

# Addressing Diabetes Distress and Usability in Arabic mHealth: User Experience, Psychological Reassurance, and Age-Related Dynamics

Zahraa Alkhafaje<sup>1\*</sup>, Fadya Al-Hamadani<sup>2</sup> and Anmar Thiaa Aldeen<sup>3</sup>

<sup>1</sup>Clinical Pharmacy Department, College of Pharmacy, Al-Farahidi University, Baghdad, Iraq.

<sup>2</sup>Clinical Pharmacy Department, College of Pharmacy, University of Baghdad, Baghdad, Iraq.

<sup>3</sup>Diabetes and Endocrinology Center, Al-Kindi Teaching Hospital, Baghdad, Iraq.

\*Corresponding Author E-mail: Zahraa.khafaji92@gmail.com

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Daily diabetes management requires more than simple adherence to a routine; it involves ongoing cognitive and emotional effort that frequently leads to diabetes-related distress. While smartphone applications offer potential solutions for alleviating this burden through streamlined self-monitoring and emotional support, there remains a notable scarcity of mHealth tools tailored for Arabic-speaking users. To address this, a cross-sectional study was performed at the Endocrinology and Diabetes Center in Al-Rusafa, Baghdad, Iraq, involving 76 adult patients. Participants were divided into three age groups (30–45, 46–60, and 61–75 years) to assess the “Edarat Alsukari” app, focusing on its usability, cognitive demand, and variations in user experience across different ages. Following a six-month usage period, the 18-item mHealth App Usability Questionnaire (MAUQ) was administered. Respondents generally provided positive ratings (mean = 5.37, SD = 0.3). The app performed particularly well regarding its operational functionality, specifically in Ease of Use (mean = 5.94) and Interface and Satisfaction (mean = 5.40), which helped minimize technological fatigue. Conversely, perceived usefulness scores were moderate (mean = 4.86). The evaluation highlighted two distinct limitations: inadequate integration with healthcare services (mean = 1.72) and a lack of progress acknowledgment (mean = 2.49), indicating insufficient clinical connectivity. Although sex did not significantly impact usability ratings, perceived usefulness demonstrated a consistent decline among older demographics (dropping from 5.30 in the 30–45 age bracket to 4.62 in the 61–75 cohort). In summary, although “Edarat Alsukari” provides a highly accessible user interface for the Arabic-speaking demographic, the absence of interactive feedback mechanisms and direct medical connectivity restricts its ability to deliver psychological reassurance. This drawback is predominantly experienced by older users.

**Keywords:** Age Variations; Cognitive Accessibility; Diabetes Distress; MAUQ; MHealth; Psychological Reassurance.

In recent years, the widespread adoption of smartphones has transformed mobile health applications into essential components of chronic disease management.<sup>1</sup> When effectively

implemented, these digital resources facilitate uninterrupted self-tracking, supply crucial medical education, and empower individuals to actively participate in their treatment protocols.<sup>2</sup>

However, coping with a lifelong disease such as diabetes transcends basic physical compliance. It demands continuous cognitive vigilance and significant emotional strength—a psychological toll frequently characterized in clinical research as “diabetes distress.” Inadequately designed technological interventions can exacerbate this condition by introducing unnecessary cognitive strain and digital fatigue into a patient’s daily life. Conversely, carefully optimized applications can streamline disease management, minimize mental load, and provide a sense of emotional security rather than becoming a burdensome obligation.

