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RESEARCH ARTICLE

The development of an Islamic-inspired digital therapeutics app: exploring mental health challenges among university students

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Abstract - Mental health difficulties, including anxiety, depression, and stress, are prevalent among Muslim university students and are often intensified by academic demands and societal stigma that discourage help-seeking. Existing mental health services frequently lack cultural and religious sensitivity, limiting their relevance and effectiveness for this population. Furthermore, although numerous Islamic-themed mobile applications exist globally, a comprehensive literature review reveals a notable absence of digital platforms specifically designed to address the distinct mental health challenges faced by Muslim students, particularly those offering live access to therapists and experts. This study seeks to address this critical gap by developing and evaluating a digital therapeutic application rooted in Islamic principles to enhance the psychological well-being of Muslim university students aged 18 to 30. The application combines evidence-based psychological interventions with Islamic spiritual practices such as Dhikr, Dua, and faith-based coping mechanisms. It delivers structured daily spiritual exercises, personalised support, and direct access to culturally competent clinicians, thereby providing a culturally congruent approach to mental healthcare. A total of 308 Muslim university students participated in a quantitative evaluation involving surveys, interviews, and app usage data to assess the intervention's impact on emotional resilience, stress reduction, and engagement with spiritual practice. Statistical analysis revealed significant improvements in emotional regulation ($p < 0.01$) and coping strategies ($p < 0.05$) following app utilisation. While awareness of digital therapeutic apps ($p = 0.497$) and perceived helpfulness of Islamic-themed apps ($p = 0.424$) were not significant predictors, the model demonstrated strong explanatory capacity with adjusted R^2 values of 0.768 and 0.816 for mental health outcomes and age-related variance, respectively. These findings highlight the potential efficacy of integrating digital mental health interventions with Islamic values to overcome culturally specific barriers faced by Muslim students. The study emphasises the importance of culturally sensitive digital therapeutics and recommends further longitudinal research to evaluate their long-term impact within diverse religious populations.

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1. Introduction

The level of mental well-being consideration among university students is reaching critical levels, with anxiety, stress, and depression being more commonly observed in this segment of individuals than in the general population [1], [2]. This study intends to investigate the development and possible implications of a psychosocial digital application informed by Islamic principles for Muslim university students' mental health and well-being. This study seeks to add to the extant literature in digital mental health intervention with cultural specificity by exploring how Islamic teachings were integrated into evidence-based psychological treatment. Depression, anxiety, and stress happen to be fairly common occurrences in students, with rates estimated between 24.9% and 58.1%, and they tend to be more chronic and comorbid [3]. While some research studies have indicated a rise in the problems, others have also stated that greater awareness and help-seeking could have led to this perception of rise, thus making any conclusive statement difficult [4]. There are also gender differences, with females reported to have higher rates of depression than males [5]. Many factors affect mental health, ranging from stress related to academia, social life considerations, to environmental characteristics such as campus greening [2], [6], [7].

Universities have started giving wellness programs involving psychoeducation, workshops, and mental health clinics on the campus; in the future, the aim of such programs will be on early intervention and support to vulnerable groups [3]. It was stated that academic stress affected student well-being more than financial concerns [8]. On the contrary, anxiety risk may be influenced by academic year, financial support, social ties, and lifestyle [9]. Such courses might include ethics or academic honesty and could create anxiety in distance education settings.

With students from minorities experiencing fear, dismal living conditions, and educational disruption, the COVID-19 pandemic has further worsened mental health issues [10]. Language anxiety, particularities about the personality of students, and low self-efficacy may hamper the student's ability to perform academically [11]; social-emotional learning, on the other hand, has been put forth as a remedy [12]. There must be an inter-institutional effort to address student mental health. Such an approach would include integration into curricula, stigma reduction, and cooperation with mental health professionals. Considering the recent direction of teletherapy and digital mental health intervention apps, urgently needed

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are culturally relevant interventions for Muslim students confronted with particular stressors and challenges, including academic pressure, family expectations, and ideological confrontations with the works of faith.

Plus, there is little research done on tailored digital interventions for Muslim student populations. This work bridges the gap by exploring a digital therapeutic that is based on Islamic principles and can provide meaningful and culturally consonant support. Digital therapeutics (DTx) seem to hold the promise of offering mobile, geographically personalized care in treating anxiety and depression, particularly to the digital-savvy university population [13], [14]. Mainstream digital mental health apps neglect to address the spiritual and cultural factors that are central to the well-being of a Muslim individual and also forget important design factors such as usability and customization. The study will focus on trying to find ways of filling such gaps through the digital incorporation of Islamic teachings and psychological interventions. Findings from this work will provide the foundation and impetus for furthering the design of fair and effective mental health offerings in higher education.

The contents of the study are arranged in the following sections. Section 1 introduces the background, objective, and importance of developing an Islamic-inspired digital therapeutics app for Muslim university students. Then, Section 2 reviews literature relating to digital therapeutics, the mental health issues among university students, and the need for culturally adapted Islamic-inspired interventions. Section 3 contains the research methodology and includes research design, participants, data collection instruments, and analysis procedures. Section 4 presents the results and discussion of the study, highlighting descriptive statistics, correlation analyses, and the results of the MANOVA. Section 5 details the discussion, including the findings in comparison with previous literature and theoretical implications. Section 6 sets out the limitations of the study. Finally, Section 7 makes concluding remarks with key learnings, contributions, and suggestions for future research.

2. Literature Review

2.1 Relevance of Digital Therapeutics (DTx) and Mental Health Apps in Handling Mental Health Issues

Yet, particularly mobile apps are utilized as digital therapeutics for the purpose of providing evidence-based intervention in anxiety, depression, and stress [14], mainly among university students. As such, mobile-based DTx provides mental health support to mentally needy populations, given the availability of cell phones [15]. Studies stress that user-centered design (UCD) maximizes the usability and effectiveness of mental health apps by making features essentially compatible with user needs and behaviors [17]. Inal et al. [13] suggested that multiple iterative evaluation cycles enhance engagement and acceptability. From an Islamic perspective, mental wellness is pivotal for spiritual well-being and communion with Allah [18]; however, Muslim youths rarely have access to religiously adapted mental health tools. Hence, injecting Islamic values such as mindfulness-muraqabah, dhikr, and privacy-conscious features into DTx will address the common concerns of stigma and cultural fit. Islamic-oriented digital platforms can foster holistic well-being by integrating spiritual, psychological, and emotional terrains with Islamic teachings. Since digital health strategies are more in vogue in universities these days, it's essential to understand the cultural and religious parameters of DTx to enhance mental health outcomes for Muslim students.

2.2 Overview of Mental Health Issues Among University Students

University students face anxiety, stress, and depression as never before, and the pandemic has made academic pressures, social isolation, and reduced engagement in coping activities more intense [19]-[21]. The major causes are academic pressures, financial stress, and adapting to adjustments in university life [19], [21]. Stress becomes the major trigger for psychological distress, especially fuelled by expectations and fear of performance. Faculty awareness of mental health matters is growing, but many do not have the training for student mental health support, creating systemic gaps in university support services [22]-[26]. Graduate students suffer an added vulnerability with marked disengagement and physiological changes in stress. This calls for robust plans, operating on both the preventive and reactive sides. Effective interventions include improved access to mental health services, self-efficacy promotion, coping-skills training, and the use of digital tools [21]-[23]. A "whole university approach" is recommended, which calls for structural changes and a supportive cultural atmosphere [23]. Increasing levels of mental health literacy among students and educators is also critical [23]. Likewise, the decline in social support and social satisfaction contributes to the deterioration in well-being, thereby strengthening the argument for a conducive academic environment [25]. Given the escalating nature of this crisis, a more holistic and culturally responsive approach is required.

2.3 Mental health issues faced by Muslim university students

An almost impossible variety of academic and psychosocial stressors are thrust upon these students as a result of social and cultural influences and economic constraints. Experiences of Islamophobia and racial discrimination engender alienation that detracts from both mental health and academic performance [27]. External pressures are compounded by those that arise internally, greater anxiety, particularly from the expectation of family that more emphasis will be placed upon the academic and career success of the student; however, anxiety is created if the student's own desire is contradictory to those of the family. Career-related stress is very common among international Muslim students, who otherwise use peer support and resilient mechanisms to cope with academic and professional uncertainties. The transition to digital education has introduced them to several other barriers, especially in places like Saudi Arabia, where scant resources coupled with privacy issues hinder adaptation [28]. This digital divide worsens educational inequality and increases student-related stress. Cultural and religious contradictions with academic content, such as those that contradict

the concept of evolution in science classes, for instance, become hurdles to student engagement and learning. On the whole, these intersecting stressors point out the necessity for culturally sensitive mental health support and inclusive education settings designed around the needs of Muslim students.

