Al-Farouk journal of sciences
Volume (2), Issue (3) (JUNE, 2026)
ISSN: 3135-2359

مجلة الفاروق للعلوم
المجلد (2) العدد 3 يونيو 2026
ردمد: 3135-2359

Design and Usability Evaluation of a Voice-Enabled Healthcare Appointment Booking Prototype for Older Adults in Libya: A Preliminary Usability Study

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تاريخ الاستلام: 2026/04/20 تاريخ المراجعة 2026 /05/20 تاريخ القبول:2026/06/01- تاريخ النشر: 2026 /06/15

ABSTRACT
The increasing adoption of mobile healthcare applications has transformed how patients access healthcare services, communicate with healthcare providers, and schedule medical appointments. Despite these advancements, older adults often encounter challenges when interacting with healthcare applications due to age-related changes in vision, memory, motor skills, and limited familiarity with digital technologies. Voice-enabled interfaces have emerged as a promising approach to improve accessibility and simplify user interaction. This study presents the design and usability evaluation of a voice-enabled healthcare appointment booking prototype developed specifically for older adults in Libya. The prototype was designed using Figma and incorporated a conceptual voice interaction mechanism intended to support appointment scheduling through a simplified interaction process. A usability evaluation was conducted involving eleven participants aged 50 years and above. Data were collected using a structured questionnaire that assessed ease of use, interface clarity, user understanding, interaction preferences, and perceived usefulness. The findings indicate that 81.8% of participants considered the prototype easy or very easy to use, while 90.9% reported that the interface elements were clear and understandable. Most participants completed the interaction process without significant difficulties. Although participants did not exclusively prefer voice interaction, many expressed interest in combining voice and touch-based interaction methods. The study demonstrates the potential of voice-enabled design concepts to improve healthcare accessibility for older adults and provides preliminary evidence supporting the future development of voice-oriented healthcare applications within the Libyan context.
KEYWORDS: Voice User Interface, Healthcare Applications, Older Adults, Usability Evaluation, Human–Computer Interaction, Accessibility, Appointment Booking, Libya.

Introduction

Digital transformation has significantly influenced healthcare delivery worldwide. Mobile healthcare applications have become important tools for facilitating communication between patients and healthcare providers, supporting appointment scheduling, enabling telemedicine services, and providing access to health-related information. As healthcare systems increasingly rely on digital technologies, ensuring that healthcare applications remain accessible and usable for all population groups has become a critical design challenge [1].

Older adults represent one of the user groups that may experience difficulties when interacting with mobile healthcare applications. Age-related changes in visual perception, cognitive processing, memory, and motor abilities can negatively affect the ability to navigate complex interfaces and complete digital tasks efficiently [1], [2]. Consequently, interface design plays a

vital role in determining whether healthcare technologies are successfully adopted by older users.

Healthcare appointment booking is among the most commonly used functions within healthcare applications. However, appointment scheduling often requires users to navigate multiple screens, interpret interface elements, and complete several touch-based interactions. These requirements may create barriers for older adults, particularly those with limited experience using smartphones and mobile applications [1].

Recent developments in Voice User Interfaces (VUIs) have introduced new opportunities for improving accessibility and usability. Voice-enabled interaction allows users to communicate with digital systems using spoken language rather than relying exclusively on graphical controls. Previous studies have suggested that voice interaction can reduce physical effort, simplify task completion, and provide a more natural communication mechanism for older users [2], [3].

Research investigating voice-enabled technologies among older adults has reported positive outcomes related to ease of use, accessibility, and technology acceptance. Voice assistants and speech-based systems have been applied in areas such as information retrieval, medication reminders, home assistance, and healthcare support services [3], [4]. Nevertheless, the adoption of voice interaction within healthcare appointment-booking applications remains relatively underexplored, particularly in developing countries.

In Libya, healthcare applications have gained increasing attention in recent years. Platforms such as Speetar Health provide appointment booking and telemedicine services through mobile applications. Although these platforms offer valuable healthcare functionality, they primarily rely on conventional graphical interaction methods and are generally designed for broad user populations rather than specifically addressing the needs of older adults.