Despite the rapid expansion of the global mobile health sector, there is a persistent lack of platforms specifically customized for the linguistic and cultural nuances of Arabic-speaking communities, leading to reliance on poorly localized mHealth interfaces that fail to address regional linguistic, clinical, and cultural nuances. Within the Iraqi healthcare landscape specifically, individuals managing type 2 diabetes frequently encounter substantial hurdles related to self-management education and routine clinical practices. Furthermore, research underscores the critical necessity of accurately assessing and enhancing both the quality of life and the reliability of medication adherence among this specific patient demographic. Recent clinical investigations have proven that integrating pharmacist-directed teleconsultations with targeted mHealth applications can markedly optimize glycemic outcomes, specifically HbA1c levels,<sup>11</sup> while simultaneously boosting self-care behaviors and overall life quality in Iraqi patients.<sup>12</sup> The “Edarat Alsukari” Android application was engineered to address this exact deficiency by offering native-language support to diabetic patients.<sup>13</sup> The ultimate effectiveness of such digital tools, however, relies intrinsically on user acceptance and practical intuitiveness. To systematically measure these factors, the mHealth App Usability Questionnaire (MAUQ) serves as a standardized metric for evaluating functional simplicity, interface satisfaction, and the user’s perception of the application’s overall value.

Demographics—particularly age—play a critical role in dictating how individuals interact with digital health interfaces. Older populations generally face more complex chronic health

challenges and theoretically possess the highest potential to benefit from mHealth interventions. Nevertheless, a widespread lack of digital literacy among older diabetics, combined with age-related functional barriers, creates a significant “digital divide”. Nevertheless, diminished digital fluency and functional barriers often create a “digital divide,” causing senior patients to view mobile platforms as tedious chores rather than supportive resources. Consequently, analyzing age-related differences in user experience is a foundational requirement for refining and maximizing the impact of these digital health interventions.<sup>13</sup>

The current investigation seeks to measure the usability, user satisfaction, and perceived clinical utility of the “Edarat Alsukari” application among Arabic-speaking individuals diagnosed with diabetes.<sup>13</sup> By stratifying responses across distinct age brackets and interpreting the findings through a biopsychosocial framework, this research aims to illuminate how specific software design elements influence both practical navigation and the actual psychological comfort derived by the patients.<sup>13</sup>

#### **Literature Review**

Mobile health (mHealth) technologies have established a pivotal role in chronic disease self-management, particularly for Type 2 Diabetes Mellitus (T2DM), where continuous cognitive, behavioral, and emotional self-monitoring frequently leads to diabetes distress. Although mHealth interventions have proven effective at enhancing self-care behaviors and clinical outcomes, significant disparities persist in regional platform availability and linguistic and cultural localization. Within Arabic-speaking populations across the Middle East, a shortage of culturally and linguistically customized mHealth tools forces reliance on generic or poorly localized interfaces, which limits patient engagement and undermines clinical utility.

Application usability and user experience (UX) are primary determinants of long-term technology adoption in digital health. Validated evaluation frameworks, such as the mHealth App Usability Questionnaire (MAUQ), assess essential domains including ease of use, interface satisfaction, and perceived clinical usefulness. However, user perception across these domains is significantly moderated by demographic variables, particularly age and digital literacy. Older adults

frequently encounter physical, visual, and cognitive friction during app interaction—a challenge highlighted in aging-focused usability models such as the MOLD-US framework. While operational usability ratings often show minimal variance across gender and sex, broader sociotechnical dynamics influence overall technology acceptance. Synthesizing these factors underscores the necessity of evaluating localized mHealth tools through a multidimensional lens that accounts for age-related dynamics and psychological reassurance alongside traditional usability metrics.

## MATERIALS AND METHODS

### Study Design, Setting, and Participants

A cross-sectional evaluation was conducted at the Endocrinology and Diabetes Center located in Baghdad's Al-Rusafa district, Iraq. The study was carried out over a six-month duration, spanning from October 2023 to March 2024. The evaluation cohort consisted of 76 active Android users with a documented medical diagnosis of diabetes, recruited via convenience sampling during routine outpatient visits. The baseline demographic characteristics and eligibility criteria for the participant sample are summarized in Table 1.

