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Improving Collaborative Management of Multiple Mental and Physical Health Conditions: A Qualitative Inquiry into Designing Technology-Enabled Services for Eliciting Patients' Values

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Abstract

People with multiple chronic conditions (MCC) face challenges planning health care collaboratively with primary care clinicians, particularly when their priorities conflict. These challenges intensify with symptoms of anxiety or depression. Elicitation of patients' values is promoted as a means to aligning patient and clinician priorities in primary care, and as a component of psychotherapy for anxiety and depression. But, these approaches remain siloed. We conducted a qualitative interview study to understand patients' preferences for Technology Enabled Services (TESs) to coordinate values elicitation across primary and mental health care settings. Many participants preferred face-to-face elicitation by a mental health clinician; some preferred elicitation via telehealth and some preferred self-directed elicitation. Participants' preferences were influenced by: 1) how they perceived the rationale and benefits of values elicitation; 2) how they perceived the training and credibility of people facilitating elicitation; and 3) how they perceived their own capacity to engage in values elicitation. Participants also

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shared numerous concerns about values elicitation that warrant critical examination of TESs to support it.

Additional Key Words and Phrases:

multiple chronic conditions; mental health; patient-clinician communication; primary care; depression; anxiety; multimorbidity; values; person-centered care

1 Introduction

The prevalence of adults with multiple chronic conditions (MCC) is high and increases with age, with estimates ranging from 55% to 98% among older adults [10, 39]. Common co-occurring conditions include diabetes, hypertension, coronary artery disease, and depression. Living with and managing MCC is demanding [7]: it involves prioritizing among conflicting symptoms and treatments [14, 16]. Ideal management of MCC is collaborative, with patients and clinicians working together to define and target health-related problems, establish goals, and plan care [65]. However, clinicians' and patients' priorities are often discordant [27, 64, 69], resulting in worse patient experiences with clinicians and reduced participation in their health care [56].

These obstacles are heightened for people with anxiety and depression. Symptoms such as amotivation, difficulty concentrating, worry, avoidance, and isolation hinder clinician collaboration. People with MCC are at higher risk of developing anxiety and depression [47] and may not recognize worsening mental health due to symptoms like sluggishness, insomnia, or fatigue [32]. Likewise, people with anxiety or depression are more likely to develop physical chronic conditions [9].

Eliciting patients' values—what a person considers important for their well-being and health [21, 38]—can clarify patients' health priorities, help them discuss priorities with clinicians, and ultimately reach concordance regarding how best to manage the patient's health [20, 62]. Despite momentum in developing interventions to elicit values of people with MCC (see Section 2), there has been little attention to the special needs of people with MCC and anxiety or depression. Yet, this population is uniquely positioned to benefit from values elicitation: in addition to clarifying priorities among competing health demands, values elicitation can address mental health symptoms as part of psychotherapeutic approaches such as Acceptance and Commitment Therapy (ACT) [67]. However, psychotherapy, primary care, and specialty care have historically been fragmented, contributing to health care that is poorly coordinated, lower quality, and more costly [17, 53, 66]. Similarly, approaches to values elicitation remain siloed across primary care and mental health settings. Our research questions are motivated by this fragmentation:

- How, and in which health care contexts, do people with MCC and anxiety or depression prefer to identify and share their values?
- How do people with MCC and anxiety or depression prefer to use technology-enabled services (TESs) to support identification and sharing of values?

To explore these questions, we conducted a qualitative interview study with 30 adults with MCC and depression or anxiety. Participants reacted to four scenarios, each representing a different TES for eliciting values. We use the term “technology-enabled service” to refer to interventions that combine technological and service components, such as output from a patient-facing mobile application (technology) being integrated into a clinician’s workflow for preparing for a clinic visit (one service touchpoint) and setting visit priorities with the patient (another touchpoint).

Participants strongly preferred the scenario in which values were discussed face-to-face with a mental health clinician, although some noted benefits of meeting with a peer who shares identities or experiences with the patient. This finding contrasts with interventions (e.g., [50, 58]) that have approached values as information to be identified and applied in primary care settings. If participants do not have enough time or capacity to see a mental health clinician in-person, telehealth or self-directed exercises were generally more preferred over meeting with a peer. Our findings suggest many patients prefer to locate values elicitation in mental health care contexts instead.

Across all scenarios, participants were more willing to engage in values elicitation when the rationale for the TES was clear, and when they believed their values would be used by primary care clinicians to benefit their care. Participants appreciated the therapeutic nature of reflecting on values but faced competing time demands that may hinder deep engagement in elicitation exercises. Participants also expressed many concerns about values elicitation: difficulty finding ample time, doubt that primary care clinicians will review values if shared, and uncertainty about harms of disclosing values to clinicians. In the Discussion, we translate these findings into implications for the design of TESs to elicit patients’ values.

This paper makes two primary contributions to CSCW. First, we identify perceived benefits to situating values elicitation in mental health care, as this promises credibility to patients and offers reassurance that emotional aspects of reflecting on values will be handled capably. Second, we give much needed attention to participants’ misgivings regarding values elicitation and clarify ways TESs could address these concerns. Together these contributions clarify how to design values elicitation services that promote collaborative management of MCC and anxiety or depression.

2 Related work

As introduced above, people with intersecting mental and physical health conditions are uniquely positioned to benefit from values elicitation. The first two sections below illustrate the limitations of existing values-related interventions that have treated mental health and physical health separately. The third section positions our paper’s approach relative to scholarship on values in design.

2.1 Values elicitation for physical conditions: limited consideration for depression and anxiety

MCC are challenging to manage and treat because care guidelines and clinical workflows focus on single chronic conditions and offer little guidance when those guidelines conflict [4, 11]. For example, consider a person with depression, type II diabetes, and irritable bowel syndrome (IBS). Managing these conditions falls mostly on the patient alongside demands of daily life [16]. Say this person values relationships with close friends, and their friends connect over meals at restaurants. This person must monitor nutritional content of their food to manage blood sugar for diabetes [15] and avoid painful or embarrassing symptoms of IBS [46]. Additionally, the patient may be taking antidepressant medication that reduces their appetite, but the medications also improve the patient’s mood and enable them to engage in social activities. How should this person proceed?

Managing MCC requires prioritization among competing demands like these, and patients’ and clinicians’ priorities often do not align. Multiple research programs are devoted to helping patients and clinicians reach concordant priorities for care. Some models offer principles for improving primary care consultations for people with MCC, such as the Ariadne principles for achieving realistic treatment goals [44] and the SHERPA model for clinical decision making [30]. The Patient Priorities Care program builds on these principles in a concrete intervention that has a growing uptake in practice [8, 45, 58, 60, 62]. It aims to help patients translate values into health-related goals and anchor primary care visits to those goals.

Within CSCW and HCI, research on eliciting values of people with MCC has focused mostly on overcoming communication boundaries between patients and primary care clinicians. Lim et al. [36] found that patients withhold values from clinicians when they do not perceive values to be relevant to their health care. Following co-design workshops with patients, caregivers, and clinicians, Berry et al. [6] demonstrated wide-ranging preferences for supporting patient-clinician communication about values, including varying preferences for the time-intensiveness, intimacy, and privacy of such interventions. In later design iterations, Lim et al. [37], Berry et al. [5], and Ryu et al. [50] developed the Conversation Canvas system to help patients relate their personal values to health priorities, and advocate for their health priorities with primary care clinicians [5, 6, 37, 50].

