From Information Seeking to Empowerment: Using Large Language Model Chatbot in Supporting Wheelchair Life in Low Resource Settings

Wen Mo
UCL Interaction Centre, University College London
United Kingdom
Global Disability Innovation Hub, University College London
United Kingdom
wen.mo.19@ucl.ac.uk

Aneesha Singh
UCL Interaction Centre, University College London
United Kingdom
aneesha.singh@ucl.ac.uk

Catherine Holloway
UCL Interaction Centre, University College London
United Kingdom
Global Disability Innovation Hub, University College London
United Kingdom
c.holloway@ucl.ac.uk

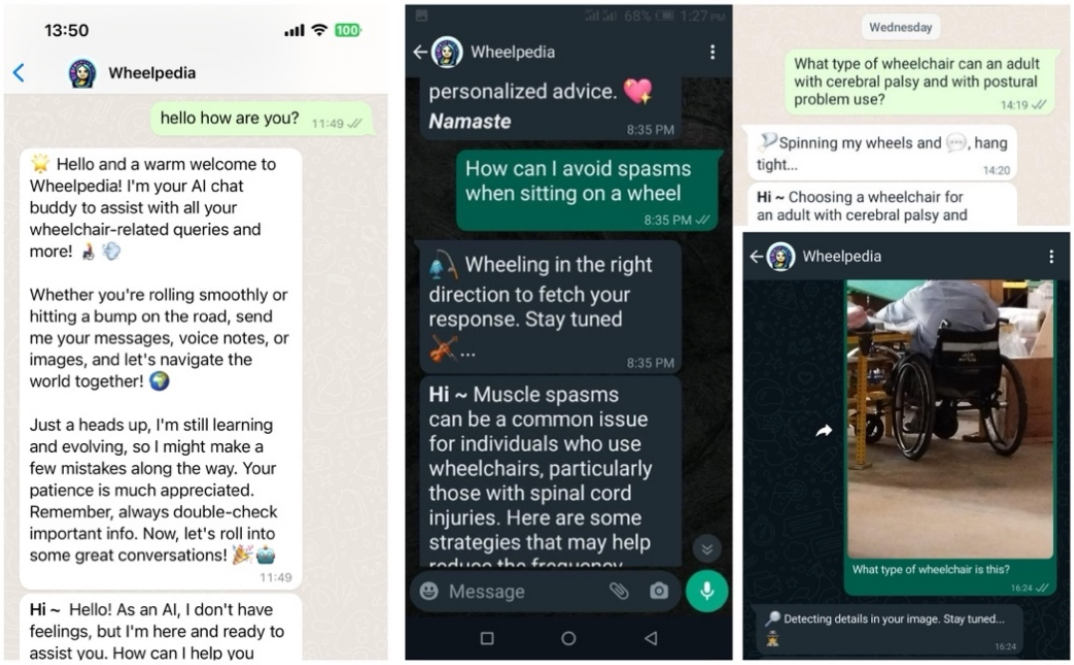


Figure 1: Examples of participants' questions to WhatsApp chatbot -Wheelpedia, which was used as a design probe.

Abstract

To tackle the lack of wheelchair service information and training in low and middle-income countries (LMICs), we deployed Wheelpedia, a WhatsApp chatbot powered by a large language model (LLM) as a design probe for 2 months to concretely explore how it can support wheelchair users and professionals in Nigeria and Kenya. Through 18 semi-structured interviews and analysis of 471 messages, we focused on not only Wheelpedia's acceptability and usability but also how users orient themselves with the probe, integrate its information, and manage trust with it. The findings revealed participants' overwhelming enthusiasm towards the chatbot's potential in education, fostering empowerment, and reducing social stigma. We discuss challenges like users' difficulty in formulating questions, unfamiliarity with the concept of chatbots, and requests for image output. This paper contributes valuable insights into the design implications and research opportunities for deploying LLM chatbots in low-resourced settings with complex accessibility needs.

ASSETS '24, October 27–30, 2024, St. John's, NL, Canada

ACM ISBN 979-8-4007-0677-6/24/10
https://doi.org/10.1145/3663548.3675609

CCS Concepts

• **Human-centered computing** → Accessibility; Empirical studies in accessibility.

Keywords

Assistive Technology, Information Seeking, Chatbot, Large Language Model Chatbot, Accessibility, Disability, Wheelchair, Low and Middle-Income Countries, Informal Setting, Nigeria, Kenya

ACM Reference Format:

Wen Mo, Aneesha Singh, and Catherine Holloway. 2024. From Information Seeking to Empowerment: Using Large Language Model Chatbot in Supporting Wheelchair Life in Low Resource Settings. In *The 26th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '24), October 27–30, 2024, St. John's, NL, Canada.* ACM, New York, NY, USA, 18 pages. https://doi.org/10.1145/3663548.3675609

1 Introduction

Wheelchairs play a crucial role in enhancing the autonomy and quality of life for people with mobility impairments. The World Health Organization (WHO) estimates that approximately 80 million people globally require a wheelchair for mobility [83]. To improve Assistive Technology (AT) access, reports have highlighted six key steps where the first two require people to be aware of the possible AT solutions, have access to AT information, and also advice from professionals to avoid wasting time and money on unsuitable products [84]. However, many hurdles lie ahead of these two steps for wheelchair users in low and middle-income countries (LMICs) [35]. To start, people in LMICs have low digital skills [50, 65, 80], hindering their ability to effectively navigate and extract relevant information from vast online data [92].

Additionally, the lack of professional personnel, financial resources, and AT services [35] in LMICs further constrains the opportunities for them to obtain and learn information about AT [84]. Such an absence of important information could result in users having unfit wheelchairs or negative experiences, increasing the risk of accidents and physical pain. Furthermore, the information about AT is fragmented and difficult to track due to the disparate nature of AT and rapid innovation, especially in digital AT [5]. This becomes a critical accessibility issue not only for people with disabilities (PwDs) but also for all AT information seekers, including healthcare professionals, policymakers, and other stakeholders.

Meanwhile, thanks to the latest advancements in artificial intelligence (AI) and natural language processing (NLP), studies have shown that integrating AI-powered chatbots into WhatsApp is a promising strategy to improve the healthcare service [26, 64]. Additionally, the latest breakthrough in generative AI (GenAI) [28] and the surging popularity of ChatGPT (OpenAI[1]), a generative pre-training transformer (GPT) model-powered chatbot have opened up unprecedented avenues to support information access and learning [17, 18, 43, 62, 87], as well as raised significant concerns regarding information accuracy, data privacy, regulation of use and more [1, 3, 28, 82]. However, very little research has investigated the opportunities and challenges that such Large Language Model (LLM) chatbots would offer for people in LMICs to access AT information.

[1]https://openai.com

To address this critical gap, this paper dives into the wheelchair community in Nigeria and Kenya and explores what role an LLM Chatbot can play in supporting PwDs and professionals in LMICs to access AT information. Specifically, we investigate how wheelchair users might adopt the LLM chatbot for daily support in using wheelchairs and how professionals perceive its utility in their work. The overarching research question of this study and the detailed breakdown are as follows:

RQ: How can an LLM Chatbot meet the informational needs of wheelchair users and professionals to support the use of wheelchairs in Nigeria and Kenya?

RQ1: What are the general attitudes towards the acceptance of the chatbot?

RQ2: What types of support do users need from the chatbot?

RQ3: What are the challenges and concerns of using an LLM chatbot in this setting?

To answer these questions, we provided our participants with a design probe: Wheelpedia, a WhatsApp Chatbot powered by the OpenAI GPT models, which is prompted to provide information regarding the use of wheelchairs. We conducted semi-structured interviews with 14 wheelchair users and 4 professionals from local wheelchair organizations. Both groups of interviews focused on users' current information-seeking behaviors and the potential roles of an LLM Chatbot in addressing their needs. To have a comprehensive view of user interactions, including those who did not participate in the interviews, we also analyzed 2 months of anonymous conversation logs to identify implicit user needs and patterns.

We discuss five key themes, capturing how participants interacted with Wheelpedia, their varied information needs, and a range of potential applications Wheelpedia can provide. Drawing from the insights, we discuss the design challenges in supporting using an LLM chatbot for people in LMICs such as balancing between the use of multimedia and data cost and how to introduce an AI tool to low resource settings.

This paper contributes to (1) empirical evidence supporting the need for LLM chatbots for PwDs in LMICs; (2) detailed informational needs and the potential application areas that LLM chatbots can support; (3) design recommendations for developing LLM chatbots that are contextually appropriate for supporting wheelchair users and professionals in LMICs.

2 Related Work

2.1 Understanding Barriers to Seeking AT Information in LMICs

The advancement of digital technology has enabled people to find information online on various platforms and devices. However, studies have shown many challenges in finding information about wheelchairs and AT in general, one of the key barriers to successful AT access [84].