### Instrument

Following an uninterrupted six-month trial period, users evaluated the “Edarat Alsukari” platform utilizing the validated 18-item mHealth App Usability Questionnaire (MAUQ). Participants rated each statement on a 7-point Likert scale, ranging from 1 (“Strongly Disagree”) to 7 (“Strongly Agree”). The questionnaire is structured around three primary domains:

- **Ease of Use (5 items):** Measures functional straightforwardness and the reduction of cognitive barriers.
- **Interface and Satisfaction (7 items):** Gauges visual presentation, navigational fluidity, and generalized user comfort.
- **Usefulness (6 items):** Assesses the subjective clinical benefit, the quality of digital feedback, and integration with healthcare systems.

### Data Analysis

Statistical evaluations were performed to generate descriptive data, including means, standard deviations, frequencies, and percentages

for individual questionnaire statements, domain subscales, and the aggregate usability score. The resulting subscale metrics were categorized as Low (1.00–3.00), Moderate (3.01–5.00), or High (5.01–7.00). Subsequent subgroup testing was applied to observe score fluctuations based on sex and age distributions.

## RESULTS

### Overall Usability and Subscale Performance

The general reception of the “Edarat Alsukari” application was highly positive, yielding an aggregate total usability index mean rating of 5.37 (SD = 0.3). To evaluate performance, the 18 questionnaire items were grouped into three core evaluation Variables: *Ease of Use* (Items 1–5), *Interface and Satisfaction* (Items 6–12), and *Usefulness* (Items 13–18). Composite scores for each Variable were calculated as the arithmetic mean of all constituent items in that group per participant, whereas individual item scores reflect standalone statement ratings.

When evaluating the primary Variables, the platform excelled predominantly in operational functionality. The *Ease of Use* composite variable achieved the highest rating (mean = 5.94, SD = 0.4; High), closely followed by *Interface and Satisfaction* (mean = 5.40, SD = 0.3; High). Alternatively, the *Usefulness* composite variable scored lower, falling into the moderate category (mean = 4.86, SD = 0.5), as detailed in Table 2.

### Item-Level Usability Analysis

An examination of individual statements revealed distinct trends: users demonstrated high satisfaction with interface fluidity and expressed a strong likelihood of continued app usage, but identified notable deficiencies regarding clinical connectivity and automated feedback. Because Table 3 details standalone statement ratings, individual item scores differ mathematically from the aggregated composite Variable means reported in Table 2.

For example, while the overall *Ease of Use* composite variable averaged 5.94, individual statement ratings within this domain ranged from 5.19 for learning facility (Item 2) to 6.68 for navigational consistency across screens (Item 3). Similarly, within the *Interface and Satisfaction* domain (composite mean = 5.40), individual item

**Table 1.** Baseline Demographic and Input Characteristics of Study Participants (N = 76)

| Characteristic / Parameter | Sub-category            | Frequency (n) / Value                                      | Percentage (%) / Range |
|----------------------------|-------------------------|------------------------------------------------------------|------------------------|
| Study Duration             | Data Collection Window  | October 2023 – March 2024                                  | 6 Months               |
|                            | Clinical Center         | Al-Rusafa Endocrinology Center, Baghdad                    | Single-center          |
| Location                   | Male                    | 38                                                         | 50.0%                  |
|                            | Female                  | 38                                                         | 50.0%                  |
| Sex                        | 30–45 Years             | 8                                                          | Young Cohort           |
|                            | 46–60 Years             | 56                                                         | Middle Cohort          |
|                            | 61–75 Years             | 12                                                         | Senior Cohort          |
| Age Distribution           | Operating System        | Android OS                                                 | 100%                   |
|                            | Medical Status          | Documented T2DM Diagnosis                                  | Required               |
| Device & Software OS       | Technical Requirements  | Personal Android Smartphone Ownership                      | Required               |
|                            | Functional Capabilities | Sufficient visual and cognitive ability for app usage      | Required               |
| Inclusion Criteria         | Institutional Committee | University of Baghdad-College of Pharmacy Ethics Committee | Required               |
| Ethical Approval           |                         |                                                            | Ref: 2023/104          |

scores varied from social setting comfort (Item 9, mean = 4.41) to temporal efficiency (Item 10, mean = 6.59) and repeat usage intent (Item 11, mean = 6.78).

