RESEARCH-ARTICLE

Designing with Tensions: Understanding Professionals' Needs in Integrating AI Chatbots for Wheelchair Assessment Services in Low- and Middle-Income Countries

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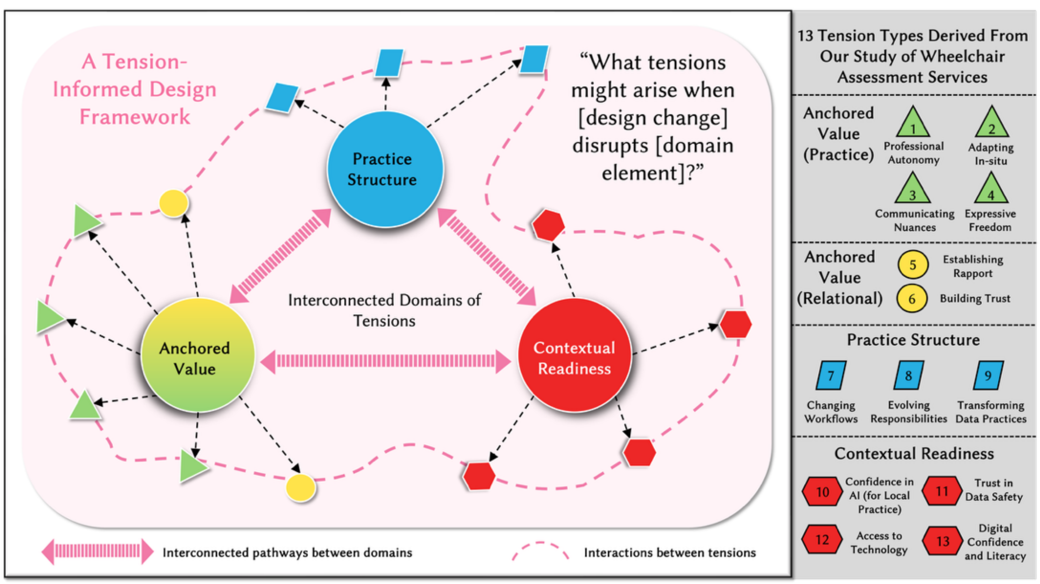

Figure 1: The conceptual illustration of the proposed Tension-Informed Design Framework for integrating a chatbot into wheelchair assessment services in LMICs and 13 identified tensions derived from our study.

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Abstract

While AI chatbots have been proposed to support wheelchair provision services in low- and middle-income countries (LMICs), the perception of physical therapists regarding how they could be integrated into their service workflow remains unclear. We conducted semi-structured interviews with 11 professionals from Africa and South Asia, using two design probes to investigate the potential and limitations of using chatbots in their everyday wheelchair assessment services. Our findings revealed 13 tensions that arise when the envisioned chatbot use misaligns with three interconnected domains - professional values, practice structures, and contextual readiness, such as conflicts in professional autonomy, evolving responsibilities, and confidence in AI. To guide more situated chatbot design, we proposed a tension-informed design framework that centers professional practice and surfaces tensions as opportunities rather than barriers. We discuss how introducing chatbots in LMICs should aim to amplify professionals' capacity and align with the nature of assistive technology services.

CCS Concepts

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

Keywords

AI Chatbot, Wheelchair Provision, Wheelchair Assessment, Low and Middle-income Countries, Digital Health, Healthcare Service

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1 Introduction

Assistive Technology (AT), defined by the World Health Organization (WHO), is "an umbrella term for assistive products (e.g., wheelchairs) and their related systems and services" [98]. These services include assessment, fitting, training, follow-up, maintenance, and more, which are all essential to ensuring the safe and effective use of ATs like wheelchairs. However, in low- and middle-income countries (LMICs), wheelchair service provision is often hindered by limited access to trained professionals, inadequate supply chains, and insufficient infrastructure [30, 99]. To address these challenges, the WHO has established guidelines for wheelchair provision [97] and training packages tailored for low-resource settings [105], aiming to improve service capacity and quality.

Meanwhile, growing research interest in digitalizing healthcare services, such as developing electronic health records (EHR) systems [14, 65, 69] and telemedicine, [24, 52, 64, 82] shows how digital health tools could improve healthcare practice. Amid this rising enthusiasm [81], the "Chatbot Tsunami" [33] has arrived, with Artificial Intelligence (AI) chatbots riding the crest of the popularity wave in healthcare research, especially after the release of GPT-3 in June 2020. Numerous studies have highlighted the promise of AI chatbots in supporting healthcare professionals to improve patient care [57, 59], enhancing professional workflows by offering insights to aid diagnoses and offload administrative tasks [41, 70, 75, 85].

However, limited attention, especially in Human-Computer Interaction (HCI) and AT, has been paid to investigating how such tools might support wheelchair provision in LMICs. Mo et al. [58] offered an early exploration, indicating the potential of large-language model chatbots in improving wheelchair service by providing physical therapists with real-time consultation and training. While promising, it remains unclear how such chatbots should be designed to realize these opportunities in practice. For instance, what would be the practice-specific challenges that affect the integration of chatbots into existing workflows? What kinds of chatbot interactions would amplify rather than disrupt professionals' expertise? Thus, there is a need to better understand how to transform the promises of AI chatbots into workflow-compatible and context-aligned tools for wheelchair provision services.

To explore these questions, we conducted a two-part study, shifting from broad exploration to a more specific, practice-based approach, focusing on wheelchair assessment services with 11 physical and occupational therapists from Africa and South Asia. Wheelchair assessment plays a central role in ensuring appropriate provision [105]. First, we interviewed professionals to understand the challenges in current practices. Second, we encouraged participants to reflect on the imagined use of two chatbot design probes: **"Ask Wheelie"** for supporting wheelchair assessments and **"Wheel Care"** for facilitating personalized follow-up care. Based on the feedback, we present six main themes that reveal professionals' core need for digitalization and highlight varying tensions they anticipated in introducing AI chatbots into their workflow, such as concerns over losing control of practice workflows, the difficulty of conveying contextual nuance through chatbot interfaces, and the risk of disrupting trust and rapport with clients. Based on our findings, we identified 13 tensions and categorized them into three interconnected domains: Practice Structure, Anchored Values, and Contextual Readiness. We propose them as a tension-informed design framework and discuss the importance of building human capacity when designing digital solutions for AT service in resource-constrained settings.

In our study, we noticed that our participants used different terms to refer to wheelchair / assistive device users, including "patients," "clients," "beneficiaries," and "users." Considering that our study focuses on professionals providing services (e.g., assessments, consultations, and follow-ups), we have chosen 'clients' in the paper as a neutral term to reflect the service context. Additionally, it helps avoid potential confusion when referring to professionals as *users of* AI chatbots and digital tools.

In summary, this paper contributes to the growing body of HCI and AT literature on chatbot adoption in wheelchair services, specifically in LMICs, as follows:

1. It maps common challenges professionals face, and the digital support needed across wheelchair assessment steps, highlighting the demand for digitalization.
2. Building upon past literature, it provides concrete, practice-grounded insights into professionals' perceptions of chatbot potentials and limitations in enhancing wheelchair assessment service in resource-constrained settings.
3. It introduces a tension-informed framework comprising 13 identified tensions categorized across three interconnected domains: Anchored Values (practice-based and relational), Practice Structure, and Contextual Readiness. This framework aims to guide designers in anticipating and navigating

the tensions that arise when developing digital solutions for AT services in LMICs.

2 Related Work

2.1 Background of Wheelchair Provision Service in Low and Middle-Income Countries

The World Health Organization (WHO) estimates that approximately 80 million people, or about 1% of the world's population, require a wheelchair for mobility [97]. This need is escalating in part due to the aging population, higher rates of road traffic accidents, and advances in healthcare [5]. However, evidence suggests that the provision of wheelchairs faces significant challenges, with approximately 65% and 95% of people needing a wheelchair not having access to one [99]. People in low and middle-income countries (LMICs) [30] are more likely to report an unmet need due to financial difficulties, lack of awareness of appropriate wheelchairs, limited availability of trained personnel, resource shortage, and poor systems of provision [106].