From the perspective of markets, the AT market is rapidly evolving, and booming with diverse product types and solutions [2, 68]. According to the World Intellectual Property Organization (WIPO) AT Trends report, over 15,000 patents were filed for emerging AT [85]. Danemayer et al [22] interviewed 22 AT professionals and

discovered the AT information-seeking process is limited by fragmented international marketplaces, insular stakeholder groups, challenges in publishing AT research, traditional search limitations, and often incomplete AT information. For example, people from different regions and cultures may also have varied needs which would require a broad range of information available. However different regulatory environments across countries can affect the availability and information regarding AT products, which demonstrates the complex interplay between user needs, healthcare providers, and market dynamics.

The poor process of seeking AT information could affect all stakeholders in AT ecologies, not just people with disabilities. It could hinder individuals from receiving appropriate AT [15], prevent producers and designers of AT from developing products that accurately meet user requirements, especially in LMICs, and cause governments and organizations to allocate insufficient funds to the areas of greatest need [68]. This would widen the AT information access gap between LMICs and HICs.

Yet, little research in HCI has examined PwD's information needs for AT or seeking behavior nor explored specific ways or solutions to help increase awareness of possible AT solutions. In addition, it is within consensus that there is still limited research on AT-related issues within the LMICs [11, 38, 51], where government financial and infrastructure resources are further restrained.

Some have attempted to build centralized AT information platforms like the EASTIN system [4], AT Info Map app [79], and personalized recommender systems such as ATvisor.ai [93] and Buddy [40]. However, few AT information portals were developed using human-centered design principles that consider the sensitive nature of AT (i.e., data privacy issues of people with disabilities) or pay attention to presenting data in a way that is accessible, adaptable, and easy to understand, especially for PwDs [94]. Some research started exploring applying AI to AT information portals, to improve accessibility and tailor information for better decision-making. However, there are concerns regarding the misinformation and fairness of AI algorithms which require inclusive datasets and data transparency [22].

Furthermore, such centralized systems might not be able to keep up with the rapid evolution of AT and information technology which would cause delays in adding new novel products [22]. Also, people in LMICs might not have access to web-based information portals due to low digital skills, language barriers, and the cost of internet service. Considering these concerns, shifting focus from centralized data portals to a more accessible approach via mobile phones could offer a more adaptable and immediate way to provide AT information.

2.2 Exploring ChatGPT Applications in Healthcare

Generative artificial intelligence (GenAI) is a system that can produce new and creative content including images, texts, music, video, and more [28]. One of the most notable examples is ChatGPT, a large language model developed by OpenAI, a key driver in the evolution of chatbots across industries [37, 69], suggesting a new frontier for AI-powered chatbots in HCI [46]. With just a few prompts, ChatGPT enables the rapid creation of scripts [53], student performance assessment, and teacher development [21, 74]. A plethora of research has investigated its potential applications under various contexts, including government services [87], product research [36], tourism [37], textile [91], and education [25, 73, 76] as well as its overall applications, challenges [28], and social impact [7].

A growing research interest has been dedicated to examining its utility in the healthcare [82], focusing on medical education, research, and clinical workflow [49]. For instance, studies suggested that it can support clinical decisions, and patient communication, and create synthetic patient data [42, 60]. The biggest obstacle to adopting ChatGPT in healthcare is its accuracy and access to up-to-date medical data [42]. Its tendency to hallucinate, producing non-factual information, might be tolerable in some domains [27] but could cause serious harm in critical healthcare and medicine contexts [90]. Many reviews shared similar findings [17, 67, 77] that the current version of ChatGPT needs a fact check for its all statements. Alam et al [1] voiced other drawbacks including its lack of human judgment and interactivity. Spallek et al [72] evaluated its validity in mental health and reached the same results where the current output required human supervision. Li et al [49] mentioned that despite the vast interest, very little research has been dedicated to improving the underlying language model, calling for specialized AI models for healthcare.

Despite the current limitations, studies overall acknowledged its highly accurate information and benefits of providing insights and feedback in real-time. However, most of the research is skewed towards high-income contexts, leaving a gap in understanding the unique challenges and opportunities an LLM chatbot could have in LMICs. Very little research has investigated its application in the domain of AT [48, 63] or accessing AT information. Therefore, this paper aims to bridge this gap by exploring its acceptance, potential applications, and drawbacks in supporting wheelchair users and professionals in accessing AT information in LMICs.

3 Method

We introduced participants to Wheelpedia, a WhatsApp chatbot powered by a GPT model, serving as a design probe. After at least one week of use, we conducted follow-up interviews with 18 participants from Nigeria and Kenya: four professionals and 14 wheelchair users to gather insights into their experiences. The conversation messages were subsequently combed through for deep analysis. This research received ethics clearance from the University College London Ethics Committee. The following sections present the detailed study design and data analysis process.

3.1 Probe Design

3.1.1 Choice of Platform. WhatsApp is reported as the most popular mobile messaging platform on smartphones worldwide [54], and Pew Research has reported that it has dominated social media sites in middle-income countries like Kenya and Nigeria [59]. There have also been increasing applications of WhatsApp as a tool in healthcare [30, 44, 64] and LMICs [41, 81]. Therefore, we chose WhatsApp as the message medium for our probe Wheelpedia.

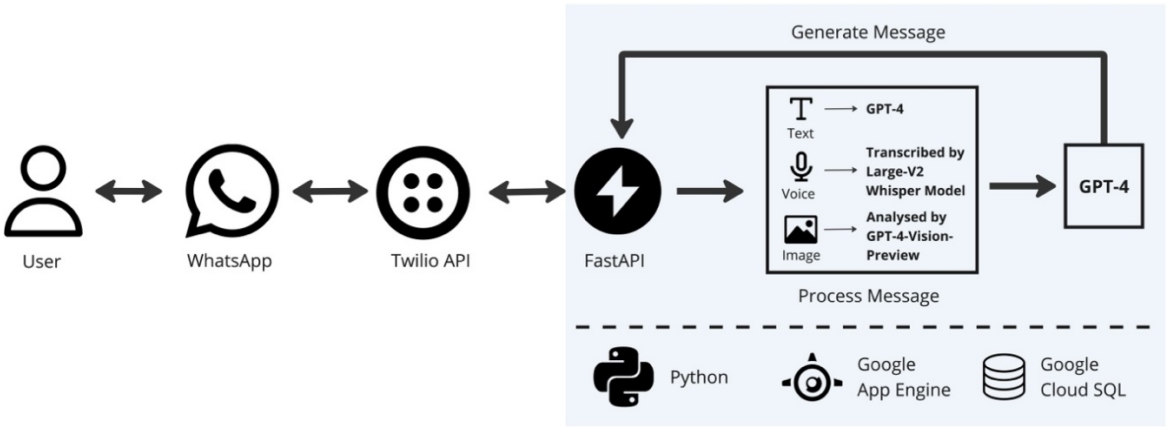


Figure 2: Wheelpedia System Architecture and Data Flow

3.1.2 Probe Architecture and Data Flow. The probe was developed using FastAPI for the backend and hosted on Google App Engine. Data is stored in Google Cloud SQL. For communication between WhatsApp and FastAPI, we employed the Twilio API. The probe is designed to receive messages via text, voice, and image. We used the OpenAI APIs[2] where the voice message is first transcribed by the large-v2 Whisper model, and the image is analyzed by the GPT-4 Vision Preview. All texts are processed and then generated by the GPT-4 model (our study was implemented before the release of GPT-4o). The probe was prompted to answer any questions regarding using wheelchairs considering the socioeconomic and cultural differences in LMICs such as ensuring straightforward language. To safeguard user privacy and ensure the anonymity of conversations, all users' WhatsApp numbers are hashed, and all original image and audio files are deleted right after translation and analysis. Figure 2 depicts the high-level architecture and API usage.

3.1.3 Conversation Flow. Considering the initial stage of this study, the conversation flow is designed in an open-question mode. After the chatbot receives the first message from a user, it will send a welcome message to introduce its purpose and limitations [47]. Following the reception of each user message, Wheelpedia sends out a processing message working as the alternative to the typing cues and an indicator that users' questions are being attended to [71]. To enhance engagement, we added decorative emojis to the processing messages, and the language was tailored to the wheelchair domain [19]. Past studies have shown that using emojis in the dialogue could enhance the social attractiveness and engagement of a chatbot, particularly for simple tasks [9, 24]. The processing message sent depends on the type of user input and is randomized. Examples are shown in Table 1.

3.2 Participant Recruitment

Participants were recruited through the snowball sampling method [34]. Initial outreach targeted participants from a previous study who had consented to be contacted for future research. Eligibility for participation in the study was set for individuals over the age of 18 who are either current wheelchair users in LMICs or professionals (e.g., physical therapists, organizational staff) working directly with wheelchair users. These initial contacts were encouraged to share information about the current study within their networks, either by directly referring potential participants to the research team or by distributing a link to the study's participant information sheet and consent form. This approach was adopted to maintain a manageable participant pool for remote interactive sessions with the design probe.