The lowest individual scores occurred within the *Usefulness* domain, specifically concerning healthcare access improvement (Item 14, mean = 1.72, SD = 0.6) and progress acknowledgment (Item 8, mean = 2.49, SD = 1.0). A comprehensive breakdown of all 18 standalone items is displayed in Table 3.

### Demographic Variations in Usability

Sex-based differences in usability perception were negligible. Both men (mean = 5.36, SD = 0.3) and women (mean = 5.38, SD = 0.3) indicated similarly high levels of overall satisfaction, sharing identical categorizations across all evaluated subscales (Table 4).

Age distributions, however, revealed a divergent pattern. Although metrics for Ease of Use and Interface and Satisfaction remained robust across all age brackets, perceptions of Usefulness declined sequentially with advancing age. Individuals in the youngest cohort (30–45 years) categorized the app's utility as High (mean = 5.30), whereas the middle (46–60 years) and senior (61–75 years) groups rated it as Moderate (means of 4.79 and 4.62, respectively). Consequently, total usability averages mirrored this age-related decline, as illustrated in Table 5.

### Response Frequency Distribution

An analysis of response frequencies corroborated the statistical averages. A significant majority, 60 participants (78.9%), strongly agreed they would continue using the software (Item 11). In contrast, 49 individuals (64.5%) disagreed, and 25 (32.9%) strongly disagreed that the platform successfully expanded their access to clinical care providers (Item 14). Table 6 outlines the complete response distribution for these highlighted items.

## DISCUSSION

### The Usability-Utility Gap and Psychological Reassurance

A primary observation from this study is the distinct discrepancy between the app's strong operational performance and its perceived utility among patients. Users reported minimal cognitive strain while navigating the application (Ease of

Use mean = 5.94). This type of predictable layout and visual coherence is fundamentally critical for mitigating digital anxiety, allowing users to perform necessary tasks without feeling cognitively overburdened.

However, the application exhibited significant shortcomings regarding its psychosocial and medical benefits. Effective diabetes management is intricately linked to continuous

self-assessment and prevalent emotional fatigue. Individuals utilize mobile health platforms not merely for data entry, but to seek reassurance and maintain a psychological bridge to their medical providers.v Because “Edarat Alsukari” functions primarily as an isolated digital diary rather than a networked clinical care portal, its design limitations are clearly reflected in the negative evaluations of healthcare accessibility (Item 14 mean = 1.72)

**Table 2.** MAUQ Performance Across Core Evaluation Variables (N = 76)

| Variables                  | Constituent Items | Composite Mean | Composite SD | Classification Level |
|----------------------------|-------------------|----------------|--------------|----------------------|
| Ease of Use                | 5 (Items 1–5)     | 5.94           | 0.4          | High                 |
| Interface and Satisfaction | 7 (Items 6–12)    | 5.40           | 0.3          | High                 |
| Usefulness                 | 6 (Items 13–18)   | 4.86           | 0.5          | Moderate             |
| Total Usability Index      | 18 (Items 1–18)   | 5.37           | 0.3          | High                 |