All of these approaches position values elicitation as an activity performed prior to, or as part of, a visit with a primary care clinician. Yet, symptoms of anxiety and depression may limit patients’ willingness or ability to participate meaningfully in values elicitation in this context. Overall, research and practice in primary care leave a gap in understanding how best to design TESs for values elicitation to meet the needs of this population.

2.2 Values elicitation for mental health conditions: limited consideration of physical conditions

Psychotherapy to manage mental health conditions like anxiety and depression often includes discussion of a patient’s core values. One prominent example is ACT [26]. ACT supports people in relating differently to difficult emotions, reducing avoidance and increasing psychological flexibility. ACT also supports patients in identifying and enacting core values. We drew from ACT values elicitation worksheets in designing the TESs that participants in this research study critiqued (see Table 2 and Appendix A).

Research has generated substantial evidence of the effectiveness of ACT-based values identification exercises. For example, ACT had benefits for people who experience anhedonia (i.e., diminished interest in things one typically enjoys), a core symptom of depression [67]. ACT is also effective in managing symptoms of anxiety and depression for people with other conditions including chronic pain [63, 68], cancer [24], and diabetes [31]. ACT also improves medication adherence [42] and diabetes self-management [25].

ACT, like many evidence-based mental health practices, is commonly delivered in person. In-person service delivery can create access challenges, particularly for people with MCC who must attend numerous health appointments, may have impaired mobility [13], or may face added risks to in-person attendance due to being immunocompromised [54]. There is clear motivation for remotely-delivered and technology-enabled mental health care, especially in light of the COVID-19 pandemic.

A meta-analysis of technology-enabled ACT found these digital interventions to be promising among people with single chronic conditions but noted a dearth of ACT interventions among people with MCC [28]. Further, most technology-enabled ACT interventions have focused on therapeutic, symptom-level benefits (e.g., improvements in physical functioning or health-related quality of life) without support for collaborative care planning, which would be especially beneficial for people with MCC.

Technology-enabled ACT interventions also tend to last several weeks. This duration is typical of mental health interventions and makes implementation challenging. It is common for patients to only attend one therapy session instead of multiple [57]. Many digital mental health interventions also achieve low levels of engagement. A meta-analysis of 10 randomized controlled trials found that only 30% of digital mental health intervention users completed 75% or more of the intended duration [33]. Brief single-session interventions (SSIs) have demonstrated effectiveness for a variety of mental health concerns [51, 52] and may be more feasible and acceptable to patients than multi-week interventions [18].

Thus, in this study we explored how people with MCC prefer to engage with brief TESs for values elicitation that build from ACT principles, yield mental health benefits, and contribute to communication of values and health priorities to primary care clinicians.

2.3 Conceptualizations of values in design research and health care

Designing TESs for values elicitation demands thinking with multiple conceptualizations of values. This section locates our research relative to scholarship at intersections of values, design, and health.

First, we assert that the object of our design efforts is to enable each person to recognize, articulate, and enact what they consider important for their own well-being and health. We hew to the definition of values established by Lim et al. [38] because it is grounded in the perspectives of people with MCC: what a person considers most important for their well-being and health, including abilities, activities, emotions, possessions, principles, and relationships. This definition communicates the breadth of people's personal values. Values are not limited to health-related goals, such as maintaining mobility or mental sharpness. They are not limited to values of moral and ethical import, like independence and honesty. And they include experiences (i.e., emotions like joy or relief) and material objects (i.e., possessions like one's home or a musical instrument). Any and all of these categories of values may inform a person's priorities health care.

Second, our conceptualization of the relationship between values and design is influenced heavily by Value Sensitive Design (VSD), developed by Batya Friedman, Dave Hendry, and colleagues [21]. VSD is a robust, theoretically-grounded and methodologically-expansive approach consisting of three complementary types of investigation: empirical (investigating values of interested parties in context), conceptual (defining values discursively, drawing on philosophy), and technical (investigating how values are, can, or should be embedded through technology design). Friedman and Hendry [21] recently clarified how values are defined in VSD: while values of moral and ethical import are essential to consider, designers are advised to investigate values as understood and enacted in specific design contexts.

Third, our conceptualization of values is influenced by critiques of VSD, which offer alternate lenses on values and design: we do not limit ourselves to a finite list of values of moral and ethical import and we seek to understand how values are enacted in practice [35]; we are sensitive to limitations of merely identifying and applying values, and we see values as resources in thinking through design situations [48]; and we resist assuming people's values are fixed, instead seeking to understand how values are dynamic, reinforced and transformed through enactment in practice over time [29].

Finally, we acknowledge that our conceptualization of values overlaps, but is not coextensive with, how values are typically conceptualized in health care research and practice. In health contexts, clinicians and researchers tend to view patients' values as abstract and fixed [26], and often values are seen as a means to establishing health-related preferences, goals, and outcomes (c.f., [23, 43, 59]). We note there is not a single nor stable definition of values in health care research and practice [19].

Thus, overall, we assert a principal definition of values grounded in the perspectives of people with MCC, and we adopt a pluralistic and resourceful orientation toward the many definitions of values offered in design research and health care scholarship and practice. We orient our design process primarily toward enabling patients to articulate their personal values across primary care and mental health settings.

3 Methods

We conducted a qualitative interview study to understand people's preferences for how to design TESs to support values elicitation and sharing values with primary care clinicians. All study procedures were approved by the authors' Institutional Review Board prior to enrolling participants.

3.1 Participants

Participants were recruited from an online research registry maintained by [research center redacted]. Potential participants were eligible if they were at least 18 years old, fluent in English, and had a self-reported history of depression or anxiety symptoms and at least two chronic physical health conditions. They were compensated $25.

3.2 Data collection

We interviewed 30 participants. To examine experiences across the adult lifespan, we purposively sampled 15 adults aged 18–64 and 15 older adults aged 65 and above. Interviews lasted 60 minutes and were conducted over Zoom by the lead author accompanied by a co-author. Prior to the interview, participants completed a photo elicitation exercise. They were instructed to take photographs of 3–5 objects, experiences, activities, or anything else that represented something important for their well-being and health (i.e., personal values). At the beginning of the interview, participants shared 3 photographs and explained why they took each one. This exercise gave participants experience reflecting on and sharing their values. Photos were not saved or analyzed as study data.

The rest of the interview explored participants' preferences for having their values elicited in health care settings and for communicating values to primary care clinicians. Participants were presented with four scenarios depicting ways of eliciting values and sharing them with clinicians (Table 2). More information on the development and details of these scenarios is included in Section 3.4, and full scenarios are included in Appendix A. These scenarios systematically varied on the type of facilitator (i.e., a mental health clinician, a health educator, a peer listener, self-led by patient), communication medium (i.e., face-to-face, self-directed online course, videoconference), and content (variety of existing ACT activities). ACT activities used in each scenario are available in Appendix A. Participants reacted to each scenario, indicating what would and would not work well for them. They were then asked how they think their values should be shared with their health care team, and reflected on experiences they had discussing their values in mental or physical health care settings. The first author also wrote field notes during and after each interview to capture key information, such as participant preferences for approaches to eliciting values. Interviews were audio-recorded and transcribed professionally. Transcripts were de-identified for analysis.