[2]https://openai.com/api/

3.3 Probe Study Procedure

The study initiated with participants receiving a link to access the information sheet and consent form on RedCap. After consenting to participate, they received the WhatsApp contact of "Wheelpedia." Participants were informed they could ask the probe any questions about wheelchairs via text, voice, and image, similar to their regular use of WhatsApp. Additionally, it was emphasized that Wheelpedia was a research probe, not a fully developed product, and may contain potential errors. This disclaimer was also included in the probe's WhatsApp profile and welcome message.

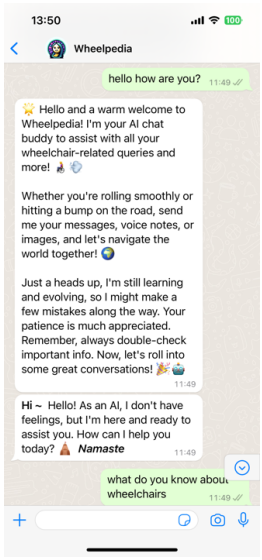
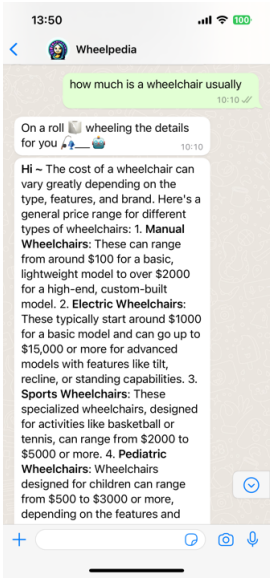
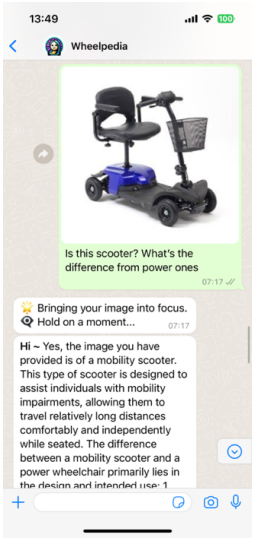
Participants were instructed to interact with this chatbot as often as needed. There was no required minimum number of questions, but participants needed to engage with the chatbot for at least one week to qualify for a paid follow-up interview.

3.4 Interview Study Procedure and Data Collection

Upon feeling ready to offer feedback, the participants who were interested in the paid follow-up interview were prompted to contact the researcher for scheduling. At the beginning of each interview, we assessed their interaction frequency with the chatbot, postponing interviews for those with fewer than three interactions and encouraging them to engage more with the chatbot.

To answer our research questions, the interview was structured around four key topics:

Table 1: Welcome and Processing Messages Example

Welcome Message	Text	Voice	Image
			

- Background Information: This section gathered data on participants' educational backgrounds, previous chatbot experiences, and current attitudes toward AI usage.
- Perceived Utility of Wheelpedia: Here, we explored the types of questions participants asked, how they used or anticipated using the information obtained, and the potential long-term support of Wheelpedia.
- User Experience with Wheelpedia: Participants provided insights on their overall impression of the chatbot, ease of interaction, favored features, and aspects they believed needed improvement.
- Attitudes on Trustworthiness and Concerns: This section delved into factors contributing to participants' trust in Wheelpedia, possible risks to individuals and the community, and concerns regarding privacy, cultural beliefs, and practices.

3.5 Interview Participant Demographics

In total, 18 participants took part in our interviews (Women: 9, Men: 9). Among the 14 wheelchair users, 3 are from Kenya and 11 from Nigeria. All professionals are from Kenya. Almost all participants have heard of AI, but in general, they are not familiar with the concept. Over half of the participants had never heard of or tried a chatbot before. Participant demographics and professional backgrounds are detailed in Table 2 and Table 3. All participants were compensated for their time.

3.6 Interview Data Analysis

16 of the 18 semi-structured interviews, averaging 53 minutes long, were conducted over Microsoft Teams, audio recorded, and transcribed immediately. Due to the intermittent internet connections after multiple tries, W13 and W14 answered our questions through a back-and-forth email format. We used thematic analysis, weaving together both bottom-up and top-down coding strategies [14] to analyze the transcripts of professionals and wheelchair users separately.

We first open-coded our data bottom-up, allowing for the organic creation of new codes, such as "fitting," "test with known answers", "emotional support", "demystify wheelchairs", "unfamiliar with chatbot", "need to guide questions" and more. The codes were iteratively refined, involving merging similar responses across both participant groups under unified codes, while distinctly coding unique perspectives, such as "in-depth answers" under professionals and "simple language" under wheelchair users to reflect the varying information needs between them.

Following this phase, we shifted towards a top-down approach, using our interview sections as a scaffold to organize the codes into first-level themes like "types of questions asked.", "challenges of use" and "managing trust". As we progressed, we also identified new themes that had not been directly anticipated by our interview framework. These themes then coalesced into five overarching themes through a deliberate process of merging, deleting, and clustering. We used an affinity diagram on a Miro board to facilitate this iterative process.

Table 2: Wheelchair Users' Demographic

ID	Gender	Age	Country	Education	Medical Condition	Mobility Aids	YUW	Heard of Chatbot	Heard of AI
W1	Woman	45-54	Nigeria	Master or higher	SCI	MW;PW	39	N	Y
W2	Woman	45-54	Kenya	Primary School	Polio	MW	20	N	N
W3	Man	45-54	Nigeria	Diploma	SCI	MW; Scooter	24	Y	Y
W4	Woman	35-44	Nigeria	Master or higher	SCI	MW	15	Y	Y
W5	Man	35-44	Nigeria	Bachelor	SCI	MW	10	Y	Y
W6	Woman	35-44	Nigeria	Bachelor	SCI	MW	12	N	Y
W7	Man	45-54	Nigeria	Diploma	SCI	MW	4	N	Y
W8	Woman	45-54	Nigeria	Bachelor	SCI	MW	15	N	Y
W9	Woman	26-34	Nigeria	Diploma	SCI	MW	2	Y	Y
W10	Woman	26-34	Nigeria	Bachelor	SCI	MW; PW	15	Y	Y
W11	Man	35-44	Nigeria	Bachelor	SCI	MW;	11	Y	Y
W12	Man	26-34	Nigeria	Diploma	SCI	MW; PW	6	N	Y
W13	Man	35-44	Kenya	High School	Polio	MW; Scooter	10	N	N
W14	Man	35-44	Kenya	High School	Transverse Myelitis	MW	16	N	Y

[a] Note: SCI - Spinal Cord Injury; YUW - Years Using Wheelchair; MW - Manual Wheelchair; PW - Power Wheelchair; Y-Yes; N-No.

Table 3: Professionals' Demographic

ID	Gender	Age	Country	Education	Profession	YoE	Heard of Chatbot	Heard of AI
P1	Man	65-74	Kenya	Master or higher	Director	15	Y	Y
P2	Man	26-34	Kenya	Bachelor	Physical Therapist	5	Y	Y
P3	Woman	26-34	Kenya	Diploma	Office Assistant	5	N	Y
P4	Woman	26-34	Kenya	Diploma	Physical Therapist	6	N	Y

[a] Note: YoE - Years of Experience; Y-Yes; N-No.

3.7 Conversation History Data Analysis

One month after concluding the interviews, we extracted conversation histories spanning January 18th to March 12th. In total, 471 message entries from 42 participants were analyzed. The primary goal was to gain deeper insights into how users interacted with the chatbot, including categorizing the domains of questions, studying how the questions were asked, and identifying implicit needs not captured in the interviews. Analyzing how questions are asked can reveal much about users' communication habits and their expectations of the chatbot's capabilities. This insight is crucial for refining chatbot responses and functionality.

Considering the rich data, we discarded the types of questions coded in the interview and iteratively open-coded the messages

Table 4: Theme Overview

Main Themes	Sub-themes	About
Using Wheelpedia	•Question Domains •Use of Multimedia •Asking Broad Advice •Different Focus on Questions	Reporting how participants interacted with the chatbot including the types and frequency of questions asked, message formats used, and how the questions were asked including the nuanced differences between users and professionals
The Acceptance of Wheelpedia	•Answer Quality •Convenience •Communication Style •Novelty Effect	Discussing participant's general attitudes towards the acceptance of the chatbot and the underlying driving factors
A Chatbot Beyond Information Seeking	•Immediate Consultation and Knowledge Sharing •Training and Education for Multiple Stakeholders •Empowering, Calming, and Comforting •Reduce Social Stigma and Raise Awareness	Discussing various ways that participants envision chatbots in supporting the wheelchair community in LMICs
Managing Trust	•Test with Known Answers •Reputation and Credibility •Community Leader •Transparency and Cautionary Advice •Personal Experience and Realistic Expectations	Describing participants' strategies for establishing and maintaining trust with Wheelpedia, highlighting their concerns and the perceived reliability of the chatbot
Drawbacks and Concerns	•Underrepresented Local Dialects in LMICs. •Low Digital Literacy •Limited Access to Smartphones •Expensive data and Internet Connectivity Issues •Unsure about Perceived Harms or Data Privacy	Capturing the potential drawbacks and concerns expressed by participants regarding the adoption of Wheelpedia within their community

from the bottom up, incorporating the feedback from an external physical therapist who reviewed 50 representative examples.

