ থাকে, অথবা আপনার যদি গবেষণা সংক্রান্ত কোন আঘাত রিপোর্ট করার প্রয়োজন হয়, তাহলে দয়া করে তদন্তকারীর সাথে যোগাযোগ করুনঃ*

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অংশগ্রহণকারী অধিকার	*আপনার যদি নিজস্ব অধিকার সম্পর্কে প্রশ্ন থাকে অথবা গবেষণা সংক্রান্ত ইনজুরি রিপোর্ট করতে চান, তাহলে অনুগ্রহ করে যোগাযোগ করুনঃ* ইউনিভার্সিটি অফ মেরিল্যান্ড কলেজ পার্ক প্রাতিষ্ঠানিক পর্যালোচনা বোর্ড অফিস ১২০৪ মারি মাউন্ট হল কলেজ পার্ক, মেরিল্যান্ড, ২০৭৪২ ই-মেইল: irb@umd.edu টেলিফোন: ৩০১-৪০৫-০৬৭৮ *একজন গবেষণা অংশগ্রহণকারী হিসেবে আপনার অধিকার সম্পর্কে আরও তথ্য জানার জন্য অনুগ্রহ করে ভিজিট করুন:* https://research.umd.edu/irb-research-participants *এই গবেষণাটি মানব বিষয় সম্পর্কিত গবেষণার জন্য মেরিল্যান্ড বিশ্ববিদ্যালয়, কলেজ পার্ক–এর আইআরবি পদ্ধতি অনুসারে পর্যালোচনা করা হয়েছে।*
অডিও-টেপ অধিবেশনে অনুমতি	*আমরা আপনাকে অনুরোধ করব যে, আমরা আপনার অনুমতি নিয়ে সাক্ষাৎকারটি অডিও-টেপ করব যাতে আমরা সব প্রশ্নের উত্তর সঠিকভাবে নথিভুক্ত করতে পারি। আপনি যদি একমত হয়ে থাকেন, তাহলে নিচের চেকবক্সে টিক চিহ্ন দিয়ে এই ইঙ্গিত দেন যে গবেষকরা এই গবেষণার জন্য আপনার অডিওটেপ তৈরী এবং রাখার অনুমতি পাচ্ছেন।*
	অংশগ্রহণকারী ইলেকট্রনিকভাবে চেকবক্স পূরণ করবেন
সম্মতির বিবৃতি	*আপনার নিম্নের চেকবক্সটি পূরণ করা এই নির্দেশ করে যে, আপনার বয়স ১৮ বছর বা তার বেশী; আপনি এই সম্মতি ফর্মটি পড়েছেন অথবা আপনাকে পড়ে শোনানো হয়েছে; আপনার প্রশ্নের উত্তর দেওয়া হয়েছে এবং আপনি স্বেচ্ছায় এই গবেষণায় অংশগ্রহণ করতে সম্মত হয়েছেন। আপনি এই সম্মতি ফর্মের একটি অনুলিপি ডাউনলোড করে রাখতে পারেন।* *আপনি যদি অংশগ্রহণ করতে সম্মত হয়ে থাকেন, অনুগ্রহ করে নিচের চেকবক্সটি পূরণ করুন।*
	অংশগ্রহণকারী ইলেকট্রনিকভাবে চেকবক্স পূরণ করবেন

Appendix I.
English Consent form- Online survey
CONSENT TO PARTICIPATE

Project Title	MENTAL HEALTH IN UNIVERSITY STUDENTS IN BANGLADESH: AN EXAMINATION OF CURRENT PRACTICES, SERVICE USE, AND ACCEPTABILITY OF MHEALTH FOR MENTAL HEALTH
Purpose of the Study	*This research is being conducted by* **Munjireen Sifat** *at the University of Maryland, College Park. We are inviting you to participate in this research project because you are over 18 and attending a university in Bangladesh. The purpose of this research project is to understand acceptable language to use in survey development pertaining to mental wellness and digital health.*

Procedures	*The procedures involve completing an online survey that will take approximately 15-20 minutes. Before starting the survey, you will be provided a link to the online consent form. The survey will consist of multiple choice and short answer questions. Here is a sample question-*
	    1. I use mobile health service (other than for mental health) currently (for example for weight loss, to increase physical activity):
	        a. Yes
	        b. No
	        c. Do not wish to answer

Potential Risks and Discomforts	*The known risks to you are minimal.* You are welcome to skip any question you do not wish to answer. You are always welcome to reach out to us directly if you have any concerns. *There is a risk that you might feel uncomfortable answering some of the questions. If you do feel this way, please reach out to the following resources:* *BRAC University Counseling Center:* *Email: counseling@bracu.ac.bd* *Shahjalal University of Science and Technology Counseling:* *E-mail: dscg@sust.edu* *Independent University of Bangladesh Counseling Services:* *E-mail: psc@iub.edu.bd* *Innovation for Well-Being Foundation Hotline and Resources* *Phone: 01726 427219* *Website: www.iwellbeing.org* *Email: info@iwellbeing.org* *Researcher Contact Information* **Munjireen Sifat** 2242 Valley Dr, College Park, MD 20742 **msifat@terpmail.umd.edu**

Potential Benefits	*There are no direct benefits to participants. It is anticipated that the findings from this research will benefit other individuals. The data collected contain an assessment of current attitudes and use of mental health and digital health services of Bangladeshi University students. The findings will inform future interventions surrounding mental health promotion, and could have broader policy implications.*
Confidentiality	*There is potential for breach in confidentiality, however, every effort will be made to protect your personal information. Any personal identifying information will be kept separate from other study related information.. Only the PI and members of the research team will have access to any data files related to this project, the files will be stored on the PI's secure network server at UMD with password-protected access.* *If you choose, you can enter a raffle to win $5, for this purpose, we will collect your e-mail address to be able to deliver the $5 gift incentive. Email addresses will be over written and electronically destroyed 1-week after the receiving confirmation that the incentive was successfully delivered.* *If we write a report or article about this research project, your identity will be protected to the maximum extent possible. Your information may be shared with representatives of the University of Maryland, College Park or governmental authorities if you or someone else is in danger or if we are required to do so by law.*
Compensation	*You may win $5 if you choose to enter the raffle. At the end of the interview, you will be asked if you'd like to participate in the raffle, and you will then be directed to a separate survey form, where you will be able to provide information for a bKash transfer. You will be responsible for any taxes assessed on the compensation.*
Right to Withdraw and Questions	*Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.* *Your decision to participate or not participate in this research will have no positive or negative affect on your grades or standing at your University.* *If you decide to stop taking part in the study, if you have questions, concerns, or complaints, or if you need to report an injury related to the research, please contact the investigator:*

	Munjireen Sifat 2242 Valley Dr, College Park, MD 20742 ***msifat@terpmail.umd.edu***
Participant Rights	*If you have questions about your rights or wish to report a research-related injury, please contact:* University of Maryland College Park Institutional Review Board Office 1204 Marie Mount Hall College Park, Maryland, 20742 E-mail: irb@umd.edu Telephone: 301-405-0678 *For more information regarding your rights as a research participant, please visit:* https://research.umd.edu/irb-research-participants *This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.*
Statement of Consent	*Your checking of the box indicates that you are* 18 years of age or older*; you have read this consent form or have had it read to you; your questions have been answered to your satisfaction and you voluntarily agree to participate in this research study. You can download a copy of this consent form.* *If you agree to participate, please check the box below.*
	PARTICIPANT CHECKS BOX ELECTRONICALLY	