To understand participants' symptoms and contextualize the findings, participants completed the Patient Health Questionnaire (PHQ-9), a 9-item self-report measure that assesses depressive symptoms over the preceding two weeks [34], and the Generalized Anxiety Disorder Scale (GAD-7), a 7-item self-report measure of anxiety symptoms over the preceding two weeks [55]. Scores range from 0–27 and 0–21 respectively, with higher scores on both indicating more severe symptoms. These measures are commonly administered as part of standard clinical practice in primary care.

Interviewers were trained to identify and assess suicidality risk using the Columbia-Suicide Severity Rating Scale (C-SSRS) [49] if indicated based on responses to the PHQ-9, or self-disclosed suicidal thoughts or behaviors. Interviewers initiated the C-SSRS in five interviews, and one participant declined to complete the assessment, indicating they were receiving support from a mental health therapist and did not identify themselves as high-risk. All participants who completed the C-SSRS were classified as low-risk and were provided mental health resources upon request.

3.3 Participant demographics

We report demographic characteristics in Table 1. Participants reported a range of chronic health conditions, with the most common being: arthritis, hypertension, hyperlipidemia, kidney or bladder problems, and cataracts. While all participants reported a history of depression or anxiety, average symptom levels of depression and anxiety were within the mild range at the time of the interview. The mean score on the PHQ-9 was 8.7 (range: 0 – 22, SD: 5.3) while the mean score on the GAD-7 was 5.7 (range: 0 – 15, SD: 4.3).

3.4 Storyboard scenarios

Storyboard scenarios represent prototype TESs for values elicitation. These were conceptualized and designed by team members with backgrounds in clinical psychology and digital mental health. Each storyboard follows the journey of a patient interacting with a different person (e.g., health care team member) who uses different digital tools to facilitate a values elicitation activity. The scenarios also pose technology-enabled options for sharing values with their primary care provider. We used these storyboards to gather participants' reactions to hypothetical scenarios with the aim of generating implications for the design of TESs for values elicitation. Table 2 details the characteristics of each scenario, and Figure 1 is an example scenario. Participants were provided with the ACT-based worksheets for reference in advance of the interview.

3.5 Researcher background and expertise

The authors had training in HCI, clinical psychology, and social work; had experience working with individuals with mental health concerns and chronic health conditions; and had training and experience in ACT. Authors also have lived experience with mental health concerns and chronic health conditions. This project drew on these professional and personal experiences to design the study and interpret data. Throughout our analysis, each coder took into account their own positionality while analyzing participants' transcripts.

3.6 Analysis

Interview transcripts were analyzed in Dedoose [1] guided by reflexive thematic analysis [12]. The lead author reviewed the field notes and created an initial codebook. Five authors applied this codebook to one transcript, discussed and resolved differences in coding, and refined the codebook. This process was repeated with another transcript, after which the codebook was finalized. Authors divided the remaining transcripts and coded them independently. During coding, authors wrote memos to capture and elaborate on patterns in the data. All authors met weekly to summarize each interview and discuss memos. Authors also noted potential design implications while reviewing transcripts.

Of note, Braun & Clarke [12] do not recommend using formal inter-rater reliability metrics as part of reflexive thematic analysis because inter-rater reliability assumes that meaning is fixed within the data. Reflexive thematic analysis assumes that meaning in data reflects the subjectivity of the researchers and their interpretations. Therefore, inter-rater reliability in our analysis can be understood as researchers being trained to collaborate and code in the same manner, and aligning interpretations through regular discussion.

The lead author created five provisional themes by reviewing field notes, memos, and coded interview data, specifically extracting excerpts relevant to answering the research question and identifying patterns in participants' preferences across the scenarios. These provisional themes were discussed by the team. Each team member was assigned a theme and reviewed codes and transcript excerpts relevant to the theme. Each author collated excerpts, wrote theme descriptions and explanations, and presented these to the team; thus, all authors were familiar with the dataset as a whole. The team decided to consolidate two pairs of themes, resulting in a total of three themes presented in the Findings.

4 Findings

The findings are structured as follows. First, we summarize participants' perspectives on the advantages and disadvantages of each scenario. Then, we present three themes generated in the analysis.

Most participants favored the mental health clinician scenario, followed by the brief online course, health educator, and peer listener scenarios. Advantages and disadvantages for each scenario are reported in Table 3. Participants reported desiring an opportunity to speak with a licensed mental health clinician to discuss personal values alongside mental health concerns. They believed mental health clinicians to be better trained at eliciting their values and incorporating them into their care compared to health coaches or peer listeners, whose credentials and training were perceived as insufficient or unclear. Participants also appreciated that the mental health clinician scenario integrated both physical and mental health, with a mental health visit immediately preceding a primary care visit. However, they criticized the length of time and energy required to attend two co-located appointments back-to-back. Telehealth options were appealing to people who had more time constraints, and to those with higher levels of anxiety. Telehealth requires less time and effort to attend appointments, and affords the opportunity to meet with a clinician from the comfort of their home.

In subsections 4.1, 4.2, and 4.3 below, we report the three themes generated through reflexive thematic analysis.

4.1 Perceptions of rationale, benefits, and risks of values elicitation

Many participants (i.e., over two-thirds of participants) perceived inherent, therapeutic mental health benefits to reflecting on and sharing values (as is intended in ACT-based activities). Participants also perceived instrumental benefits, such as better integrating mental and physical health care, shifting the focus of care planning to values instead of goals, and preparing for upcoming visits with primary care clinicians. But some (i.e., approximately one-quarter of participants) indicated it was not clear how values could be used to improve their health care. Some participants wanted a clearer rationale for sharing values with their primary care clinician. Others doubted clinicians would use values for patients' benefit, as they might ignore values due to time pressure, wasting the time the patient had spent reflecting and sharing their values. Others predicted that clinicians would respond to their values judgmentally, potentially hampering their patient-provider relationship.

We elaborate on these issues in subthemes below.

4.1.1 Communicating rationale for values elicitation.—Some participants described the importance of receiving a sound rationale for completing any type of value elicitation exercise, whether it be an online questionnaire or an in-person meeting with a mental health clinician. Generally, patients wanted to know why it is important to share their values with their primary care team. They wanted to see an added benefit for investing their time and taking the risk of sharing additional personal information with their clinician. For example, P20 shared concerns about discordant values but noted that providing a treatment rationale could lead to a more productive conversation:

> "It's a very touchy place to be. […] If I go to my health care provider and somewhere along the line my values indicate that I am pro-abortion, and then I feel as though my physician is not, am I gonna share my values about what life is? Do I really want that much of myself exposed? I think it's tricky. Unless, again, unless you prep me [… and] tell me how you're trying to help me, and if I can understand that what you're trying to do is that, 'The doctor doesn't have much time to examine you, the doctor is aware that the way you feel about yourself and the world around you and life, in general, is going to help that doctor assess […] your health.'"
>
> (P20)

Clues about how to construct this rationale come from participants' perceived benefits of values elicitation, which fell into two main categories: instrumental benefits and therapeutic benefits.