To address this challenge, this study proposes a voice-enabled healthcare appointment booking prototype developed using Figma. Unlike fully implemented voice-controlled systems, the proposed prototype represents a conceptual voice interaction design intended to evaluate user perceptions and usability characteristics during the early stages of development. The study focuses on understanding how older adults perceive a voice-enabled appointment-booking interface and whether such an approach may contribute to improved accessibility.

A usability evaluation was conducted involving eleven participants from older age groups in Libya. Participants interacted with the prototype and completed a questionnaire designed to assess ease of use, interface clarity, interaction preferences, and perceived usefulness. The findings contribute to the growing body of research on healthcare usability and voice interaction while providing context-specific insights from Libya, where research on voice-enabled healthcare interfaces remains limited.

The remainder of this paper is organized as follows. Section II reviews relevant literature on healthcare applications, voice user interfaces, and accessibility for older adults. Section III describes the research methodology and evaluation process. Section IV presents the proposed system design. Section V discusses the study results. Sections VI, VII, and VIII present the discussion, limitations, and future work, respectively. Finally, Section IX concludes the paper.

Related Work

Mobile Healthcare Applications for Older Adults

Mobile healthcare (mHealth) applications have become an important component of modern healthcare systems. These applications support a wide range of healthcare services, including appointment scheduling, medication management, health monitoring, patient-provider communication, and telemedicine. The widespread adoption of smartphones has accelerated the use of mHealth solutions, enabling healthcare services to become more accessible and convenient for many users [1], [5].

Despite their advantages, healthcare applications often present usability challenges for older adults. Age-related declines in visual acuity, motor coordination, memory, and cognitive processing can affect the ability of older users to interact efficiently with mobile interfaces [6], [7]. As a result, usability has become a critical consideration in the design and evaluation of healthcare technologies intended for aging populations.

Wang et al. [1] conducted a comprehensive review of mHealth applications designed for elderly individuals and reported that interface simplicity, clear navigation, readability, and accessibility are among the most influential factors affecting user satisfaction and technology adoption. Their findings emphasize the importance of designing healthcare applications that accommodate the specific characteristics and needs of older users.

Similarly, Fisk et al. [7] argued that technology designed for older adults should minimize cognitive workload, reduce interaction complexity, and provide intuitive navigation mechanisms. These principles have become central to accessibility-oriented healthcare application design.

Voice User Interfaces and Accessibility

Voice User Interfaces (VUIs) allow users to interact with digital systems through spoken language rather than traditional graphical controls. Advances in speech recognition and natural language processing technologies have significantly improved the effectiveness of voice-enabled interaction across various application domains [8], [9].

Compared with traditional touch-based interfaces, voice interaction may reduce the physical effort required to complete digital tasks. Users can communicate with systems through natural language commands instead of navigating complex menus and interface structures. This capability has attracted considerable interest within accessibility research.

Stigall and Caine [2] conducted a systematic review of voice user interfaces and older adults. Their findings indicated that voice interaction can support accessibility by reducing dependence on visual and motor capabilities. However, the review also highlighted the importance of designing voice interfaces that accommodate user expectations and varying levels of technological experience.

Research in human–computer interaction has increasingly emphasized multimodal interaction approaches that combine voice and graphical interfaces. Such approaches allow users to choose interaction methods according to their preferences, abilities, and situational requirements [10], [11].

Voice Assistants and Older Adults

The growing popularity of commercial voice assistants has stimulated research investigating their use among older adults. Technologies such as smart speakers and conversational agents have demonstrated potential benefits related to accessibility, convenience, and independent living.

Arnold et al. [3] reviewed the literature concerning the use of personal voice assistants among older adults and found that voice interaction can provide a more natural and accessible method of communication compared with traditional computing interfaces. The review highlighted benefits including ease of learning, reduced technological barriers, and improved accessibility.

Kokorelias et al. [4] reported similar findings in their investigation of voice-activated virtual assistants for older adults. Their study suggested that voice-enabled technologies may support independence and increase engagement when appropriately designed to address the needs of aging users.