2.4 Need for a Specifically Tailored DTx App

Muslim university students face unique mental health challenges that require culturally responsive interventions. Available data show that Muslim students experience considerably elevated levels of academic anxiety, especially in the phase of thesis writing, which often leads to diminished productivity and, eventually, burnout [29],[30]. There are stigmatizing attitudes in Arab-Islamic perspectives toward mental illness, leading to resistance to seeking professional help; such scenarios are compounded by the very limited formal education in the mental health discipline and reliance on non-clinical sources [31],[32]. A personalized mental health tool for Muslim students might bridge this gap by incorporating culturally congruent activities such as Qur'anic recitation, reading, and memorization, which would legally enhance emotional regulation and reduce anxiety [32]. There is also evidence to support positive thinking training in reducing academic stress for this population [31]. A culturally adapted digital tool can reconcile contemporary therapeutic methodologies with Islamic values to reduce stigma and enhance availability of care. Making use of participatory design and human-centered machine learning, embedding Muslim student feedback throughout development is bound to raise cultural appropriateness, engagement, and adoption [33]. Therefore, such tools are competent partners for improving mental health outcomes with a commitment to evidence direction and faith alignment.

2.5 Islamic Perspectives on Mental Health

Focus groups recognized several key factors as barriers to help-seeking: stigma, limited access, and non-culturally competent care. Within the Muslim community, mental illnesses are mostly viewed as a sign of weak faith or spiritual failure and thus become sources of internalized guilt, pushing individuals toward avoiding formal mental health services. Their concerns are often considered private matters to be resolved with religious leaders and not discussed openly, leading to somatization-a form of acceptance wherein emotional distress is expressed through the body. Other barriers also include self-stigma, financial constraints, language issues, and lack of insurance. On the other hand, distrust of Western mental health services, seen as incompatible with Islamic teachings, can serve to deepen feelings of alienation and thus worsen symptoms. These systems and cultural factors, therefore, enhance the cycle of underdiagnosis and untreated distress. However, mosques may be a trusted entry point to care, provided that imams are trained in identifying and referring individuals appropriately. As Zhou et al. [14] explain, AI-enabled digital platforms can also provide interventions tailored to cultural factors based on users' religious and social preferences, meaning increased engagement in underserved communities.

2.6 Addressing the Challenges of Academic Pressure and Mental Health Stigma Among Muslim University Students

Academic stress is indeed one of the major concerns faced by university students and goes a long way in affecting their mental health and well-being. Factors contributing to academic stressors include family pressure, peer expectations, or even systemic academic demands [25]. Such stressors or threats have further intensified due to the COVID-19 pandemic and are seen to have increased effects, especially among females and final-year students [32]. Psychological capital has been found to be a mediator and moderator of the relationship between academic stress and anxiety, implying that resilience, hope, and self-efficacy will moderate or balance the negative consequences. In addition, incivility and academic stress have been found to be positively correlated with psychological distress, whereas gratitude could serve as a mediator to reduce the effects of incivility [34]. Anxiety and hopelessness also mediate the relationship between academic stress and depression [34]. These findings highlight the need for universities to develop adaptive, ever-changing mental health services geared towards students' academic and personal challenges [24],[34],[35]. Proactive intervention strategies are crucial for mitigating stress causes and fostering emotional resilience in different student communities.

2.7 Example Mental Health Mobile Application with Islamic Design and Contents

Table 1 illustrates four examples of Muslim mental health mobile applications that are accessible online. This literature suggests that there are three (3) mobile applications that are specifically designed to address mental health concerns within the Muslim community. These applications, which are detailed in Table 1, were created to offer Muslim individuals who are in need of mental health resources religiously appropriate support. The applications, which are accessible via the Internet, are a targeted approach to addressing the psychological well-being of this demographic.

Table 1. A brief overview of mental health apps with Islamic design and content

Mobile App's Name	Overview	Islamic Features
Sakeenah URL Links: https://cutt.ly/tRHgTcm	Sakeenah helps Muslims become mentally healthier. pp. 'Sakeenah' (tranquility) is a guided meditation series that helps Muslims manage mental health concerns such as depression, anxiety, and lack of sleep, as well as emotional issues like grief and bereavement. The app Sakeenah is simple and suitable for all ages. Sakeenah also provides organized audio information for Muslim mental health worldwide. Users can enhance their mental health with this app.	Home: Provides 12 kinds of meditation sessions. Users need to choose sessions and listen to audio content. Meditation: Meditation in Islam - Introduction to meditations in Islam. Reduce Anxiety - Mindfulness meditation to reduce anxiety. Moral Sleep stories - From Islamic History to sleep better. Meditate Now - Short single sessions. By Allah - Guideline about Allah will always provide a way Tawakkal Ala'Allah - build trust in Allah's plan. Our losses & sabr - Learn to deal with whatever befalls. Our Emotions - acknowledgement of user experience This too shall pass - The art of navigating through life's contractions Qadar - listen to build a calm, unconditional acceptance. Ground Yourself - 7-minute session of grounding yourself. Dua - Incredibly powerful Duas that will heighten connection. Profile: User profile information Contact us Rate application, bookmark, favourite
Mindful Muslim URL Links: https://cutt.ly/WRHgF7m	One of the earliest Islamic mindfulness apps, it gently guides audio talk-throughs of Islamic stories to help 1.8 billion Muslims improve their emotional and mental health. Mindful Muslim lets users create a personalised playlist of du'as, ruqyahs, night Quran readings, and Islamic stories to fall asleep.	Home: Select narrator (male /female) Guided talk down: topics covered are anxiety, 12 lessons on how to deal with and cope with several mental issues, Hope, stress, and fear. Build Playlist: 11 types of Uplifting and motivational courses from notable scholars, experts, and public figures with a total duration of 9 hours (540 minutes). View user's playlist Others: Sleep diary Help More Info Settings
Halaqah URL Link: https://cutt.ly/fRHhmGe	With a relaxed mind and reconnection to the source of life, people find peace. "Halaqah" is a digital spiritual circle where users can practice dhikr and guided meditations to relax. In addition to Dhikr, which immerses participants in a profound communal experience that alleviates symptoms of modern living, it offers guided	Courses: Mindfulness: A total of 50 courses to improve mental health, including overwhelmed, anxiety, courage, guide to meditation. Purification: 11 courses focus on anger issues, envy, lust, and death. Dhikr: Total 44 minutes and 25 seconds of Dhikr to Allah and Salawat. Featured course: Guide to meditation of 13 minutes 30 seconds. Inspirational quotes: Downloaded course to view offline.

	mindfulness sessions to help them through difficult times.

3. Materials and Methods

3.1 Research Design

This study employed a cross-sectional quantitative survey design to evaluate the mental health challenges of Muslim university students. The design allowed data to be gathered at a single point in time, enabling the identification of patterns in emotional well-being, perceived stress, anxiety levels, and engagement in digital mental health resources. This design is suitable for assessing differences and relationships among psychological variables within a diverse student population.

3.2 Participants and Sampling

The study sample consisted of 308 Muslim university students enrolled in various academic programs. Participants were recruited through convenience sampling using online platforms and university networks. Although convenience sampling has limitations in generalizability, it was considered practical and appropriate for exploratory research during the study period, where access to a broader random sample was limited. The inclusion criteria ensured that only current university students were selected to accurately reflect the influence of academic life on mental health. Data collection took place between January to March 2025.

3.3 Data Collection Instrument

Data were collected using a structured online questionnaire created via Google Forms. The instrument comprised two sections:

- Section A: Demographic information (age, gender, academic year, and course of study).
- Section B: Psychometric measures assessing three core variables, perceived stress, anxiety, and emotional well-being, using 5-point Likert scale items ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

The instrument was face-validated and content-validated by subject matter experts and pilot-tested on a small group of students to ensure clarity, relevance, and ease of comprehension.

3.4 Data Analysis

Data were analyzed using IBM SPSS Statistics version 27. The analysis began with data screening and outlier detection, followed by tests for normality using the Kolmogorov-Smirnov and Shapiro-Wilk tests. While some variables violated the normality assumption, the large sample size (N = 308) justified the use of parametric tests under the Central Limit Theorem.

A Multivariate Analysis of Variance (MANOVA) was conducted to assess the joint influence of demographic and behavioral factors on multiple dependent variables, such as type of mental health challenge, frequency of emotional disturbance, and use of digital apps. MANOVA provided robust insights into interrelated psychological outcome patterns.