Basic statistical methods were applied to quantify aspects such as the frequency and types of questions across coded categories. This quantitative layer supported the qualitative insights, providing a holistic view of how users interact with the chatbot. After the conversation history was coded, we revisited and refined the themes initially derived from the interviews to ensure a comprehensive integration of insights from both datasets.

4 Findings

In this section, we present five main themes, each consisting of their corresponding sub-themes (Table 4).

Throughout the remaining sections, wheelchair users are identified with a "W", and professionals with a "P". Within each theme, we report our findings by combining data from the interviews and conversation history.

4.1 Using Wheelpedia

Understanding how users interact with the probe is crucial for capturing their information needs and expectations. From our interview data to conversation logs, it is evident that users interacted with Wheelpedia for a variety of topics, some beyond the scope of wheelchairs. From a broad categorization perspective (Figure 3), nearly 46% of the collected messages pertain to topics related to wheelchair life, 31% are considered *User Engagement* messages, and the remaining 23% fall under *Other* topics.

4.1.1 Question Domains. Under the wheelchair life-related topics, we identified 10 main domains and 21 subdomains (Figure 4). Most questions (45%) focused on *Wheelchair Service Steps,* addressing issues involving wheelchair assessment, procurement (e.g., where to purchase wheelchairs or parts), provision steps, fitting process, wheelchair maintenance, and wheelchair skills with a focus on bed transfer techniques. *Health and Wellbeing* is the second most popular domain (17%) involving understanding and managing different physical health conditions (e.g., edema), physical exercises, and mental health, a recurring theme with messages highlighting the difficulties in adapting to life in a wheelchair and managing post-accident traumas. Following this, *Wheelchair Education* (12%) emerged as a significant category, including inquiries for the definition or explanation of wheelchair-related concepts. Subsequently, questions related to *Seating and Positioning*, were also prominent, focusing on selecting and seeking appropriate wheelchair cushions and strategies to prevent pressure sores. This trend is consistent with our interview data where the most asked questions were about wheelchair service and health.

Notably, some inquiries were seeking financial support, finding free donations, or requesting specific model modifications from wheelchair donation organizations. Such questions underscore the challenges of wheelchair accessibility, affordability, and quality in LMICs [84]. Given the frequent inquiries about procuring wheelchairs or parts and finding donations, this implies that the chatbot needs to offer localized information to assist users in finding context-aware resources effectively.

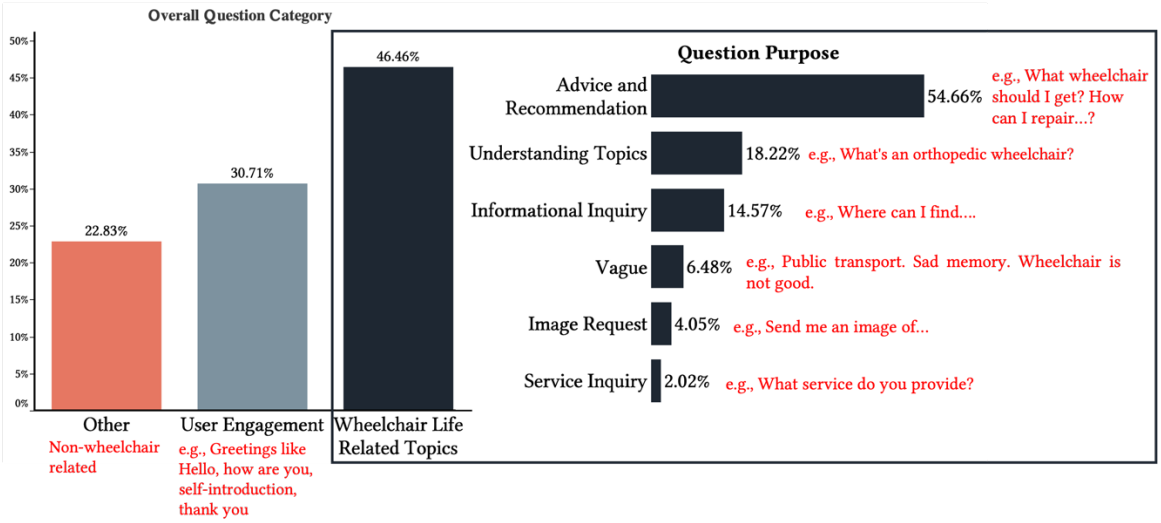


Figure 3: Overall Question Category and Question Purpose for Wheelchair Life-related Topics

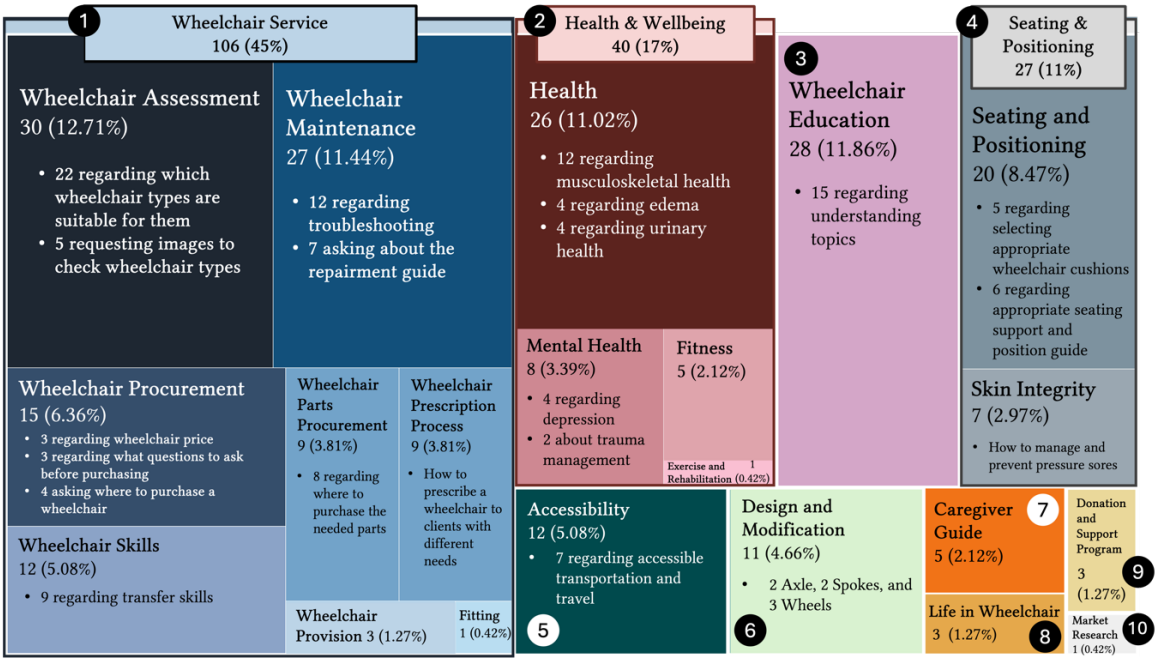


Figure 4: Question Domain Distribution and Examples under Wheelchair-Life-Related Topics

In the User Engagement category, the interactions ranged from simple greetings (e.g., "Hi", "Hello", "Good Morning", "Good Night") to positive feedback (e.g., "You have been very helpful", "Thank you") and self-introduction (e.g., "I am XXX and I have spinal cord injury"). The politeness indicates participants' enthusiasm, and some even shared personal stories and daily encounters with the chatbot.

However, there were misunderstandings regarding the role of the chatbot where some users thanked it for giving this opportunity or referred to the chatbot as the name of the researcher to request interviews. These observations are consistent with the interview data that many participants are relatively unfamiliar with chatbots. This confusion suggests that the chatbot's design should incorporate more explicit cues and guidance in the conversation flow to prevent misinterpretations, particularly for first-time users.

Lastly, under the *Other* category, users inquired sporadic questions ranging from asking for English translations to discussing politics, professional development, and learning about technology.

These use patterns implied users' genuine curiosity but raised questions regarding designing strategies to handle questions outside the chatbot's defined scope.