Recent studies have also emphasized the importance of personalization, trust, privacy, and simplicity when designing voice-enabled technologies for older adults [12]. These factors influence user acceptance and long-term adoption of voice interaction systems.

Voice Technologies in Healthcare

Healthcare has emerged as one of the most promising application areas for voice-enabled interaction. Researchers have investigated the use of voice technologies for appointment scheduling, symptom reporting, medication reminders, electronic health record interaction, and healthcare self-management [13].

Kumah-Crystal et al. [13] reviewed voice-based interactions with electronic health record systems and concluded that voice technologies have the potential to improve efficiency and simplify healthcare-related tasks. Their findings suggest that voice interaction may reduce barriers associated with traditional healthcare information systems.

However, despite increasing interest in healthcare voice interfaces, relatively few studies have examined voice-enabled appointment-booking systems designed specifically for older adults.

Healthcare Applications in Libya

The healthcare sector in Libya has experienced gradual digital transformation during recent years. Mobile healthcare applications have begun providing services such as appointment scheduling, online consultations, and healthcare information management.

One example is Speetar Health, a healthcare platform that offers appointment booking and telemedicine services through mobile technologies. These services contribute to improving healthcare accessibility and reducing geographical barriers to healthcare access.

Nevertheless, existing healthcare applications primarily rely on conventional graphical user interfaces and are generally intended for broad user populations. Limited evidence currently exists regarding the integration of voice-enabled interaction within Libyan healthcare applications. Furthermore, research examining usability and accessibility issues among older Libyan users remains scarce.

Research Gap

Although previous studies have demonstrated the benefits of healthcare applications and voice-enabled technologies, several research gaps remain.

First, much of the existing literature has been conducted in technologically advanced regions, while evidence from developing countries remains limited [1], [3].

Second, although voice technologies have been investigated in healthcare contexts, relatively few studies have focused specifically on appointment-booking interfaces for older adults [13.

Third, research exploring voice-enabled healthcare interaction within Libya is extremely limited. Existing healthcare platforms primarily emphasize service delivery rather than accessibility-oriented interaction design.

Finally, few studies have evaluated conceptual voice-enabled healthcare appointment-booking systems during the early design stage using interactive prototypes. Evaluating usability before full implementation may provide valuable insights while reducing development costs and design risks.

To address these gaps, the present study proposes and evaluates a voice-enabled healthcare appointment-booking prototype specifically designed for older adults in Libya. The study focuses on usability, accessibility, and user perceptions of voice interaction within a healthcare context.

METHODOLOGY

Research Design

This study adopted a usability-oriented research approach to investigate the perceived effectiveness of a voice-enabled healthcare appointment-booking interface for older adults in Libya. The research focused on evaluating user perceptions and usability characteristics rather than assessing the technical performance of speech-recognition technologies.

A prototype-based evaluation methodology was selected because it enables researchers to assess user interaction and identify usability issues during the early stages of system development. This approach is widely used in Human–Computer Interaction research to evaluate conceptual designs before full implementation [10], [11].

Prototype Development

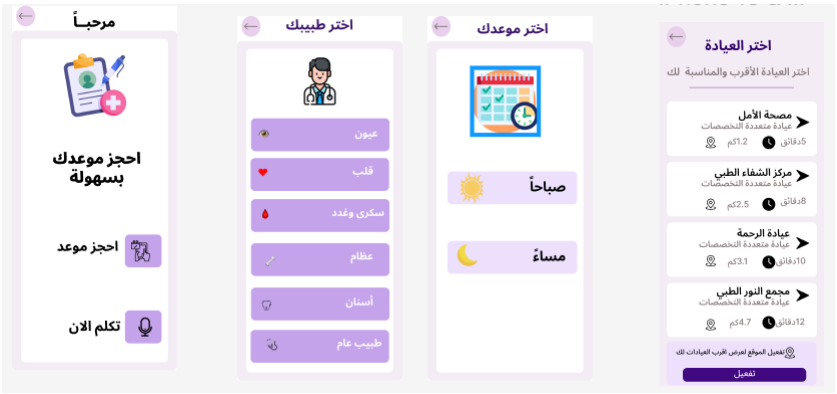
A conceptual healthcare appointment-booking prototype was designed using Figma. The prototype simulated a mobile healthcare application intended to support appointment scheduling through a simplified interaction process.

