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Applying Design-Thinking to Develop a Mission Statement Mobile Application in Palliative Care

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Abstract

Delivering high-quality palliative care requires a deep understanding of each patient's personal values and preferences to support truly patient-centered advance care planning (ACP). Despite strong evidence showing that ACP can lower healthcare expenditures by up to 36%, reduce emotional strain on patients and families, and promote care aligned with patient goals, participation rates remain below one-third among adults. This project sought to design a mobile health intervention that addresses barriers to ACP engagement and enhances the integration of patient values into palliative care. Guided by a design-thinking framework, our team developed a mobile application prototype informed by recurring challenges identified across palliative care research and practice. Communication barriers related to expressing and understanding patient priorities were recognized as a major obstacle within palliative care delivery. To respond to this need, a prototype application was designed to facilitate clearer, more meaningful communication between patients and their care providers. The proposed "Mission Statement" app empowers patients to articulate what is most important to them and to share these values with their healthcare team. It also offers a dynamic space for patients to refine their goals and preferences throughout their care journey. Employing design-thinking proved to be an effective strategy for driving patient-centered innovation and translating research insights into practical clinical tools.

Keywords: Palliative care, Advance care planning, Digital health, Design-thinking, Mobile innovation

Introduction

Palliative care is a dynamic, interdisciplinary, and highly individualized approach to care that neither hastens nor delays death but focuses on alleviating pain, managing symptoms, and supporting emotional and spiritual well-being [1]. A central component of palliative care is advance care planning (ACP)—a process that encourages individuals to reflect on their beliefs and values and communicate them with healthcare professionals and loved ones [2–4].

The benefits of ACP are well established in the literature. Engaging in ACP ensures that patients receive care consistent with their values and preferences [5, 6], alleviates the emotional burden and decisional stress experienced by caregivers when interpreting uncertain patient wishes [7, 8], and can reduce healthcare expenditures by up to 36% [9, 10]. Numerous guidelines also emphasize the importance of open, compassionate, and honest communication in end-of-life care as a foundation for truly patient-centered practice [11–13].

Despite these well-documented advantages, fewer than one-third of adults have participated in ACP discussions or completed advance directives, largely due to the emotional discomfort and stigma surrounding conversations about death and dying [14]. Healthcare providers, too, often find such discussions challenging, particularly when

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eliciting or interpreting patient values and preferences [15]. Although patients frequently identify communication as a core element of quality care [16, 17], many continue to express dissatisfaction with physician communication [18]. Within palliative care, where communication is inherently sensitive and complex [19], ineffective dialogue can contribute to patient and family distress, including heightened anxiety, depression, and dissatisfaction with care [20–23].

Innovative approaches have emerged to facilitate conversations around ACP and palliative care. Examples include gamified board games that encourage discussions about death in community settings [24, 25] and patient-reported outcome measures (PROMs) used as communication tools [26, 27]. However, the applicability of these methods within clinical contexts remains uncertain [8, 9], and currently, no validated or widely accepted PROM exists for use in palliative care settings [24–28].

To address these gaps, our team is developing a mobile application designed to enhance communication in palliative care by allowing patients to record and share their personal values and preferences. This tool will enable users to create a personalized "patient mission statement"—a concise expression of what matters most to them, including their care goals and guiding values.

By allowing healthcare providers to easily access patients' stated priorities, this application aims to reduce ambiguity surrounding patient values and preferences—a persistent barrier in ACP and palliative care [7, 8, 29, 30]. It will also streamline communication by minimizing the need for patients to repeat sensitive information during successive interactions. Furthermore, enabling patients to document and update their mission statements throughout their care journey may reduce caregiver distress when faced with ambiguous decisions, as patient wishes will be clearly articulated and accessible [7, 8].

The purpose of this paper is to describe the design-thinking process underpinning the initial development phase of this innovation. Drawing upon evidence from the existing literature, we developed the first prototype of the "Mission Statement" mobile application. Future phases will involve iterative prototyping and user testing with key stakeholders. Ultimately, this work aims to demonstrate how clinicians can apply design-thinking principles to translate research insights into practical interventions that enhance care delivery and patient outcomes.

Materials and Methods

This project employed a design-thinking methodology [31], a human-centered framework for creative problem solving that prioritizes empathy and collaboration to generate innovative solutions. Design-thinking emphasizes understanding user needs, leveraging multidisciplinary perspectives, ideating potential interventions, and engaging in rapid, iterative cycles of prototyping and testing to refine solutions [31].

Unlike linear or top-down approaches to healthcare design, design-thinking follows a cyclical process of ideation, experimentation, and feedback, fostering flexibility and responsiveness to user experiences [32]. Originally popularized in the business and engineering sectors, design-thinking has been championed by firms such as IDEO, which collaborated with Stanford University to establish the renowned d.school, a global leader in design innovation responsible for projects with companies such as Apple and GE [33, 34].

In healthcare, design-thinking has gained increasing traction as an effective framework for developing user-centered interventions. A recent systematic review identified 24 healthcare projects utilizing design-thinking, all reporting improvements in satisfaction, usability, and intervention effectiveness when compared with conventional approaches [32].