Additionally, correlation analyses were performed to examine the strength and direction of relationships among variables. Pearson's correlation was applied to continuous, approximately normal variables, while Spearman's rank correlation was used for ordinal data and non-normally distributed variables.

3.5 Qualitative Component

To complement the quantitative analysis, the questionnaire included one open-ended question inviting participants to describe their mental health challenges in their own words. This qualitative input enriched the findings by capturing personal experiences and nuanced perspectives that might not be reflected in standardized scales. A thematic analysis approach was used to identify recurring themes, which were then categorized into broader areas such as academic pressure, time management issues, career-related stress, and environmental or social distractions. Theme frequencies were calculated to support a descriptive interpretation aligned with the quantitative results.

4. Results and Discussion

4.1 Descriptive and Normality Analysis

4.1.1 Descriptive Statistics of Key Variables

There were 308 Muslim university students representing various academic programs in the participant pool for this study. Regarding the descriptive statistics, the most frequently reported mental health issue was a combination of anxiety, stress, and depression (n = 96), followed by stress alone (n = 104), and other combinations of anxiety and depression. Extremely few students mentioned single issues such as anxiety (n = 7) and existential crisis (n = 1), implying that co-occurring mental health symptoms are very common.

Concerning the timing of occurrences, most of the respondents faced these disturbances throughout the semester (n = 101), with major spikes toward the end of the semester (n = 83) and during midterm assessments (n = 37). This could indicate that academic pressures, especially those during the assessment period, are quite interrelated with emotional disturbances.

Further looking into academic stressors, the combined effect of midterm exams, final exams, and group projects was most often mentioned (n = 108), indicating multitasking pressure as a prime trigger. The frequency of feeling overwhelmed was quite high; just 5 of the students said they never felt overwhelmed, while 99 sometimes, 71 often, and 55 all the time felt overwhelmed.

4.1.2 Normality Testing

To determine the appropriateness of parametric analyses, the Kolmogorov-Smirnov and Shapiro-Wilk tests were invoked in the context of these analyses to assess normality across all key continuous and ordinal variables noted in the study (see Table 2). Most variables in question (e.g., Mental Health Challenges, Perceived Impact, Timing of Issues, Likelihood to Use App) failed the normality assumption ($p < .05$), especially those involving Likert-type or ordinal scales.

However, as a consequence of the relatively large sample size (N = 308), the Central Limit Theorem suggests parametric tests could apply to those resembling normal distributions. Indeed, non-parametric ones such as Spearman's rank-order correlation were employed in analyzing later stages of this study for variables that failed to follow normality and for all ordinal variables.

A. Mental Health Challenges Faced

Table 2 indicates that the major challenge students confront is stress (104 students), while combinations such as Anxiety; Stress; Depression (96 students) are the other. Anxiety almost alone (7) or existential crises (1) were reported by very few. This seemed to indicate a strong coalescence of mental health symptoms among students.

Table 2. Mental health challenges faced

		Cases					
	Mental Health Challenges	Valid		Missing		Total	
	Faced	N	Percent	N	Percent	N	Percent
level	Stress	104	100.0%	0	0.0%	104	100.0%
	Anxiety	7	100.0%	0	0.0%	7	100.0%
	Depression	9	90.0%	1	10.0%	10	100.0%
	Anxiety; Stress	31	91.2%	3	8.8%	34	100.0%
	Anxiety; Depression	29	100.0%	0	0.0%	29	100.0%
	Stress; Depression	28	100.0%	0	0.0%	28	100.0%
	Anxiety; Stress; Depression	96	100.0%	0	0.0%	96	100.0%
	Existential Crisis	1	100.0%	0	0.0%	1	100.0%
Age	Stress	104	100.0%	0	0.0%	104	100.0%
	Anxiety	7	100.0%	0	0.0%	7	100.0%
	Depression	9	90.0%	1	10.0%	10	100.0%
	Anxiety; Stress	31	91.2%	3	8.8%	34	100.0%
	Anxiety; Depression	29	100.0%	0	0.0%	29	100.0%
	Stress; Depression	28	100.0%	0	0.0%	28	100.0%
	Anxiety; Stress; Depression	96	100.0%	0	0.0%	96	100.0%
	Existential Crisis	1	100.0%	0	0.0%	1	100.0%

B. Timing of Mental Health Issues

As shown in Table 3, most students experience such challenges during the semester (101), at the end of the semester (83), or in the middle of the semester (37). These data imply that stress is sustained and peaks at the deadlines and evaluation points.

Table 3. Timing of mental health issues

		Cases					
	Timing of Mental Health	Valid		Missing		Total	
	Issues	N	Percent	N	Percent	N	Percent
level	Beginning of the semester	31	100.0%	0	0.0%	31	100.0%
	During the whole semester	101	98.1%	2	1.9%	103	100.0%
	Before any assessment	20	90.9%	2	9.1%	22	100.0%
	In the middle of the semester	37	100.0%	0	0.0%	37	100.0%
	At the end of the semester	83	100.0%	0	0.0%	83	100.0%
	During exam period	25	100.0%	0	0.0%	25	100.0%
	Before result	8	100.0%	0	0.0%	8	100.0%
age	Beginning of the semester	31	100.0%	0	0.0%	31	100.0%
	During the whole semester	101	98.1%	2	1.9%	103	100.0%
	Before any assessment	20	90.9%	2	9.1%	22	100.0%
	In the middle of the semester	37	100.0%	0	0.0%	37	100.0%
	At the end of the semester	83	100.0%	0	0.0%	83	100.0%

	During exam period	25	100.0%	0	0.0%	25	100.0%
	Before result	8	100.0%	0	0.0%	8	100.0%

C. Specific Academic Triggers

Table 4 indicates that top stressors include combinations of midterm, final exams, presentations, and group projects (e.g., 108 students reported Midterm; Final Exam; Group Project). This indicates that it is often the challenge of multitasking between competing academic demands that mental health challenges arise.

Table 4. Specific academic triggers

		Cases					
		Valid		Missing		Total	
	Specific Academic Triggers	N	Percent	N	Percent	N	Percent
level	Assignments	3	100.0%	0	0.0%	3	100.0%
	Presentation	10	100.0%	0	0.0%	10	100.0%
	Group project	4	100.0%	0	0.0%	4	100.0%
	Writing methodology	1	100.0%	0	0.0%	1	100.0%
	Work dateline	1	100.0%	0	0.0%	1	100.0%
	Final exam	13	92.9%	1	7.1%	14	100.0%
	Submission	1	100.0%	0	0.0%	1	100.0%
	Assignments; Presentation	3	100.0%	0	0.0%	3	100.0%
	Presentation; Group project	3	100.0%	0	0.0%	3	100.0%
	Midterm exam; Assignments	11	100.0%	0	0.0%	11	100.0%
	Midterm exam; Final exam	20	100.0%	0	0.0%	20	100.0%
	Assignments;Presentation;Group project	3	100.0%	0	0.0%	3	100.0%
	Midterm exam; Quizzes; Final exam	76	100.0%	0	0.0%	76	100.0%
	Assignments;Presentation;Final exam	1	100.0%	0	0.0%	1	100.0%
	Assignments;Quizzes;Presentation;Group project	25	100.0%	0	0.0%	25	100.0%
	Midterm exam; Presentation; Final exam; Group project	108	98.2%	2	1.8%	110	100.0%
	Quizzes;Presentation;Final exam	1	100.0%	0	0.0%	1	100.0%
	The vagueness of the assessment and lack of futuristic implications.	1	100.0%	0	0.0%	1	100.0%
	college environment and bad people	1	100.0%	0	0.0%	1	100.0%
	Unknown triggers	1	100.0%	0	0.0%	1	100.0%
	Group project; family, people around me	1	100.0%	0	0.0%	1	100.0%
	Dissertation	1	100.0%	0	0.0%	1	100.0%
	Midterm exam	1	100.0%	0	0.0%	1	100.0%
	Assignments;Quizzes;Presentation	1	100.0%	0	0.0%	1	100.0%
	Quizzes;Presentation;Final exam	1	100.0%	0	0.0%	1	100.0%
	Presentation; Final exam	4	100.0%	0	0.0%	4	100.0%
	Preparation & report presentation; monthly updates	1	100.0%	0	0.0%	1	100.0%
	32	1	100.0%	0	0.0%	1	100.0%
	Presentation; Final exam; Group project	7	100.0%	0	0.0%	7	100.0%
age	Assignments	3	100.0%	0	0.0%	3	100.0%
	Presentation	10	100.0%	0	0.0%	10	100.0%
	Group project	4	100.0%	0	0.0%	4	100.0%
	Writing methodology	1	100.0%	0	0.0%	1	100.0%
	Work dateline	1	100.0%	0	0.0%	1	100.0%
	Final exam	13	92.9%	1	7.1%	14	100.0%
	Submission	1	100.0%	0	0.0%	1	100.0%
	Assignments;Presentation	3	100.0%	0	0.0%	3	100.0%