Despite some positive outcomes [87], such as the WHO's eight steps in wheelchair provision in less-resourced settings [107], the prevailing research indicates that in LMICs, the approach to wheelchair provision predominantly relies on donated wheelchairs that adhere to Western design, which are often provided without the necessary clinical assessments [54]. To improve wheelchair provision, Gowran et al. [30] argued that the focus should shift from a product delivery-centric approach to a service-oriented approach, building capacity through adequate education and training for staff to provide high-quality products and ongoing services [54, 97]. Without these proper services, there is a significant risk of delivering unfit wheelchairs, adversely affecting the recipient's physical health, safety, and even vocational and economic wellbeing [15, 31, 84]. However, reviews [12, 18, 54] found that only a few educational institutions offer training in wheelchair provision, relying on non-government organizations (NGOs) to fill the educational gap in LMICs. Studies [12, 18] also highlight persistent deficiencies in geographic reach, professional diversity, and curriculum integration. These challenges highlight a critical need for researching new approaches to deliver more effective wheelchair provision services.

Meanwhile, the rapid advancement of digital healthcare [2, 63], especially AI, has sparked interest in medical research, claiming its immense potential to revolutionize healthcare quality [61, 96]. Studies have found that AI tools could enable healthcare services like remote consultations, data management, and clinical decision-making in LMICs [76]. Despite these potentials, whether they could improve wheelchair service delivery remains underexplored. This study aims to contribute to this gap.

2.2 Envisioned AI Chatbot Solutions in Healthcare Service

AI-driven chatbots, or "Conversational Agents" (CAs), are defined as computer programs that simulate human conversation, integrating AI, natural language processing, and machine learning [1, 3, 26, 51, 55]. Recent advances in large language models (LLMs), such as Google Med-PaLM 2 and OpenAI's ChatGPT, have attracted significant attention in healthcare services [57], spanning diverse domains including psychiatry [68, 83], musculoskeletal rehabilitation [75], radiology [41], allergy and immunology [29], and more [5, 19, 46, 85, 100, 104].

In particular, a broad range of use cases has been explored [44, 77], such as ChatGPT's application in medical research [41], health literacy education [20, 36, 85, 94], scenario simulations for training [16, 47], and daily clinical practices (e.g., triage, consultation, and post-treatment care [44, 75, 85, 100]). Many claimed that AI chatbots could support decision-making in diagnosis [71] and streamline workflows [36], particularly in medical writing [57, 77, 80], such as summarizing and writing discharge reports [67], electronic health records [102], and case reports [23].

Although the above applications sound promising, limitations remain. Some studies have shown that ChatGPT demonstrates solid general medical knowledge [48, 103, 104] in diagnosing complex cases [74], but it still produces inaccuracies and "hallucinations," especially in nuanced cases [5, 19, 83], due to its reliance on probabilistic word prediction, training data quality, and the lack of real-time medical updates[36, 60, 77]. Though GPT-4 showed notable improvements over GPT-3.5 in lab medicine questions [101], it still generated non-factual or incomplete answers, reinforcing the need for expert fact-checking [16, 77, 83, 90]. Additional concerns include its inability to interpret images, lack of transparency, and challenges related to privacy and accountability [44, 77].

Moreover, Li et al. [44] and Sallam [77] found that most current studies were preprints and editorials that focused on the potential use of AI chatbots rather than empirical evaluation, for example, how would adopting chatbots impact the existing clinical workflow? Wah et al. [93] reviewed the case studies of hybrid AI chatbots in healthcare, identifying several recurring barriers, including infrastructure constraints and limited patient trust. However, such reviews treat barriers as discrete issues rather than examining how they unfold and interact in situated service settings. Recent literature has also acknowledged that HCI often confines service design efforts to the interaction level [43]. As Shaw et al. [79] argued, the implementation of technology must be grounded in understanding how tools impact work routines, team dynamics, and the value propositions offered by technology, emphasizing the importance of viewing digital health innovation through a service design lens. Similarly, Greenhalgh et al. [32] in their synthesis of the Diffusion of Innovation, have argued that the successful assimilation of digital health innovations depends on how well they align with existing values, norms, and routines. Therefore, there is a need to move beyond the potential application of chatbots to explore in-depth how they could be effectively adopted in clinical service workflows.

2.2.1 AI Chatbot for AT. Despite the growing interest in AI chatbots among healthcare domains, there is limited research investigating their applications in AT. Buzzi et al. [13] received positive feedback on a chatbot that provided brief informational support to visually impaired users with low digital literacy. In wheelchair service, Fang and Ping [25] built a machine-learning LINE Bot offering basic suggestions for wheelchair types in Taiwan. While these studies show potential for improving information access, they were not developed with input from healthcare professionals.

Mo et al. [58] involved wheelchair users and professionals in an LMIC context, finding potential for chatbots to support training AT professionals and improve access to AT information. However, their work stopped short of exploring the design challenges of incorporating AI chatbots into service workflows for professionals, whether using chatbots would enable or disrupt current practice, and what the contextual requirements are.

2.2.2 AI Chatbot Adoption in LMICs. Furthermore, most AI chatbot studies were conducted in high-income countries [57], leaving questions about their applicability in LMICs, where infrastructure barriers and language differences could complicate adoption [8, 39]. Biana and Joaquin [8] argue that while LMIC institutions may adopt AI chatbots as symbols of innovation, core processes often remain paper-based. They suggest that LMICs are not technologically ready for AI adoption due to infrastructural and systemic challenges, particularly relevant in AT services, which are systematically under-resourced, and personnel are often overworked [89]. However, we argue that this perspective inadvertently highlights the need for more grounded research to understand how technologies can be adapted to support local practices and constraints. For example, Toyama's technology amplification theory [88] posits that technology doesn't automatically solve problems but amplifies existing access, capacity, and motivation. And the key is to invest in building human capacity. In this light, carefully considering infrastructural and professional constraints is not a reason to avoid AI applications but a call to design with careful consideration of local contexts.

To address these gaps, our study uses the wheelchair assessment service as a case study to explore how physical therapists in LMICs consider the barriers and opportunities in integrating a chatbot into their current workflow.

3 Method

Our study consists of two parts: semi-structured interviews and a design probe activity, where we introduced two speculative probes to elicit responses to potential AI chatbot integration across the assessment workflow. Employing probes [17, 27, 28] is an established research method in HCI that intends to provoke reflection and invite situated feedback. The study aimed to answer three research questions as follows:

RQ1. What digital technologies do professionals need to support their wheelchair provision services in LMICs?
RQ2. How do professionals in LMICs perceive the potential and limitations of AI chatbots in supporting wheelchair assessment services?
RQ3. How can AI chatbots be designed to support and fit into wheelchair assessment services in LMICs?

3.1 Participants

We recruited 11 rehabilitation professionals whose jobs involved wheelchair service and who were from low- and middle-income countries (seven men and four women; nine from Africa and two from South Asia). P1 and P9 initially worked as full-time physical therapists, but their responsibilities have expanded to include managerial tasks and policy and outreach advocacy. Among our participants, we observed three types of work settings. They are (1) office-based (10/11), including clinics, hospitals, and charity organizations; (2) On-the-road (P3&P7), referring to professionals who travel around the country to perform wheelchair provision service; and (3) Fieldwork (6/11), encompassing home visits to private clients as well as service provision in community centers or other non-office locations. Overall, participants reported a moderate familiarity with chatbots, averaging a 4.7 on a scale where 0 indicated no prior experience and 10 represented frequent use. Participants' details are in Table 1.

Before the study, we obtained ethics approval from the university ethics committee. Participants were recruited voluntarily through online advertisements on AT community forums and word of mouth. They were required to read the information sheet and sign the consent form before scheduling study time. All participants agreed to voice and video recording and received compensation for their time, which was the equivalent of £20 in their local currency, in the form of mobile credits or Amazon vouchers per their choice.

3.2 Study Procedure

All studies were conducted online through Microsoft Teams. Upon joining the meeting, we briefed participants on the study procedure and obtained their consent to record. The overall duration of the studies ranged from one hour and 33 minutes to three hours and two minutes (M=131±26.2 minutes). The variations in the study length were first due to poor internet connection, which caused frequent interruptions and longer times for Miro[1], a collaborative online whiteboard platform, to load in Part Two. Additionally, some participants offered detailed descriptions, resulting in longer discussions, while others gave more concise answers.