The prototype included several screens representing the complete appointment-booking workflow, including:

- Home Screen
- Medical Specialty Selection
- Clinic Selection
- Appointment Selection
- Voice Interaction Screen
- Booking Confirmation Screen
- Appointment Unavailability Screen

The design emphasized simplicity, accessibility, and ease of navigation. Large interface elements, clear labels, and reduced interaction complexity were incorporated to support older users.

Fig. 1. Main screens of the proposed healthcare appointment-booking prototype.



Voice Interaction Concept

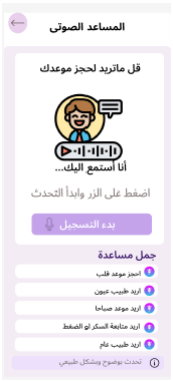
The prototype incorporated a conceptual voice interaction mechanism represented by a dedicated voice interface screen. The purpose of this feature was to demonstrate how future healthcare applications could allow users to perform appointment-booking tasks using spoken commands.

Examples of potential commands include:

- "Book an appointment."
- "Show available appointments."
- "Select cardiology."
- "Confirm appointment."

The prototype did not implement actual speech recognition or natural language processing. Instead, participants evaluated the concept and usability of voice-enabled interaction through the interactive prototype

Fig. 2. Conceptual voice-enabled interaction screen.



Participants

The usability evaluation involved eleven participants aged 50 years and above. Participants were selected to represent the target user group of older adults.

The age distribution was as follows:

- 50–59 years: 10 participants (90.9%)
- 60–69 years: 1 participant (9.1%)

No participants were above 70 years of age

Evaluation Procedure

Participants were provided with access to the Figma prototype and asked to explore the appointment-booking process. After interacting with the prototype, participants completed an online questionnaire.

The questionnaire consisted of demographic questions and usability-related questions addressing:

- Previous experience with healthcare applications
- Ease of use
- Interface clarity
- Understanding of the application
- Interaction preferences
- Perceived usefulness
- Difficulties encountered during use

Data Collection and Analysis

Data was collected using Google Forms and analyzed using descriptive statistics. Frequency and percentages were calculated to summarize participant responses.

The analysis focused on identifying usability trends and evaluating participant perceptions regarding the proposed voice-enabled healthcare appointment-booking prototype.

PROPOSED SYSTEM DESIGN

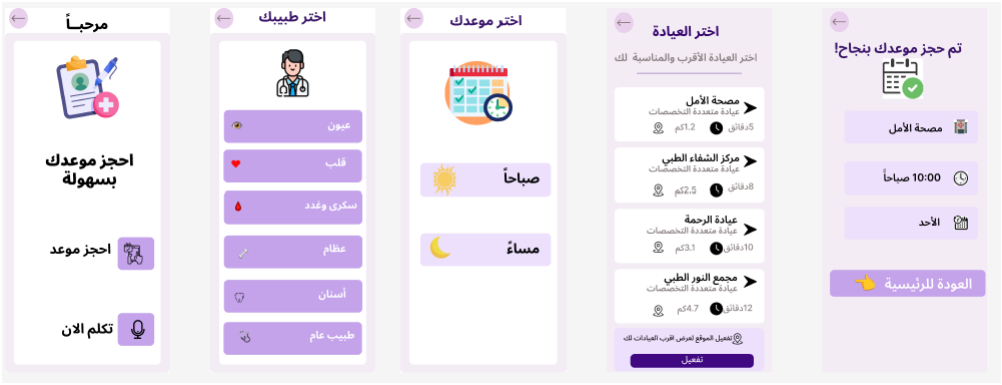
System Overview

The proposed system is a conceptual mobile healthcare application designed to simplify the appointment-booking process for older adults. The system was developed as an interactive prototype using Figma and focuses on improving usability through simplified navigation and a conceptual voice-enabled interaction mechanism.