Presentation; Group project	3	100.0%	0	0.0%	3	100.0%
Midterm exam; Assignments	11	100.0%	0	0.0%	11	100.0%
Midterm exam; Final exam	20	100.0%	0	0.0%	20	100.0%
Assignments;Presentation;Group project	3	100.0%	0	0.0%	3	100.0%
Midterm exam; Quizzes; Final exam	76	100.0%	0	0.0%	76	100.0%
Assignments;Presentation;Final exam	1	100.0%	0	0.0%	1	100.0%
Assignments;Quizzes;Presentation;Group project	25	100.0%	0	0.0%	25	100.0%
Midterm exam; Presentation; Final exam; Group project	108	98.2%	2	1.8%	110	100.0%
Quizzes;Presentation;Final exam	1	100.0%	0	0.0%	1	100.0%
The vagueness of the assessment and lack of futuristic implications.	1	100.0%	0	0.0%	1	100.0%
college environment and bad people	1	100.0%	0	0.0%	1	100.0%
Unknown triggers	1	100.0%	0	0.0%	1	100.0%
Group project; family, people around me	1	100.0%	0	0.0%	1	100.0%
Dissertation	1	100.0%	0	0.0%	1	100.0%
Midterm exam	1	100.0%	0	0.0%	1	100.0%
Assignments;Quizzes;Presentation	1	100.0%	0	0.0%	1	100.0%
Quizzes;Presentation;Final exam	1	100.0%	0	0.0%	1	100.0%
Presentation; Final exam	4	100.0%	0	0.0%	4	100.0%
Preparation & report presentation; monthly updates	1	100.0%	0	0.0%	1	100.0%
32	1	100.0%	0	0.0%	1	100.0%
Presentation; Final exam; Group project	7	100.0%	0	0.0%	7	100.0%

D. Frequency of Feeling Overwhelmed

As presented in Table 5, the fear of being overwhelmed sometimes (n = 99), often (n = 71), or always (n = 55) is shared by most students. With only 5 students reporting to have never been overwhelmed, the feeling of being overwhelmed is highly prevalent due to academic-related pressure.

Table 5. Frequency of feeling overwhelmed

	Frequency of Feeling Overwhelmed	Valid		Cases Missing		Total	
		N	Percent	N	Percent	N	Percent
level	Never	5	100.0%	0	0.0%	5	100.0%
	Rarely	75	100.0%	0	0.0%	75	100.0%
	Sometimes	99	99.0%	1	1.0%	100	100.0%
	Often	71	98.6%	1	1.4%	72	100.0%
	Every time	55	96.5%	2	3.5%	57	100.0%
age	Never	5	100.0%	0	0.0%	5	100.0%
	Rarely	75	100.0%	0	0.0%	75	100.0%
	Sometimes	99	99.0%	1	1.0%	100	100.0%
	Often	71	98.6%	1	1.4%	72	100.0%
	Every time	55	96.5%	2	3.5%	57	100.0%

E. Mental Health Conditions Currently Experienced

Table 6 shows that academic pressure is the most cited stressor (248 students), accompanied by issues such as rebalancing workload, worrying about prospects, and fulfilling family expectations. Some students mentioned having medically diagnosed conditions, such as OCD or anxiety, as part of their troubles.

Table 6. Mental health conditions currently experienced

		Cases					
	Mental Health Conditions	Valid		Missing		Total	
	Currently Experienced	N	Percent	N	Percent	N	Percent
level	Academic pressure	248	98.8%	3	1.2%	251	100.0%
	Family expectations	11	100.0%	0	0.0%	11	100.0%
	Fear of not having expected grades; Balancing academic workload; Self-expectations; Career growth	25	100.0%	0	0.0%	25	100.0%
	Balancing academic workload	8	100.0%	0	0.0%	8	100.0%
	Self–expectations	6	85.7%	1	14.3%	7	100.0%
	Career growth	5	100.0%	0	0.0%	5	100.0%
	I've been diagnosed with obsessive-compulsive disorder & Anxiety by a psychiatrist.	1	100.0%	0	0.0%	1	100.0%
	Existential crisis	1	100.0%	0	0.0%	1	100.0%
age	Academic pressure	248	98.8%	3	1.2%	251	100.0%
	Family expectations	11	100.0%	0	0.0%	11	100.0%
	Fear of not having expected grades; Balancing academic workload; Self-expectations; Career growth	25	100.0%	0	0.0%	25	100.0%
	Balancing academic workload	8	100.0%	0	0.0%	8	100.0%
	Self–expectations	6	85.7%	1	14.3%	7	100.0%
	Career growth	5	100.0%	0	0.0%	5	100.0%
	I've been diagnosed with obsessive-compulsive disorder & Anxiety by a psychiatrist.	1	100.0%	0	0.0%	1	100.0%
	Existential crisis	1	100.0%	0	0.0%	1	100.0%

F. Perceived Impact of Challenges

According to Table 7, students reported various levels of impact: 102 said it interfered with their work; 125 moderated the effects; and a few reported severe effects such as disturbed sleep or isolation. This shows that there is a broad spectrum of effects on their mental health.

Table 7. Perceived impact of challenges

		Cases					
	Perceived Impact of	Valid		Missing		Total	
	Challenges	N	Percent	N	Percent	N	Percent
level	Not much	69	100.0%	0	0.0%	69	100.0%
	Moderate level	125	96.9%	4	3.1%	129	100.0%
	It hampers my other works	102	100.0%	0	0.0%	102	100.0%
	It doesn't impact me at all	7	100.0%	0	0.0%	7	100.0%
	It even creeps into my sleep	1	100.0%	0	0.0%	1	100.0%
	Dissociation and isolation	1	100.0%	0	0.0%	1	100.0%
age	Not much	69	100.0%	0	0.0%	69	100.0%
	Moderate level	125	96.9%	4	3.1%	129	100.0%
	It hampers my other works	102	100.0%	0	0.0%	102	100.0%
	It doesn't impact me at all	7	100.0%	0	0.0%	7	100.0%
	It even creeps into my sleep	1	100.0%	0	0.0%	1	100.0%
	Dissociation and isolation	1	100.0%	0	0.0%	1	100.0%

G. Influence of Peer Pressure and Expectations

As detailed in Table 8, the majority (225) believe that peer/social pressure influences their mental health. This calls for the setting up of support systems against social stressors in the university environment.

Table 8. Influence of peer pressure and expectations

	Influence of Peer Pressure and Expectations	Cases					
		Valid		Missing		Total	
		N	Percent	N	Percent	N	Percent
level	Yes	225	99.1%	2	0.9%	227	100.0%
	No	31	100.0%	0	0.0%	31	100.0%
	Maybe	49	96.1%	2	3.9%	51	100.0%
age	Yes	225	99.1%	2	0.9%	227	100.0%
	No	31	100.0%	0	0.0%	31	100.0%
	Maybe	49	96.1%	2	3.9%	51	100.0%

H. Awareness of Digital Therapeutic Apps

Table 9 reveals that there is good familiarity, with 228 respondents knowing Islamic digital therapeutic apps. Nonetheless, 48 were uncertain; this points to a need for better outreach and education.

Table 9. Awareness of digital therapeutic apps

	Awareness of Digital Therapeutic Apps	Cases					
		Valid		Missing		Total	
		N	Percent	N	Percent	N	Percent
level	yes	228	98.3%	4	1.7%	232	100.0%
	no	29	100.0%	0	0.0%	29	100.0%
	maybe	48	100.0%	0	0.0%	48	100.0%
age	yes	228	98.3%	4	1.7%	232	100.0%
	no	29	100.0%	0	0.0%	29	100.0%
	maybe	48	100.0%	0	0.0%	48	100.0%

I. Usage of Digital Mental Health Tools

As shown in Table 10, the highest usage was recorded among 305 students, signifying an openness to digitally mediated solutions that can help manage their mental health.

Table 10. Usage of digital mental health tools

	Usage of Digital Mental Health Tools	Cases					
		Valid		Missing		Total	
		N	Percent	N	Percent	N	Percent
level	yes	305	99.7%	1	0.3%	306	100.0%
age	yes	305	99.7%	1	0.3%	306	100.0%

J. Likelihood to Use a Muslim-Focused App

Table 11 indicates that the majority rated the app as somewhat important (167) and very important (70). This creates potential to source culturally relevant mental health tools.