Appendix J.
Bangla Consent Form – Online Survey

<div align="center">অংশগ্রহণের জন্য সম্মতি</div>

প্রকল্পের শিরোনাম	বাংলাদেশে বিশ্ববিদ্যালয়ের শিক্ষার্থীদের মানসিক স্বাস্থ্য: বর্তমান অনুশীলন, সেবা ব্যবহার এবং মানসিক স্বাস্থ্যের গ্রহণযোগ্যতার একটি গবেষণা
গবেষণার উদ্দেশ্য	কলেজ পার্কের মেরিল্যান্ড বিশ্ববিদ্যালয়ের **মুনতাহীন সিফাত** এই গবেষণাটি পরিচালনা করছেন। আমরা আপনাকে এই গবেষণা প্রকল্পে অংশগ্রহণের আমন্ত্রণ জানাচ্ছি কারণ আপনার বয়স ১৮ বছরের বেশী এবং আপনি বাংলাদেশের একটি বিশ্ববিদ্যালয়ের শিক্ষার্থী। এই গবেষণা প্রকল্পের উদ্দেশ্য হচ্ছে মানসিক সুস্থতা এবং ডিজিটাল স্বাস্থ্য সম্পর্কিত জরিপ উন্নয়নে গ্রহণযোগ্য ভাষা উপলব্ধি করা।
পদ্ধতি	গবেষণার কার্য-পরিচালনার জন্য Zoom বা Skype এর মাধ্যমে এক একটি সাক্ষাৎকার সম্পন্ন করতে প্রায় এক ঘণ্টা সময় লাগবে। সাক্ষাৎকার শুরু করার আগে, আপনাকে অনলাইন সম্মতি ফর্মের একটি লিঙ্ক দেওয়া হবে। আপনি আপনার পছন্দের একটি ছদ্মনাম বেছে নেবেন, এবং আপনি যদি ইচ্ছুক হন, তাহলে সাক্ষাৎকারটি অডিও রেকর্ড করা হবে। এই অধিবেশনে অডিও রেকর্ডিং এবং নোটটেকার দ্বারা তথ্য সংগ্রহ করা হবে। এখানে একটি নমুনা প্রশ্ন আছে- **"সুখী" বলতে কি বোঝায়?** *(বাংলা অনুবাদ:) আপনার কাছে খুশি থাকা মানে কি?*
সম্ভাব্য ঝুঁকি এবং অসুবিধা/ অস্বচ্ছন্দতা	আপনার জন্য এখানে ন্যূনতম ঝুঁকি রয়েছে। আপনি যদি কোন প্রশ্নের উত্তর না দিতে চান তাহলে সেই প্রশ্নটি এড়িয়ে যেতে পারেন। আপনার যদি কোন ধরনের উদ্বেগ থাকে তাহলে সরাসরি আমাদের সাথে যোগাযোগ করতে পারেন। এখানে আপনি কিছু প্রশ্নের উত্তর দিতে অস্বস্তি বোধ করতে পারেন। আপনি যদি এরকম অনুভব করেন তাহলে অনুগ্রহ করে নিম্নলিখিত সংস্থা/গবেষকের সাথে যোগাযোগ করুনঃ *ব্র্যাক ইউনিভার্সিটি কাউন্সেলিং সেন্টার:* *ইমেইল:* counseling@bracu.ac.bd *শাহজালাল বিজ্ঞান ও প্রযুক্তি বিশ্ববিদ্যালয় কাউন্সেলিং:* *ই-মেইল:* dscg@sust.edu *ইন্ডিপেন্ডেন্ট ইউনিভার্সিটি অফ বাংলাদেশ কাউন্সেলিং সার্ভিসেস:* *ই-মেইল:* psc@iub.edu.bd *কল্যাণ ফাউন্ডেশন হটলাইন ও সম্পদের জন্য উদ্ভাবন* *ফোন: ০১৯২৬ ৪২৭২১৯* *ওয়েবসাইট:* www.iwellbeing.org *ইমেইল:* info@iwellbeing.org

	গবেষক পরিচিতি তথ্য **মুনজিরীন সিফাত** 2242 ভ্যালি ডাঃ, কলেজ পার্ক, এমডি 20742 ***msifat@terpmail.umd.edu***
সম্ভাব্য সুবিধা	*অংশগ্রহণকারীদের জন্য সরাসরি কোন সুবিধা নেই। আশা করা হচ্ছে যে, এই গবেষণার ফলাফল অন্যান্য ব্যক্তিদের উপকারে আসবে। সংগৃহীত তথ্যে ইংরেজি জরিপ প্রশ্নের বাংলা অনুবাদ বোঝার একটি মূল্যায়ন রয়েছে, যা এই জরিপের বাংলা সংস্করণের উন্নয়নে অবদান রাখতে ব্যবহার করা হবে। এই প্রকল্পের পরবর্তী অংশে জরিপগুলো আমার দ্বারা ব্যবহার করা হবে এবং ভবিষ্যতে অন্যান্য গবেষকদের ব্যবহার করতে স্বাগত জানানো হবে।*
গোপনীয়তা	*গোপনীয়তায় লঙ্ঘনের সম্ভাবনা রয়েছে, তবে আপনার ব্যক্তিগত তথ্য সুরক্ষার জন্য সর্বাত্মক চেষ্টা করা হবে। যে কোনও ব্যক্তিগত সনাক্তকারী তথ্য অধ্যয়নের সাথে সম্পর্কিত অন্যান্য তথ্যের থেকে পৃথক রাখা হবে, আমরা আপনার নাম প্রতিলিপি বা রেকর্ডিংয়ে ব্যবহার করব না.* *আপনার ব্যক্তিগত তথ্য রক্ষার জন্য সর্বাত্মক প্রচেষ্টা করা হবে। যে কোন ব্যক্তিগত সনাক্তকরণ তথ্য অন্যান্য গবেষণা সম্পর্কিত তথ্য থেকে আলাদা রাখা হবে। শুধুমাত্র পিআই এবং গবেষক দলের সদস্যরা এই প্রকল্প সম্পর্কিত যে কোন ডাটা ফাইলে প্রবেশাধিকার পাবেন। আপনি যদি অডিও-রেকর্ড হতে সম্মত হন, ফাইলগুলি পাসওয়ার্ড-সুরক্ষিত অ্যাক্সেস সহ UMD-এর নিরাপদ নেটওয়ার্ক সার্ভারে সংরক্ষণ করা হবে।* *আমরা আপনার ই-মেইল ঠিকানা সংগ্রহ করব যাতে ৫ ডলার উপহার প্রণোদনা প্রদান করা যায়। প্রণোদনাটি সফলভাবে বিতরণ করা হয়েছে তা নিশ্চিত হওয়ার এক সপ্তাহ পরে ইমেল ঠিকানাগুলি ওভাররাইট করা হবে এবং ইলেকট্রনিকভাবে ধ্বংস করা হবে।. একইভাবে, আপনি অডিও-রেকর্ডিং হতে সম্মত হলে, অডিও প্রতিলিপি করার পরে আমরা এক সপ্তাহ স্থায়ীভাবে রেকর্ডিংগুলি ধ্বংস করব।* *যদি আমরা এই গবেষণা প্রকল্প সম্পর্কে একটি প্রতিবেদন বা প্রবন্ধ লিখি, আপনার পরিচয় সর্বোচ্চ মাত্রায় সুরক্ষিত রাখা হবে। আপনার তথ্য মেরিল্যান্ড বিশ্ববিদ্যালয়, কলেজ পার্ক বা সরকারী কর্তৃপক্ষের প্রতিনিধিদের সাথে শেয়ার করা হতে পারে যদি আপনি বা অন্য কেউ বিপদে থাকেন অথবা যদি আমাদের আইন অনুযায়ী তা করতে হয়।*
প্রতিদান	*সাক্ষাৎকার সম্পন্ন করার জন্য আপনাকে ৫ ডলার প্রতিদান দেয়া হবে। সাক্ষাৎকার শেষে, আপনাকে একটি BKASH জন্য তথ্য প্রদান করতে বলা হবে। প্রতিদানের উপর মূল্যায়িত যে কোন করের জন্য আপনি দায়বদ্ধ থাকবেন।*
প্রত্যাহার এবং প্রশ্ন তোলার অধিকার	*এই গবেষণায় আপনার অংশগ্রহণ সম্পূর্ণ স্বেচ্ছাধীন। আপনি কোন ধরনের অংশগ্রহন না করারও সিদ্ধান্ত নিতে পারেন। আপনি যদি এই গবেষণায় অংশগ্রহণের সিদ্ধান্ত নেন, তাহলে আপনি যে কোন সময় অংশগ্রহণ করা বন্ধ করে দিতে পারেন।*