4.1.2 Instrumental benefits of values elicitation.—In this subsection we expand on ways in which values elicitation could be instrumental to improving communication and relationships with clinicians. These benefits include (1) helping patients prepare for an upcoming visit with their PCP; (2) encouraging the PCP to integrate mental and physical health and see them holistically; (3) enabling clinicians to shift the focus of treatment from goals of values to support patients in living a more fulfilling life; and (4) facilitating stronger connections between mental health and PCP.

Participants saw values elicitation as having instrumental benefits by preparing them to better plan care of their chronic conditions with PCPs. A quote from P16 highlights these benefits, emphasizing that values elicitation can provide clinicians with a framework for better understanding the patient:

> "…it's useful as a complement […] wellness is always a two-way street. No one can just swoop in and say you need X, Y, and Z. They have to talk to you, and you have to be prepared to talk to them. And I think that having a framework that they can think about that can get you ready, so that you are not just thinking about it for the first time when you're in front of them is good."
>
> (P16)

A second instrumental benefit of values elicitation was helping the clinician build a holistic perspective of the patient. For example, P2 imagined the ACT-based worksheets as a useful tool for quickly summarizing the patient's values for the clinician. P2 said:

> "I think the more holistic of a picture they have of their patients, the better. […] I think it could definitely […] enhance their understanding of you, and how to interact with you. So, I think it could be helpful to just—maybe that bullseye worksheet, checking in with that. Or just something really quick and easy for them, too. "
>
> (P2)

A third instrumental benefit of values elicitation was shifting the focus from treatment goals to values. P6 emphasized the utility of values elicitation as a means for the clinician to understand the patient's physical and mental health care needs. In this example, P6's gastroenterologist made a medication change associated with a treatment goal, but this change negatively affected P6's mental health. This in turn affected their creativity, behavior, and performance at work, which they valued. Values elicitation could help give more weight to the patients' values, rather than focusing solely on the specialist's treatment goals:

> "…an example is my gastroenterologist upped one of my medications, and it had a bad reaction with an antidepressant. And I didn't know that. So, I thought that I was just going through some sort of creative block. But it was just that negative reaction. And I think if they knew how much I needed to be able to think on my feet, and be a problem-solver at work, then I would hope that they would think first about what different medications might be best, and not have a negative reaction than upping something that could change my personality or mood."
>
> (P6)

The fourth instrumental benefit of values elicitation was fostering stronger connections between primary care clinicians and mental health specialists. P3 drives home the point that patients see benefits to primary and mental health clinicians being aligned, and that elicitation and communication about patients' values can be a means to achieving this. P3 said:

> "Like you never see that. […] Your PCP might be one provider, then your therapist somewhere way else […]. And this [sharing values between mental health and primary care] makes it a lot easier to connect between the two versus the patient, if you tell the PCP, 'Hey, the therapist did this or that,' or the PCP requesting info from the therapist, which may take a couple of weeks or however long it takes. […] It would be nice when they're both in the loop."

(P3)

Overall, this sub-theme demonstrates that participants appreciated different ways in which values elicitation could be a means to improving health care for mental and physical conditions.

4.1.3 Therapeutic benefits of values elicitation.—

Participants identified ways in which reflecting on and articulating their values could be therapeutic in itself. These benefits included (1) enjoying the process of clarifying values and making them explicit; (2) appreciating an opportunity to assess balance in one's life.

Participants appreciated different forms of support and guidance for articulating their values. P18 enjoyed completing the "Quick Look at Your Values" worksheet, as it helped her clarify who she was and what matters to her. Before we interviewed her, she had shared this worksheet with her mental health therapist, who noted its therapeutic value:

> "I told [my therapist] that I was doing this. And she said, 'That's really good. It's almost like doing therapy.' […] it made me really think, 'What is important to me?' And I did go back, and I actually did that exercise [the 'Quick Look at Your Values' worksheet] […] It actually was an intellectual—it was a thing of like, organizing, 'Who am I? What am I? What really matters to me?'"

(P18)

P5 and P9 both enjoyed the photo elicitation component of the interview. For example, P5 said, "…I found it very enjoyable because it made me have to look around my apartment and sort of assess who I was and what was important to me." P9 appreciated that the exercise helped her recognize valued aspects of her life that had become routine:

> "So, overall, I thoroughly enjoyed the activity. […] It helps remind me of what I value. Sometimes, I just go in my backyard or just go in my massage chair because it's part of my routine. I interact with my family and friends. It's all part of my routine. But I don't recognize how important they are to my overall health until this activity where it really makes me evaluate myself and evaluate what are all those different important values in my life."

(P9)

Participants appreciated the worksheets' therapeutic value, like P3, who found the brief bullseye worksheet useful for identifying areas to improve. P19 also lauded the worksheet's ability to briefly check in on their strengths and weaknesses.

4.1.4 Concern for consequences of disclosing values.—

Values sharing can be a sensitive topic for patients, especially when they are concerned about who has access to their information and the potential opportunity for values discord (i.e., conflicting beliefs between patient and provider). Participants highlighted the importance of confidence that sharing their values with their clinician would not impact their relationship or the quality of care adversely. They lamented that this risk-benefit calculation can be taxing for people with anxiety and depression, as they tend to predict how their relationship with their clinician might change depending on what they disclose. P20 shared their concerns regarding how their partner's gender identity might reveal transphobic attitudes that might affect their patient-provider relationship:

> "Minority populations may prioritize other values that other people might not […] In my head the scenario that's coming to mind is if we're having this conversation and in the terms of this conversation it's like, 'Oh, me and my spouse we're a couple. They're trans. They're transitioning.' And that's great if the provider is very supportive. But what if it kind of changes the tone?"
>
> (P20)

Transparent communication about the benefits of sharing personal values can significantly aid patients in deciding the nature and extent of their disclosures. If patients are asked to complete reflection questions and share intimate details with their clinicians, they would prefer an understanding of how this will improve their care plan, and also confirmation that their provider will use it.

4.1.5 Skepticism that clinicians would review values.—Given the limited amount of time during visits with clinicians, participants felt uncertain why they would engage in values elicitation if they predicted that their clinicians would not have time to read through their values. It is important to participants to have their clinicians acknowledge their values, as this exercise requires deep contemplation and vulnerability. They emphasized values elicitation to facilitate communication, rather than as a purely self-reflective process. P15 shared their skepticism in values elicitation exercises as methods aimed at appeasing patients instead of a meaningfully engaging practice:

> "There's the chance that nobody will actually read what I write. It could just go into cyberspace somewhere. You know, they might just be sort of placating me, like, 'Oh, we want to know what you value. Yeah, write it down.' But then nobody ever actually even opens it."
>
> (P15)

In addition to receiving confirmation that their values were read by their provider, the participants also emphasized the need for clear action to be taken based on their values.

While participants saw benefits in engaging in values elicitation exercises (therapeutic benefits) and using it as a means to better align health priorities between them and their clinicians (instrumental benefits), getting them to participate in values elicitation requires clearly communicating the rationale, acknowledgement of their values after sharing, and confidence that this information will be used towards improving their health.

4.2 Importance of facilitator credibility, training, and capacity to help

The scenarios included people in different roles facilitating values elicitation: a mental health clinician, a health educator, a peer listener, and a self-directed module (no facilitator). Many participants responded to the characteristics of the facilitator(s) in the scenarios, especially following the Peer Listener scenario. Typically, participants rejected a scenario if they perceived a lack of credibility in the facilitator. Perceptions of credibility depended on the facilitator's training and qualifications, shared identities or lived experiences, and perceived ability to offer actionable support beyond listening.