3.2.1 Semi-structured Interviews (45 to 60 minutes). In Part One, we started by asking participants about their professional backgrounds, day-to-day job responsibilities, tools used in practice, and how they tackle issues. Next, to piece everything together, we asked participants to provide an example of the most recent session with a client and walk us through each step. Lastly, we asked participants to discuss the limitations of current practices and envision how they would like to be supported without considering any practical and technological constraints.

3.2.2 Design Probe Activity (45 to 90 minutes). In Part Two, participants were given a link to the Miro board for the design probe activity and instructed to share their screens. The board contains a series of mockup screens of two probes. More details are presented in 3.3.

We briefly introduced each probe's main purpose and then revealed one section of the mockup screens at a time, allowing participants to review, critique, and answer tailored follow-up questions step by step. While the questions slightly varied depending on specific sections, shared questions included: (1) If given this tool, what questions would you ask at this stage? (2) What was your initial impression? (3) What potential benefits and challenges do you envision using it? (4) Compared to your current practice, will this form of interaction improve your practice?

[1] Miro: www.miro.com

Table 1: Participant Information

PID	Role	YoE	Age	Gender	Education	Country	Area	Work Setting	Self-reported Experience with Chatbot (0-10)
1	PT	7	35-44	Man	Masters	India	Urban	Office	8
2	PT	5	26-34	Man	Bachelor	Kenya	Urban	Office, Fieldwork	5
3	OT	11	35-44	Man	Diploma	Kenya	Suburban	On-the-road, Fieldwork	6
4	P/O	13	35-44	Man	Diploma	Kenya	Village	Office, Fieldwork	4
5	PT	8	26-34	Woman	Diploma	Kenya	Suburban	Office, Fieldwork	6
6	WPA	5	26-34	Woman	Diploma	Kenya	Urban	Office, Fieldwork	6
7	OT	6	26-34	Woman	Diploma	Kenya	Urban	Office, On-the-road	1
8	PT	13	35-44	Man	Masters	Pakistan	Village	Office	4
9	PT	10	45-54	Man	Masters	South Africa	Urban	Office	5
10	OT	2	26-34	Woman	Bachelor	South Africa	Urban	Office, Fieldwork	4
11	P/O	4	26-34	Man	Diploma	Uganda	Urban	Office	7

PT: Physical Therapist; OT: Occupational Therapist; P/O: Prosthetist/Orthotist; WPA: Wheelchair Provision Assistant; YoE: Years of Experience; 0: Never Heard of and 10: Use it all the time

3.3 Probe Design

When deciding the functions of our two probes, we first conducted desk research, reviewing existing literature [12, 54] and wheelchair service guidelines (e.g., WHO Wheelchair Service Training Package) [105, 107] to identify common practices and gaps. Additionally, recent research has shown that professionals see potential in chatbots to support personnel who haven't been adequately trained on wheelchair provision steps, act as a consultation tool for themselves at work, and offer information to educate wheelchair users [58]. Furthermore, supporting clinical decision-making and patient information-seeking are two widely discussed potential applications of generative AI identified in past literature [61]. Therefore, we selected one probe as a consultation tool for professionals conducting assessment interviews and another for follow-up services [85].

3.3.1 Probe I: Ask Wheelie. "Ask Wheelie" is a chatbot concept designed to serve as a consultation tool that proactively guides professionals in asking appropriate questions during wheelchair assessments, automatically filling out the selected form, and answering questions as they arise. There were seven mockup screens divided into four sections: (1) Who is your assistant, (2) How to interact with your bot, (3) What questions will you ask, and (4) How does your bot answer? Examples are shown in Figure 2.

3.3.2 Probe II: Wheel Care. "Wheel Care" demonstrates the second chatbot concept, enabling therapists to "prescribe" a post-assessment chatbot by tailoring information based on the client's needs, background, and goals. Figure 3 presents the mockup screens following the similar flow of the sections as the first probe: (1) Who is your assistant, (2) How to interact with your bot, (3) How to share the bot with your clients, including asking professionals to decide whether they would like to receive notifications when their clients send an inquiry to the chatbot, and (4) How your clients interact with the bot.

3.4 Data Analysis

All sessions were audio recorded and transcribed immediately. We employed reflective thematic analysis with the bottom-up approach [10] to analyze transcripts. The first author highlighted all relevant responses to the interview questions and assigned preliminary codes to them on digital sticky notes in Miro, which were placed under the corresponding sections and mock-up screens, with each participant marked with a unique color. All codes were iteratively refined where similar ones (e.g., "Need offline" and "Should not need data"), as well as contradictory ones (e.g., "always room to learn" versus "know what to want"), were clustered together and consolidated into groups. An affinity diagram was created to identify patterns in these codes and facilitate the development of themes.

As coding progressed, underlying tensions became evident in participants' reflections, expressed as trade-offs, conflicting desires, or values at odds between their current practice and imagined chatbot functions. These observations guided the next stage of analysis, where we refined and grouped codes, paying special attention to these tensions. For instance, an initial theme like "Benefits of Digitalizing Notes" was reinterpreted to capture a more layered view,

Figure 2: From left to right, four example screens present how the probe "Ask Wheelie" works. They are (1) the introduction of "Ask Wheelie," (2) the chatbot guides users on what questions to ask, (3) users ask the chatbot a question, and (4) the chatbot's answer to users' questions.

Figure 3: From left to right, four example screens present how the probe "Wheel Care" works. They are (1) the introduction of "Wheel Care," (2) the chatbot allows professionals to select tailored knowledge blocks to prescribe to users, (3) the chatbot provides the sharing link and notification settings, and (4) how users interact with "Wheel Care".

becoming "Tensions between Expressive Freedom and Controlled Notetaking."

Subsequently, the first author then met independently with three co-authors to discuss and refine the themes, ensuring a diversity of perspectives and minimizing interpretive bias. A final round of collaborative review led to the agreement on six overarching themes structured around key professional needs, 13 tension types, and three domains.

4 Findings: Understanding Current Wheelchair Assessment Practice in LMICs (RQ1)

This section reports two themes, uncovering the daily challenges and the support beyond digital technologies that professionals wish for. All participants follow a typical process from background interview to follow-up service (Figure 4). Therefore, in this paper, when we refer to wheelchair assessment services, we specifically refer to practices involved in these six stages, some of which are

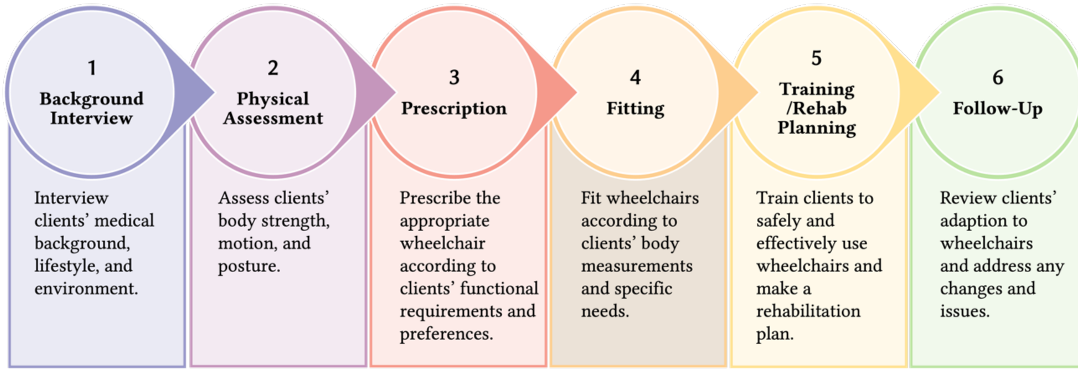

Figure 4: Wheelchair Assessment Service Workflow

handled directly (e.g., interviewing, training), while others (e.g., fitting) involve collaboration with technicians.

4.1 Sharing the Workload for Service Quality

All participants described how ongoing resource constraints, such as limited wheelchairs and repair components, service availability, and understaffing, delay wheelchair provision and intensify workload strain throughout the process, increasing pressure to see as many clients as possible. Notably, despite the service being a multi-step process, four participants (P2, P3, P5, P6) deliver assessments and wheelchairs on the same day, adding logistical strain, especially for field visits.