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আপনি যদি এই গবেষণায় অংশগ্রহণ না করার সিদ্ধান্ত নেন অথবা আপনি যদি যে কোন সময় অংশগ্রহণ করা বন্ধ করেন, তাহলে আপনাকে কোন ধরনের জরিমানা করা হবে না বা আপনি অন্যকোন সুযোগ হারাবেন না।

আপনার এই গবেষণায় অংশ নেওয়া বা অংশ নেওয়ার সিদ্ধান্তের আপনার গ্রেডগুলিতে বা আপনার বিশ্ববিদ্যালয়ে দাঁড়াতে কোনও ইতিবাচক বা নেতিবাচক প্রভাব ফেলবে না।

আপনি যদি এই গবেষণায় অংশ নেওয়া বন্ধ করার সিদ্ধান্ত নেন, যদি আপনার কোন প্রশ্ন, উদ্বেগ বা অভিযোগ থাকে, অথবা আপনার যদি গবেষণা সংক্রান্ত কোন আঘাত রিপোর্ট করার প্রয়োজন হয়, তাহলে দয়া করে তদন্তকারীর সাথে যোগাযোগ করুনঃ

মুনজিরীন সিফাত
2242 ভ্যালি ডাঃ, কলেজ পার্ক, এমডি 20742
msifat@terpmail.umd.edu

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অংশগ্রহণকারী অধিকার

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আপনার যদি নিজস্ব অধিকার সম্পর্কে প্রশ্ন থাকে অথবা গবেষণা সংক্রান্ত ইনজুরি রিপোর্ট করতে চান, তাহলে অনুগ্রহ করে যোগাযোগ করুনঃ

ইউনিভার্সিটি অফ মেরিল্যান্ড কলেজ পার্ক
প্রাতিষ্ঠানিক পর্যালোচনা বোর্ড অফিস
১২০৪ মারি মাউন্ট হল
কলেজ পার্ক, মেরিল্যান্ড, ২০৭৪২
ই-মেইল: irb@umd.edu
টেলিফোন: ৩০১-৪০৫-০৬৭৮

একজন গবেষণা অংশগ্রহণকারী হিসেবে আপনার অধিকার সম্পর্কে আরও তথ্য জানার জন্য অনুগ্রহ করে ভিজিট করুন:
https://research.umd.edu/irb-research-participants

এই গবেষণাটি মানব বিষয় সম্পর্কিত গবেষণার জন্য মেরিল্যান্ড বিশ্ববিদ্যালয়, কলেজ পার্ক–এর আইআরবি পদ্ধতি অনুসারে পর্যালোচনা করা হয়েছে।

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অডিও-টেপ অধিবেশনে অনুমতি

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আমরা আপনাকে অনুরোধ করব যে, আমরা আপনার অনুমতি নিয়ে সাক্ষাৎকারটি অডিও-টেপ করব যাতে আমরা সব প্রশ্নের উত্তর সঠিকভাবে নথিভুক্ত করতে পারি। আপনি যদি একমত হয়ে থাকেন, তাহলে নিচের চেকবক্সে টিক চিহ্ন দিয়ে এই ইঙ্গিত দেন যে গবেষকরা এই গবেষণার জন্য আপনার অডিওটেপ তৈরী এবং রাখার অনুমতি পাচ্ছেন।

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অংশগ্রহণকারী ইলেকট্রনিকভাবে চেকবক্স পূরণ করবেন

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সম্মতির বিবৃতি

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আপনার নিচের চেকবক্সটি পূরণ করা এই নির্দেশ করে যে, আপনার বয়স ১৮ বছর

</td>
</tr>
</table>

	বা তার বেশী; আপনি এই সম্মতি ফর্মটি পড়েছেন অথবা আপনাকে পড়ে শোনানো হয়েছে; আপনার প্রশ্নের উত্তর দেওয়া হয়েছে এবং আপনি স্বেচ্ছায় এই গবেষণায় অংশগ্রহণ করতে সম্মত হয়েছেন। আপনি এই সম্মতি ফর্মের একটি অনুলিপি ডাউনলোড করে রাখতে পারেন।	
	আপনি যদি অংশগ্রহণ করতে সম্মত হয়ে থাকেন, অনুগ্রহ করে নিচের চেকবক্সটি পূরণ করুন।	
	অংশগ্রহণকারী ইলেকট্রনিকভাবে চেকবক্স পূরণ করবেন	

Appendix K.
English Consent Form – In-Depth Interview

CONSENT WAIVER
CONSENT TO PARTICIPATE

Project Title	MENTAL HEALTH IN UNIVERSITY STUDENTS IN BANGLADESH: AN EXAMINATION OF CURRENT PRACTICES, SERVICE USE, AND ACCEPTABILITY OF MHEALTH FOR MENTAL HEALTH
Purpose of the Study	*This research is being conducted by **Munjireen Sifat** at the University of Maryland, College Park. We are inviting you to participate in this research project because you are over 18 and attending a university in Bangladesh. The purpose of this research project is to understand student opinions about virtual meditation practices..*
Procedures	*The procedures involve completing an interview over Zoom or Skype that will take approximately an hour. Before starting the interview, you will be provided a link to the online consent form. You will pick a pseudonym of your choosing, and if you are willing, the interview will be audio recorded. The data will be collected through the audio recording and by the notetaker in this session. Here is a sample question-* ***What thoughts ran through your head during this exercise? (Bangla Transliteration: Ey exercise ar mohtheh, apnee ke mono korsoh?***
Potential Risks and Discomforts	*There are no known risks to you.* You are welcome to skip any question you do not wish to answer. You are always welcome to reach out to us directly if you have any concerns. P*lease reach out to the following resources if you choose:* *BRAC University Counseling Center:* *Email: counseling@bracu.ac.bd* *Shahjalal University of Science and Technology Counseling:* *E-mail: dscg@sust.edu* *Independent University of Bangladesh Counseling Services:* *E-mail: psc@iub.edu.bd* *Innovation for Well-Being Foundation Hotline and Resources* *Phone: 01726 427219* *Website: www.iwellbeing.org* *Email: info@iwellbeing.org* *Researcher Contact Information* ***Munjireen Sifat*** 2242 Valley Dr, College Park, MD 20742 ***msifat@terpmail.umd.edu***