4.2.1 Confirmation of training and qualifications.—

Participants expected those who elicit values to have formal medical or mental health training and education, as they perceived these facilitators to be equipped to handle values-related discussions effectively. A common concern from the Peer Listener and Health Educator scenarios was that the facilitator would be someone similar to the participant who does not have formal credentials, or someone not affiliated with a health care organization or profession. P11 spoke to how not knowing someone's qualifications or training creates uncertainty that can be anxiety-provoking, and could be counterproductive for people managing mental health symptoms:

> "I like the other two scenarios better [than Health Educator] because I don't know anything about what a health educator is, I guess, and I think a lot of people wouldn't. And so it's like, 'Who's this person that's asking me all these questions about—what's their qualification?' But I think this would be more anxiety-provoking for me to talk with a random stranger who I don't know. A behavioral health clinician, you know they have some sort of degree, or you inherently know what their training is."
>
> (P11)

Participant 11's testimonials were echoed across many participants, thereby underscoring facilitator credentials as an important factor in whether participants with mental health symptoms would be willing to engage in values elicitation.

4.2.2 Shared lived experiences and identities.—

Not all participants required a credentialed facilitator. People's perceptions of facilitator credibility varied based on their own expectations of, and lived experience with, health care professionals. Some participants noted that having a peer with similar lived experiences and identities could be useful for people who are more reticent in seeking mental health support from credentialed professionals. For example, P28 said:

> "…different people, of course, respond to different things. Some people would be intimidated by talking to a mental health provider. They would say, 'I'm not crazy.' […] 'I don't need to talk to a shrink.' And then a peer might be more to their liking. But other people might think, 'This person doesn't have the health care degree. Why should I share my stuff with them?' So, I really think it's not a one size fits all approach."
>
> (P28)

P28 captured nuance in the acceptability of a peer listener. They acknowledged that it can be difficult to find an accommodating peer to meet each individual's requirements, especially given that patients have a wide variety of needs.

4.2.3 Actionable support beyond listening.—

Most participants emphasized the importance of having facilitators for values elicitation who possess not just the ability to listen, but also the training and experience necessary to offer substantial support. This includes making actionable suggestions or connecting patients to resources. Highlighting this, P16 critiqued the Health Educator scenario, noting the difference between receiving educational guidance and the deeper, more therapeutic engagement they desired:

> "Again, it's one thing [for the patient] to be educated. That person [the health educator]-they can go through a worksheet and they can give you information. But the word 'educators' suggests that they're not actually therapists, they're not actually an emotional wellness practitioner. They're just gonna say, 'Hey, based on what you said, I'm gonna suggest A, B, and C. Now go off and have fun.'"
>
> (P16)

In response to this need, participants expressed a clear preference for mental health professionals over peers as facilitators, underscoring the importance of a safe environment for discussing personal values. For people with anxiety and depression, being vulnerable and engaging in values elicitation could trigger emotional responses, necessitating facilitators with the skills and qualifications to offer not only support but also concrete actions to improve well-being. This distinction illuminates the depth of engagement participants sought, extending beyond basic education to encompass emotional wellness support and actionable health improvement strategies.

4.3 Assessing and navigating personal capacity

Time imposes limits and constraints that impact participants and their ability or willingness to engage in values elicitation activities. Many participants shared their experience of time poverty—the inability to tend to personal matters due to limited discretionary time [22]—and challenges of managing competing demands with limited time. Moreover, several participants shared how time pressure can exacerbate their symptoms of depression or anxiety. There were two capacity-related considerations associated with values elicitation activities: (1) values elicitation activities may exceed the discretionary time people have available; and (2) people experience values elicitation as cognitively and emotionally demanding. We elaborate on these challenges and how they can inhibit values elicitation.

4.3.1 Costs and benefits of time spent on values elicitation.—Many participants discussed how busy schedules, priorities, and competing demands may reduce their ability to engage in values elicitation. Several people raised concerns about not having the time for multiple appointments to accommodate values elicitation (e.g., visit with a mental health clinician followed by their primary care appointment, as in the first scenario). Participants highlighted factors that increase convenience, which could be a solution to minimize the negative consequences of time poverty.

Limited discretionary time forces patients to compromise on how they would best like to meet with their clinicians. P9 prioritized videoconferencing to reflect its convenience, despite their ideal preference for face-to-face appointments. When asked why they preferred videoconferencing, they explained:

> "Convenience. But in an ideal world where I have all the time in the world, absolutely face-to-face is my primary choice. But in my current situation, video conference makes more sense…[because of] timing, basically."

(P9)

The amount of discretionary time participants had available did not always influence their preferences regarding values elicitation, like prioritizing credibility of the facilitator over time. P2 shared how she needed the maximum return on investment ("ROI") when choosing a health care option. She reflected on how, despite requiring more time, talking with a mental health clinician for an hour would be more beneficial than talking with a health educator for 15 minutes:

> "The ROI, in terms of the time that I'm investing into that hour, is greater than if I maybe were to be with the health educator for 15 minutes. So, I feel like if I had a choice between all of them, I probably would stick with the mental health clinician because they're highly trained to deal with your emotional issues and mental health issues, and I found therapy to be really helpful. "

(P2)

When considering social drivers of health, discretionary time is not equitably available for all people, as demonstrated by P7 who discussed her lived experiences as a Black woman with depression. P7 shared the additional burdens that are placed on her as a Black woman, where she is expected to persevere through her challenges despite recognizing her mental health needs. She shared how stigma influences her ability to seek care:

> "…I've been diagnosed with depression for a very, very long time. And as you guys may know, it's just not acceptable to be depressed in the Black community, especially Black women. And so, when I told my aunt I was depressed, she basically gave me a lecture. And she said, 'We're Black women. We don't have time to be depressed. We have too much to do.'"

(P7)

Clinicians also need to be economical with how much time they spend with their patients, as structural barriers can prevent quality engagement between patients and PCPs, as highlighted by P24. They discussed the limitations imposed by insurance companies on visit length:

> "It's probably not possible, because of the amount of time that insurance companies allot to doctors per visit. If—after having received the information from the mental health professional—if my health care provider had a question that she had time to clarify it with me…And I know that they very often don't. But just the facts of life with insurance companies don't let them have a lot of time."

(P24)

The availability of discretionary time is unfortunately determined by competing demands, positioning patients with a difficult choice between seeking the care they prefer or prioritizing convenience for the sake of supporting their mental health.

4.3.2 Accounting for cognitive demands.—Participants also expressed concerns about how cognitively and emotionally demanding values elicitation exercises can be, especially exercises that involve deep contemplation. Symptoms of depression and anxiety can act as barriers to engaging in health care activities, and they can be exacerbated by perceived time pressure when there is a lack of discretionary time.