**Table 3.** Descriptive Statistics of Standalone Questionnaire Items (N = 76)

| Item No. | Standalone Questionnaire Statement                                 | Target Variable Domain   | Mean | SD  |
|----------|--------------------------------------------------------------------|--------------------------|------|-----|
| 1        | The app was easy to use.                                           | Ease of Use              | 5.22 | 1.0 |
| 2        | It was easy for me to learn to use the app.                        | Ease of Use              | 5.19 | 1.2 |
| 3        | The navigation was consistent when moving between screens.         | Ease of Use              | 6.68 | 0.4 |
| 4        | The interface allowed me to use all functions effectively.         | Ease of Use              | 6.58 | 0.5 |
| 5        | Whenever I made a mistake, I could recover easily and quickly.     | Ease of Use              | 6.01 | 0.9 |
| 6        | I like the interface of the app.                                   | Interface & Satisfaction | 5.78 | 1.2 |
| 7        | Information was well organized and easy to find.                   | Interface & Satisfaction | 5.96 | 1.1 |
| 8        | The app adequately acknowledged and informed me of my progress.    | Interface & Satisfaction | 2.49 | 1.0 |
| 9        | I feel comfortable using this app in social settings.              | Interface & Satisfaction | 4.41 | 0.6 |
| 10       | The amount of time involved in using this app was fitting.         | Interface & Satisfaction | 6.59 | 0.5 |
| 11       | I would use this app again.                                        | Interface & Satisfaction | 6.78 | 0.4 |
| 12       | Overall, I am satisfied with this app.                             | Interface & Satisfaction | 5.76 | 0.9 |
| 13       | The app would be useful for my health and well-being.              | Usefulness               | 6.32 | 0.9 |
| 14       | The app improved my access to healthcare services.                 | Usefulness               | 1.72 | 0.6 |
| 15       | The app helped me manage my health effectively.                    | Usefulness               | 4.85 | 1.1 |
| 16       | The app has all the functions and capabilities expected.           | Usefulness               | 5.75 | 0.9 |
| 17       | I could use the app even when the internet connection was poor.    | Usefulness               | 5.55 | 1.3 |
| 18       | The app provides an acceptable way to receive healthcare services. | Usefulness               | 4.97 | 1.2 |

**Table 4.** MAUQ Scores Comparison by Sex

| Subscale                 | Male<br>(Mean $\pm$ SD) | Male<br>Level | Female<br>(Mean $\pm$ SD) | Female<br>Level |
|--------------------------|-------------------------|---------------|---------------------------|-----------------|
| Ease of Use              | 5.90 $\pm$ 0.4          | High          | 5.98 $\pm$ 0.5            | High            |
| Interface & Satisfaction | 5.46 $\pm$ 0.3          | High          | 5.34 $\pm$ 0.4            | High            |
| Usefulness               | 4.81 $\pm$ 0.4          | Moderate      | 4.90 $\pm$ 0.5            | Moderate        |
| Total Score              | 5.36 $\pm$ 0.3          | High          | 5.38 $\pm$ 0.3            | High            |

**Table 5.** MAUQ Scores Comparison by Age Groups

| Subscale                 | 30–45 Years    | Level | 46–60 Years    | Level    | 61–75 Years    | Level    |
|--------------------------|----------------|-------|----------------|----------|----------------|----------|
| Ease of Use              | 6.45 $\pm$ 0.3 | High  | 5.89 $\pm$ 0.4 | High     | 5.60 $\pm$ 0.4 | High     |
| Interface & Satisfaction | 5.47 $\pm$ 0.3 | High  | 5.43 $\pm$ 0.4 | High     | 5.20 $\pm$ 0.3 | High     |
| Usefulness               | 5.30 $\pm$ 0.2 | High  | 4.79 $\pm$ 0.4 | Moderate | 4.62 $\pm$ 0.5 | Moderate |
| Total Score              | 5.69 $\pm$ 0.1 | High  | 5.35 $\pm$ 0.2 | High     | 5.13 $\pm$ 0.3 | High     |