Table 11. Likelihood to use a Muslim-focused app

	Likelihood to Use a Muslim-Focused App	Cases					
		Valid		Missing		Total	
		N	Percent	N	Percent	N	Percent
level	Not important at all	7	100.0%	0	0.0%	7	100.0%
	Slightly important	20	95.2%	1	4.8%	21	100.0%
	Somewhat important	167	100.0%	0	0.0%	167	100.0%
	Moderately important	41	100.0%	0	0.0%	41	100.0%
	Very important	70	95.9%	3	4.1%	73	100.0%
age	Not important at all	7	100.0%	0	0.0%	7	100.0%
	Slightly important	20	95.2%	1	4.8%	21	100.0%
	Somewhat important	167	100.0%	0	0.0%	167	100.0%
	Moderately important	41	100.0%	0	0.0%	41	100.0%
	Very important	70	95.9%	3	4.1%	73	100.0%

K. Perceived Effectiveness of Digital Tools

As presented in Table 12, moderately effective (198) or slightly effective (85) were the terms embraced by most students, denoting that they trust technology to aid therapy and yet still indicate the much space left for them.

Table 12. Perceived effectiveness of digital tools

	Perceived Effectiveness of Digital Tools	Cases					
		Valid		Missing		Total	
		N	Percent	N	Percent	N	Percent
level	Not effective at all	7	100.0%	0	0.0%	7	100.0%
	Not effective	15	100.0%	0	0.0%	15	100.0%
	Slightly effective	85	96.6%	3	3.4%	88	100.0%
	Moderately effective	198	99.5%	1	0.5%	199	100.0%
age	Not effective at all	7	100.0%	0	0.0%	7	100.0%
	Not effective	15	100.0%	0	0.0%	15	100.0%
	Slightly effective	85	96.6%	3	3.4%	88	100.0%
	Moderately effective	198	99.5%	1	0.5%	199	100.0%

L. Helpfulness of Islamic-Themed Apps

Table 13 shows that the virtual app would help very much, as indicated by 121 students, while most reported moderate and slight effectiveness, revealing high demand for culturally attuned mental health services.

Table 13. Helpfulness of Islamic-themed apps

	Helpfulness of Islamic-Themed Apps	Cases					
		Valid		Missing		Total	
		N	Percent	N	Percent	N	Percent
Level	Not helpful at all	34	100.0%	0	0.0%	34	100.0%
	Slightly helpful	53	100.0%	0	0.0%	53	100.0%
	Moderately helpful	97	100.0%	0	0.0%	97	100.0%
	Very helpful	121	96.8%	4	3.2%	125	100.0%
Age	Not helpful at all	34	100.0%	0	0.0%	34	100.0%
	Slightly helpful	53	100.0%	0	0.0%	53	100.0%
	Moderately helpful	97	100.0%	0	0.0%	97	100.0%
	Very helpful	121	96.8%	4	3.2%	125	100.0%

Mental health problems among university students tend to arise mostly from environmental stress such as academic pressure and social stressors. Yet students are increasingly interested in and demanding solutions in terms of digital therapeutic tools that resonate with Islamic value systems and student culture. The descriptive data provide a perspective on the general state of student distress, arguing that academic stressors and semester timing are the major triggers that bring about mental health challenges. The results emphasize the critical importance of designing interventions that occur when students are undergoing their heaviest academic load, and those that address the multi-faceted nature of student stress. The prevalence of emotional overload calls for the incorporation of features in such an app that provide real-time emotion tracking, Duas for stress, and coping mechanisms, which are in alignment with Muslim cultural and spiritual contexts.

4.2 Correlation Analysis

4.2.1 Assumption Check and Choice of Method

Normality, as it were, was checked for each variable before analyses of correlation with the Kolmogorov-Smirnov test and the Shapiro-Wilk test. Mental Health Challenges, Mental Health Challenges Faced, Likelihood to Use a Muslim-Focused App, amongst many others, failed the assumption of normality; some of them were ordinal or categorical, justifying the nonparametric methods. Hence, the following cases result:

- Pearson's correlation could be used for approximately normally distributed interval data; it is included.
- Spearman's rank-order correlation is a non-parametric alternative for ordinal variables and those that cannot meet the requirement of normality.

4.2.2 Pearson Correlation Results

Correlation tests revealed substantial links between the variables based on Pearson's correlation. Table 14 shows the complete matrix:

Table 14. Pearson correlation results

Variable 1	Variable 2	Pearson r	Sig. (2-tailed)	N
Level of education	Age	.826	.000	309
Level of education	Perceived Impact of Challenges	.264	.000	309
Level of education	Mental Health Challenges	.347	.000	309
Level of education	Likelihood to Use a Muslim-Focused App	.158	.005	309
Perceived Effectiveness of Digital Tools	Mental Health Challenges	-.214	.000	309
Perceived Effectiveness of Digital Tools	Influence of Peer Pressure and Expectations	-.235	.000	309
Perceived Effectiveness of Digital Tools	Level of education	-.110	.053	309

4.2.3 Spearman's Correlation Results

Spearman's Rho correlation was used for variables that don't meet the normal distribution pattern or were ordinal in nature. Table 15 below shows the full matrix:

Table 15. Spearman's correlation results

Variable 1	Variable 2	Spearman ρ	Sig. (2-tailed)	N
Level of education	Perceived Impact of Challenges	.289	.000	309
Level of education	Mental Health Conditions Currently Experienced	.287	.000	309
Level of education	Timing of Mental Health Issues	.395	.000	309
Perceived Effectiveness of Digital Tools	Helpfulness of Islamic-Themed Apps	.436	.000	309
Likelihood to Use a Muslim-Focused App	Perceived Effectiveness of Digital Tools	-.444	.000	309
Likelihood to Use a Muslim-Focused App	Awareness of Digital Therapeutic Apps	-.368	.000	309
Likelihood to Use a Muslim-Focused App	Awareness of Digital Therapeutic Apps	-.152	.007	309

4.2.4 Summary of Correlation Findings

While both correlations in Pearson and Spearman's found significant relations between mental health experiences of students and their interaction with an Islamic-oriented digital therapeutic app, those students reporting higher levels of distress or stress were more likely to identify the app's therapeutic value, engage with it more frequently, and view it as more helpful in managing their mental health concerns. Higher perceived mental health problems positively correlated with usage of Muslim apps ($\rho = .444$, $p < .001$). This could indicate that emotion-laden students indeed want digital support but may find a faith-based intervention preferable, thus providing a practical opportunity for targeted digital therapeutics that are culturally consonant.

4.3 MANOVA

4.3.1 Multivariate Effects (Wilks' Lambda)

Multivariate tests using Wilks' lambda calculated the overall influence of each independent variable across the combined dependent variables (mental health levels and age). The results in the Table 16 below show statistically significant predictors of variance. The only two predictors that were statistically insignificant were Awareness of Digital Therapeutic

Apps and Helpfulness of Islamic-Themed Apps. The adjusted R^2 for level of mental health was 0.768, and the adjusted R^2 for age was 0.816, showing strong model fit and explanatory power.

Table 16. Multivariate effects (Wilks' lambda)

Factor	Wilks' Lambda	F	Sig. (p)
Mental Health Challenges Faced	.585	12.102	< .001
Timing of Mental Health Issues	.571	12.729	< .001
Specific Academic Triggers	.190	11.732	< .001
Frequency of Feeling Overwhelmed	.651	14.109	< .001
Mental Health Conditions Currently Experienced	.627	10.354	< .001
Perceived Impact of Challenges	.793	7.268	< .001
Influence of Peer Pressure and Expectations	.803	13.715	< .001
Awareness of Digital Therapeutic Apps	.986	.845	.497
Likelihood to Use a Muslim-Focused App	.881	5.137	< .001
Perceived Effectiveness of Digital Tools	.959	2.476	.044
Helpfulness of Islamic-Themed Apps	.975	1.001	.424

Most independent variables contributed significantly to the outcome variables when assessed as multivariate. Only tested as non-significant predictors were 'Awareness of Digital Therapeutic Apps' ($p = .497$) and 'Helpfulness of Islamic-Themed Apps' ($p = .424$), meaning that knowing or generally perceiving how helpful the app was did not significantly explain their diversity among levels of mental health and different age groups.

In a nutshell: academic pressures (deadlines, examination times), peer pressure, and frequency of emotional upset strongly predict mental health issues among Muslim university students. Significantly, students with high perceived mental illness disturbances are more likely to:

- Download mental health apps,
- Consider Islamic-themed content as relevant,
- Consider personalized interventions useful.