Values elicitation can help patients elucidate what matters to their health and well-being so they can reprioritize demands and reduce feelings of time pressure. When discussing the Brief Online Course scenario, P2 reflected that completing their pre-appointment check-in (e.g., health questionnaires, listing reason for visit, etc.) through the patient portal is already a challenge due to decreased motivation as a result of depression. This 10-minute task felt effortful:

> "…To be honest, I have a hard enough time making sure to fill in the pre-appointment stuff, for my doctor, that's 10 minutes. So, I can't see myself voluntarily, really doing a 30-minute course on the app…I think it would be hard for me to feel motivated to do that."
>
> (P2)

P9 also highlighted the mental and emotional resources needed to complete worksheets. P9 suggested that shortening values elicitation activities and making them more enjoyable could alleviate some of their concerns:

> "Make it short and […] more fun and less tedious…Make it into more like a game rather than sitting there filling out—if I'm actually filling out something that takes me 30 minutes, that mean it's probably like 50 pages long. And that's gonna increase my anxiety more. […] the whole purpose of I'm doing all this is to decrease my anxiety. "
>
> (P9)

P15 surmised that they would feel frustrated if they had to attend two appointments in the mental health clinician scenario, which entails meeting with the mental health clinician for an hour before their primary care visit. Long back-to-back sessions may cause fatigue, impeding clear communication with their provider and undermining the purpose of the TESs. Careful consideration is needed to avoid unintentionally overwhelming the patient with clinical interactions, as that might result in frustration or discourage patient engagement in the process:

> "…if the meeting with the mental health provider is an hour and then I go on to the next one, that alone is a very long time for me. Seeing two providers back-to-back and then doing this kind of thought exercise here and this one and then moving on to another provider and wanting to communicate with them and wanting to be articulate […] And that would make me feel extremely frustrated if I were less articulate than […] I wanted to be."
>
> (P15)

People with anxiety or depression may be sensitive to cognitively demanding activities when they lack discretionary time. However, by conveying the potential benefits of engaging in values elicitation activities, patients can calibrate for themselves the best trade-off between time and energy required. These interviews revealed participants' risk-benefit calculations to determine which format of values elicitation would be the most beneficial and least burdensome.

5 Discussion

Redesigning health care to be more responsive to patients' values is the subject of multiple research programs (c.f., [5, 45, 50, 61]). This topic is larger than one paper can solve, and requires input from multiple interested parties, especially patients, primary care clinicians, and mental health clinicians. Our paper centered the needs of patients with intersecting physical and mental health conditions, a perspective that has not been represented in the literature to date.

Overall, findings from these participants challenge the assumption that the primary purpose of TESs for values elicitation is to overcome communication boundaries between a patient and a primary care clinician. Instead, our findings imply that values elicitation should be conceptualized as a service that spans mental health and primary care settings, and that technology can support multiple touchpoints across this service. This represents a significant finding and original contribution, as prior research in CSCW and HCI on MCC and values has focused mostly on the primary care setting, designing technologies to overcome communication boundaries around values between patients and primary care clinicians [5, 6, 37, 50]. In the present paper, we offer findings and design implications in response to questions of how and in what context to elicit values for people with MCC and anxiety or depression.

In addition, our findings clarified the instrumental and therapeutic benefits of values elicitation that participants perceived, and also illustrated key concerns. Participants emphasized the need to communicate the rationale and benefits of values elicitation clearly, and to allay patients' concerns regarding potential risks to sharing values with primary care clinicians. Participants also required the person or people facilitating values elicitation to exhibit credibility and capability, and noted that mental health clinicians are positioned well to fulfill this requirement. Finally, participants wanted a TESs for values elicitation to be worth their time, and thus wanted the temporal, cognitive, and emotional demands to be justified and communicated clearly. Below, Table 4 specifies how TESs can alleviate specific pain points associated with each theme. Then, in three subsections we discuss how our findings rework and extend prior research, and translate findings into specific implications for the design of TESs.

5.1 Tension between convenience and depth of values elicitation

Participants expressed that time poverty reduces their ability to engage in values elicitation. Adding more responsibilities can increase time pressure and exacerbate mental health symptoms. Our findings showed that people's willingness to engage in values elicitation activities requires reflecting on their available time and personal capacity. This internal capacity calculation resonates with Miserandino's "spoon theory," in which spoons are metaphorical units of energy, and people with chronic illnesses negotiate how to spend their finite number of spoons each day [40].

Managing daily tasks can already be challenging for people living with anxiety or depression, which underscores the need to inform them about the benefits and potential demands of engaging in values elicitation. When deciding whether to engage, they may need support to inventory their cognitive and emotional capacity.

Additionally, we found that participants perceived both therapeutic and instrumental benefits to reflecting on values and sharing them with clinicians. Achieving these benefits requires investing some time and cognitive and emotional resources. Optimizing values elicitation exercises to be as fast as possible, or to require as little thought or as few difficult emotions as possible, may fail to engage patients in the work required to achieve benefits. On the other hand, people will not engage in values elicitation if they do not judge the benefits to be worth the effort.

5.1.1 Design implications.

Our findings suggest that designers of TESs must balance convenience and depth. Because patients need to self-identify how much time and personal capacity they have, we propose considerations for how to build patients' confidence that their efforts will be worthwhile and meet their current needs:

- **Provide a menu of activities with expected outcomes of engaging in each activity.** One way to offer flexibility in response to varying degrees of personal capacity is to provide a menu of values-related activities, and for each activity show the expected outcome, format (e.g., visually-oriented, written text, etc.), and estimated time and effort required. For example, the brief online course scenario could be improved by first asking the patient how much time they have to complete a values elicitation exercise. Their selection can help determine the appropriate educational modules in which to engage. A similar approach was used in the Mothers and Babies Online Course, a web-based intervention with a mindfulness training component to improve perinatal mental health outcomes, with estimated times to complete each activity [3]. Similarly, we see opportunities to provide patients with values elicitation options that vary in length and intensity (e.g., single-session interventions [52] and multi-session ones).
- **Offer options for in-person, independent, and telehealth values elicitation to accommodate varying schedules.** While some participants may prefer in-person visits, competing time demands make telehealth or independent values elicitation attractive options for others. Enable flexibility by allowing patients to choose how they would like to engage in values elicitation alongside the expected time and effort needed, as explained by the previous design implication.

Existing approaches to values elicitation (e.g., [58]) assume that patients are ready and prepared to engage in reflection on values. We share these design considerations to avoid this assumption, as patients with anxiety or depression may want to know how much of their effort is needed.

5.2 Building confidence and accountability

Participants in this study held personal assumptions about what values elicitation entails and how their clinicians may or may not respond to their values, if shared. This emphasizes the need for clear communication regarding what values elicitation involves, including its potential advantages and challenges, to help patients make informed decisions about their participation. Individuals with anxiety or depression were more inclined to participate in values elicitation when they believed that their clinicians would genuinely consider their values in care planning, potentially enhancing their healthcare experience and overall well-being. Further, our findings confirm prior research (e.g., [6]) that patients desire control over which care team members have access to their values. This highlights the importance of patient autonomy over personal information, including personal values. How values elicitation exercises are explained, how values get incorporated into care, and who gets access to these values, are key requirements for assuring patients that the exercise is safe and worth their time.

Our findings resonate with Berry et al.'s [6] guidance, intimacy, and disclosure dimensions for supporting patient-provider communication about values. The guidance dimension refers to the extent facilitators guide patients in determining what to share to clinicians, while the intimacy dimension characterizes how much patients perceive their values to be heard and understood by a clinician. Disclosure concerns the degree to which patients have control over who has access to their values. In the present study, we found that patients with anxiety or depression could benefit from guidance about how living in line with their values could improve their health, as that could help them be less concerned with potential values conflict with clinicians and center the discussion on their well-being.