The shortage of service is also closely intertwined with the understaffing of on-site therapists and technicians. During Stages 1 and 2, many professionals (8/11) lacked support for notetaking and client positioning, often relying heavily on caregivers or memory: "You don't put the child for too long because if you take one measurement to record another, they will be restless." (P4). Although students or assistants sometimes help, many prefer to write notes themselves due to a lack of trust in their assistants' educational level (P3, P4, P8).

When problems arise, professionals prefer to ask colleagues or someone senior and rarely resort to online searches [72]. However, this approach is often limited by staff availability (P11) or fear of interrupting others (P6). P2 and P10 have turned to WhatsApp groups to discuss it with their peers, but the responses were often delayed. Thus, participants imagined having digital tools for consultation support, assisting with prescribing the most appropriate wheelchairs for complex cases.

Also, understaffing hindered wheelchair training (Stage 5) and limited continued support during follow-up service (Stage 6). With limited capacity, P2, P10, and P11 gave out personal phone numbers to clients, resulting in an overwhelming influx of incoming calls outside working hours (P11).

Therefore, all participants wish to share their workload, especially during hands-on assessments. However, many considered the hands-on session their favorite part of the job, as P11 explained, "That's when you realize whether whatever you've done is worth it all. It's just like a checkout point." This underscores their need to preserve autonomy.

4.2 Digitalizing Assessment Service for Efficiency

> "Now the digital world and people are doing all already (typing on computers in hospitals). These are, you know, the basic way. But when it comes to the rehabilitation assistive technology, these things are missing" P1

We found that digital tools were rarely used across all participants' current workflows. During the assessment, nearly all participants (10/11) reported using pen and paper to collect data, generating many notes after each session. While P1 and P9 noted that some clinics have introduced digital forms on tablets, paper remains the dominant method.

For home-based programs (Stage 5), most participants relied on "word of mouth" to demonstrate exercise plans. Supporting materials are often improvised through hand-drawn sketches or basic printouts. Some professionals refer clients to WhatsApp groups or suggest recording videos (P5, P8). Almost all participants desired a digital database to improve this workflow.

The follow-up process relies almost entirely on phone calls. Despite being overwhelmed with follow-up responsibilities, participants reported difficulty reaching clients when needed. Additionally, clients might speak local dialects, which often hinders effective communication. Thus, they wished for automatic systems to help check clients' progress.

Although full digital integration is rare, a trend of digitalization is evident. Most participants (8/11) reported transferring basic client data (e.g., biodata and contacts) to computers after the assessment, while detailed notes remained on paper. This manual transfer is time-consuming, and physical documents are often lost, especially during fieldwork (P2, P3). Therefore, all expressed interest in fully digital assessment forms to streamline workflow, ease information sharing, and eliminate the need to carry physical documents (P2

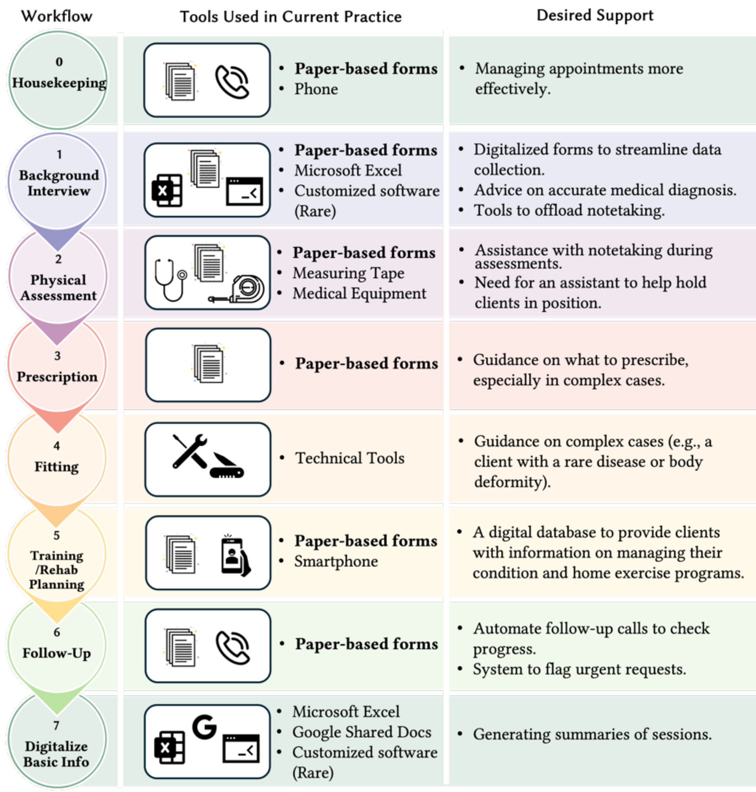

Figure 5: A detailed mapping of current tools employed in the workflow and the support participants proposed with two added stages: pre-assessment housekeeping and post-assessment digitalization.

& P3). As P4 illustrated, "If we could have a digitalized system whereby you have a tablet and there's an already designed form with a set of questions."

5 Findings: Envisioning AI chatbot integration (RQ2)

This section presents professionals' responses to our probes and answers our second research question. We coded participants' reflections on each envisioned chatbot use into subthemes; some were directly presented in the probes, and others were additional ideas they imagined, sparked by the probes. A central pattern we observed in these reflections was that participants actively weighed new interactions against the possible disruptions to their current practice, navigating competing pulls between what would be feasible and what would be constrained, revealing conflicts, trade-offs, and hesitations. We frame these responses as tensions to emphasize the nuanced negotiations professionals made for these envisioned uses.

To better understand how these responses relate to their service needs and workflow, we then grouped the subthemes into four overarching themes: the first three align with the key areas of need identified earlier, while the fourth captures cross-cutting conditions that shape the feasibility of chatbot integration (Figure 6).

5.1 Unpacking the Nature of Situated Assessment Practice for Chatbot Design

This theme summarizes how participants considered the potential usefulness of chatbots in supporting their assessment interviews, highlighting the concerns rooted in their practice's situated nature: adaptive, nuanced, and relational.

5.1.1 Tensions in Preserving Professional Autonomy via Scripted Chatbot Guidance. Our participants had mixed feelings about being guided by chatbots during the assessment process. Many participants (7/11) acknowledged that such a tool could collaborate with them during moments of uncertainty, believing "there is always room to learn" (P1), such as suggesting follow-up questions when clients couldn't clearly explain their condition (P2). Additionally, some considered this guidance could speed up the interview process as "this is giving you questions. So, I can go ahead rather than thinking about them" (P1). Notably, P2 and P10 considered that the value of guidance lies in co-piloting the interview, reminding them when critical questions are missed, like ticking off items from a conversation template. However, some experienced professionals felt "It (using chatbots) might not be helpful as I know what to ask" (7/11). They were concerned about losing their **professional autonomy** through this interaction, which is central to their practice. These suggestions indicate how participants started

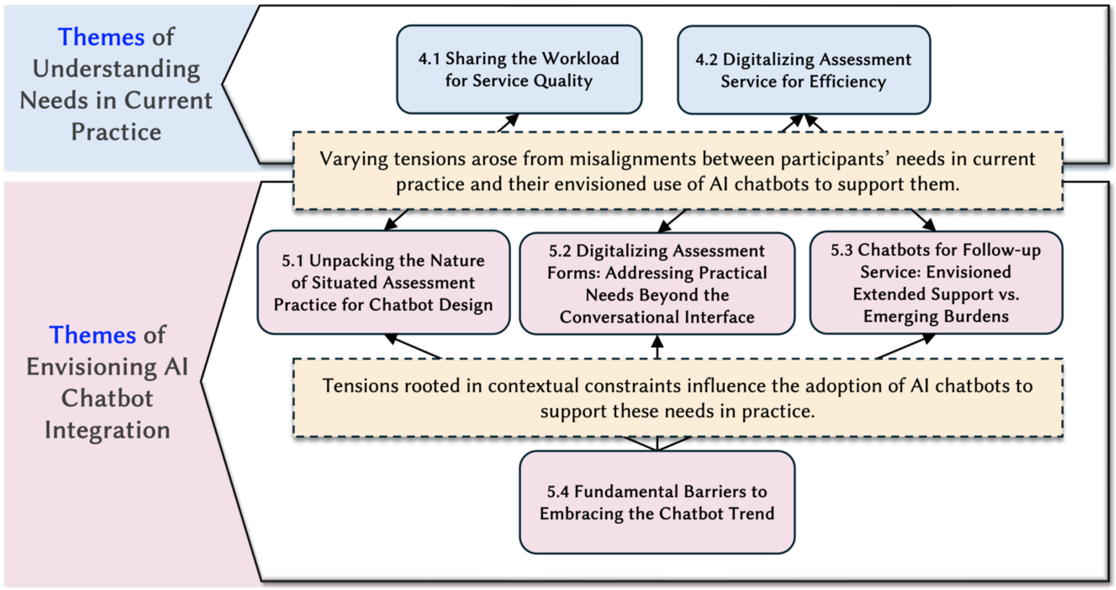

Figure 6: The Overview of the Themes' Relationships

to envision their professional roles shifting as **practice evolves** with the introduction of digital tools.