On the contrary, knowledge about digital tools or general impressions about app helpfulness are not able to strongly pinpoint differences in mental health. Therefore, specific, rich-featured, and context-aware design would have more impact on the target population than mere visibility or brand recognition.

By and large, university stakeholders will have to put their efforts into the identification of risky academic periods and inform the deployment of digital support. For developers, this is a strong signal about embedding real-time, emotionally responsive Islamic content such as Dua suggestions and therapist-matching systems.

4.4 Between-Subjects Effects Summary

Separate univariate tests indicated how each independent variable influenced each of the dependent variables. The following mental health level predictors were statistically significant: challenge type ($F=17.206$, $p<.001$), semester phase ($F=5.739$, $p<.001$), academic stressor ($F=15.023$, $p<.001$), emotional disturbance frequency ($F=20.142$, $p<.001$), type of mental health condition ($F=21.410$, $p<.001$), perceived severity of impact ($F=11.043$, $p<.001$), engagement with the app ($F=24.912$, $p<.001$), perceived importance of app content ($F=8.531$, $p<.001$), and perceived effectiveness of the app ($F=4.818$, $p=.009$).

The adjusted R-squared that resulted for mental health level was 0.768, and that for age group was 0.816, strongly indicating model fit as well as explanatory power for the independent variables measured.

4.5 Proposed Low-Fidelity Mental Health Application Prototype Design for Students

Following a thorough study of the literature and careful survey analysis, the authors designed a low-fidelity application specifically for Muslim university students, meeting their demands. The initiative provides a variety of resources meant to help students with typical mental health issues, including academic stress and the demands of juggling their obligations to their studies and others. Especially, the program has a built-in feature for direct correspondence with a qualified therapist, therefore guaranteeing that students have easily available and private support as needed. The program also offers efficient techniques and instruments for controlling academic pressure, encouraging mental health, and building resilience against academic obstacles. Careful design of the interface guarantees simplicity of navigation and a user-friendly experience with consideration for usability. Moreover, the colour schemes, layout, and general look have been carefully chosen to fit the tastes and cultural sensibilities of Muslim university students, therefore providing comfort and familiarity. This design approach is meant to improve the user experience as well as to create an environment in which students feel supported and understood, therefore facilitating access to and the efficacy of mental health resources. By means of this deliberate mix of elements and design, the application seeks to be a necessary tool in helping the mental well-being of Muslim university students, thereby enabling them to better control their academic stress and hence promote emotional and psychological health.

4.6 Key Features of the Application:

Displayed in Figures 1(a) –1(c) are features of the digital therapeutics application that has been inspired by Islamic culture, namely the home page, the emotion check-in page, and the dua page. The home page works as the central hub, with quick access to coping methods and direct links to counsellors. The emotion page is about checking one's present feelings and obtaining personal spiritual guidance, while the dua page is for obtaining selected duas and dhikrs that fit one's emotional needs-hence someone feeling stressed due to an upcoming examination might find appropriate ones there. Users of this page can either immediately connect with a counsellor or investigate a variety of coping mechanisms in line with Islamic values of well-being and mental resilience. This page acts as an easily available starting place for them. The choices offered are meant to encourage psychological and emotional assistance by including Islamic direction into doable coping strategies.

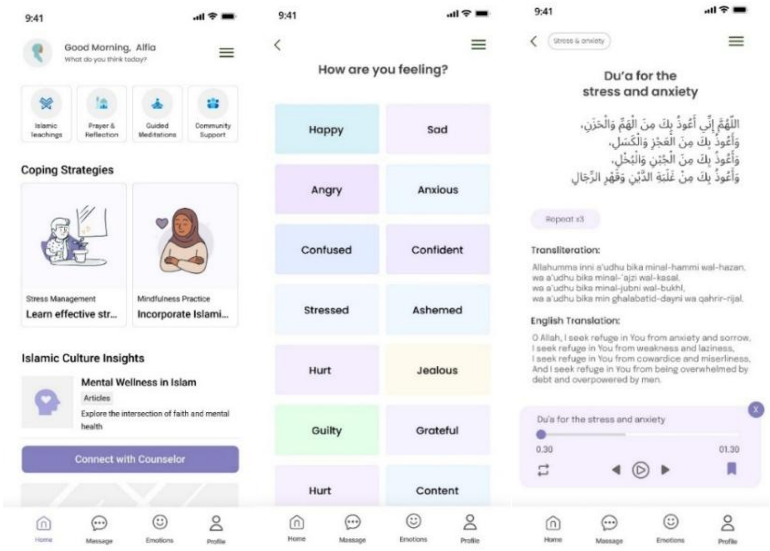


Figure 1(a). Home page Figure 1(b). Emotion page Figure 1(c). Dua page

Users of the Emotion Page are invited to evaluate and consider their present emotional condition by choosing among a spectrum of emotions. This self-evaluation produces customised material that guides the user to particular duas or dhikrs catered to their emotional need. This function provides spiritual activities in accordance with Islamic teachings to handle the emotional difficulties the user is experiencing, therefore promoting mindfulness and self-awareness.

The Dua or Dhikr page provides a carefully selected assortment of individual duas and dhikrs, each selected for their relevance to distinct emotional states, such as anxiety connected to tests or stress resulting from approaching deadlines. Rooted in Islamic tradition, these spiritual activities give consumers easily available, guided tools meant to promote emotional release, inner serenity, and resilience. Every dua or dhikr is given background and justification to make sure users appreciate both its importance and uses.

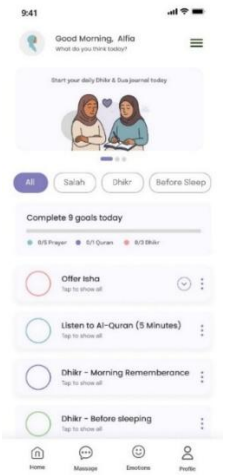


Figure 2. Daily goal track page

Figure 2 illustrates the interface of a mobile application that has the potential to facilitate personal development, spiritual practice, and well-being by integrating Islamic rituals with mental health support tools. The app contains numerous fundamental components that are directly relevant to your research on the development of a digital therapeutics app for Muslim university students that is inspired by Islamic principles.

4.6.1 Personalized Greeting and Daily Journal

The user's experience is personalised by the salutation "Good Morning, Alfia," which cultivates a sense of connection. The suggestion to establish a "daily Dhikr & Dua journal" serves as an exceptional instrument for the management of mental health by encouraging users to incorporate their spiritual practices into their daily routines through self-reflection and mindfulness. Relevance to study: User engagement is significantly improved by personalisation, particularly for a demographic such as Muslim university students who may encounter a variety of mental health challenges. This could be translated into personalised support in your application, which would prompt users to participate in spiritual practices that foster emotional resilience in accordance with Islamic teachings.

4.6.2 Monitoring and Objective Establishment

The user is encouraged to accomplish daily objectives, including listening to the Quran, engaging in Dhikr practices, and offering specific petitions (e.g., Isha). The visual goal tracker is a motivating feature that enables users to monitor their progress (e.g., 0/5 for prayer, 0/3 for Dhikr). Relevance to the study: This application may benefit from incorporating goal-setting and progress monitoring capabilities. Incorporating daily objectives regarding prayer, Quran reading, and Dhikr would facilitate the maintenance of consistent spiritual practices among Muslim students, potentially alleviating tension, anxiety, and other mental health challenges. A significant psychological advantage is that students experience a sense of motivation and accomplishment as a result of monitoring their progress.

4.6.3 Spiritual Practice Categories

The application categorises spiritual practices into three groups: Salah (prayer), Dhikr (remembrance of Allah), and Before Sleep. This organisation assists users in optimising their daily routines by directing their attention to specific practices at the appropriate periods. It is imperative to categorise spiritual practices in order to address a variety of mental health challenges at different junctures. For instance, providing specific duas or Dhikrs for anxiety prior to exams or reminders for gratitude at night could enhance the practicality and efficacy of your application in promoting the mental health of Muslim students. This categorisation is also consistent with Islamic teachings, as it establishes structured opportunities for reflection and worship.

4.6.4 Integration of Emotional Well-Being

A section titled "Emotions" is present in the app's interface. This implies an integrated method of monitoring emotional states, which may motivate users to contemplate their emotions and align them with suitable spiritual practices. An emotional well-being feature that allows users to evaluate their emotional state and receive personalised spiritual support (e.g., dua or Dhikr) would be in direct alignment with your research on the provision of Islamic coping mechanisms for mental health challenges. Linking emotional states with specific Islamic practices, such as Duas for stress or gratitude, is a proactive approach that could assist Muslim University students in managing stress, anxiety, or sorrow in accordance with their religious beliefs.