Potential Benefits	*There are no direct benefits to participants. It is anticipated that the findings from this research will benefit other individuals. The data collected contain an assessment of understanding participants opinions regarding mindful meditation practices, and the acceptance of using such practices via an App.*
Confidentiality	*Every effort will be made to protect your personal information. Any personal identifying information will be kept separate from other study related information. Only the PI and members of the research team will have access to any data files related to this project. If you agree to being audio-recorded, the files will be stored on the PI's secure network server at UMD with password-protected access.* *We will collect your e-mail address to be able to deliver the $5 gift incentive. Email addresses will be over written and electronically destroyed 1-week after the receiving confirmation that the incentive was successfully delivered.* *If we write a report or article about this research project, your identity will be protected to the maximum extent possible. Your information may be shared with representatives of the University of Maryland, College Park or governmental authorities if you or someone else is in danger or if we are required to do so by law.*
Compensation	*You will be provided with $5 for completing the interview. At the end of the interview, you will be asked to provide information for a PayPal transfer. You will be responsible for any taxes assessed on the compensation.*
Right to Withdraw and Questions	*Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.* *If you decide to stop taking part in the study, if you have questions, concerns, or complaints, or if you need to report an injury related to the research, please contact the investigator:* **Munjireen Sifat** 2242 Valley Dr, College Park, MD 20742 **msifat@terpmail.umd.edu**
Participant Rights	*If you have questions about your rights or wish to report a research-related injury, please contact:* University of Maryland College Park Institutional Review Board Office 1204 Marie Mount Hall College Park, Maryland, 20742

	E-mail: irb@umd.edu Telephone: 301-405-0678 *For more information regarding your rights as a research participant, please visit:* https://research.umd.edu/irb-research-participants *This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.*	
Permission to Audio-tape Sessions	*We will ask that we audio-tape the interview with your permission to be used for quality assurance, and so that we can accurately document your answers to interview questions. If you agree, you checking the box indicates that you give researchers permission to make and retain the audiotape for this study.*	
	PARTICIPANT CHECKS BOX ELECTRONICALLY	
Statement of Consent	*Your checking of the box indicates that you are* 18 years of age or older*; you have read this consent form or have had it read to you; your questions have been answered to your satisfaction and you voluntarily agree to participate in this research study. You can download a copy of this consent form.* *If you agree to participate, please check the box below.*	
	PARTICIPANT CHECKS BOX ELECTRONICALLY	

Appendix L.
Bangla Consent Form- In Depth Interview

<div align="center">

সম্মতি মওকুফ
অংশগ্রহণের সম্মতি

</div>

প্রকল্পের শিরোনাম	বাংলাদেশে বিশ্ববিদ্যালয়ের শিক্ষার্থীদের মানসিক স্বাস্থ্য: বর্তমান অনুশীলন, পরিষেবা ব্যবহার এবং মানসিক স্বাস্থ্যের জন্য একটি পরীক্ষা ফর্মের নীচে
অধ্যয়নের উদ্দেশ্য	এই গবেষণাটি কলেজ পার্কের মেরিল্যান্ড বিশ্ববিদ্যালয়ে **মুঞ্জিরিন সিফাত** পরিচালনা করছেন। আমরা আপনাকে এই গবেষণা প্রকল্পে অংশ নেওয়ার জন্য আমন্ত্রণ জানাচ্ছি কারণ আপনার ১৮ বছরের বেশি বয়সী এবং বাংলাদেশের একটি বিশ্ববিদ্যালয়েপড়া। এই গবেষণা প্রকল্পের উদ্দেশ্য ভার্চুয়াল ধ্যান অনুশীলন সম্পর্কে শিক্ষার্থীদের মতামত বোঝা। .
পদ্ধতি	পদ্ধতিগুলি জুম বা স্কাইপের মাধ্যমে একটি সাক্ষাৎকার সম্পূর্ণ করতে জড়িত যা প্রায় এক ঘন্টাসময় নেবে। সাক্ষাৎকার শুরু করার আগে, আপনাকে অনলাইন সম্মতি ফর্মের একটি লিঙ্ক সরবরাহ করা হবে। আপনি আপনার পছন্দগুলির একটি ছদ্মনাম বেছে নেবেন, এবং আপনি যদি ইচ্ছুক হন তবে সাক্ষাৎকারটি অডিও রেকর্ড করা হবে। এই সেশনে অডিও রেকর্ডিং এবং নোটটেকারের মাধ্যমে ডেটা সংগ্রহ করা হবে। এখানে একটি নমুনা প্রশ্ন- **এই অনুশীলনের সময় আপনার মাথায় কী চিন্তাছিল?** (বাংলা ট্রান্সলিটারেশন: ই ই ব্যায়াম আর মোহথেহ, এপিএনইকে মোনো কোরসোহ?
সম্ভাব্য ঝুঁকি এবং অস্বস্তি	আর আপনার জন্য কোন পরিচিত ঝুঁকি নয়। আপনি যে কোনও প্রশ্নের উত্তর দিতে চান না তা এড়িয়ে যেতে আপনাকে স্বাগত। আপনার যদি কোনও উদ্বেগ থাকে তবে সরাসরি আমাদের কাছে পৌঁছানোর জন্য আপনাকে সর্বদা স্বাগত। যদি আপনি পছন্দকরেন তবে পি ইজারা নিম্নলিখিত সংস্থানগুলিতে পৌঁছে যায়: ব্র্যাক বিশ্ববিদ্যালয়ের কাউন্সেলিং সেন্টার: ইমেইল: counseling@bracu.ac.bd শাহজালাল বিজ্ঞান ও প্রযুক্তি বিশ্ববিদ্যালয় কাউন্সেলিং: ই-মেইল: dscg@sust.edu স্বাধীন বাংলাদেশ কাউন্সেলিং সার্ভিস বিশ্ববিদ্যালয়: ই-মেইল: psc@iub.edu.bd কল্যাণ ফাউন্ডেশন হটলাইন এবং সম্পদের জন্য উদ্ভাবন ফোন: ০১৭২৬ ৪২৭২১৯ ওয়েবসাইট: www.iwellbeing.org ইমেইল: info@iwellbeing.org গবেষক যোগাযোগ তথ্য **মুঞ্জিরিন সিফাত**