Despite the different attitudes, participants unanimously suggested that such a chatbot could be developed into a simulation-based training tool for conducting interviews. If used during a client session, they believed this could benefit junior professionals or wheelchair providers who have never received adequate training in conducting assessment interviews [16, 47].

5.1.2 Tensions in Maintaining Adaptive Assessment Flow via Structured Conversation Template. Although participants acknowledged that having step-by-step prompts in chatbots for guidance may ensure core questions are covered or speed up the process, this interaction could restrict off-script thinking, introducing rigidity into an inherently fluid process.

In the current practice, professionals constantly switch between topics, often deviating from existing templates as they observe clients' evolving needs. P2 explained, "Assessments are not just a series of fixed questions, but rather a back-and-forth conversation. . .(structured) Forms work well with children because they have common problems, but issues with adults are often very broad." P11 described conducting assessment interviews as a creative process of "creating a story from clients."

These **tensions in adaptive assessment flow** are also rooted in personal style. When asked what an interview template might be like, many (5/11) admitted it was challenging as there are no one-size-fits-all question lists, as each professional's approach is unique. Everyone might consider others' approaches incorrect or unsuitable. For instance, P9 would prefer a completely blank paper, allowing him to see things not on paper. Therefore, all participants requested features to add, modify, or rephrase questions themselves on the fly.

> "Remember, it's (rehabilitation) a service; it shouldn't be too rigid. . . There should be a space for breaking the rule, going the extra mile, or even doing less." P9

5.1.3 Tensions in Communicating Nuances via Chatbot Interaction. Echoing findings from prior work [58] and the need for consultation support, participants saw substantial promise in using chatbots as information-seeking tools during assessments, especially valuing the easy access and quick turnaround. Many (8/11) appreciated the idea of engaging chatbots in collaborative dialogue, resembling peer discussions around wheelchair selection [73]. As P2 described: "We (professionals and the chatbot) can argue it out or come up with a discussion in which we both agree."

However, participants wondered how to make chatbots realistically understand the nuanced details of clients' cases, as wheelchair assessments [53] typically involve a holistic evaluation of clients' physical, environmental, and medical backgrounds [97].

> "How can the chatbot answer when it can't see what my child is like?.. It's usually the practical type of question of how to position, what best accommodation the patient would need. Whether they will need a tilt, whether they need a cushion." P3

Furthermore, physical assessment requires physical inspection, often relying on observed behaviors, subtle bodily cues, and unspoken interactions that are all difficult to articulate through text alone. This echoes the comments from P10: "Sometimes I don't know how I would ask if I had a really complex case." Such restrictions led to concerns not only about answer accuracy but also about the time it would take to **communicate nuances** effectively, reducing the easy and quick appeal of chatbot interactions. To address this issue, participants requested features like image upload and referencing past assessments as a proxy for them to provide rich, embodied contextual details.

The same applies when users expect answers from the chatbot, suggesting video and image output with highlighted parts for detailed instructions. For instance, P10 asked, "Where would you measure from if somebody isn't sitting upright?" and further illustrated how she would consult somebody with such questions. "I'll say, OK, measure from the back of the knee. And then they do it, but they're doing it wrong. Then I'll say, OK, look at my video, and then I'll point the video at my leg."

5.1.4 Tensions in Establishing Rapport in the Presence of Using a Chatbot. There is one tension centered on the risk that integrating chatbots might **disrupt rapport** with clients, especially since the wheelchair assessment often involves personal and sensitive topics. Some participants noted that clients observe their body language during consultations, so they worried that using chatbots might make the interaction more transactional and less personal. Others described rapport-building as occurring through informal moments, such as telling jokes, using toys with children, or simply taking breaks with clients, which they feared might be lost if their clients saw them interacting with a chatbot (P4, P5, P11).

> "You need to connect to the patient to feel what the patient feels, but the patient also needs to connect with you... If you are using a chatbot like this, it reduces that connection because you need the connection to build trust. . . Again, there has to be a personal contact, which the chatbot may not necessarily have." P9

In addition, while building rapport, there is an underlying tension regarding **establishing client trust**, as participants expressed concerns about how the chosen medium might affect their professional image. For instance, P10 questioned, "How would a client feel about me typing on my phone while I'm interacting with them?" P11 and P5 worried clients might assume personal texting or improper use of their data, diminishing trust in participants' professionalism, "since they can't see what you are doing." Therefore, many reported they felt more natural when using a computer. In contrast, some were less worried, viewing digital tools in practice as a natural progression, suggesting that showing the screen or explaining the chatbot's use could help preserve trust (P1, P3, P4).

5.2 Digitalizing Assessment Forms: Addressing Practical Needs Beyond the Conversational Interface

This theme describes how the probe confirmed participants' need for digitalizing assessments, while their suggestions questioned whether chatbots were the right digital tool to fulfill this need.

5.2.1 Tensions in Preserving Expressive Freedom in Digitalizing Forms via Chatbot Interaction. Participants initially responded positively to "Ask Wheelie" as a digital tool for recording, storing, and retrieving client assessment forms. As P4 noted, "With just a smartphone, you're going to get the details of maybe all the assessments you've done in one phone, instead of carrying 20 papers with different sets of pages." P4 also appreciated the simplicity of typing directly into a chatbot, without having to navigate a form.

However, this enthusiasm for efficiency was quickly countered by concerns that the chatbot's question-and-answer input would restrict the **expressive freedom** that professionals relied on from traditional pen and paper. They underscored that completing wheelchair assessment forms involves more than writing texts. They often have sketches, body maps, and scribbled annotations. As P3 described, "I like to draw a little picture or link to something, like put an arrow to be like 'this is what I'm referring to. It's just quicker to write on paper." Such visual and spatial notes helped participants quickly refer to observations or explain concepts to clients. This need for flexibility in documentation also paralleled the dynamic and off-the-script nature of interviews.

Some participants proposed features like manually selecting questions, which mirrored traditional form-based tools rather than conversational input, signaling a deeper preference for documentation styles that offer flexibility. As P10 explained, "Patient notes in South Africa are written. This (chatbot) is not what I am used to." Thus, there are tensions in how to digitalize the form. Participants welcomed the idea of chatbots but found their input structure at odds with the creative and spatial forms of expression required in their practice.

5.2.2 Tensions in Having Confidence in AI to Reduce Documentation Burden. A few participants (4/11) suggested asking chatbots to fill out the assessment forms by transcribing conversations live and providing auto-generated summaries [67].

> "If I could just talk to the patient and, like, somehow magically afterward, I would have a summary of all the things we talked about." P10

These ideas reconfirmed their genuine need to reduce documentation and cognitive workload. They believed this could allow them to focus on listening to clients and avoid omitting details while conducting physical assessments, which is strongly associated with the hands-on nature of the wheelchair assessment process. Yet, these ideas also raised critical concerns about client consent for sharing and how much control they would have over what was recorded and stored (P3, P11). Participants approached it cautiously, questioning the accuracy and reliability of AI chatbots in understanding dialects and local expressions (P3, P4, P11). These comments reflected not only concerns about **AI's performance in low-resource languages** but also a broader need to **handle data responsibly** to ensure consent, protect client privacy, and control data recording. Thus, tensions arose between their desire for AI to ease their documentation workload and their hesitation to use it when reliable performance or ethical guidance was not in place.