4.6.5 User-centred Design

The design is modern, clear, and user-friendly, featuring icons for Home, Messages, Emotions, and Profile. This enhances the app's usability, encouraging students who may encounter time constraints as a result of academic pressures to utilise it on a regular basis. The success of the application will be contingent upon the emphasis on a straightforward, intuitive, and clear design. Ease of use and accessibility are essential for university students, particularly those who are experiencing academic duress, in order to promote consistent engagement with the application. It is probable that the app's effectiveness in offering mental health support will be enhanced by incorporating a user-friendly interface into your research.

Depending on their unique psychological characteristics, the Islamic-based DTx app intends to cater to Muslim university students through user-centered and culturally considerate features. Every feature carries dual therapeutic and spiritual intentions, with the goal of building emotional resiliency in respect to religious values and stigma reduction.

A. Emotion Check-In and Recommendation Engine

This tool allows users to self-assess their emotions every day, keeping track of stress, anxiety, mood changes, and so on. These evaluations help the app intelligently offer Duʿa (supplications), selected Qur'anic verses, or Islamic coping strategies appropriate for the given context. Such an experience supports the idea of self-care alongside spiritual reflection and thus enhances self-awareness and religion-based emotion regulation strategies.

B. Live Therapist Access

This feature allows a user to book an appointment with real-time Muslim therapists, filtered by region, guaranteeing that users will be able to find counselors who understand their religious and cultural background, thereby enhancing trust and a sense of psychological safety within formal mechanisms of therapy.

C. Daily Dhikr Tracker

This app acts as a guide, providing an audio and written Dhikr (remembrance of Allah) message for spiritual grounding. The app tracks users' progress in a motivational way and sends reminders, thereby encouraging people to be consistent with peaceful religious acts that help them with emotional regulation and clarity of mind.

D. Interactive Psycho-Spiritual Modules
An array of structured exercises in mental health melding Islamic teachings with evidence-based therapeutic frameworks such as Cognitive Behavioral Therapy (CBT). These modules consist of Islamic mindfulness (Tafakkur), journaling prompts related to Hadith literature, gratitude reflection, and behavioral activation adapted to the context of Muslim students.

E. Push Notifications and Crisis Support
Timed notifications are intended to encourage the user to engage in spiritual or related wellness activities, especially when stress-inducing academic time periods are in effect. The app also includes emergency contact features connecting to culturally competent hotlines or religious counselors for acute mental health support. These features came out of the participatory design process and, based upon Islamic mental health literature, to ensure usability, emotional relevance, and therapeutic effectiveness that are all congruent with the users' faith. They draw upon user preferences identified during preliminary studies and reflect empirical research around the importance of integrating the cultural and religious dimensions within digital mental health interventions [19], [13], [14].

4.7 Connections to Research
Holistic Well-Being: By integrating spiritual practices with daily routines, this application offers a comprehensive approach to well-being. Incorporating Islamic practices such as prayer, Quran reading, and Dhikr can be beneficial for Muslim university students who are experiencing academic and personal stress. In the same vein, your application could integrate these methodologies with mental health instruments to provide comprehensive assistance.

4.7.1 Customisation of the User Experience
The application customises the user experience according to the user's emotional state and daily progress, which is consistent with your research objective of developing a personalised, Islamic-guided support system. Customisation could be based on the unique requirements of each student, providing personalised coping strategies, prayers, and dhikrs to address specific emotional concerns, such as tension before exams or anxiety about deadlines.

4.7.2 Motivation and Tracking
The feature that enables users to monitor their daily spiritual objectives is a motivational tool. This can be implemented in your application to monitor mental health progress, thereby providing users with a sense of accomplishment and promoting positive behaviours that are consistent with Islamic well-being practices. Students may experience a sense of empowerment in maintaining their spiritual practices by monitoring their progress, which can be especially beneficial in the context of academic duress.

4.7.3 Potential future Improvements to design
Interactive Emotional Well-Being Tracker: It would be a significant improvement in the promotion of mental health to incorporate a feature like the "Emotions" section, which would allow users to log and ruminate on their emotional state and receive personalised recommendations for duas or dhikrs. Counselling or peer support integration: In a manner similar to the way the app might provide prayers and spiritual practices, you could incorporate a feature that enables users to establish a connection with a counsellor or peer mentor who is knowledgeable about Islamic values. This would further improve the support system for students who are grappling with more intricate mental health issues.

4.7.4 Visual and Aesthetic Design
The app's modern, clear design renders it both user-friendly and enjoyable. Ensuring that your application integrates Islamic design elements (including geometric patterns, colours, and typography) while maintaining a contemporary aesthetic will enhance the experience of students and promote engagement in your research.
By integrating these features, the research app can provide practical, culturally pertinent mental health support for Muslim university students, thereby integrating traditional Islamic practices into a modern digital format that promotes well-being.

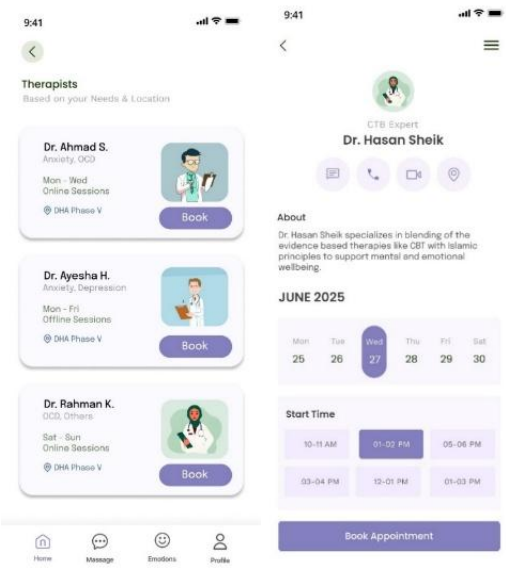


Figure 3(a). Therapists' list Figure 3(b). Therapist's booking page

As in Figures 3(a) and 3(b), the directory lists certified mental health professionals, filtered by specialisations, locations, and availability, while the booking page allows users to book an appointment through the app itself. This ensures that students can find culturally competent therapists who practice evidence-based mental health care along with Islamic principles.

This page lists therapists by region, availability, and user needs (anxiety, OCD, depression). Therapist profiles include:

- Dr. Ahmad S. conducts online anxiety and OCD sessions.
- Dr. Ayesha H.: Offline anxiety and depression specialist.

OCD and other illness specialist Dr. Rahman K. offers online sessions. Users can effortlessly arrange appointments with each profile's "Book" button.

4.8 Relevance to Your Research: Cultural Sensitivity and Accessibility

Islamic-Inspired Therapists: Researchers might include therapists who understand both modern and Islamic mental health therapy in the app. It could offer CBT or other evidence-based specialists who incorporate Islamic principles like mindfulness (Muraqaba) and spiritual activities (Dhikr, Dua). Location-Based Accessibility: Enables Muslim students to identify culturally sensitive counsellors or peer support on-campus or online who respect Islamic principles.

4.9 Muslim Student Mental Health Issues

4.9.1 Online Counselling

Many Muslim university students struggle with mental health due to academic stress, identity issues, and cultural expectations. Helping students feel supported requires a variety of therapists who understand academic stress, social anxiety, and religious identity issues. Online sessions meet varied requirements and interests. Online treatment may be more convenient for Muslim students with hectic schedules or cultural stigmas.

4.9.2 Easy Scheduling

Use the "Book" button to schedule easily. This might be implemented in your app to make mental health support more accessible by letting users book sessions with emotional or psychological therapists. Figure 2: Therapist Profile Page. Dr. Hasan Sheikh, a therapist who combines CBT with Islamic ideas to improve mental and emotional health, is shown in this snapshot. Important elements: Personal Description: Dr. Sheikh's CBT-Islamic expertise.

4.9.3 Availability

A calendar of available appointment slots lets users choose a time. A clear "Book Appointment" button on the therapist's profile. Clear, Professional Therapist Profiles. Each therapist's profile is professional and lists their specialisation and availability. This interface will let students identify and connect with the proper professionals depending on their requirements (e.g., stress management, test anxiety, depression) and counselling choices in the app.

Flexible, user-focused appointment scheduling: The ability to explore available hours and arrange appointments with the therapist is user-friendly and engaging. This approach might allow students to make visits with mental health and Islamic values therapists through the app.