	2242 ভ্যালি ড্রঃ, কলেজ পার্ক, এমডি 20742 *msifat@terpmail.umd.edu*
সম্ভাব্য সুবিধা	*অংশগ্রহণকারীদের জন্য কোনও সরাসরি সুবিধা নেই। এটি প্রত্যাশিত যে এই গবেষণাথেকে প্রাপ্ত ফলাফলগুলি অন্যান্য ব্যক্তিদের উপকৃত করবে। সংগৃহীত তথ্যে সচেতন ধ্যান অনুশীলন সম্পর্কিত অংশগ্রহণকারীদের মতামত বোঝার মূল্যায়ন এবং একটি অ্যাপের মাধ্যমে এই জাতীয় অনুশীলনগুলি ব্যবহারের গ্রহণযোগ্যতা রয়েছে।*
গোপনীয়তা	*আপনার ব্যক্তিগত তথ্য সুরক্ষিত রাখার জন্য সর্বাত্মক প্রচেষ্টা করা হবে। যে কোনও ব্যক্তিগত সনাক্তকরণ তথ্য অন্যান্য অধ্যয়ন সম্পর্কিত তথ্য থেকে পৃথক রাখা হবে। শুধুমাত্র পিআই এবং গবেষণা দলের সদস্যরা এই প্রকল্প সম্পর্কিত যে কোনও ডেটা ফাইলঅ্যাক্সেস পাবেন। আপনি অডিও রেকর্ড হতে সম্মত হলে, ফাইলপাসওয়ার্ড সুরক্ষিত অ্যাক্সেস সঙ্গে ইউএমডি তে পিআই নিরাপদ নেটওয়ার্ক সার্ভারে সংরক্ষণ করা হবে।* *আমরা আপনার ই-মেইল ঠিকানা সংগ্রহ করব $ 5 উপহার প্রণোদনা প্রদান করতে সক্ষম হতে। ইমেল ঠিকানাগুলি লিখিত এবং বৈদ্যুতিনভাবে ধ্বংস করা হবে 1-সপ্তাহ পরে প্রাপ্ত নিশ্চিতকরণের পরে যে প্রণোদনাটি সফলভাবে বিতরণ করা হয়েছিল।* *আমরা যদি এই গবেষণা প্রকল্প সম্পর্কে একটি প্রতিবেদন বা নিবন্ধ লিখি, আপনার পরিচয় সর্বাধিক পরিমাণে সুরক্ষিত থাকবে। আপনি বা অন্য কেউ বিপদে পড়লে বা আইন অনুসারে আমাদের তা করার প্রয়োজন হলে আপনার তথ্য মেরিল্যান্ড বিশ্ববিদ্যালয়, কলেজ পার্ক বা সরকারী কর্তৃপক্ষের প্রতিনিধিদের সাথে ভাগ করা যেতে পারে।*
ক্ষতিপূরণ	*সাক্ষাৎকার টি শেষ করার জন্য আপনাকে $5 প্রদান করাহবে। সাক্ষাৎকার শেষে, আপনি একটি PayPal স্থানান্তর জন্য তথ্য প্রদান করতে বলা হবে। ক্ষতিপূরণের উপর মূল্যায়ন করা যে কোনও করের জন্য আপনি দায়বদ্ধ থাকবেন।*
প্রত্যাহার করার অধিকার এবং প্রশ্ন	*এই গবেষণায় আপনার অংশগ্রহণ সম্পূর্ণ স্বেচ্ছামূলক। আপনি একেবারেই অংশ না নেওয়ার সিদ্ধান্ত নিতে পারেন। আপনি যদি এই গবেষণায় অংশ নেওয়ার সিদ্ধান্ত নেন তবে আপনি যে কোনও সময় অংশগ্রহণ বন্ধ করতে পারেন। আপনি যদি এই গবেষণায় অংশ না নেওয়ার সিদ্ধান্ত নেন বা আপনি যদি কোনও সময় অংশগ্রহণ বন্ধ করেন তবে আপনাকে শাস্তি দেওয়া হবে না বা এমন কোনও সুবিধা হারাবেন না যার জন্য আপনি অন্যথায় যোগ্যতা অর্জন করেন।* *আপনি যদি গবেষণায় অংশ নেওয়া বন্ধ করার সিদ্ধান্ত নেন, যদি আপনার প্রশ্ন, উদ্বেগ বা অভিযোগ থাকে, অথবা যদি আপনার গবেষণা সম্পর্কিত কোনও আঘাতের প্রতিবেদন করার প্রয়োজন হয় তবে দয়া করে তদন্তকারীর সাথে যোগাযোগকরুন:* *মুঞ্জিরিন সিফাত* 2242 ভ্যালি ড্রঃ, কলেজ পার্ক, এমডি 20742 *msifat@terpmail.umd.edu*

অংশগ্রহণকারীঅধিকার	*আপনার অধিকার সম্পর্কে প্রশ্ন থাকলে বা গবেষণা সম্পর্কিত আঘাতের প্রতিবেদন করতে চাইলে, অনুগ্রহ করে যোগাযোগ করুন:*
	ইউনিভার্সিটি অফ মেরিল্যান্ড কলেজ পার্ক *প্রাতিষ্ঠানিক পর্যালোচনা বোর্ড অফিস* *১২০৪ মারি মাউন্ট হল* *কলেজ পার্ক, মেরিল্যান্ড, 20742* *ই-মেইল:* irb@umd.edu *টেলিফোন: ৩০১-৪০৫-০৬৭৮* *গবেষণা অংশগ্রহণকারী হিসাবে আপনার অধিকার সম্পর্কিত আরও তথ্যের জন্য, অনুগ্রহ করে দেখুন:* https://research.umd.edu/irb-research-participants *এই গবেষণা টি মেরিল্যান্ড বিশ্ববিদ্যালয়, কলেজ পার্ক আইআরবি পদ্ধতি অনুযায়ী মানব বিষয় জড়িত গবেষণার জন্য পর্যালোচনা করা হয়েছে।*
অডিও-টেপ সেশনের অনুমতি	*আমরা জিজ্ঞাসা করব যে আমরা আপনার অনুমতি সহ সাক্ষাৎকারটি অডিও-টেপ করব যা গুণমানের নিশ্চয়তার জন্য ব্যবহার করা হবে, এবং যাতে আমরা ইন্টারভিউ য়ের প্রশ্নগুলিতে আপনার উত্তরগুলি সঠিকভাবে নথিভুক্ত করতে পারি। আপনি সম্মত হলে, আপনি বাক্সটি পরীক্ষা করে ইঙ্গিত করেন যে আপনি গবেষকদের এই গবেষণার জন্য অডিওটেপ তৈরি এবং ধরে রাখার অনুমতি দেন।*
	অংশগ্রহণকারী বৈদ্যুতিনভাবে বাক্স পরীক্ষা করে	
সম্মতির বিবৃতি	*আপনার বাক্সটি পরীক্ষা করা ইঙ্গিত করে যে আপনার বয়স 18 বছর বা তার বেশি;আপনি এই সম্মতি ফর্মটি পড়েছেন বা এটি আপনার কাছে পড়েছেন; আপনার প্রশ্নের উত্তর আপনার সন্তুষ্টির জন্য দেওয়া হয়েছে এবং আপনি স্বেচ্ছায় এই গবেষণা গবেষণায় অংশ নিতে সম্মত হয়েছেন। আপনি এই সম্মতি ফর্মের একটি অনুলিপি ডাউনলোড করতে পারেন।* *আপনি যদি অংশগ্রহণ করতে সম্মত হন তবে অনুগ্রহ করে নীচের বাক্সটি পরীক্ষা করুন।*
	অংশগ্রহণকারী বৈদ্যুতিনভাবে বাক্স পরীক্ষা করে	

Appendix M.

IRB Application

INITIAL APPLICATION

1. **Abstract:**

The prevalence of mental health problems, such as depression and suicide, is higher in Bangladesh than the global rate. The incidence of mental health problems in Bangladesh is highest in young adulthood and often occurs in university students who face increased stress in the academic environment. However, no studies to date examine how students may cope or treat increased stressors. Despite the prevalence rates of mental health problems, there is an astonishing lack of both health care providers that are trained in psychiatric health, as well as healthcare facilities equipped to handle mental health problems. One method to deliver services in similar scenarios is by using mobile health applications. Mobile health apps are effective in Bangladesh for chronic health problems, though there is no current literature on the use of mHealth for mental health promotion in Bangladesh, nor in the university student population in Bangladesh. As such, developing a mental health intervention rooted in theory that is culturally acceptable for the Bangladeshi community and can be delivered in an app format could have far-reaching effects. Thus, this study has three aims 1) to assess current rates, motivators, and barriers of using mental health services and practices, 2) to examine motivators toward using mHealth generally and for mental health and 3) to investigate the acceptability of content in an existing mental health promotion app for a Bangladeshi University student population.