5.3 Chatbots for Follow-up Service: Extended Support vs. Emerging Burdens

This theme captures how participants weighed the possible benefits of integrating AI chatbots in follow-up care against potential new burdens.

5.3.1 Tensions in Balancing Offloading Post-Assessment Support with Incurring New Labor via Chatbots. Consistent with past research [20, 36, 85, 94], "Wheel Care" was seen as helpful in offering tailored support to clients remotely 24/7. Some also envisioned the chatbot as a training content hub, offloading tasks like "create an exercise plan" (P11). They suggested incorporating features to preload videos, resources, or templates into various modules, streamlining the process of prescribing information. They believed this could free up time to attend to other clients, improving work efficiency.

Furthermore, all participants asked how "Wheel Care" could be shared with other clinics and how other stakeholders, like doctors, could contribute to prescribing information or even turn "Wheel Care" usage into high-level reports for different stakeholders (P1).

> "So, I wonder if there would be a way for multiple people to input. Maria will get all the information she needs. Rather than, for example, her doctor writing something down and the speech therapist mentioning something else she might forget. . ." P10

However, with different stakeholders, there were inevitably concerns about access (P1, P7) for data security and increased chances of mistakes, such as accidental deletion of data, leading to extra coordination labor. Participants who were less familiar with chatbots or had low confidence in using digital tools expressed concerns that the additional burden of explaining the tool to every client, amid large caseloads and limited time, would exacerbate this coordination effort. The push to reduce workload was counterbalanced by the pull of incurring new burdens, creating **tensions as practice evolved** (P4, P6), a common concern when introduced with a new digital tool [9]. Consequently, some participants (P3, P9) working in environments with established access questioned whether a chatbot with such functions would meaningfully add value to their practice, given that they already had the necessary materials and expertise at hand, so "there was no time to go to the bot."

5.3.2 Tensions in Balancing Respecting Clients' Privacy with Professionals' Need for Progress Monitoring. Aligning with the expressed need to monitor clients' progress with the issued wheelchairs, almost all participants (10/11) would like to be notified when clients ask the chatbot questions [50] and intervene when needed. This could give professionals visibility into what clients are confused about after a session and benefit their work with other clients.

> "After the training, Maria might struggle to maneuver over the rough grounds or maybe the uphill. . . the chatbot will provide that information, and then from there, we can see what other needs we need to train the wheelchair users after provision." P4

At the same time, tensions emerged when participants (4/11) worried their clients might feel embarrassed, leading them to either refrain from asking questions or to be selective with their inquiries, especially sensitive or intimate ones, defeating the purpose of monitoring progress. P4 added, "Maybe if Maria didn't trust me, she would not want me to see the questions." In healthcare systems, many models around technology acceptance have emphasized the importance of privacy protection [22, 35].

However, the opposite concern was notification fatigue, meaning constant updates could become overwhelming and add a new workload. To address this conflict, participants suggested seeking client consent upfront for sharing their chatbot interactions while allowing them to select which questions to share later (P5, P6, P7). Alternatively, notifications could be limited to critical issues (e.g., medical or wheelchair safety), reducing notification overload and respecting clients' privacy (P3, P10, P11). These reflections centered on how clients' being "followed up" might affect their behavior, revealing **tensions around balancing the professional's need for visibility** with the client's right and control over privacy, echoing the **tensions in building trust**.

5.4 Fundamental Barriers to Embracing the Chatbot Trend

Regardless of which probe participants reviewed, there are fundamental barriers in participants' settings beyond chatbots' functionality and design, including limited access to digital technologies, poor internet connectivity, power disruption, and low digital literacy [58], underscoring the ongoing challenges in implementing digital tools in LMICs [4, 7, 66], particularly the tensions around **technology access** [88] and the **digital confidence and literacy** [91].

For instance, among the participants, those who have less access to digital technologies worried, " If we don't have a smartphone or you don't have a laptop and you are the one left in the center and you want to do a review for the child, how are you going to be able to access the detail." (P6). Additionally, two of the most frequent comments participants made when reviewing probes were: "Is it offline or online?" or "It should not need data". Participants also pointed out that among their clients, those who would benefit most from the "Wheel Care" might struggle to use it due to low digital literacy(P10). Others are worried about their digital skills affecting the use of chatbots during assessment, like slow typing speed (P2, P6). Despite these considerable doubts, most participants (9/11) are still motivated to embrace the trend of integrating AI chatbots into their work.

> "If we are encouraging technology, if we are going with the flow because, in the future, chatbots will be old in the next 30-40 years, we will have used this a lot." P9

6 A Tension-Informed Design Framework for AT Service in LMICs (RQ3)

In this section, we propose a tension-informed design framework grounded in our findings, which positions tensions not as discrete barriers to chatbot adoption but as opportunities to carefully balance envisioned technologies and the situated conditions of AT professional practice. By proposing a set of 13 tension types and a higher-level categorization of three interconnected domains, the framework aims to guide early-stage design exploration by inviting designers to ask, "What tensions might arise when [design change] disrupts [domain element]?"

6.1 Categorizing the Tension Types

We noticed that some tensions in Section 5 stemmed from perceived disruptions to core values in current AT practice, such as the dynamic, relational, and hands-on aspects of assessment interviews. In contrast, some were more structural, reflecting practical tradeoffs, such as taking on new coordination tasks after "offloading" current ones to chatbots. These patterns suggested that tensions occurred not just in responses to isolated functions but were also associated with deeper dimensions of existing practice. This prompted

Table 2: The Overview of Tension Types and Domains Grounded in Our Study

Domain Name	Tensions In	Might Arise When
Anchored Value - Practice	Professional Autonomy	The designed conversation flow misaligns with how professionals make judgment, choose their style, or direct their practice, which results in undermining their autonomy.
	Adapting In-Situ	The designed interaction flow constrains professionals' ability to adapt their approach in real time or improvise as the session unfolds.
	Communicating Nuances	The designed interface or interaction limit professionals' ability to convey the subtle, contextual, or hands-on aspects of clients' cases.
	Expressive Freedom	The designed interface or interaction constrains how professionals record, annotate, or articulate their thoughts - especially in formats that rely on spatial, visual, or non-linear forms of expression.
Anchored Value - Relational	Establishing Rapport	Using a chatbot interrupts or alters the informal, relational dynamics professionals rely on to connect with clients, such as shared attention, body language, or casual conversation.
	Building Trust	The presence of chatbots affects how clients perceive professionals' attentiveness or competence, which leads to undermining clients' trust in them, especially when chatbot use is not transparent or visible to clients.
Practice Structure	Shifting Workflow	Integrating chatbots shifts existing workflows or creates additional tasks, potentially clashing with how professionals are accustomed to working.
	Evolving Responsibilities	Integrating chatbots introduces new responsibilities, expanding or changing professionals' original roles, especially when proper training is not in place.
	Transforming Data Practice	Integrating chatbots transforms how information is documented, accessed, or shared, changing the data flow between professionals and other stakeholders.
Contextual Readiness	Confidence in AI for Local Context	Professionals doubt AI's ability to perform reliably in local conditions (e.g., dialects or contextual nuances), conflicting with their desire to rely on AI.
	Trust in Data Safety	Professionals do not trust the safety of how client data is stored, accessed, or protected, conflicting with their desire to digitalize work.
	Access to Technology	Professionals are concerned that limited infrastructure, such as unreliable internet, devices, or power, will constrain their access to use chatbots, conflicting with their desire to use any digital tools.
	Digital Confidence and Literacy	Professionals feel uncertain about both their and other's digital skills, having low confidence in navigating digital tools, conflicting with their desire to use any digital tools.

us to ask: What aspects of the assessment service do these tensions disrupt?