5.2.1 Design implications.—When considering a TESs to facilitate values elicitation, designers should frame the service to help patients understand its utilities and benefits, how their values will be used to improve their care, and what level of autonomy they have over how their values get shared, and with whom.

- **Provide patients with brief psychoeducation regarding how living in line with their values could improve their health.** Clarify that values are leveraged to tailor care in a way that resonates with the patient's core beliefs, which can potentially alleviate concerns around misuse of values. Assure patients that their shared values will be utilized exclusively to refine and personalize their treatment plan, which can significantly contribute to their overall well-being. This psychoeducation can be presented in a direct message on the patient's EHR portal, or hosted on their PCP's hospital website under a resources page for self-management skills.
- **Create communication pathways to help clinicians integrate patient values into collaborative care planning discussions.** Technologies like patient portals or EHRs can maintain visibility of patient values at each of these steps. For example, patients' values could be visible in the section of the EHR used by a clinician to prepare for a visit, in the section of the EHR used to document decisions during visits, and in after-visit summaries printed and provided

electronically to the patient. From our interviews, participants were split on their preferences for sharing their values virtually through an EHR or verbally to their clinicians. However, regardless of these preferences, participants desired for clinicians to acknowledge and utilize their values in care planning. If shared through an EHR, having the provider send a message or confirm receipt of values would demonstrate attention and care to the patient.

- **Give patients the option to choose who they share their values with.** This can increase their comfort in disclosing, avoid potential data privacy concerns, and optimize patient autonomy over their personal data. However, achieving this may be challenging in practice, as EHR systems serve many functions for many users across large organizations, and supported tools may not be granular enough for managing permissions to specific information like values; changing these tools requires interfacing with EHR vendors, which can be challenging and slow.

5.3 Building trust through perceived credibility and legitimacy

Participants' preferences for a credible facilitator resonate with Mohr and colleagues' [41] model of supportive accountability, where effectiveness of eHealth interventions is enhanced by human support, particularly from supporters or facilitators who are seen as credible, benevolent, and trustworthy. Mohr and colleagues argue that perceived legitimacy is earned when the facilitator shows the necessary expertise, either through demonstrated knowledge or formal certifications. Mohr and colleagues argue that perceived legitimacy is an ongoing practice that needs to be sustained.

Assessing legitimacy of a facilitator can start even before the initial point of contact, as patients may investigate the organizations the facilitator is affiliated with. During the actual patient-facilitator interaction, the facilitator also has to demonstrate trustworthiness and benevolence, as patients want to know their facilitator is genuinely committed to the betterment of the patient's health. Lastly, legitimacy is built by meeting professional expectations such as following up with the patient at promised times or interacting in ways that convey expertise.

The Peer Listener scenario was least favored in part because participants perceived the peer to lack credible training or clinical background. Participants worried that peers would not be able to provide concrete actions to improve their mental health, or respond effectively to patients' concerns. Further, these peers are not governed by any professional code of ethics that holds them accountable to serve in the patient's best interests.

5.3.1 Design implications.

—Designers need to consider how perceived legitimacy can be cultivated before, during, and after the initial point of contact with the values elicitation facilitator. This does not necessarily mean that only trained mental health clinicians can be perceived as legitimate; regardless, trust signals need to be designed thoughtfully.

- **Direct patients to facilitator's qualifications for conducting values elicitation.** Signaling legitimacy begins before meeting with a facilitator, which can be achieved through directing patients to different media, including websites, professional biographies, and other related pieces of information that signal a facilitator's capability to conduct values elicitation. Prior to booking a values elicitation appointment, consider directing the patient to a website or similar repository where the patient can demystify their facilitator and select which one they feel most comfortable with based on their biographies.

- **Consider recruiting facilitators who have some level of mental health training.** Participants were concerned that some types of facilitators (e.g., peers, health educators) would not be able to respond to mental health concerns capably (e.g., a panic attack during the middle of a session). Thus, to relieve potential concerns regarding unexpected mental health problems during the session, designers should consider recruiting facilitators with some level of mental health training (such as mental health first aid), or developing training or certification for facilitators to complete prior to beginning this work.
- **Demonstrate beneficence through professional conduct.** For patients with anxiety or depression, cultivating and building trust is paramount to ensuring feelings of safety and comfort when engaging in values elicitation. This may involve facilitators explaining their affiliation and how their services complement ongoing care with the patient's PCP. This trust-building explanation can be achieved in a direct message on the patient's patient portal, and revisited during the initial values elicitation meeting.

5.4 Limitations

This study had several limitations. First, the scope of this study is centered around the technology and service components of eliciting patient values and may not fully capture the broader spectrum of challenges or higher-level interactions inherent to values elicitation methods. Our focused methodology might have limited the examination of more systemic flaws in values elicitation, such as cultural biases in the conceptualization of values [2]. Our scope is also limited as it did not include some of the more detailed interactional aspects of values elicitation activities. Extant research has covered this area well, including a paper by Ryu et al. [50] that examined the development and sharing of connections between personal values and self-management tasks, building on prior iterative design of reflection activities by Berry et al. [5]. Second, our participants may have favored digital mental health interventions because many were recruited from a participant registry for mental health technology studies. This might have influenced willingness to engage in technology-enabled values elicitation activities. Research with a broader participant sample is needed to understand whether the findings from this paper hold for participants with different characteristics. Third, at the time of the interviews, not all participants reported symptoms of anxiety or depression, as the inclusion criteria required people to have a self-reported history of anxiety or depression within the prior 12 months. Participants with little to no current symptoms might have found technology-supported values elicitation more or less acceptable, and further research is needed to clarify how the severity of mental health symptoms influences preferences for values elicitation. Fourth, we had more women than men in the study, which is common in mental health research due to gender-specific preferences and increased mental health stigma among men. Fifth, we did not capture participants' level of education or access to technology; these factors could influence their preferences for TESs. Finally, as discussed below, there is a need to complement this paper's patient-centered findings with the perspectives of clinicians and other key interested parties.

5.5 Future work

This study centered the experiences and perspectives of patients. Our interviews illustrated patients' thoughts on including other roles (e.g., mental health clinicians, peers, health coaches, online modules) as touchpoints in a broader values elicitation service. This raises new questions about which types of clinicians ought to be engaged in the design of values elicitation services, and how such a service should be distributed and coordinated across different health care specialties (e.g., primary care and mental health).

Future work should engage other key parties (primary care clinicians, mental health clinicians, nurses, medical assistants, clinic administrators). For example, what tools would support mental health clinicians in preparing patients for conversations about values? How well are mental health clinicians prepared to discuss values in relation to patients' priorities for primary care? What forms of support (including information technologies) are needed to translate insights from conversations with mental health clinicians into information that's usable by a primary care clinician (e.g., aligning with existing workflows and health information systems)? Lastly, future work should consider the broader methodological challenges of values elicitation in diverse contexts to enhance the accuracy and depth of applying these methods in healthcare.