The prototype aims to reduce the complexity commonly associated with healthcare applications by minimizing navigation steps and presenting essential functions in a clear and accessible manner. The primary objective is to assist older adults in scheduling healthcare appointments efficiently and with minimal effort.

The design process was guided by usability principles emphasizing simplicity, accessibility, consistency, and ease of learning. Special consideration was given to age-related usability challenges that may affect interaction with mobile healthcare applications.

Fig.3. Main interfaces of the proposed healthcare appointment-booking prototype, including the home screen, specialty selection, clinic selection, and appointment-booking screens.



System Architecture

The proposed prototype consists of four conceptual layers:

1. User Interface Layer

This layer provides visual interaction through screens, buttons, icons, and navigation elements. It enables users to access healthcare services and complete appointment-booking tasks.

2. Appointment Management Layer

This layer supports appointment selection, scheduling, confirmation, and management functions.

3. Voice Interaction Layer

This conceptual layer represents future integration of voice-based interaction. Users would be able to perform appointment-booking tasks through spoken commands instead of relying exclusively on touch-based interaction.

4. Feedback and Confirmation Layer

This layer provides system responses, appointment confirmations, and notifications regarding booking outcomes

User Interaction Workflow

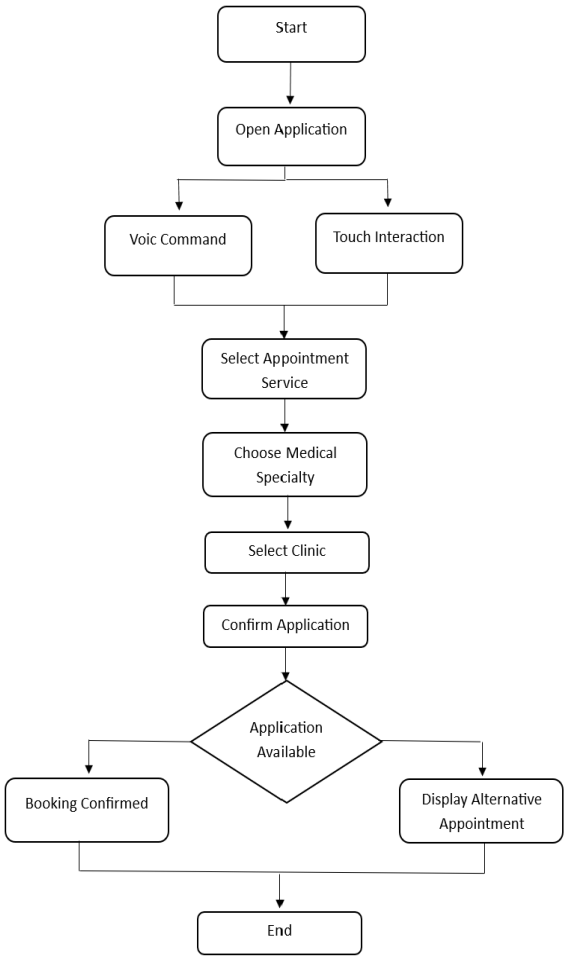
The appointment-booking workflow was intentionally simplified to reduce cognitive workload and improve usability for older adults.

The interaction process consists of the following stages:

1. Open the application.
2. Select the appointment-booking service.
3. Choose a medical specialty.
4. Select a clinic or healthcare provider.
5. Choose an available appointment date and time.
6. Confirm appointment details.
7. Receive confirmation of successful booking.

This workflow minimizes unnecessary navigation and reduces the number of actions required to complete an appointment-booking task

Fig. 4. Appointment-booking workflow of the proposed prototype.



Voice-Enabled Interaction Concept

The primary innovation of the proposed prototype is the inclusion of a conceptual voice-enabled interaction mechanism.

A microphone interface element was integrated into the design to illustrate how future healthcare applications could support voice interaction. Through this mechanism, users would be able to complete appointment-booking tasks using spoken commands.

Examples of possible commands include:

- “Book an appointment.”
- “Select cardiology.”
- “Show available appointment times.”
- “Confirm my appointment.”