To investigate this, we revisited participants' reflections to consolidate recurring tensions, moving beyond a technology function-by-function lens toward a **professional-practice-centered** approach. 13 key tension types (see Table 3 for definitions) emerged in response to the participants' envisioned chatbot use. Through an iterative process, we examined which aspects of the practice these tensions are most associated with and identified three interconnected domains:

1. Anchored Values: refer to the values that ground how AT professionals define and deliver quality service. Tensions might arise when chatbot integration is perceived to interfere with or undermine these values. These fall into two categories: practice-based values, which reflect how professionals approach their work (e.g., autonomy, adaptability), and relational values, which reflect the importance of connection with clients (e.g., rapport).
2. Practice Structure: encompasses the core tasks, professional responsibilities, and workflows that constitute day-to-day professional practice. Tensions might arise when chatbot integration restructures services, such as changing workflows, shifting responsibilities, or altering data practices, especially when the surrounding support or resources (like coordination mechanisms or staffing) are lacking.
3. Contextual Readiness: captures the broader conditions shaping whether a digital tool can realistically be adopted. Tensions in this domain might stem from concerns about infrastructure readiness, digital literacy, or whether AI systems can function effectively in local settings (e.g., handling local dialects or unreliable internet).

To put them in context, Figure 7 shows how the 13 tensions within the three domains were mapped back to the six identified themes. It visualizes which themes concentrate on specific types of tension and how the same tension might appear across various themes.

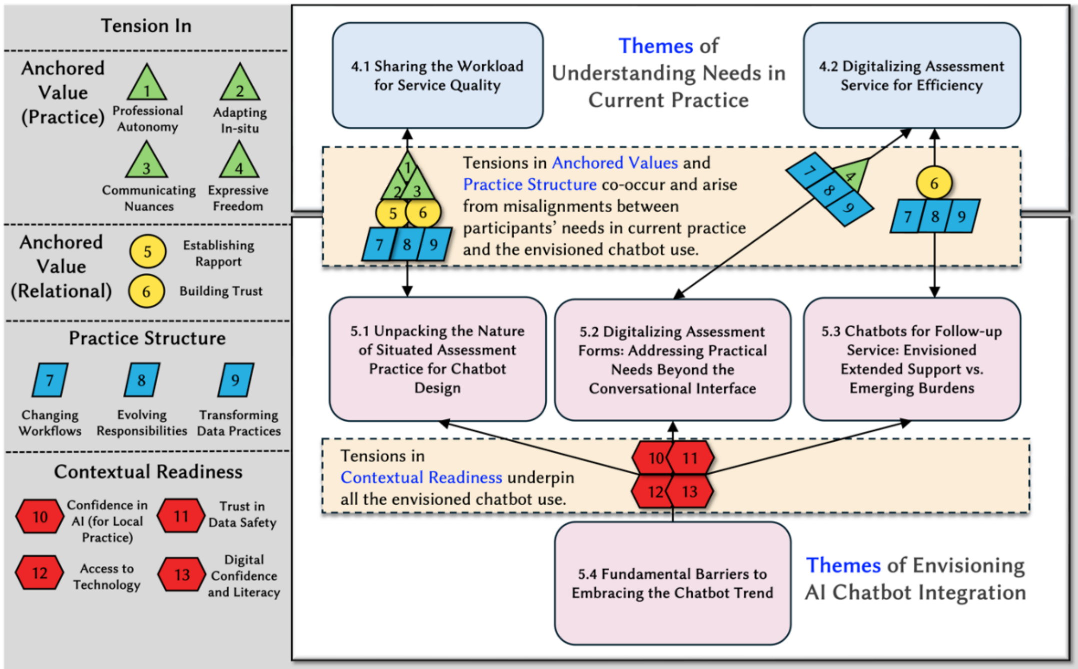

Figure 7: A visual map illustrates how tensions are distributed across the wheelchair assessment workflow and highlights which types of tensions are associated with what aspects of the envisioned chatbot use.

6.2 The Three Interconnected Domains

Furthermore, these tensions do not operate in isolation. Introducing a chatbot will inevitably reshape the status quo, initiating changes across all domains. A shift in workflow may alter professional roles, and in doing so, may surface tensions around misaligned values or expectations, and may also collide with the realities of the context. For example, as seen in Figure 7, all themes are layered with tensions in both anchored values and practice structure, underpinned by the tensions in contextual readiness. Thus, we see these domains not as a hierarchy or linear cascade but as interconnected domains where tensions may surface, interact, or accumulate (Figure 1).

For designers, this means that anticipating tensions during an earlier stage is not about addressing each tension consecutively but about recognizing how a single design intervention, however small, may influence multiple domains of service. This encourages a holistic approach that zooms out from individual tensions to reflect on how the three domains interact and influence one another.

Notably, we emphasize that tensions or disruptions are not inherently negative. Sometimes, the goal of introducing new tools like chatbots could be to challenge or transform existing workflows (e.g., Electronic Health Records [56]). Thus, instead of labeling participants' concerns as barriers to technology adoption, we consider tensions as opportunities for design. We do not aim to suggest avoiding change but to support designers in recognizing where tensions may arise and consider whether disruption is intentional, necessary, or in need of mitigation.

In addition, while the 13 types were grounded in wheelchair assessment services, the three domains were developed with broader applicability in mind, echoing common dimensions across AT and healthcare services. By centering on professional practice rather than the technology itself, we aim to help designers see beyond direct "usefulness" metrics and approach alignment as an iterative negotiation of values, workflows, and contexts. By highlighting these interconnected domains, we aim to offer a practical entry point for designers to unpack what service areas may be affected by chatbot integration and how these areas could impact each other.

6.3 From 13 Tensions to Design Prompts

To make this categorization actionable for design, Table 3 presents a series of question prompts and ideas for reflection, synthesized from participants' suggestions. These questions and ideas are not meant to be exhaustive but rather serve as a starting point to help designers identify scenarios where tensions might arise and brainstorm how design could better align with real-world practices.

7 Discussion

While we set out to probe the potential and limitations of integrating chatbots in wheelchair assessment services, especially in areas commonly highlighted in the literature, our findings offer a more nuanced understanding of how using chatbots might be seen as intersecting with the values, structure, and digital readiness respected in current practice. In doing so, we proposed a tension-informed design framework that helps designers negotiate the alignment between chatbot design and the practice, value, and contextual demands of service delivery. Here, we reflect on this framework within the broader discourse of HCI and digital healthcare services, discussing the importance of building human capacities before introducing digital solutions in low-resource settings.

Table 3: Designing with Tensions

Domain Name	Designers Might Ask	Design Ideas / Implications
Anchored Value	What tensions might arise when chatbot design interferes with the way professionals typically engage in wheelchair assessment tasks? (e.g., hands-on, verbal, observational), or misaligns with professionals' core values about how care should be delivered? • How might the chatbot design affect professionals' ability to exercise clinical judgment during dynamic wheelchair assessment sessions? • In what ways could chatbots constrain how professionals articulate nuanced observations? • How might chatbot features limit the flexibility professionals have in documenting information in their preferred format? • How might using chatbots shift the relational dynamic or communication flow between professionals and their clients?	• To maintain professionals' autotomy and flexibility, in the chatbot interface, allow them to customize roles of chatbots, and toggle between these roles (e.g., an assistant, teacher, or note-taking tool) based on their own experience and tasks [45]. For each chatbot's answer, professionals could provide real-time feedback via shortcuts, like accept, override, or skip. • Enable multimodal input, such as voice and images to help the chatbot better interpret the issue at hand. Consider integrate a customizable canvas that supports freehand sketches and annotations on body maps or photos. • To preserve the relational dynamic between professionals and clients, chatbot interaction should minimize visible disruptions, such as session-aware timing or wearable displays that keep interactions discreet. When appropriate, chatbot functionality can be introduced to clients, with thoughtfully designed avatars [86] to support transparency and build trust.
Practice Structure	What tensions might arise when chatbot integration restructures existing practice? • How might chatbot integration shift responsibilities in ways that create unintended burden for professionals? • In what ways might integrating a chatbot challenge how information typically flows across staff roles or teams? • What kinds of onboarding, coordination, or fallback mechanisms are needed to help professionals adjust to new workflows involving chatbot use?	• To help professionals anticipate and adjust changes in task distribution, designers should begin by co-mapping with professionals the intended role of the chatbot within the existing workflow and identify possible new forms of labor, such as maintaining the work when the chatbots fail to meet the expectations [38]. • Co-create a shared, role-tagged task dashboard that lists all chatbot-initiated actions, along with who is expected to validate, complete, or follow up. Allow professionals to add context to a chatbot suggestion before passing it to another team member.
Contextual Readiness	What tensions might arise when chatbot designers assume the readiness that does not yet exist in the local context? • How might local infrastructure (e.g., connectivity, devices) limit chatbot reliability or access? • What chatbot assumptions (e.g., technical fluency, digital skills) could erode professionals or clients' confidence in using it? • In what ways might concerns about data safety or AI decision-making erode professionals' willingness to use the chatbot?	• Design chatbots with offline-first or low-bandwidth capabilities, ensuring compatibility with various devices such as supporting basic smartphones and building upon existing communication channels like WhatsApp or SMS [58]. • Provide fallback options (e.g., downloadable forms, and paper-based alternatives) when chatbot services are temporarily unavailable. Co-design with professionals to create procedures for transitioning between chatbots and pre-chatbot method, depending on connectivity conditions and session needs. • Allow customizable onboarding paths based on the user's self-identified comfort level. For example, provide a "basic mode" for users new to chatbots, and an "advanced mode" for more confident users. Designers could consider modular design so professionals can add chatbot features as they gain more confidence. Incorporate in-context, just-in-time micro-tutorials, such as tooltips that explain how to use certain features without requiring users to leave the flow. • To enhance professionals' trust in chatbots, being transparent with evidence sources, how the decision is generated and whether it impacts on users' privacy, such as include respective confidence level for each key decision point, or a clear visualization to map the data flow [40, 95].