4.1.2 Use of Multimedia. Interestingly, although participants were informed that they could interact with the chatbot using text, voice, and images, most messages (441: 93.63%) were sent in text format, complemented by only 17 audio messages and 16 images. From the interviews, most participants reported that they did not know they could send images. This limited use of multimedia can be attributed to a mix of unfamiliarity with the technology and a lack of perceived need at this early stage of interaction. Specifically, W1 expressed concerns about using voice notes, worried that the chatbot might not accurately understand her accent. Meanwhile, W10 indicated a preference for sending voice notes exclusively to close friends. Additionally, there is a different aspect of accessibility as W9 explained that due to her disability, she is recommended to exercise her fingers as a form of rehabilitation. On the contrary, other participants reported accessibility issues with difficulties in texting and preferring to communicate via audio.

The themes were varied among the images sent by participants. They explained that their primary intention was to explore how the chatbot would respond to these pictures. This reflects a common starting point among all participants, who began their interaction with the chatbot without clear expectations.

4.1.3 Asking Broad Advice. In addition to categorizing types of questions, we examined how the questions under wheelchair life-related topics were formulated regarding purpose and scope. As depicted in Figure 3, about 55% sought *Advice and Recommendations* on topics such as choosing wheelchairs, cushions, and repairing wheelchair parts (e.g., castor wheels, spokes, axle, motor, battery, joystick, anti-tipper, tires). Around 18% aimed at *Understanding Topics*, such as definitions and functions of various wheelchair types. 15% involved *Informational Inquiry* like locating resources or inquiring about battery life.

Notably, 4.05% requested the chatbot to send images, especially when asking for wheelchair-type recommendations under Wheelchair Assessment (Figure 5). Requests for images were repeatedly emphasized during interviews, highlighting it as one important user need for chatbot design.

Meanwhile, 6.5% of the messages were categorized as Vague in question purpose. For instance, some involved only one phrase, like "joint", and "physical discomfort, and others simply stated, "My wheelchair died" or "I hit a bump" without further context, indicating challenges in deriving clear user intent to provide actionable information.

While many questions might appear not vague, they were categorized as broad in question scope, meaning they entail complex analysis and detailed responses. For example, many asked for help in choosing wheelchair types, which involves a careful wheelchair assessment process [83]. This pattern was consistent across all question domains (Figure 6), with a total of 59% considered broad.

Overall, these findings indicate that participants might be unfamiliar with an LLM chatbot and wheelchair terminology. Although these broad questions pose challenges to conversation design, they highlight the chatbot's potential to advance the education of AT knowledge by guiding users to formulate more precise inquiries.

4.1.4 Different Focus on Questions. From the interview and conversation logs, we observed that wheelchair users were more likely to focus on their immediate needs such as the types, availability, and usage of wheelchairs or parts as well as how to take care of health conditions.

> "I asked a lot of questions, like what type of wheelchairs like children with cerebral palsy can use. What type of cushions can one use and which is the best wheelchair in like where the roads are not that good." W2

> "If I'm using a wheelchair and my leg is swelling up, what is the solution?" W3

> "I asked about the motorized (wheelchair), whether it is repairable? Where can I get controllers?" W13

Professionals, on the other hand, tended to ask questions that could support their work process. Their questions often revolved around the procedural aspects of wheelchair provision and fitting, as well as dealing with complex cases.

> "I was asking mainly about wheelchair fitting steps, for different conditions and different terrains." P1

> "My first question was about the steps in wheelchair provision . . .. The other one (example) it's about how sometimes you give out a wheelchair but the person says the wheelchair caused more harm to me and I'm worse. So what should I do?" P3

> "The majority of the questions asked were about how we can accommodate different deformities in our wheelchair. . . how different diagnoses can be fitted in different types of wheelchair" P4

Despite this divergence, there was a similarity in the nature of the questions asked by both groups, though sometimes they were from different perspectives. For example, professionals inquire about the wheelchair fitting process, which, directly relates to the detailed guidance that wheelchair users need when they seek recommendations on appropriate wheelchairs. This pattern was observed across various topics, underscoring the importance of understanding users' roles in the chatbot design.

4.2 The Acceptance of Wheelpedia

> "I would say ohh the word will be awesome. It's beyond what it's expected" P1

All our participants both professionals and wheelchair users expressed overwhelmingly positive experiences with Wheelpedia, displaying high acceptance towards using such LLM chatbots in their day-to-day lives. Participants' feedback emphasized five main driving factors: the perceived quality of the answer, the accessibility of the chatbot, the style of the communication, and the novelty effect which all align with past research findings [56, 61].

4.2.1 Quality of the Answer. Participants were unanimously impressed by the overall chatbot's answer quality, especially the details, personalized answers, and the ability to analyze images. The quality of the answer directly impacts whether participants would trust the chatbot or not. Such trust plays a big role in users' perceived ease of use and perceived usefulness which in turn, leads to

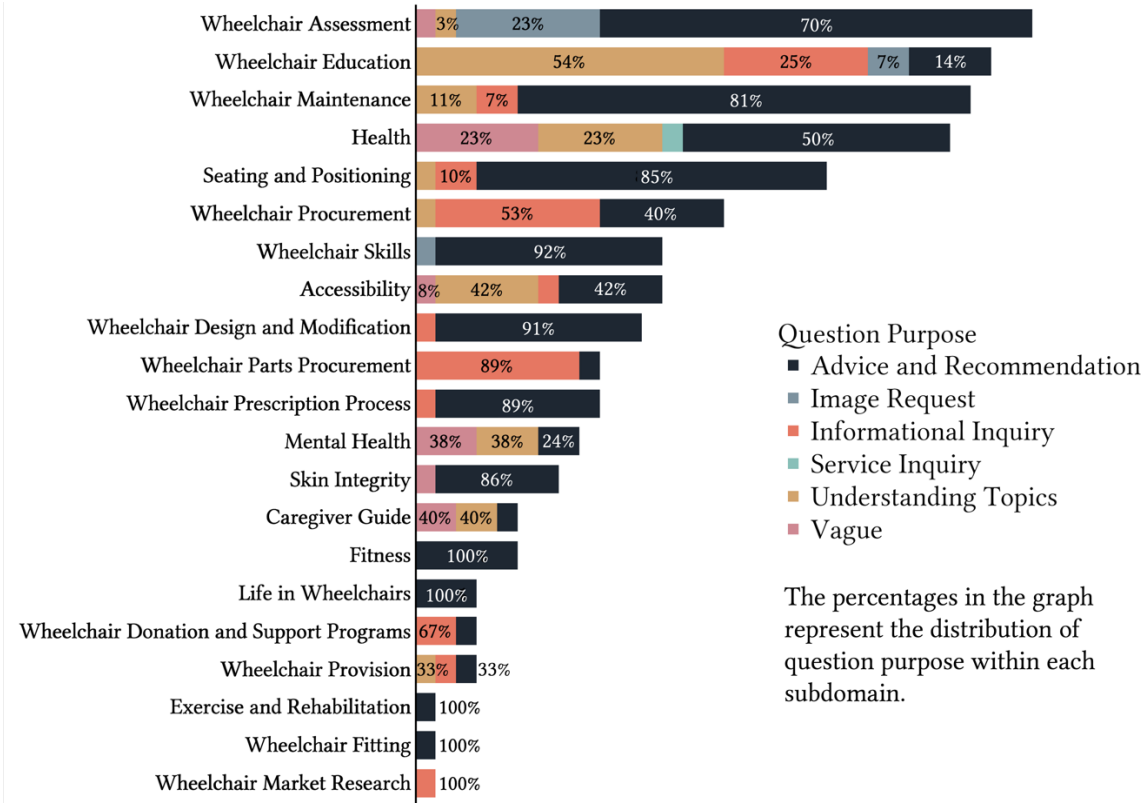


Figure 5: Purpose Distribution by Question Subdomains.