Although real speech-recognition functionality was not implemented, participants were able to explore and evaluate the concept through the interactive prototype.

The purpose of this feature was to investigate user perceptions regarding the usefulness of voice-enabled healthcare interfaces for older adults.

Fig. 5. Conceptual voice-enabled interaction screen.

Usability-Oriented Design Features

Several design features were incorporated to improve usability and accessibility.

Large Interface Elements

Buttons and interactive components were designed to be visually prominent and easy to identify.

Simplified Navigation

The number of steps required to complete appointment booking was minimized.

Reduced Cognitive Load

The interface focused on essential functions while avoiding unnecessary information and visual clutter.

Accessibility Support

The voice-enabled interaction concept was introduced as an accessibility enhancement intended to support users who may experience challenges with touch-based interaction.

Familiar Interaction Patterns

The prototype followed common mobile application design conventions to reduce learning effort and improve user confidence**.**

Conceptual Comparison with Existing Healthcare Applications

Healthcare applications currently available in Libya provide valuable healthcare services, including appointment scheduling and telemedicine support. One example is Speetar Health, which offers healthcare management and communication services through a mobile platform. However, most existing applications are designed for a general user population. In contrast, the proposed prototype specifically focuses on the usability needs of older adults.

Table 1. Conceptual Comparison Between Existing Healthcare Applications and the Proposed Prototype

Feature	Existing Healthcare Applications	Proposed Prototype
Appointment Booking	Supported	Supported
Telemedicine Services	Supported	Not Included
Healthcare Records	Supported	Not Included
General User Focus	Yes	No
Older Adult Focus	Limited	Primary Focus
Voice Interaction Concept	Limited	Integrated
Usability Evaluation with Older Adults	Rarely Reported	Conducted
Figma-Based Prototype	Not Applicable	Yes

The comparison demonstrates that the primary contribution of the proposed prototype lies in its focus on usability and accessibility for older adults rather than the number of healthcare services provided.

RESULTS

Participant Demographics

A total of eleven participants took part in the usability evaluation of the proposed healthcare appointment-booking prototype. Participants belonged to older age groups and interacted with the prototype before completing the questionnaire.

Age Group	Frequency	Percentage
50–59	10	90.9%
60–69	1	9.1%
70+	0	0.0%
Total	11	100%

The majority of participants were between 50 and 59 years of age. Only one participant belonged to the 60–69 age group.

Previous Experience with Healthcare Applications

Participants were asked whether they had previously used healthcare applications.

Table 3. Previous Experience with Healthcare Applications

Response	Frequency	Percentage
Yes	**3**	**27.3%**
No	**8**	**72.7%**
Total	**11**	**100%**

Most participants had no previous experience with healthcare applications. This finding suggests that the usability evaluation involved users with limited familiarity with digital healthcare services.

Perceived Ease of Use

Participants evaluated the overall ease of using the prototype.

Table 4. Perceived Ease of Use

Response	Frequency	Percentage
Very Easy	6	54.5%
Easy	3	27.3%
Moderate	2	18.2%
Difficult	0	0.0%
Total	11	100%

A large majority of participants reported positive usability perceptions. Specifically, 81.8% rated the application as easy or very easy to use.

Interface Clarity

Participants were asked whether the interface buttons were clear and easy to use.

Table 5. Interface Clarity

Response	Frequency	Percentage
Yes	10	90.9%
To Some Extent	1	9.1%
No	0	0.0%
Total	11	100%

The results indicate a high level of satisfaction regarding interface clarity and visual design.

Preferred Interaction Method

Participants were asked about their preferred interaction method.

Table 6. Preferred Interaction Method

Interaction Method	Frequency	Percentage
Buttons	5	45.5%
Voice	2	18.2%
Both	4	36.4%
Total	11	100%

The findings suggest that participants generally preferred either traditional button-based interaction or a combination of voice and touch-based controls

User Understanding of the Application

Participants were asked whether the application was easy to understand.

Table 7. User Understanding of the Application

Response	Frequency	Percentage
Yes	9	81.8%
To Some Extent	1	9.1%
No	1	9.1%
Total	11	100%

Most participants reported that the application was easy to understand and navigate.