**Table 6.** Response Frequency Across 7-Point Likert Scale (N = 76)

| Item    | Strongly<br>Disagree<br>(%) | Disagree<br>(%) | Somewhat<br>Disagree<br>(%) | Neutral<br>(%) | Somewhat<br>Agree<br>(%) | Agree<br>(%) | Strongly<br>Agree<br>(%) |
|---------|-----------------------------|-----------------|-----------------------------|----------------|--------------------------|--------------|--------------------------|
| Item 3  | 0 (0.0)                     | 0 (0.0)         | 0 (0.0)                     | 0 (0.0)        | 0 (0.0)                  | 24 (31.6)    | 52 (68.4)                |
| Item 8  | 16 (21.1)                   | 22 (28.9)       | 23 (30.3)                   | 15 (19.7)      | 0 (0.0)                  | 0 (0.0)      | 0 (0.0)                  |
| Item 11 | 0 (0.0)                     | 0 (0.0)         | 0 (0.0)                     | 0 (0.0)        | 1 (1.3)                  | 15 (19.7)    | 60 (78.9)                |
| Item 14 | 25 (32.9)                   | 49 (64.5)       | 0 (0.0)                     | 2 (2.6)        | 0 (0.0)                  | 0 (0.0)      | 0 (0.0)                  |

x and progress acknowledgment (Item 8 mean = 2.49). In the absence of responsive feedback mechanisms, an observational tracking app can easily devolve into an additional chore, failing to alleviate disease-induced stress. To bridge this usability-utility gap, future mHealth platforms must incorporate strategic user engagement frameworks. Specifically, proactive cognitive load reduction—achieved through automated data entry, streamlined navigation, and clutter-free summaries—can prevent user fatigue.<sup>22</sup> Furthermore, integrating Just-In-Time Adaptive Interventions (JITAI) enables the delivery of personalized behavioral prompts and clinical support at critical decision-making points (such as during glucose spikes or planned meal times).<sup>22</sup> Finally, incorporating empathetic gamification mechanics (such as supportive progress badges, milestone celebrations, and non-judgmental messaging) can enhance

intrinsic motivation and emotional reassurance without inducing anxiety or compliance pressure.<sup>23</sup>

#### Age Dynamics and Cognitive Accessibility

The perceived value of the application decreased inversely with age, dropping from a high of 5.30 in the youngest demographic to 4.62 in the oldest cohort. This trajectory perfectly mirrors trends documented in extensive digital health research. Older patients frequently navigate intricate pharmacological regimens alongside deeply ingrained lifestyle routines.<sup>12</sup> Consequently, when presented with a platform that passively logs metrics without generating actionable insights or linking directly to their physicians, these older individuals correctly perceive a lower return on their digital investment.

Conversely, patients aged 30 to 45—who possess greater baseline comfort with smartphone analytics—derived tangible benefits

from the app's self-tracking mechanics. To optimize accessibility dynamics for older diabetics, software architectures must explicitly address age-related visual, physical, and cognitive changes. Physical adjustments and visual enhancements—including scalable typography, high-contrast color palettes, enlarged touchable targets, and generous white space—are vital to alleviate visual strain and precision challenges. In parallel, incorporating cognitive scaffolding (such as step-by-step visual onboarding, contextual tooltips, conversational voice assistance, and structured task prompts) can guide senior users seamlessly through multi-step workflows. To effectively cater to senior populations, who experience greater morbidity yet higher digital apprehension, future software iterations must transition from static data storage to dynamic care extensions. Such tools must feature automated, encouraging feedback loops and seamless communication channels with medical professionals.

#### **Sex-Gender Dynamics and Physical/Hardware Considerations**

In analyzing the broader determinants of mobile health adoption, sex and gender dynamics play a nuanced role. In the present study, overall usability ratings between male (mean = 5.36, SD = 0.3) and female (mean = 5.38, SD = 0.3) participants were virtually identical across all evaluated variables. This lack of gender disparity aligns with emerging digital health literature suggesting that when mobile applications offer equivalent operational simplicity, functional usability barriers are minimized across sexes. However, gender-specific sociotechnical factors—such as varying health-seeking behaviors, household caregiving burdens, and differing health literacy levels—can subtly influence how men and women integrate continuous digital self-monitoring into their daily routines. Tailoring mHealth features to accommodate these social dynamics can further optimize long-term engagement for both men and women.