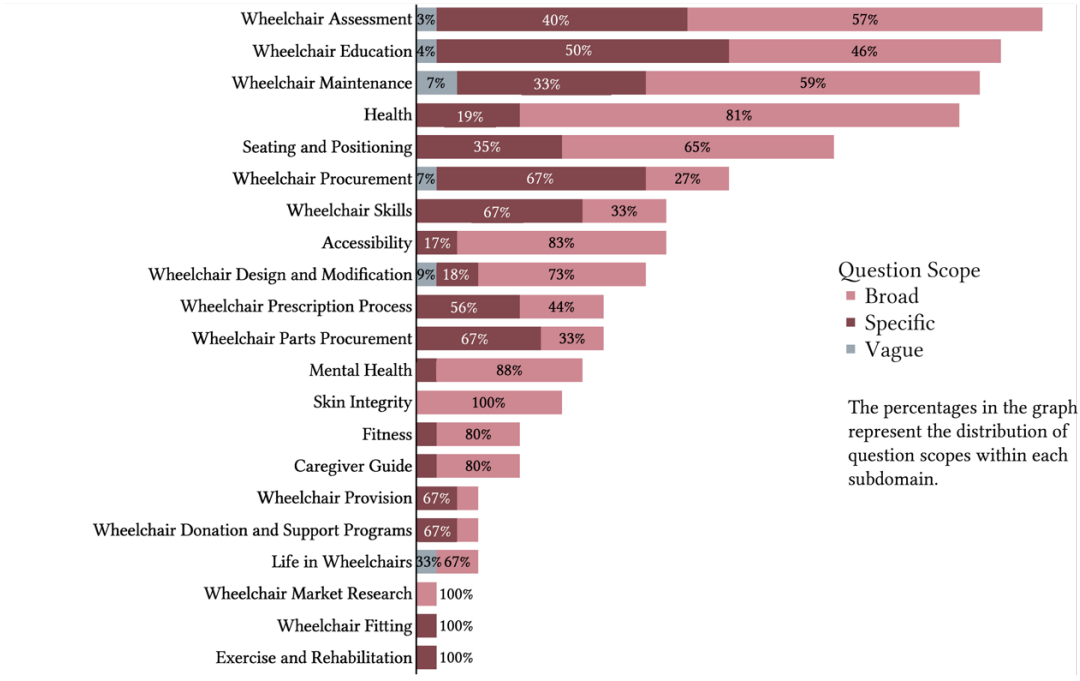


Figure 6: Scope Distribution by Question Subdomains

the acceptance of the technology [32, 55]. P1 added, "It gives very comprehensive answers and on top of that it gives extra information…it even reminded me of some things I'd forgotten." W1, with prior experience with ChatGPT, rated the domain-specific Wheelpedia higher, indicating the strong need to have a chatbot that is dedicated to the domain of assistive technology. Meanwhile, the participants who tested the image analysis were also very impressed by its capability to grasp the general concept.

However, the professionals and wheelchair users voiced different preferences regarding the depth of the answers. Three professionals mentioned the need for supporting sources in the chatbot's responses indicating a preference for evidence-based answers that can lend credibility and depth to the information provided. In contrast, most wheelchair users praised the simple answers, reflecting their desire for clarity, which is crucial, especially for users with low literacy levels. This variance in preferences for the depth of responses, much like the differing focus in the questions asked, highlights the varied informational needs of each user group. Multiple participants suggested a role-based conversation flow where the chatbot initially asks users to specify their roles—such as wheelchair users, caregivers, or professionals—and their conditions, enabling it to offer tailored and personalized advice.

4.2.2 *The Convenience - Real-time, Accessible, and Anonymous.*

> "It is very interesting, very amazing. Because it seems to solve people's problems within a short time." W5

Similar to Brandtzaeg and Følstad's finding [13] the perceived convenience of the chatbot in enhancing accessibility to information is another key factor that influences the acceptance of the chatbot. For example, participants appreciate that they can access Wheelpedia to get real-time answers right from their smartphones, describing it as "a centralized place to get information" (W1, W2). They believe it saves their time in googling, comparing, and synthesizing results. This could be extremely invaluable for wheelchair users who lack access to wheelchair services or specialized physical therapists, as acknowledged by our participants, both wheelchair users and professionals. W1 recalled relying on physiotherapists when she was in the UK but "when I come to Nigeria, I'm blank…in Nigeria, you wouldn't get anybody to tell you."

Additionally, P3 and P4 mentioned that many people in their communities do not have access to computers or know how to use them. The WhatsApp messaging medium offers a familiar and convenient way to search for information.

The convenience also takes form in a way that it facilitates a safe space where users can confront sensitive or difficult questions to the chatbot anonymously.

> "I don't need to keep a secret or whatever it is. And I ask questions the way I desire so it's even more than being a friend because a lot of things I can't disclose to friends." W11

4.2.3 *Communication Style - Easy, Honest, and Empathetic.*

Another contributing factor is the chatbot's engaging communication style, thanks to its natural, clear, and friendly approach, along with empathetic interactions. Participants further applaud the use of easy-to-understand language, as P1 said: "You know it's very clear. There's no jargon in it. Anybody can understand, you know, even in the Swahili. I think it is made easy for every people". This clear communication is complemented by a friendly, and engaging tone, which users find comforting and enjoyable, even when the chatbot processes their queries.

> "I like it every time I ask that question and see as I wait for the answer, like for example picking up speed and handing us your answer, I feel good." W2

A particularly valued aspect of Wheelpedia communication is its honesty and directness, especially in addressing sensitive issues. Participants appreciate straightforward answers and clear facts without false promises. W4 emphasized "I love it because it's honest. It's not telling me I was going to have like a miracle talk." This directness is seen as crucial in contexts where individuals may struggle with understanding or accepting challenging diagnoses.

> "We often see mothers who have not explained what is going on with their children…And so at times, they are left to fill the blank spaces on their own. They're just encouraged like- let's just continue with therapy for this child and then they will stand and walk. So now if this mother would opt to go and ask the chatbot, I would be interested to see how the chatbot would respond to such a mother" P2

The above feedback stresses the importance of chatbots offering direct facts while maintaining a tone that respects the user's emotional state, reinforcing the impact of empathetic engagement in driving acceptance.

4.2.4 *The Novelty Effect.*

> "I'm intrigued about it as I would never have imagined something different from Google." W4

Lastly, there is the novelty effect [56] that drives the acceptance of the chatbot. All participants from LMICs reported being curious and intrigued by this technology. Such an effect is also reflected in the declining usage over time. Many participants reported that they were uncertain about what to expect and therefore, their current interaction would mainly focus on testing the chatbot. However, all of them mentioned that even with the questions they knew the answers, but the chatbot helped organize their thoughts. Therefore, they all learned some new information that could be applied in the future after the novelty effect wears off.

For example, after testing the chatbot, three participants directly applied the information to their practices. W5 identified a wheelchair type ideal for his local terrain and further researched it online. P3 and P4 consulted the chatbot to review the wheelchair prescription processes and shared this information with their colleagues. These practical applications highlight how users transition from being motivated by novelty to using it to embed knowledge, demonstrating the participants' ability to envision continued use of Wheelpedia in their daily lives.

4.3 A Chatbot Beyond Information Seeking

All participants perceived Wheelpedia as a powerful tool in supporting the wheelchair community within LMICs across multiple ways beyond information seeking.

4.3.1 Immediate Consultation and Knowledge Sharing. As discussed above, Wheelpedia is appreciated for its efficiency, convenience, and accessibility in providing information.

- For Users: all participants highlighted its utility in immediate problem-solving and quick inquiries.
- For Professionals: they noted its value in constant consultation (P1 and P4), serving as a reminder and expanding knowledge bases, "You know we always consult… So this is a beautiful tool for that" P4 added, "It will help me to broaden my scope when it comes to now solving some of the complicated cases that you've been getting."

Therefore, participants consider it a quick information tool for practical issues, such as minor wheelchair repairs, and broader educational needs, enhancing professional expertise.

4.3.2 Training and Education for Multiple Stakeholders. In addition to mere information seeking, multiple participants also acknowledge the value of Wheelpedia as a critical educational tool, especially for new wheelchair users (P1) and professionals lacking specialized training (P1, P3, W1, W2).

- For Users: participants mentioned that many wheelchair users in their communities had no idea what they needed to be aware of when asking for a wheelchair (P1, W1, W2, and W3). For instance, they did not know they needed to measure themselves like W1 said "it (Wheelpedia) could also train them to learn about these wheelchairs." This echoes our findings about the broadness of the questions participants sent.
- For Professionals: all professionals and even participants (W2) discussed the potential of using Wheelpedia as training materials for physical therapists and service providers. Even in high-income countries, training materials are scarce in the school curriculum [16].

They argued that the educational benefits of chatbots could also extend to caregivers and organizations.

- For Caregivers: P1 emphasizes the importance of accessible care tips, "How do I prevent a pressure sore? if you're in a power wheelchair, you need to use power, tilt, and recline and do these things, then those are things that caregivers could easily implement."
- For Organizations: W5 points out the value for organizations in learning to choose appropriate wheelchairs, "even organizations that are donating… will have to look at the person they are giving the wheelchair to and think is it going to be useful for that person or not? (they can) based on the information they can get from here (Wheelpedia)." Such sentiments are reflected in some questions in the conversation history where users inquired whether some donation organizations could modify their current wheelchair models, indicating the current stocks are not meeting users' needs.

4.3.3 Empowering, Calming, And Comforting. Furthermore, participants valued the chatbot's emotional support, enhancing users' confidence and autonomy by empowering them with knowledge about their wheelchairs.

> "because it tells your sitting position, it tells you the kind of question you need. It tells you what weight a wheelchair should have. It's empowering you with knowledge. It will show you have that ownership " W1

In addition, many wheelchair users emphasize how they feel the chatbot is relating to them, considering it to be their best friend and companion to whom they can ask any questions without hiding secrets and expect honest responses at the same time. W10 provided examples that she would tell the chatbot when she felt bored and alone. Such comments reinforced the chatbot's role as both a practical advisor and a source of emotional comfort and empowerment.