Difficulties Encountered During Use

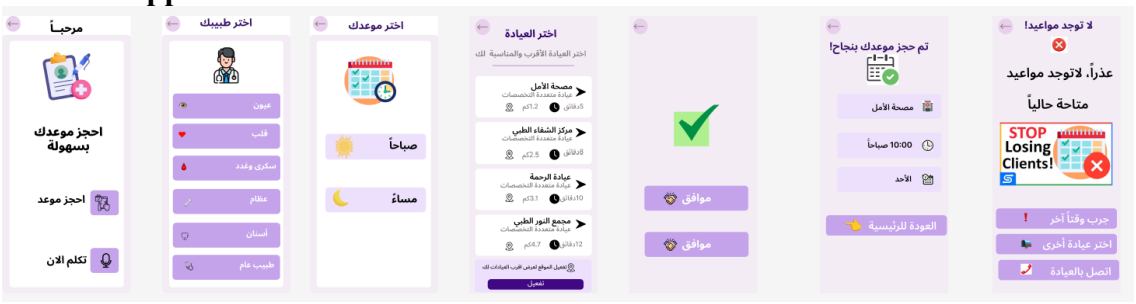
Participants were asked whether they experienced any difficulties while interacting with the prototype.

Table 8. Difficulties Encountered During Use

Response	Frequency	Percentage
No	10	90.9%
Yes	1	9.1%
Total	11	100%

The results indicate that most participants completed the evaluation without reporting significant usability problems.

Fig. 4. Prototype outcome screens showing successful appointment booking and unavailable appointment scenarios



Summary of Findings

The usability evaluation revealed several important findings:

1. Most participants had no prior experience with healthcare applications (72.7%).
2. A large majority considered the prototype easy or very easy to use (81.8%).
3. Interface clarity received highly positive evaluations (90.9%).
4. Most participants reported understanding the application without difficulty (81.8%).
5. Very few participants reported usability problems (9.1%).
6. Participants generally preferred either traditional button-based interaction or a combination of voice and touch-based interaction.

Overall, the results suggest that the proposed prototype successfully achieved its primary usability objectives and was positively received by participants

DISCUSSION

Overall Usability of the Proposed Prototype

The findings indicate that participants generally perceived the proposed healthcare appointment-booking prototype as easy to use. More than four-fifths of the participants (81.8%) rated the application as either easy or very easy to use, while none of the participants classified the system as difficult.

These findings suggest that the usability-oriented design approach adopted during prototype development was successful in reducing interaction complexity. The simplified workflow, clear

navigation structure, and accessible interface elements appear to have contributed positively to participants' experiences.

An important observation is that most participants (72.7%) had no prior experience using healthcare applications. Despite this limited experience, participants were generally able to navigate the prototype successfully and complete the appointment-booking process. This result indicates that the interface design may be suitable for users with limited technological familiarity.

Interface Clarity and User Understanding

Interface clarity is a critical factor influencing the usability of healthcare applications, particularly for older adults. The results showed that 90.9% of participants considered the interface elements clear and easy to use.

Similarly, 81.8% of participants reported that they understood how the application functioned without difficulty. These findings indicate that the design principles adopted during prototype development successfully supported user comprehension.

Large interface elements, simplified navigation paths, and reduced visual complexity likely contributed to this outcome. Previous studies have emphasized that minimizing cognitive workload and simplifying interaction processes are essential for improving accessibility among older users [1], [7].

Perceptions of Voice-Enabled Interaction

One of the primary objectives of this study was to explore user perceptions regarding voice-enabled healthcare interaction.

The results revealed that participants did not exclusively favor voice interaction. Instead, many preferred either traditional button-based interaction or a combination of voice and touch-based controls.

Specifically:

- 45.5% preferred buttons.
- 18.2% preferred voice interaction.
- 36.4% preferred a combination of both approaches.

These findings suggest that voice interaction should not necessarily replace traditional graphical interfaces. Rather, voice functionality may serve as a complementary accessibility feature that supports users according to their individual preferences and abilities.