7.1 Reflecting on Using New Technology in Healthcare Service through a Tension-Informed Framework

Our framework contributes to broader conversations about digital technology adoption in AT and healthcare services. Extensive research on healthcare technology adoption has drawn from the Technology Acceptance Model (TAM) [21] and the Unified Theory of Acceptance and Use of Technology (UTAUT) [92]. These frameworks traditionally emphasize determinants such as perceived usefulness, ease of use, facilitating conditions, and social influence on the individual level. Yet, recent critiques argue that optimizing solely for "usefulness" or "ease" is often inadequate in complex healthcare contexts [42]. Nadal et al. [62] have also noted that these models are too abstract and disconnected from design practice.

Building on these concerns, our framework offers an alternative perspective by highlighting three key differences. First, we shift focus from measuring individual acceptance post-use to informing design at the pre-use stage. Compared to the standard acceptance model, which focuses on explicit constructs such as perceived usefulness and ease of use, our approach treats these perceptions as latent outcomes that emerge from the interaction between the three domains.

Second, while Nascimento et al. [9] provided a systematic overview of common barriers to digital health adoption, such as workload burden, lack of training, and infrastructure limitations, we deliberately avoided such framing but considered them as tensions to be navigated. This approach resonates with Jian's tension-centered model of resistance [37], which frames resistance arising from tensions between new information and communication technologies (ICTs) and organizational conditions. Instead of dismissing these tensions, Jian argued that only by balancing competing needs through communication can organizations benefit from technology while minimizing pushback. This framing echoes Burgess et al. [11] , who reframed patient "noncompliance" in chronic care as "care frictions", sticky engagements where clinical guidelines collide with social, emotional, and infrastructural realities. This *Care Frictions* lens reframes the patient-provider misalignments not as failures but as sites of insight for design. Similarly, Greenhalgh et al. [9] argued that adopting digital health technology is an ongoing negotiation between the innovation, its users, and the organizational system. Our framework builds on these traditions by treating tensions not as obstacles to be eliminated but as opportunities for more situated and reflective design.

Third, in the traditional technology acceptance model, technology is the focus. For example, Shaw et al. [79] highlight their [Tool + Team + Routine] heuristic, emphasizing how the interaction among digital tools, stakeholders, and work routines drives service reconfiguration. In contrast, our framework is grounded in the professional's perspective. Rather than isolating technologies, we focus on where tensions emerge in the flow of practice, the alignment of professional values, and the influence of contextual conditions.

Thus, these shifts support a move from promoting acceptance as the end goal to designing for alignment, offering a practice-centered view to help interpret adoption challenges as navigable tensions.

7.2 Building Human Capacity in Wheelchair Assessment Services in LMICs

In line with Toyama's Technology Amplification Theory [88], our findings underscore that in low-resource settings, technology alone cannot improve service without the necessary human capacity in place. For example, participants with limited digital skills and unstable access to technology (e.g., P6) experienced tensions in Contextual Readiness, reporting discomfort in adopting new tools and lacking prior successes to motivate change. Others with strong digital skills expressed concerns tied to Anchored Values, such as disrupting client relationships or losing creative control in assessments. Additionally, any changes to the practice structure, such as offloading follow-up to chatbots, would alter the data flow between staff, raising concerns among participants, similar to the findings from previous work where digitalized records removed the informal "secret codes" shared among colleagues [34].

These tensions illustrate that simply introducing chatbots into wheelchair assessment services in LMICs is insufficient. To mitigate this, we advocate for a gradual, human capacity-building approach, where adequate support is required in both infrastructure and training to increase users' digital literacy, foster their motivation, and demonstrate the clear benefits of the new technology [9, 78]. In 3D printing for wheelchair services in Kenya, Barbareschi et al. [6] found success only when technology was introduced gradually alongside training. Thus, chatbot adoption should also begin with foundational support before layering in more complex functionality [4], such as allowing professionals in LMICs to work with the tools they trust first, alongside training staff in electronic health literacy [49] and the safe and effective use of AI chatbots [49, 59]. This approach could help professionals become more comfortable with new technology, thereby alleviating tensions associated with changing practice structures.

7.3 Limitations and Future Work

Recruiting experienced professionals in LMICs is inherently challenging; consequently, our study recruited 11 participants, mainly from Africa, especially Kenya, representing a limited sample size and skewed geographic scope. Future research should include a larger sample size and either expand to a broader scope or focus on a single location. Second, we employed two chatbot-based design probes with predefined functions, which could restrict participants' perceptions of the usability of AI chatbots and might narrow their thinking to only these two options. Also, all our findings were based on participants' speculation rather than actual use. Moving forward, field-based deployment of a prototype for a longitudinal study could provide a more comprehensive and complete picture of wheelchair service. Another limitation was the participant pool, which consisted solely of physical therapists. Future studies may benefit from involving a broader range of stakeholders, including wheelchair users, NGO staff, and IT professionals, to validate and refine the framework across varied perspectives. Additionally, the presented framework could be situated more firmly within established theories and models and evaluated by designers to assess its practical applications in design practice.

Lastly, while our findings are specific to wheelchair assessment, some of them are transferable to broader healthcare contexts, such as the need for digitalizing notes and the concerns regarding how the presence of digital tools would impact the professional-client connection. We argue that cross-context relevance strengthens the work's impact as it offers transferable insights for AI chatbot design in other healthcare settings. Second, it signals the potential for scalable design strategies to benefit other services. By acknowledging this transferability, we position our findings as part of a larger conversation on the responsible design of AI chatbots in healthcare services.

8 Conclusions

Recognizing the gap in research on how AI chatbots could enhance AT services in LMICs, we conducted semi-structured interviews alongside design probe activities to explore professionals' needs during the current workflow and the potential of AI chatbots in supporting wheelchair assessment services in LMICs. Grounded in participants' feedback, our findings revealed that AI chatbots show promise in areas like training, consultation, post-assessment care, and administrative support, aligning with past literature. However, participants have highlighted tensions, including balancing structured guidance with flexibility, maintaining freedom and creativity in notetaking, and concerns regarding professional-client relationships. Our analysis led to the development of a tension-informed framework that identifies 13 tension types and categorizes them into three interconnected domains - Practice Structure, Anchored Values, and Contextual Readiness. We consider tensions not as barriers but as opportunities that can guide the design of digital technology solutions to better align with the values in AT service workflows. The dynamic interplay between the identified tensions highlights users' diverse needs and attitudes toward integrating chatbots into their everyday practice. We believe our empirical findings and derived framework could guide developers, designers, and researchers in developing AI chatbots for wheelchair assessment, contributing to the growing literature on chatbot use in AT services in LMICs.

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