Design-thinking approach

Asch and colleagues emphasize design-thinking methodology as a cornerstone for fostering impactful innovation in healthcare, advocating for clinicians to employ its principles in generating forward-thinking solutions to systemic challenges [35]. In alignment with this perspective, our team collaborated with the Health Leadership Academy at McMaster University to apply design-thinking principles in developing our intervention. The following section outlines the design-thinking methods used in this project.

The first phase of design-thinking involves problem identification [31]. This step requires gathering insights from diverse stakeholders to understand their experiences and perspectives, followed by synthesizing these data to define the central issue to be addressed [31]. Once a core problem is established, a preliminary prototype is developed as a potential solution, which then undergoes cycles of refinement and testing. These iterative refinements are guided by observational analysis using the POEMS framework and by qualitative feedback from stakeholders.

The POEMS framework—which stands for *People, Objects, Environments, Messages, and Services*—is a structured approach for analyzing user interactions with prototypes, particularly within design-thinking research [36]. Observational data are organized according to these five categories to capture how various stakeholders engage with the prototype (for example, a mobile application), the context in which those interactions occur, and the messages and services involved. These observations are then synthesized to identify recurring patterns and

contextual factors, which are analyzed through a bottom-up process to derive their implications for prototype refinement [36].

This analysis is further supported by contextual inquiry, an approach that enables researchers to observe and discuss user experiences in real-world settings [37, 38]. Observational findings are visualized and presented to the research team for peer debriefing, allowing collaborative reflection and integration of insights into prototype modifications. This iterative process of analysis, feedback, and redesign continues throughout all stages of development to ensure that the evolving prototype remains grounded in user experience and needs.

In parallel, qualitative analysis is conducted through semi-structured interviews with key stakeholders [31]. These interviews explore participants' perspectives on the prototype, with additional probing questions designed to elicit both cognitive and emotional responses regarding their experiences interacting with it [31]. Transcripts are analyzed thematically using a bottom-up approach to identify key insights, which are subsequently applied to refine the design and functionality of the prototype.

Through the synthesis of observational and qualitative data, the prototype is iteratively enhanced in a continuous, cyclical process—hallmark of design-thinking methodology.

Current status of the project

This paper represents the first phase of our ongoing project. In this stage, we leveraged insights from previously published literature involving stakeholders in palliative care to identify the most pressing challenges in the field. Consistent across multiple studies was the recurring theme of communication barriers surrounding the articulation and understanding of patient values—reported from both patient and provider perspectives [15, 29, 30]. Drawing on these findings, we designed a preliminary prototype of a mobile application aimed at addressing this gap. Subsequent project phases will focus on iterative prototype testing and refinement using design-thinking principles.

The proposed intervention, titled the "Mission Statement" mobile application, is intended to enable patients to articulate their goals, values, and preferences early in the palliative care process. Patients will create a personalized *mission statement* that reflects what they most want their care team and loved ones to understand about them. This statement can be shared with family members and healthcare providers—each with access to a compatible version of the application—ensuring transparency and continuity of communication. Importantly, the mission statement will be dynamic, allowing patients to modify their inputs as their circumstances, goals, or preferences evolve throughout their care journey.

By placing the patient's voice at the center of decision-making, this intervention aims to foster agency, empowerment, and clarity in palliative care. The overarching goal is to reduce ambiguity regarding patient goals and values, ensuring that care is consistently aligned with what matters most to the patient, rather than being lost in translation across clinical interactions.

Components of the application

The proposed mobile application will include three primary components designed to facilitate patient expression and communication in palliative care.

First, the app will feature an open text space where patients can compose a personal *mission statement*—a message encapsulating what they wish caregivers and healthcare providers to understand about them in order to guide compassionate, individualized care.

Second, the app will include a reflective question section, where patients can respond to open-ended prompts derived from literature identifying meaningful topics for individuals receiving palliative care (e.g., "What music would you want to listen to on your last day alive?") [24–28].

Third, the app will present a values-sorting interface that allows patients to categorize what matters most to them. Users will be able to click and drag predefined values—such as *"being in as little pain as possible," "having my whole family with me,"* or *"being able to use my hands"*—into one of three importance levels: *"very important," "somewhat important,"* or *"not very important."* This feature will also permit patients to input their own personalized values, ensuring that the app remains flexible, patient-centered, and reflective of individual priorities.

Upon completion of the prototyping phase, visual representations of the application will be shared. The app is intentionally designed to be intuitive and accessible, serving not only as a display of patient preferences but also as a communication bridge connecting patients, caregivers, and clinicians. In line with design-thinking methodology, stakeholder feedback will inform every phase of the app's refinement and development.

Future directions

Future work will employ design-thinking methodology to iteratively refine the application based on user and stakeholder feedback. The development process will begin with the creation of a low-fidelity coded prototype, which will be evaluated through qualitative and observational methods with both patient and provider groups. Insights gathered will guide iterative improvements before proceeding to large-scale user testing.