The proposed study will utilize a multi-method design informed by Self-Determination Theory and the Technology Acceptance Model to explore motivational factors for mental health practices, such as coping skills, and professional services, such as therapy. The quantitative component will include regression analysis of an online survey (informed by cognitive interviews) delivered to students currently enrolled in universities in Bangladesh to determine current attitudes and practices of mental health services and the possibility of using mHealth for mental health. The qualitative component will involve thematic analysis of semi-structured interviews with randomly selected students who complete the quantitative portion of the study, regarding their opinion of mHealth for mental health app content. The proposed research study is an important step in understanding current usage, motivators, and barriers to using mental health services and wellness practices. Further, it will examine the potential acceptability of using mHealth for mental health promotion for university students in Bangladesh. This is particularly important given the lack of services and high rates of mental health problems in this population.

2. **Subject Selection:**

1. **Recruitment:**
   We will use convenience sampling for recruitment. We will utilize professional and personal networks of the study investigators and key faculty and current students at different Bangladesh universities. Those involved in recruitment will share an email to departmental listservs within their academic departments and personal networks. For the

second part of this study, recruitment will also be done through social media (Facebook, Instagram, Twitter) of study investigators. Those receiving the flyer and email will be encouraged to share with their own networks. these materials will be uploaded via an amendment once they have been prepared and will not be utilized for recruitment until approval is granted by the IRB.

Part 1: Faculty and current students who I already know (I am in contact with one current student who is helping me with translations and interviews, Naima Tasnim) from the universities in Bangladesh will refer other current students to take part in the cognitive interviewing portion of the study. I (and Naima) will interview the first 5 students who agree to take part. Naima is listed as a co-investigator. The interviews will take place in Bangla.

Part 2: Survey
A recruitment script for listservs and social media posts is included as a supporting document.
A link for the study survey will be shared that includes a consent form and the survey itself. This snowball, non-probability sampling will ensure a high number of participations, which is acceptable given the descriptive nature of the study. Participants will complete the survey online without research supervision. The survey will be in Bangla.

Part 3: In depth interview
Within the survey, we will ask participants if they would like to be considered for a potential follow up, of those who say yes, 12 will be randomly selected to complete the in-depth interview portion of the study. The interviews will take place in Bangla.

2. **Eligibility Criteria:**
   The eligibility criteria for this study include:
   Participants must be adults, 18+
   Current students enrolled in a university in Bangladesh
   Total N (for all parts): 367

3. **Rationale:**
   The objective of the study is to assess current trends of mental health service and coping strategy use of University students, as most students who are enrolled in university are young adults, 18+ and current students is a suitable sample.

4. **Enrollment Numbers:**
   Part 1: (cognitive interview) N=5
   Part 2 (survey): N=350
   Part 3: (in depth interview) N= 12

   a. **Rationale for Enrollment Numbers**:
   Part 1: Based on current practices of cognitive interviewing, a sample of 5 is sufficient to examine understanding of language (we will continue until we reach saturation).
   Part 2: This is based on values from past literature and performing a power calculation based on OR of 1.57 –with the dependent variable as technology acceptance and the independent variable as ease of use. The power calculation was based on a-priori z-tests for logistic regression, with alpha set at 0.05,

Part 3: Based on literature using Braun and Clarke method of Thematic Analysis, N=12 has been found in the past to be the sample when data reaches saturation.

5. Procedures:

I am only writing about the procedures for part 1 (the cognitive interviewing), as part 2 and 3 are dependent on its results and will be adapted accordingly. An amendment application will be submitted once the procedures and materials for parts 2 and 3 have been finalized. No research in regards to parts 2 or 3 will take place until these procedures/materials have been approved by the UMD IRB. To be sure the research follows Bangladeshi standards, the study is being supervised by Dr. Fayyaz Khan, the Vice Chancellor of Bangladesh University of Business and Technology (BUBT). He has provided a letter stating his approval of the interview guides and survey.

Participants will be recruited via email through faculty who work in Bangladesh universities. The following people have agreed to send information regarding to the study to their departmental listservs--
Dr. Sabina Rashid, Dean of the School of Public Health,   BRAC University
Dr. Shamsun Ahmed, Adjunct Professor,   Independent University and BRAC University
Dr. Farzana Islam, Vice Chancellor, Jahangirnagar University
Dr. Farid Ahmed, vice Chancellor,   Sylhet University
Dr. Hasan Reza,   Professor, North South University
Dr. Rezwan Khan, past Vice Chancellor, Professor , United International University
Dr. Fayyaz Khan, Vice Chancellor, Bangladesh University of Business and Technology
Naima Tasnim,   past student, BRAC University

Participants who preliminarily agree to participate in cognitive interviewing will schedule a time to meet with me (PI) and my research assistant, Naima Tasmin, via Zoom or Skype. Participants (N up to 5 – will stop when data saturation is reached) will be interviewed using the attached cognitive interviewing guide.

Prior to beginning the interview, I will send each of the participants a link to an online consent form, which I will go over with them before beginning the interview. I will also ask if they consent to the interviews being audio-recorded, though the audio-recording is not a requirement and they can still participate even if they do not agree to be recorded. Then, following the attached guide, participants will be asked to note how they would answer survey questions, if anything was unclear to them in the questions, and how they interpret key words. The questions pertain to understanding language surrounding mental health and digital health.

Interviews will take place in Bangla. Interviews were transliterated by the PI, Dr. Abdul Pathan and Ms. Nurun Baten, all native speakers of Bangla. They were then proofread by Dr. Ishraque Shawon, a physician who completed her medical school in Bangladesh. Then, the interviews were transcribed into Bangla b Naima Tasnim, a Bangladeshi native. After complete translation to Bangla, Dr. Abdul Pathan and Ms. Nurun Baten reviewed to ensure the Bangla version of the interview matched the original guide.

Interviews will be conducted by either me (the PI) or the research assistant (Naima Tasmin), while the other will be notetaking during the interview. They are expected to take approximately an hour, and all participants will receive a $5 monetary gift (the

hourly wage for university students in Bangladesh) for their time.

As some of the questions may be sensitive in nature, we provide resources to all those who consent to be interviewed. These are uploaded in a supplemental file.

6.   Risks:

The known risks to participants are minimal. There is a risk that some participants might feel uncomfortable answering some of the questions. Participants will not be required to respond to any of the items that they do not feel comfortable answering. Further, we will provide information for mental health resources based on the University they attend (all Universities have a counseling center). Moreover, the data will be stored under encrypted, password protected devices and only accessed by the PI(s) who have received CITI training. If there was a risk of confidentiality breach, the UMD IRB will be immediately notified and proper procedures would've been followed to mitigate the situation.

7.   Benefits:

There are no direct benefits to participants. It is anticipated that the findings from this research will benefit other individuals. The data collected contain an assessment of understanding the translation of English survey questions to Bangla, which will be used to contribute to the development of a Bangla version of these surveys. These surveys will be used by me in the next portion of this project and will be welcome to be used by other researchers in the future.