Beyond software usability and disease management, the clinical integration of mHealth ecosystem components—including smartphones, Bluetooth-enabled continuous glucose monitors, handsfree equipment, and wearable digital sensors—introduces concurrent health considerations.<sup>3</sup> While these hardware peripherals

enable seamless automated data capture, excessive or prolonged reliance on mobile digital devices can trigger unexpected physiological and psychological side effects. High screen exposure and continuous interaction with mobile interfaces frequently cause digital eye strain, visual fatigue, and musculoskeletal stiffness. Furthermore, constant peripheral connectivity and repetitive notification alerts can generate digital fatigue, heightened stress, and cognitive overwhelm, potentially worsening the very diabetes distress the application aims to alleviate. Developers and clinicians must therefore balance technological convenience with physical ergonomics, promoting balanced usage patterns, muted passive alerts, and streamlined hardware synchronization to prevent physical discomfort and digital fatigue.

#### **Limitations**

Certain methodological constraints must be acknowledged. Primarily, the sample size was limited to 76 subjects from a single clinical facility in Baghdad. Furthermore, the reliance on convenience sampling introduces potential selection bias, as participants recruited during clinic visits may possess higher baseline health motivation or digital device familiarity than the broader population of diabetic patients. Additionally, the absence of a control group receiving standard care or an alternative intervention limits the ability to establish definitive causal inference regarding the app's isolated impact, thereby constraining the external validity of the conclusions. Thereby restricting the broader epidemiological generalizability of the conclusions. Furthermore, the cross-sectional framework only measured subjective user sentiment at a specific temporal juncture, omitting long-term clinical data such as sustained glycemic control (HbA1c levels) or quantifiable changes in psychological distress. Subsequent investigations should adopt longitudinal designs to determine how interface optimizations directly impact biochemical markers and mental wellness over extended durations.

#### **CONCLUSION**

In summary, the “Edarat Alsukari” platform delivers an accessible and highly intuitive interface, effectively minimizing the navigational effort required by Arabic-speaking patients

managing diabetes. However, a significant gap remains between this operational simplicity and the application's subjective clinical value. Because the software lacks active progress reinforcement and direct communication channels with medical professionals, its capacity to alleviate disease-related anxiety is substantially restricted. This limitation is particularly detrimental to older users, who typically experience higher levels of diabetes distress. Moving forward, if mobile health interventions are to successfully support chronic care, developers must prioritize integrating real-time clinical feedback, telehealth connectivity, and robust support networks. Implementing these features will ensure that digital health tools mitigate psychological burdens for all age groups, rather than solely benefiting younger, digitally fluent populations.

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#### Conflict of Interest

The authors have no conflicts of interest.

#### Data Availability Statement

The manuscript incorporates all datasets produced or examined throughout this research study.

#### Ethics Statement

The study protocol was reviewed and approved by the University of Baghdad-College of Pharmacy Research Ethics Committee (Ref/ Approval Number: 2023/104).

#### Informed Consent Statement

Informed consent was obtained from all participants before screening, and it conforms to the standards currently applied in the country of origin. The privacy rights of human subjects must always be observed.

#### Clinical Trial Registration

This research does not involve any clinical trials.

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Not Applicable.

#### Author Contributions

Zahraa Alkhafaje: Conceptualization, methodology, investigation, patient recruitment coordination, data curation, formal analysis, visualization, writing—original draft preparation, writing—review and editing, and project administration; Fadya Al-Hamadani: Methodology, formal analysis, statistical analysis, validation, interpretation of data, writing—review and editing, and supervision; Anmar Thiaa Aldeen: Clinical investigation, patient recruitment, participant eligibility assessment, clinical supervision, resources, data acquisition, writing—review and editing, and supervision.

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