4.3.4 Reduce Social Stigma and Raise Awareness. Although participants were impressed by the chatbot's proficiency in identifying basic physical elements in images, they also highlighted a significant area for improvement: the lack of analysis concerning the social and lifestyle implications depicted in the images. For instance, P2 noted that the chatbot missed an opportunity to discuss the broader social context, such as the wheelchair user's role in a workplace setting.

> "But I thought maybe it would have also gone ahead to see these guys working because he was somewhere in the workshop doing some kind of work and therefore maybe could have highlighted some of the lifestyle or some of the social aspect of this person" P2

This feedback raised the issues of the model's current capacity to infer deeper social implications or cultural contexts from images without explicit prompting. How the current image analysis only sees the disability, not the ability, further demonstrates the issue of disability misrepresentation and stereotypes in LLM [29]. But it also indicates a great design opportunity for the chatbot: contributing to reducing the social stigma surrounding wheelchair users and raising social awareness in LMICs. Many participants commented on the persisting stigma attached to wheelchairs in their local community due to the lack of awareness and stressed the need to demystify wheelchairs.

> "Wheelchair is still a foreign device, there are quite a lot of people who don't even look at the wheelchair and won't even think about sitting in a wheelchair because they think they sit in a wheelchair, they'll get a disability, things like that." P1

> "My parents were ashamed. . .that people see me in wheelchairs and ashamed how people would be thinking" W3

Some participants suggested that the chatbot educates non-wheelchair users not only by changing their perspectives of the wheelchair users but also by getting educated on the accessibility needs and features in the environment.

> "It would have helped us to know. Uh, that this person needs support. Having places that are wheelchair accessible. . .it would maybe be emphasized why we need to make good ramps and accessible buildings because they can see that this person is in a wheelchair and is doing a job." P2

4.4 Managing Trust with Wheelpedia

The trustworthiness of a chatbot, as with any tool or service, is paramount for its acceptance and continued use. Our participants all reported they trusted the probe due to five main reasons:

4.4.1 Test with Known Knowledge. All participants began their interaction with Wheelpedia by asking "Questions which I knew the answers to before testing the app" as illustrated by P1. This initial test served as a benchmark for the chatbot's reliability. When the chatbot's responses aligned with or exceeded their existing knowledge, trust was significantly bolstered.

4.4.2 Reputation and Credibility. Although they were informed Wheelpedia was just a probe, participants reported that the fact it was shared by a university or a reputable entity, implying professionals' involvement, has made the chatbot seen as credible and trustworthy to them. P1 and P4 also stressed the fact that this is a chatbot specifically dedicated to wheelchair users made them trust it more.

4.4.3 Community Leader. Many participants reported that their initial trust in Wheelpedia was significantly influenced by its endorsement by a trusted figure within their local community, leading them to embrace the chatbot right from the start.

> "I trust it because it was coming from Maria (pseudonym) and she's my mentor. So I know that it is something that is good." W9

4.4.4 Transparency and Cautionary Advice. Additionally, participants mentioned that the inclusion of the disclaimer and the advice to consult with professionals they received in the answer not only underscored a responsible approach but also enhanced its trustworthiness through such transparency.

> "I trust it because, in every information that you have given us, you also put that disclaimer that you should review what you've given to us. This is helpful, honest." P4

4.4.5 Personal Experience and Realistic Expectations. Trust was also shaped by users' personal experiences and habits. Many (P3, P4, W3, and W9) double-check the chatbot's information with other sources from online to community group chat, viewing the chatbot as merely one among several information resources (W1, W2, W5, W6, W7, W8). Additionally, the diversity of options provided in the chatbot's answers was particularly valued. For instance, W6 believes that "as long as you ask him (Wheelpedia) any question, you do not even waste time. I will just go through it, and it will give you so many options for you to see the different answers that you need". Moreover, users' realistic expectations about the chatbot's capabilities played a role in how much trust they invested. W4 provided an analogy comparing the chatbot to her non-expert mother giving her advice when she is sick, reflecting a pragmatic approach to the chatbot's guidance: "I know she's not a doctor. She's just my mom. But you know, I would (listen to her), do that waiting for the next day and then maybe if I still feel sick. and then go to the hospital. But I will trust whatever she's saying for that day."

4.5 Drawbacks, Concerns, and Perceived Harms

The introduction of Wheelpedia has been met with high acceptance among participants. Yet, participants have identified several barriers that could significantly impact its broader adoption:

4.5.1 Underrepresented Local Dialects in LMICs. Most of the text and spoken messages were communicated in English with a few in the local language: 21 in Swahili, three in Hausa, and one in Yorùbá as many participants were unaware that they could communicate with Wheelpedia in different languages. During the interviews, all participants from LMICs inquired about Wheelpedia's capability to support the dialects spoken within their communities. P1 highlighted although the current version can converse well in Swahili, "it's taken up as the official language of East Africa, so it's an international language at that level. So what I'm saying is maybe go deeper further to the local dialects, you see that's where the problem would begin". This disparity in local dialect accessibility raises significant challenges for the deployment of AI technologies like Wheelpedia in diverse linguistic settings where many people do not speak English and have low literacy levels.

4.5.2 Low Digital Literacy. Half of the participants raised their concerns about the low digital literacy of people in their communities which challenges their use or understanding of the chatbot. W1 emphasized that "an average Nigerian would not know how to use it (to see its full potential)." Professionals like P4 were also worried that their clients "are not able to interpret and use it". This aligns with our findings that many of the participants were unaware of the use of multimedia. It is further underscored by our analysis of the conversation logs as many questions were asked in a very broad and ambiguous way (Figure 6). To address this, W1 recommended that the chatbot instruct users on how to formulate appropriate questions by providing examples, such as a frequently asked questions (FAQ) section.

4.5.3 Limited Access to Smartphones. W2, P3, and P4 pointed out that many wheelchair users in their communities do not own smartphones or are not familiar with using WhatsApp. P3 noted that only 25% of her clients owned smartphones and some of her clients would "even use some neighbors' smartphones to send you a picture of a kid who needs a wheelchair." P4 asked if Wheelpedia could be accessed via simple text messages. Despite the increasing growth in smartphones usage, questions remain about how to enhance the inclusivity and accessibility of an LLM chatbot like Wheelpedia.

4.5.4 Expensive Data and Internet Connectivity Issues. Participants also raised concerns regarding the affordability of internet data usage especially for images and the reliability of internet connections. W2 repeatedly voiced her concerns in "How much data does it cost? I won't use it at home." This provides design opportunities in how to optimize the chatbot for low-bandwidth environments and ensure that it remains functional even with intermittent connectivity.

4.5.5 Unsure About Perceived Harms or Data Privacy. When asked about their concerns regarding potential harm or data privacy issues associated with using an LLM chatbot, the majority of wheelchair users reported no perceivable harm except W8 who was concerned about image leaking. Many associated data privacies primarily with their online activities, expressing indifference towards privacy

concerns on the basis that they were not engaging in any illegal actions online. This lack of concern also highlights a potential gap in user education about the importance of data privacy and echoes users' unfamiliarity with the concept of AI and the use of chatbots.

Meanwhile, professionals expressed concerns primarily about users potentially relying too heavily on Wheelpedia's answers and neglecting professional diagnoses. Two of them also raised concerns about the potential leaks of sent audio messages and images, emphasizing the need for transparent data storage policies and robust data security measures to protect user privacy and maintain trust in the system.

5 Discussion

In this section, we reflect on participants' feedback and their requests discussing opportunities, potential design solutions, and the challenges they present.

5.1 In Need of Accessible AI Tools

The enthusiasm we received from participants' feedback coupled with their unfamiliarity with the concept of chatbots and data privacy issues indicate there is a lack of focus on developing accessible AI digital tools to support PwDs in LMICs. This gap points to a broader issue within the AI development community where the unique needs and challenges of PwDs are not adequately addressed or prioritized [10]. Past research has demonstrated the unfairness and biases for PwDs with large language models [29]. There is a clear need to invite PwDs into the process of designing, developing, and deploying AI tools so that they will be not only inclusive but also shaped by the lived experiences of PwDs in LMICs. Such tools should be tailored to overcome the common barriers faced by these communities, including diverse local dialects, varying levels of digital literacy, and infrastructural limitations.

This provides a unique opportunity for future research to explore how an LLM chatbot that leverages a widely used messenger platform (e.g., WhatsApp), could support people by performing a specific task and also act as a medium to educate people on the concept of AI, foster awareness about data privacy and security, and thus contribute to digital literacy.