This observation aligns with previous research suggesting that multimodal interaction approaches can improve accessibility and usability by allowing users to select the interaction method most appropriate for their needs [2], [3].

Implications for Healthcare Applications in Libya

Digital healthcare services continue to expand within Libya, creating new opportunities for improving healthcare accessibility. Existing healthcare applications provide appointment scheduling and telemedicine services; however, they are generally designed for broad user populations.

The present study highlights the potential value of integrating accessibility-oriented interaction concepts into future healthcare applications. Although the proposed prototype did not implement actual speech-recognition technologies, participants responded positively to the concept of voice-enabled interaction.

These findings suggest that future healthcare applications in Libya may benefit from incorporating voice-based accessibility features alongside conventional graphical interfaces.

Contribution to Human–Computer Interaction Research

This study contributes to the fields of Human–Computer Interaction (HCI), accessibility, and digital healthcare in several ways.

First, it provides preliminary evidence regarding user perceptions of voice-enabled healthcare interaction among older adults in Libya.

Second, it demonstrates the feasibility of evaluating healthcare accessibility concepts using interactive prototypes before full-scale implementation.
Third, it contributes context-specific findings from Libya, where research on voice-enabled healthcare interaction remains limited.
Although exploratory in nature, the study establishes a foundation for future investigations involving larger participant groups and fully functional voice-enabled healthcare systems.

LIMITATIONS

Several limitations should be considered when interpreting the findings of this study.
First, the sample size was relatively small, consisting of only eleven participants. Although this number is acceptable for an exploratory usability study, larger participant groups would improve the reliability and generalizability of the findings.
Second, most participants belonged to the 50–59 age group. Consequently, the results may not fully represent the experiences of older individuals aged 70 years and above.
Third, the prototype was developed using Figma and did not incorporate actual speech-recognition or natural-language-processing technologies. Participants therefore evaluated a conceptual representation of voice interaction rather than a fully operational voice-enabled healthcare system.
Fourth, the study focused exclusively on appointment booking and did not examine other healthcare services such as medication management, telemedicine consultations, or electronic health records.
Finally, the study relied primarily on questionnaire-based evaluation, which reflects participants' perceptions and opinions rather than objective performance measures such as task completion time or error rates.

FUTURE WORK

Several opportunities exist for extending the present study.
Future research should involve a larger and more diverse sample of older adults, including participants aged 70 years and above. A broader participant population would provide a more comprehensive understanding of usability requirements across different age groups.
Future studies should also implement a fully functional voice-enabled healthcare application capable of processing real-time speech input and natural-language commands. Such an implementation would enable researchers to evaluate actual interaction performance rather than conceptual perceptions.
Another important direction involves conducting comparative studies between voice-enabled interfaces and conventional touch-based interfaces. Comparing task completion times, error rates, and user satisfaction would provide stronger evidence regarding the effectiveness of voice interaction.
Future systems may additionally support Arabic speech recognition and Libyan Arabic dialects to improve accessibility and user acceptance.
Finally, healthcare applications may be expanded to include additional services such as telemedicine consultations, medication reminders, healthcare information management, and patient monitoring.

9. CONCLUSION

This study presented the design and usability evaluation of a voice-enabled healthcare appointment-booking prototype developed for older adults in Libya.
The prototype was created using Figma and incorporated a conceptual voice interaction mechanism intended to simplify the appointment-booking process. A usability evaluation involving eleven participants was conducted to assess ease of use, interface clarity, user understanding, interaction preferences, and perceived usefulness.

The findings indicate that participants generally viewed the prototype positively. Most participants considered the application easy to use, reported that the interface was clear and understandable, and completed the evaluation without significant difficulties.

Although participants did not exclusively prefer voice interaction, many expressed interest in combining voice and touch-based interaction methods. This finding suggests that voice functionality may be most effective when implemented as an accessibility enhancement rather than as a complete replacement for traditional interfaces.

Overall, the study demonstrates the potential of voice-enabled design concepts to support healthcare accessibility for older adults and provides a foundation for future development of more advanced healthcare applications within the Libyan context.

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