The final prototype will be pilot tested in hospitals and hospices located in a large urban center. During testing, the POEMS framework will be used to collect and analyze observational data on user interactions, while qualitative interviews with patients and healthcare providers will capture their perspectives on the application's usability, impact on communication, and integration into palliative care processes.

Design-thinking employs qualitative and ethnographic research methods to gain deep understanding of the user experience [39, 40]. However, previous critiques note a potential bias toward premature implementation—that is, advancing a product to completion before incorporating adequate user feedback [39]. To address this, our study will follow best practices by testing minimally viable prototypes early and often in the design phase. This ensures meaningful stakeholder input guides each iteration of development [39]. By maintaining an iterative, participatory process, we also aim to mitigate social desirability bias and promote authentic, user-driven innovation [41].

Results and Discussion

This study introduces a novel mobile application designed to enhance the quality of palliative care and improve communication between patients, caregivers, and providers in the context of advance care planning (ACP). Our continued use of user-centered design-thinking methodology will enable the development of an intervention that helps patients articulate their values, preferences, and goals through the creation of a personalized mission statement. Consistent with the principles of design-thinking [31], the project integrates feedback from patients, families, and healthcare professionals at every stage to ensure the final product reflects genuine stakeholder needs. The resulting innovation is expected to strengthen patient-provider communication, promote shared understanding, and empower patients to take an active role in their care journey—addressing one of the most sensitive and complex areas of healthcare delivery [42, 43].

Evidence from prior literature underscores the relevance of this approach. A systematic review by Slort and colleagues identified multiple barriers and facilitators to end-of-life communication from both patient and clinician perspectives [15]. At the patient level, barriers included ambivalence toward prognosis, reluctance to discuss needs, and evolving preferences as illness progresses [15]. Clinician-level challenges involved limited time, discomfort initiating sensitive conversations, difficulties managing patient denial, and a lack of proactive engagement [15]. Conversely, communication facilitators included clinicians taking initiative, practicing shared decision-making, demonstrating openness, and actively learning about patient preferences [15].

Our proposed mobile application aligns directly with these findings by providing a structured yet personalized platform that enables patients to articulate and update their wishes while supporting clinicians in initiating and maintaining meaningful conversations about care priorities. In doing so, this intervention has the potential to reduce communication barriers, enhance patient-centered care, and ultimately improve the palliative care experience for all stakeholders involved.

Integrating prior evidence

Slort and colleagues emphasize that clinicians must continually reassess patient needs and preferences and possess strong communication skills to address the emotional and spiritual dimensions of end-of-life care [15]. Building on this, Noordman and colleagues conducted a recent review identifying a range of communication strategies and tools currently employed by healthcare providers in palliative settings [29].

Among face-to-face communication strategies, effective approaches include the *teach-back method*—in which patients restate key information to confirm understanding—along with avoiding medical jargon and adopting a slower pace of speech [29]. Written and digital communication strategies were also identified, such as the use of visual aids, graphs, and concise text to enhance comprehension [29].

In addition, several communication tools—including *patient decision aids* and *question prompt lists*—were reported to facilitate dialogue between patients and providers [29]. For example, structured question lists designed for clinicians to guide conversations were found to empower patients to engage in discussions about prognosis and end-of-life decisions while reducing the cognitive and emotional burden of decision-making [29].

However, McCaffery's review revealed that many existing decision aids and question prompt lists lack adequate co-design and testing with patients, thereby limiting their effectiveness and relevance [30]. Noordman and colleagues further recommend the use of emerging technologies and user-centered design approaches in future communication interventions, emphasizing the need for technology-mediated innovations that are developed in collaboration with patients and caregivers [30].

Our proposed initiative directly addresses these identified challenges. By integrating design-thinking principles, the Mission Statement mobile application responds to key communication barriers such as limited consultation time, difficulty initiating sensitive conversations, and the ongoing need to reappraise and adapt to patients' evolving preferences. The intervention also aligns with current calls for digitally enabled, patient-driven decision aids that are developed through participatory design and grounded in real user experiences.

Conclusion

Through the application of design-thinking methodology, this project introduces an innovation that emerges organically within the healthcare context rather than adapting external industry solutions. By systematically identifying communication challenges in palliative care—well-documented throughout the literature—our team developed the Mission Statement mobile application as a tailored response to these needs.

This approach demonstrates how insights from existing research can be translated into practical, creative interventions through user-centered innovation processes. Rather than importing technological models from other sectors, our work exemplifies how healthcare professionals can generate meaningful innovation from within their own field, informed by direct understanding of patient and provider experiences.

Clinicians, who engage most closely with patients, occupy a uniquely advantageous position to design such solutions. Leveraging design-thinking principles allows them to conceptualize, prototype, and refine interventions that enhance the patient experience, strengthen communication, and improve care outcomes. Ultimately, this project underscores the transformative potential of design-thinking as a framework for healthcare innovation—bridging the gap between research evidence and real-world practice.

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