8.   Confidentiality:

Every effort will be made to protect participants personal information. Any personal identifying information will be kept separate from other study related information. We will collect demographic information of participants, as well as ask what university they attend. We will also collect email addresses to remain in contact to deliver incentives.

Only the PI and Naima Tasnim will have access to any data files related to this project. If the participant agrees to being audio-recorded, the files will be stored on the PI's secure network server at UMD with password-protected access limited to the PI and Naima Tasnim. The audio will be translated and transcribed to English by the PI and/or research assistant, Naima Tasmin, and personal identifying information, such as names will be recorded written as "Study Participant ID" rather than the participants name. These files will also be saved on the secure UMD network with password protected access, it was also not contain the actual names of the participants, and only include the randomly assigned ID number previously decided upon. Audio recordings will be destroyed one week after the completion of the transcription, and after the PI reviews the transcript with the audio-recording to ensure accuracy.

We will collect the participants e-mail address to be able to deliver the $5 gift incentive. Email addresses will be over written and electronically destroyed 1-week after the receiving confirmation that the incentive was successfully delivered.

We will follow similar process as suggested by the UMD IRB

(https://research.umd.edu/sites/default/files/documents/irb-forms/File%20Shredding%20Doc%20%28With%20Header%29.pdf)

9.   Consent Process:

Consent Waiver:
Given the online nature of the study, we request to waive signed informed consent. We will develop an electronic consent form (see attached) and require cognitive interviewing participants to read and accept before starting the interview questions. The interview will not take place until the PI has read through, and the participant consents to the attached form verbally and by clicking on the box stating "I have read and understand the consent form and agree to participate in this study." There will be both a Bangla and English translation of the consent form, and participants can scroll to whichever version they prefer reading.

We will ask that we audio-tape the interview with your permission to be used for quality assurance, and so that we can accurately document your answers to interview questions. If you agree, checking the following box that states "I give researchers permission to make and retain the audiotape for this study." Participants can complete the interview even if they do not agree to be audiotaped (audiotaping is not required).

(1) The research involves no more than minimal risk to the subjects.
The research project has none to minimal risk to the participants. The only anticipated 'risk' is some discomfort that some of the participants may feel when answering interview questions. Other than that, no risk is anticipated. Participants may skip or decline to answer any questions that cause discomfort.

(2) The waiver or alteration will not adversely affect the rights and welfare of the subjects. The waiver will not adversely affect the welfare or rights of survey participants. There is no benefit associated with requiring a written consent. Participants will be fully informed of their rights as participants by reading and agreeing to the electronic consent form.

(3) The research could not practicably be carried out without the waiver or alteration. The written consent requirement may make some participants hesitant to continue the survey as such requirement may add undue burden on the participants without providing any reasonable, tangible benefits to the study participants.

(4) Whenever appropriate, the subjects will be provided with additional pertinent information after participation. You may request a waiver of informed consent by including responses, in your IRB application, to the above listed waiver criteria. Participants will be provided with further information about the study, risks, and benefits at the conclusion of the interview, including the PI(s) information.

10.   Conflict of Interest:

No financial or ethical conflicts of interest exist. This study is not funded by any organization.

11.   HIPAA Compliance:

N/A. No data requiring HIPAA compliance will be collected.

12. **Research Outside of the United States:**

A. *This phase of the research will take place virtually over Zoom and Skype, we hypothesize that most participants being interviewed will reside in Bangladesh, as the target population in current Bangladesh university students.*

Though I have not conducted previous research in Bangladesh, I have volunteered there in a clinical setting before, and speak the language fluently, and understand the culture. My research assistant was born and raised in Bangladesh and speaks and write the language fluently. I have gained the support of professors within universities who have agreed to distribute the survey for students to contact me for the interviews.

I have reviewed the human subjects research guidelines in Bangladesh, found in the following link:
https://www.bmrcbd.org/application_form/EthicalGideline/mobile/index.html#p=9

The main unique steps for doing research in Bangladesh include – ensuring the Informed Consent form and materials to be used by Bangladeshi participants who only speak Bangla are written in Bangla – the Bangla consent form has been submitted to the UMD IRB.

In the "International Guidelines on Ethics in health research" the Bangladesh Handbook describes it's commitment to the Nuremberg Code and the Declaration of Helsinki. Like the UMD IRB, you must obtain informed consent (which includes aim and method of the research, criteria for selection, duration of participation, benefits and risks pertaining to involvement in research, measures taken to minimize risk, confidentiality, (medical services provided and provision for compensation due to injury of subjects which is not applicable in this case), and statements that participants are free to refuse without penalty or loss of benefits.

In Bangladesh, you only need approval from the University to conduct research of this nature. For clinical trials, you would need approval from the Bangladesh Medical Research Council, however this is not applicable to this situation. As such, I submitted all materials (everything I submitted to UMD IRB) to Dr. Fayyaz Khan, who is the Vice-Chancellor of BUBT (of Bangladesh University of Business and Technology) to review to ensure the procedures of this research follow the guidelines in Bangladesh. He has given his approval as documented in the attached letter.

B. Human subjects review in Bangladesh: This study is being supervised by Dr. Fayyaz Khan, the Vice Chancellor of Bangladesh University of Business and Technology (BUBT). He has provided a letter stating his approval of the interview guides and survey.

C. Risks: There may be some discomfort felt my participants when asking questions regarding mental health attitudes, a topic of which is surrounded by stigma.

Resources will be given to all participants that they can access in Bangladesh as follows:

BRAC University Counseling Center:
Email: counseling@bracu.ac.bd

Shahjalal University of Science and Technology Counseling:
E-mail: dscg@sust.edu

Independent University of Bangladesh Counseling Services:
E-mail: psc@iub.edu.bd

Innovation for Well-Being Foundation Hotline and Resources
Phone: 01726 427219
Website: www.iwellbeing.org
Email: info@iwellbeing.org

13. **Research Involving Prisoners:**

N/A

14. **SUPPORTING DOCUMENTS**

Your Initial Application must include a **completed Initial Application Part 1 (On-Line Document),** the information required in items 1-11 above, and all relevant supporting documents including: consent forms, letters sent to recruit participants, questionnaires completed by participants, and any other material that will be presented, viewed or read to human subject participants.

The consent forms in your approved <u>IRBNet PACKAGE</u> must be used. When creating or editing your consent form, please provide the most recent IRBNet package number at the bottom, right corner of the consent form. This ensures you are using the most "up-to-date" version of the form.

To find your IRBNet package number, go to the MY PROJECTS tab and click on the title of your project. In the PROJECT OVERVIEW page, your IRBNet package number will be listed at the top, next to your project title.

Appendix N.
Amendment Application – Survey
AMENDMENT APPLICATION

To ensure an accurate and streamlined review of your Amendment Application, please provide the following information:

1. **Provide a brief explanation stating what is being proposed and where in the protocol and/or consent changes were made. Please state if you are requesting an increase in enrollment.**

As explained in the submission of the first part of this project, I am now submitting an amendment for my dissertation project to conduct an online survey. The survey will be sent to current university students by key faculty members of Bangladeshi Universities.

I have created a new consent form for this purpose, which I am attaching – all changes from the consent form for the first part of the study are highlighted in yellow.

I have changed the procedure section to reflect that this is an online survey, that will take 15-20 minutes to complete. The Potential Benefits section reflects that the purpose of this study is to understand current attitudes and use of mental health services and digital health, and that the findings can go on to inform interventions and affect policy.