4.10 The proposed app's potential and relevance

Easily accessible mental health support: As the app makes booking therapy sessions easy, your app may make it easy to find Islamic mental health providers. Muslim university students could feel culturally supported and able to seek therapy if mental health services also recognised Islamic beliefs.

To meet the needs of Muslim students, the app has culturally competent therapists who are trained in modern psychological procedures and understand Islamic principles. This could reduce Muslim mental health stigma and encourage support seeking.

4.10.1 Integrating Islamic Therapeutic Principles

Dr. Hasan Sheik's profile suggests combining CBT with Islamic teachings, which might be a crucial innovation in your app. Your research could examine how Dhikr or Dua combined with psychological techniques can improve Muslim students' mental health.

The user-friendly interface simplifies therapist selection and scheduling, making it ideal for university students with limited time. Your app can reflect this strategy to make mental health services easy to use and encourage frequent use.

These therapist profiles support your study goal of providing Muslim students with mental health treatment that respects their religious and cultural needs. Your app can help Muslim university students find mental health treatment that fits their faith and lifestyle by offering therapists who blend traditional and Islamic therapies and easy booking.

4.11 Integrating Evidence-Based Therapies with Islamic Principles: Relevance to Your Research

This approach involves merging Western therapy approaches like CBT with Islamic beliefs, as Dr. Hasan Sheik's profile shows. This approach could be key to the app, especially for Muslim students who want culturally competent therapists who can provide modern, evidence-based mental health treatment while respecting their beliefs. Islamic coping methods like Dhikr (remembrance of Allah) and Dua (supplication), together with psychological interventions, may help Muslim students' mental health, supporting your research goal of Islamic-inspired support.

5. Discussion

Adjusted R-square values of 0.768 and 0.816 for mental health level and age reflect a strong model fit and explanatory power. In essence, the implication for practice is that the digital therapeutic app with features such as emotion-based Dhikr recommendations, spiritual journaling, and on-the-spot therapist matching can significantly influence the emotional coping skills of students and their engagement with mental health resources [13], [14]. These features drive engagement while addressing the need for discreet, culturally relevant avenues for mental health help, as both user feedback and empirical data suggest.

This is very critical because, in compiling a list of their help-seeking behaviors, the Muslim students often reflect on the congruence of religion and the acceptability of therapy. University mental health providers and counselors, like well-being strategists, are further strengthened by these findings in their appreciation of scalable, faith-based digital solutions tailored to a specific religion [25]. Conversely, the well-documented effects of academic pressure and a sense of doom ($p < .001$) on causing mental distress, especially around midterms, finals, and group assignments, call for contextual features such as Dhikr reminders before assessments, resilience messaging during exam weeks, and flexible access to therapists. Academic pressure profoundly affects emotional anguish in students, especially during high-stakes times such as midterms, finals, and collaborative projects. This pressure may result in mental health issues, such as anxiety, depression, and deteriorating psychological well-being. Academic pressure impacts mental health by elevating stress levels. In middle school and college students, stress influences mental health and academic performance, with elevated stress levels associated with adverse mental health outcomes [36], [37]. Interventions such as dietary modifications and resilience communication may mitigate the adverse impacts of academic stress on mental health [38]. Access to mental health resources and therapists equips students with strategies to manage stress [35]. Mental health challenges among student populations are affected by socio-economic factors. The COVID-19 pandemic elevated stress levels by modifying educational settings [39], [40]. Universities must improve mental health services and eliminate obstacles to psychological help [40].

In this study, it was observed how layered and persistent the mental health struggles are for Muslim university students, while academic stress appears to be the principal factor [25]. Anxiety and depression manifest simultaneously and are worsened by challenges such as peer competition, family expectations, and cultural stigmas around mental illness [23]. The stigma, spiritual guilt, and nonavailability of mental health services respectful of culture maintain a certain student population from utilizing them [14].

Adding Islamic spiritual elements to digital therapeutic approaches may assist in filling in the gaps in care that exist at present, especially for Muslim communities. Digital methods are a new discipline that uses current technology to offer tailored, evidence-based treatments that may be able to go beyond time and place [41].

For Muslims, adding spiritual elements like prayers, Islamic beliefs, and Quranic recitations to therapy makes it work better. The results show that using religious coping mechanisms is associated with better health outcomes, and these methods are being successfully adapted to meet Islamic cultural and religious settings [42]. Adding spiritual intelligence to therapy has also been demonstrated to improve spiritual health, which is important for dealing with mental health issues in today's world, as secular methods sometimes fall short [43].

Islamic psychotherapy is holistic, which means it takes into account all aspects of a person's life, including their spiritual requirements, which standard therapies may not do. More and more people are realizing that therapies need to

go beyond Eurocentric models to meet the full needs of Muslim clients, which includes addressing their mental and spiritual wellness [44].

Combining spiritual, religious, and therapeutic activities makes treatment more relevant to the cultural background of Muslim clients, which leads to better involvement and results. This method helps clients connect therapy with their spiritual and cultural beliefs while also making the most of digital health tools. Digital platforms and therapies are still not used enough, but they have the potential to provide culturally sensitive care that meets religious concerns.

Further, in this study, the use of statistical analyses (MANOVA test, Pearson test, and Spearman test) has shown that the greater the distress Muslim students experience, the more they find the Muslim-oriented app relevant, helpful, and usable to them.

Conceptually, the app is built upon this understanding, providing a spiritually themed User-Centered Design framework (UCD). The initial acceptance data suggest that it aligns with Islamic values while expanding the scope of mental health support beyond conventional structures. The intervention, incorporating Islamic sciences alongside best therapy practices, would help in fewer stigmatizations, greater accessibility, and foster engagement among students who are discouraged from seeking in-house services [13], [14]. However, despite these strengths, the proposed app remains theoretical in nature and requires further developmental initiatives. The following phases would include user testing, design sketching/refinement, and validating the relevance, usability, and acceptability of content, alongside pilot trials and field experimentation for potentiating its eventual implementation with a larger range of Muslim student populations across various cultural settings [14]. In summary, the study presses the urgent demand for culture- and spirituality-aware digital interventions for Muslim students in higher education. By bringing together psychological science and religious identity, Islamic-based digital therapeutics present a strong hope for an inclusive and stigma-free mental health support system.

6. Study Limitation

The study shows promise, yet limitations loom. First and foremost, the use of convenience sampling, though suitable during the study time, renders the results not generalizable beyond participating institutions. Future studies should apply probability sampling or recruit from more institutions to attain higher representativeness. Second, the given app is but a concept and specification: it remains furthest from a low-fidelity prototype model without a trial in usability testing in a real environment. Hence, the real behavioral impact and the engagement metrics on users could not be empirically validated in this very study. Third, the cross-sectional nature of the study limits the ability to ascertain cause-and-effect relationships or view changes over time. Therefore, to fortify the results, future attempts shall consider longitudinal approaches alongside pilot trials for the measurement of app usage over time, issues regarding changes in mental health outcomes, and refinement of features based on collected feedback. Lastly, faux self-disclosure and perceived app impressiveness can lead to bias, thereby requiring some sort of multi-modal validation technique, with a side of behavior tracking within the app and clinician-rated outcomes.

7. Conclusions

The modern design of a digital therapeutics solution is on Muslims particular university students. It combines Islamic practices and evidence-based interventions within the context of mental health to provide an avenue through which the distinct needs of students are effectively integrated to provide a culture-sensitive and accessible platform to manage one's health challenges, particularly with respect to academic pressure and the stigma surrounding such. The proposed design provides evidence of being a first step in creating a tool that would help Muslims gain a mental health support mechanism that seeks to fit in with their religious and cultural integrity. This would cover both spiritual practices such as dhikr and dua, and psychological techniques like cognitive-behavioral strategies, designed comprehensively for well-being; this becomes very important in confronting the deficiencies of being a Muslim student and making mental health support culturally appropriate and less stigmatized. The proposed design may appear realistic, but there is a need to have user testing and iterative design approaches for getting refined features and the app's record of effectiveness. Future research should emphasize pilot studies that can be designed to measure the real-life impact of this design concerning increased use and mental health outcomes. It would also make it possible to consider similar efforts for other religious or cultural groups, which may offer more insights into the universal application of such studies. Therefore, this research reflects the need for culturally appropriate mental health solutions in the context of a university where students face unique pressures.

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Authors Contribution

Murni Mahmud: Conceptualization, Formal analysis, Visualization, Supervision, Writing – review & editing.
Nahreen Zannat: Methodology, Data curation, Writing – original draft, Software, Resources, Writing – review & editing.

Conflict of Interest
The authors declare no conflicts of interest.

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