5.2 Master *Talk Wheelchair* with Generative AI Chatbot

Many inquiries from the conversation logs were noted to be broad and ambiguous—a common pitfall identified in existing research on prompt engineering with LLM chatbots [33]. The concerns from both wheelchair users and professionals gathered from our interviews also supported that people with low digital literacy might have challenges in asking questions, or in other words, writing prompts. Past research and tutorials have investigated different prompt engineering techniques [12, 20, 33, 45] and explored building different tools to support non-AI experts in creating prompts through iterative design and tests [39, 88, 89]. One design solution is to provide examples, either through a list of frequent Q&A as recommended by W1, or a question template [45]. They can be integrated into the chatbot's introductory information, bio, welcome messages, or even ending each response with a template reminder. In addition, studies also demonstrated the benefits of incorporating multimodal prompts like adding images and colors as prompt components [58].

Another approach is to employ multi-turn conversation strategies [45] where the chatbot actively guides users in refining their queries. For instance, if a user's initial question is too vague, the chatbot could respond with follow-up questions that narrow down the topic, such as 'Could you specify whether you are asking about mechanical problems or physical discomfort?' Based on the conversation logs, most of the current responses did not ask for follow-up questions which indicates a variety of issues including lack of domain-specific tuning, context management, and more.

Future research could explore different strategies and techniques to not only assist users in clarifying their needs but also educate them on formulating effective queries. A longitudinal study could help to understand whether these approaches will guide users to gradually learn how to 'Talk Wheelchair,' gaining a deeper understanding of wheelchair-related knowledge, and whether such a process would enhance users' confidence. Our findings underscore the need for ongoing research and development efforts aimed at enhancing the capabilities of LLM chatbots for AT.

5.3 Considerations in Using the Chatbot for Reducing Social Stigma

Previous research has discussed the factors shaping the societal stigmas against wheelchair users [8, 66] (e.g., religious beliefs, lack of understanding, seeing wheelchairs as a disability identifier, inaccessible built environment), These factors limit the resources of PwDs in society [6]. Prior studies have advocated for strategies to promote social engagement between PwDs and others [70]. Our findings suggest that an LLM chatbot has the potential to address this gap, by educating both wheelchair users and the public to challenge stereotypes, raise awareness, and demystify wheelchairs.

To use LLM chatbots to reduce social stigma, it is crucial to minimize bias in LLM datasets, which are often rooted in the training processes of models, making these tools vulnerable to harmful languages, stereotypes, misinformation, or skewed perspectives [23]. In addition, the AT solutions the chatbot recommends might prioritize options widely available in high-income settings but inappropriate or unaffordable in LMICs, thus ignoring the local context and needs [52]. Therefore, there is a need to have a specialized model trained on AT information that also considers the social, economic, and cultural differences.

Adopting a community-driven approach involving people with disabilities who have lived experience can help establish standard annotation guidelines and raise public awareness of disability representation in the LLM [10, 29, 57]. To demystify wheelchairs, annotations could include descriptions and images demonstrating the importance of wheelchairs and advocating for accessibility features in representation.

However, ethical concerns arise, particularly regarding the taking and analysis of pictures without their consent. Incorporating automatic face-blurring technology to anonymize individuals in all images could protect identities while allowing contextual analysis. Furthermore, describing images from an ability-based lens or with a focus on social aspects can be subjective and risk overcorrecting

and minimizing the importance of recognizing disabilities. Therefore, it is crucial in future research to involve multi-stakeholders in data collection, establishing criteria [29], and the design process of chatbots.

5.4 Balance Between Multimedia and Data Usage

One of the prominent features participants requested was to receive images from the chatbot which is essential in helping users understand and select appropriate types of wheelchairs or parts. A few participants requested audio feedback due to accessibility issues (W9, W11) and the ease of instructions. For instance, when guiding through bed transfer techniques, it is easier for users to listen to the chatbot's instructions than reading them. W3 also suggested the options of videos to support instruction-based responses.

However, some participants raised concerns regarding the usage of data for communicating in multimedia content. W2, for instance, mentioned avoiding video playback and calls on WhatsApp due to high data costs. One potential design solution could be to display an estimate of the multimedia content's size before playing, offering downsized versions or alternatives if users opt not to proceed. This approach could also apply to uploading content, where users are given a preliminary estimate of the data size before sending it, allowing them to make informed decisions about their data usage. To enhance both data efficiency and accessibility, the chatbot can also include alt text or transcribed transcripts with any multimedia content, providing alternatives that reduce data load and make content accessible to users with disabilities.

5.5 Introducing AI Tools for AT in LMICs Setting

The trust management observed in using Wheelpedia provides key insights into how AI technologies could be introduced in LMIC settings in the context of AT. Testing with known knowledge to establish reliability suggests that initial interactions with an AI tool need to confirm users' existing understandings and expectations. This underscores the importance of designing responsible LLM chatbots that deliver accurate and verifiable AT information, which is crucial for building user trust from the beginning [31, 86].

Additionally, the emphasis on the reputation and credibility of the tool and the drawbacks addressed by the participants (e.g., issues around dialect, data use, and digital literacy) highlights AI technologies for AT need to be co-designed and co-developed with professionals and people who have lived experiences with AT in LMICs. This approach ensures the chatbot is context-aware and culturally appropriate, meeting the practical needs of users [75].

Ethical considerations are equally critical in the deployment of LLM chatbots. Users must be made aware of the chatbot's limitations and are advised on when to seek human assistance, thereby preventing overreliance on the AI system. This level of transparency or showing vulnerability [78] not only respects the users' right to informed interaction but also positions the chatbot as a reliable but supplementary tool.

Furthermore, securing endorsements from trusted community leaders can be instrumental in introducing and facilitating the acceptance of new technologies within local contexts, and aligning the deployment of AI tools with cultural and community values. Hence, LLM chatbots like Wheelpedia should be designed with an iterative review of accuracy and an acute awareness of the local social dynamics, ensuring they contribute positively to the communities they are intended to serve.

6 Positionality Statement

The authors of this paper are not from Nigeria or Kenya but have experience living and working in both developing and developed countries. Our understanding of disability and access to information and technology is shaped by recognizing the unique needs within lower-income countries and contrasting them with the context of robust infrastructure and resources in higher-income ones. This exposure has influenced us to frame our research questions and data analysis not only around practical information needs but also around chatbot's potential and relevant issues pertinent to LMICs. To address any potential biases related to our backgrounds such as assumptions about the infrastructure limitations in LMICs, we engaged in reflective practices during coding and consulted with researchers from the participants' countries and the disability research community. This helped us to gain different perspectives. By recognizing the influence of our background and actively addressing biases, we aim to contribute to a more nuanced and respectful understanding of wheelchair users' views on using LLM chatbots for accessing information in LMICs.

7 Limitations and Conclusion

We recruited participants from a range of ages and professions. However, this study used the snowball sampling method which resulted in many of the participants being from the same spinal cord injury community. Despite our attempts to get a more diverse sample, we were not able to recruit professionals from Nigeria therefore, raising concerns about the representativeness of professional feedback within the Nigerian context. Additionally, the relatively small sample size may limit the generalizability of our findings.

Furthermore, the novelty of the chatbot has led many participants to primarily use it for exploratory purposes. As such, these initial messages might not fully encapsulate their true information needs or reflect real-life usage patterns. Due to the language barrier, only participants who could speak English took part in our studies, and wheelchair users who do not have a smartphone were also unable to join. Nevertheless, GSMA predicts an 88% smartphone penetration rate in sub-Saharan Africa by 2030 [95]. This anticipated growth supports the continued relevance of our method, as increasing smartphone use will likely improve users' familiarity with digital tools like chatbots.

To address this limitation and enrich our understanding, future research should aim for a more varied participant demographic, increase sample size, and extend the period of conversation log collection. This would help to capture a more representative and comprehensive dataset of user interactions, leading to insights that are more robust and accurately reflect the true information needs of users. Future research could also develop an alternative version of Wheelepdia that is accessible via basic SMS technology, enabling users without internet access or smartphones to benefit from the service.

In this research, we aimed to address the lack of accessible wheelchair service and training information in LMICs through the deployment of our design probe Wheelpedia. Our study explored how such an LLM chatbot could support wheelchair users and professionals in Nigeria and Kenya in providing AT-related information. Our findings revealed users' strong enthusiasm for the chatbot, highlighting its potential to educate users, foster empowerment, and reduce social stigma associated with wheelchair users. Participants' requests including receiving images from the chatbot and improving its understanding of local dialects underscore the need for further improvement to ensure they are both accessible and effective to support the wheelchair communities in the unique contexts of LMICs.

Acknowledgments

We would like to thank all study participants for their time and enthusiasm for the project. The research in this paper was made possible by funding from the UK Foreign, Commonwealth and Development Office through the AT2030 Programme (www.AT2030.org) which is led by the Global Disability Innovation Hub (www.DisabilityInnovation.com).

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