In the compensation section, I've changed the language to reflect that participants can choose to enter a raffle for $5.

1. **Explain the rationale/justification for the change.**

    The second component of my dissertation project is an online survey, not an in-depth interview, as such the protocol is different.

2. **State what impact the change has on risks to participants. Please state the number of CURRENTLY ENROLLED participants and if the changes will require re-consent. If the changes will not require re-consent, please state why. If the changes present no additional risks to participants, please provide a statement to indicate so.**

    There is no change to risks of the participants, as the questions are of the same mental health nature, and the same resources will be provided to them.
    Currently the N=5. These students would have to re-consent, as the protocol for the online survey is different than the in-depth interview.

3. **Clearly state whether the change has an impact on the scientific integrity of the study, (i.e. decreases, increases, no impact).**

    No impact.

4. **List the documents included with the application that have been modified (consent forms, flyers, data collection forms, surveys). State what has been changed in each modified document.**

Consent Form --
I have created a new consent form for this purpose, which I am attaching – all changes from the consent form for the first part of the study are highlighted in yellow.

I have changed the procedure section to reflect that this is an online survey, that will take 15-20 minutes to complete. The Potential Benefits section reflects that the purpose of this study is to understand current attitudes and use of mental health services and digital health, and that the findings can go on to inform interventions and affect policy.

In the compensation section, I've changed the language to reflect that participants can choose to enter a raffle for $5.

Survey –
I've attached the ENGLISH version of the survey that was developed based on the findings from part one of this research project. This survey will be translated to Bangla and back translated to English to ensure proper translation, upon approval of the English version.

Flyers--

I've attached the marketing material that will be shared to students by the Bangladeshi faculty. One is in English (this one will not be used, it is just for reference), and one is in Bangla.

5. **If adding a student and their project (in the domain of the currently approved project), please request the addition of their name to the Approval Letter. If adding a student, faculty, or staff member to your application, please be sure to have this person link a valid, CITI Training record to the submission.**

N/A

- -

NOTE (1): **Upload** **any modified documents with this amendment application.**

NOTE (2): The consent forms in your approved IRBNet PACKAGE must be used. When creating or editing your consent form, please provide the most recent IRBNet package number at the bottom, right corner of the consent form. This ensures you are using the most "up-to-date" version of the form.

To find your IRBNet package number, go to the MY PROJECTS tab and click on the title of your project. In the PROJECT OVERVIEW page, your IRBNet package number will be listed at the top, next to your project title.

NOTE (3): NIH Funding - Any change in research activities that would result in an increased risk to human subjects will require prior NIH approval before implementation. Please speak to your program officer.

Appendix O.

Amendment Application – In-depth Interview

AMENDMENT APPLICATION

To ensure an accurate and streamlined review of your Amendment Application, please provide the following information:

1. **Provide a brief explanation stating what is being proposed and where in the protocol and/or consent changes were made. Please state if you are requesting an increase in enrollment.**

As explained in the submission of the first part of this project, I am now submitting an amendment for my dissertation project to conduct third component (qualitative part) of this study. The invitation to participate will be sent to current university students by key faculty members of Bangladeshi Universities.

I have created a new consent form for this purpose, which I am attaching – the only thing that has changed from the primary consent form is the example question, and the purpose of the study being changed to now "The purpose is to understand students' opinions of using meditation practices."

3. **Explain the rationale/justification for the change.**

The third component of my dissertation project is an in-depth interview on a different topic than the first component, as such the wording is a bit different. For example, the first component was to understand the acceptable language surround mental health. This third component is to understand students opinions of using mindful meditation practices, and to see they thoughts of using such practices on an App.

4. **State what impact the change has on risks to participants. Please state the number of CURRENTLY ENROLLED participants and if the changes will require re-consent. If the changes will not require re-consent, please state why. If the changes present no additional risks to participants, please provide a statement to indicate so.**

There is no foreseen risk to this, as we do not even ask about current mental health status, and only share guided meditation practices, which do not have negative consequences. Still, the same resources will be provided to them.
Currently the N=7-12, depending on saturation of the data. These students would have to re-consent, as the purpose for this in-depth interview is slightly different than the first.

5. **Clearly state whether the change has an impact on the scientific integrity of the study, (i.e. decreases, increases, no impact).**

No impact.

6. **List the documents included with the application that have been modified (consent forms, flyers, data collection forms, surveys). State what has been changed in each modified document.**

Consent Form --
I have created a new consent form for this purpose, which I am attaching. The only part that has changed from the primary consent form is the example question, and the purpose of the study being changed to now "The purpose is to understand students' opinions of using meditation practices."

Recruitment email--
I've attached the marketing material that will be shared to students by the Bangladeshi faculty. One is in English (this one will not be used, it is just for reference), and one is in Bangla.

Interview guide—I have attached the English version of the interview guide for reference. This will be translated to Bangla (upon IRB approval) and the interviews will be conducted in Bangla.

7   If adding a student and their project (in the domain of the currently approved project), please request the addition of their name to the Approval Letter. If adding a student, faculty, or staff member to your application, please be sure to have this person link a valid, CITI Training record to the submission.

N/A

NOTE (1): <u>Upload</u> any modified documents with this amendment application.

NOTE (2): The consent forms in your approved IRBNet PACKAGE must be used. When creating or editing your consent form, please provide the most recent IRBNet package number at the bottom, right corner of the consent form. This ensures you are using the most "up-to-date" version of the form.

To find your IRBNet package number, go to the MY PROJECTS tab and click on the title of your project. In the PROJECT OVERVIEW page, your IRBNet package number will be listed at the top, next to your project title.

NOTE (3): <u>NIH Funding</u> - Any change in research activities that would result in an increased risk to human subjects will require prior NIH approval before implementation. Please speak to your program officer.

Appendix P.

IRB Approval

UNIVERSITY OF **MARYLAND**
INSTITUTIONAL REVIEW BOARD

DATE:	February 1, 2021
TO:	Munjireen Sifat, BS, MPH
FROM:	University of Maryland College Park (UMCP) IRB
PROJECT TITLE:	[1656046-3] MENTAL HEALTH IN UNIVERSITY STUDENTS IN BANGLADESH: AN EXAMINATION OF CURRENT PRACTICES, SERVICE USE, AND ACCEPTABILITY OF MHEALTH FOR MENTAL HEALTH
REFERENCE #:	
SUBMISSION TYPE:	Amendment/Modification
ACTION:	APPROVED
APPROVAL DATE:	February 1, 2021
EXPIRATION DATE:	November 23, 2021
REVIEW TYPE:	Expedited Review
REVIEW CATEGORY:	Expedited review category # 7

Thank you for your submission of Amendment/Modification materials for this project. The University of Maryland College Park (UMCP) IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

Prior to submission to the IRB Office, this project received scientific review from the departmental IRB Liaison.

This submission has received Expedited Review based on the applicable federal regulations.

This project has been determined to be a MINIMAL RISK project. Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the appropriate forms for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of November 23, 2021.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Unless a consent waiver or alteration has been approved, Federal regulations require that each participant receives a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this committee prior to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others (UPIRSOs) and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please use the appropriate reporting forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

Please note that all research records must be retained for a minimum of seven years after the completion of the project.

If you have any questions, please contact the IRB Office at 301-405-4212 or irb@umd.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Maryland College Park (UMCP) IRB's records.

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