6 Conclusion

Improving health care for people with MCC is a major public health priority. Across disciplines, scholars have designed and implemented ways to elicit values of people with MCC to improve collaboration and concordance between patients and primary care clinicians and ultimately improve health outcomes. Symptoms of anxiety and depression are common among people with MCC and can disrupt patient-clinician communication and concordance. This paper addresses a gap in prior research regarding how TESs can support values elicitation for people with MCC and co-occurring anxiety or depression. Through in-depth interviews with 30 participants, we found that many participants preferred to locate values elicitation within mental health visits, which contrasts with prevailing approaches to eliciting values for people with MCC. We also identified factors that contribute to patients' willingness to engage in values elicitation, including how the rationale for values elicitation is framed and communicated; the perceived credibility of those who facilitate values elicitation; and how time and cognitive demands are weighed against perceived benefits of values elicitation. Based on these findings, we suggest that TESs can help wrap support around in-person interactions with mental health clinicians, including: education and confidence regarding the safety and benefits of values elicitation, and preservation of patient autonomy over electronic communication of values to primary care clinicians. These contributions can guide future development of TESs to elicit values of people with MCC and anxiety or depression, ultimately improving collaborative care planning and promoting concordance in patient and clinician priorities for health care.

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A Scenarios

Below are the summary slides from each scenario. Descriptions of these scenarios are included in Table 2.

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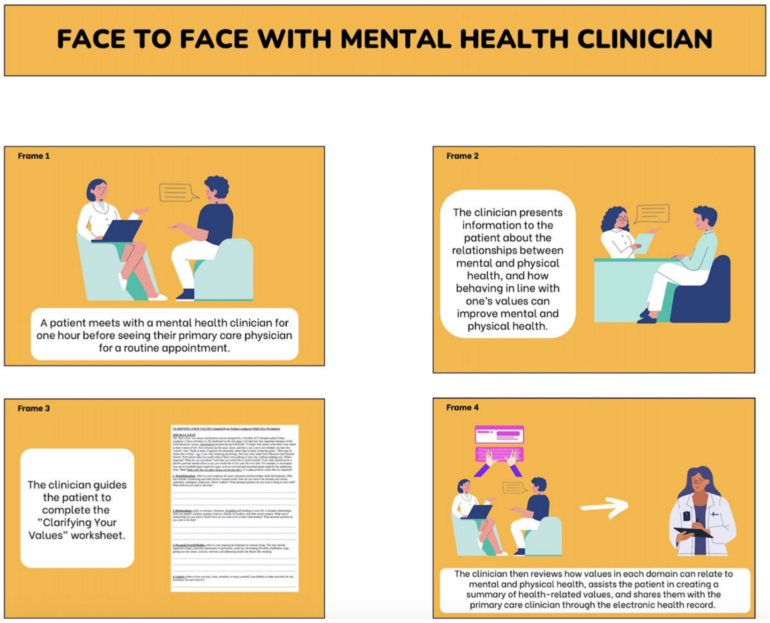
CCS Concepts:

• Human-centered computing → Empirical studies in HCI; • Applied computing → Health care information systems; Consumer health.



FACE TO FACE WITH MENTAL HEALTH CLINICIAN

Frame 1

A patient meets with a mental health clinician for one hour before seeing their primary care physician for a routine appointment.

Frame 2

The clinician presents information to the patient about the relationships between mental and physical health, and how behaving in line with one's values can improve mental and physical health.

Frame 3

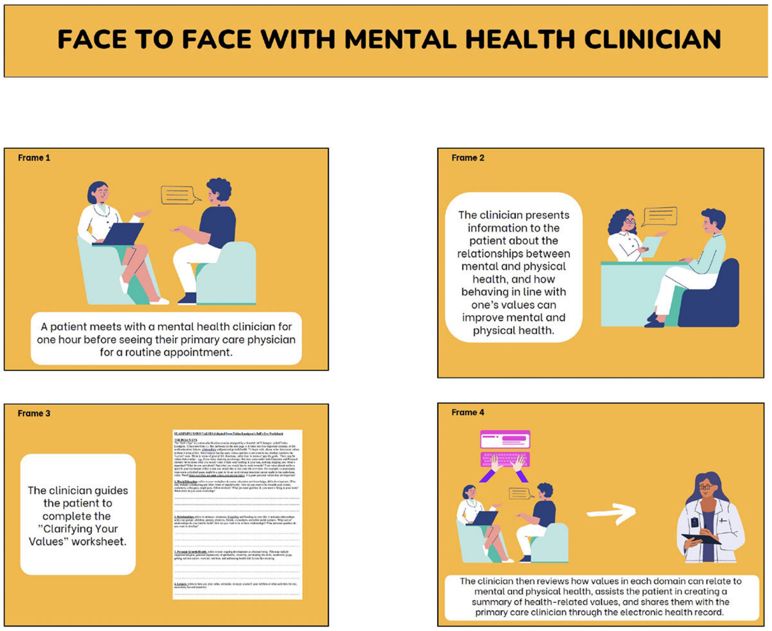
The clinician guides the patient to complete the "Clarifying Your Values" worksheet.

Frame 4

The clinician then reviews how values in each domain can relate to mental and physical health, assists the patient in creating a summary of health-related values, and shares them with the primary care clinician through the electronic health record.

Fig. 1.

Overview of the mental health clinician scenario



A patient meets with a mental health clinician for one hour before seeing their primary care physician for a routine appointment.

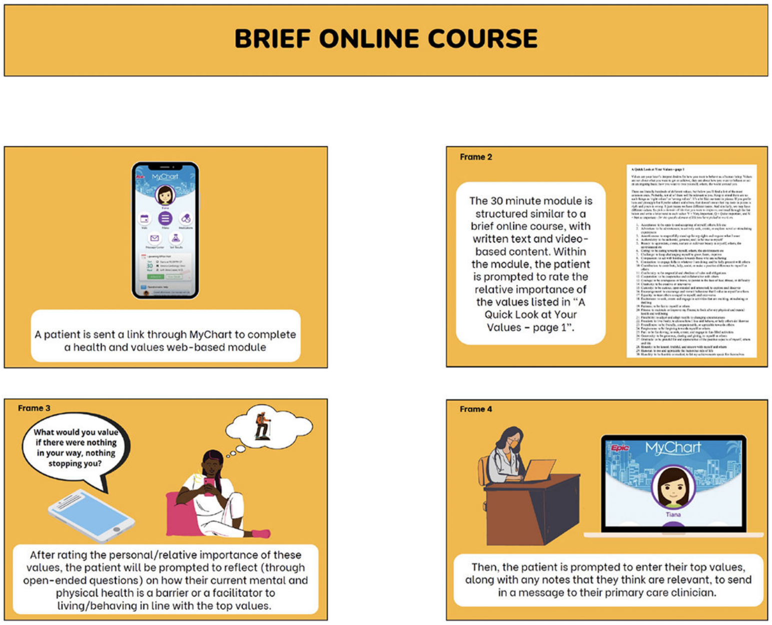
The clinician presents information to the patient about the relationships between mental and physical health, and how behaving in line with one's values can improve mental and physical health.

The clinician guides the patient to complete the "Clarifying Your Values" worksheet.

The clinician then reviews how values in each domain can relate to mental and physical health, assists the patient in creating a summary of health-related values, and shares them with the primary care clinician through the electronic health record.

Fig. 2.

Scenario: mental health clinician



A patient is sent a link through MyChart to complete a health and values web-based module

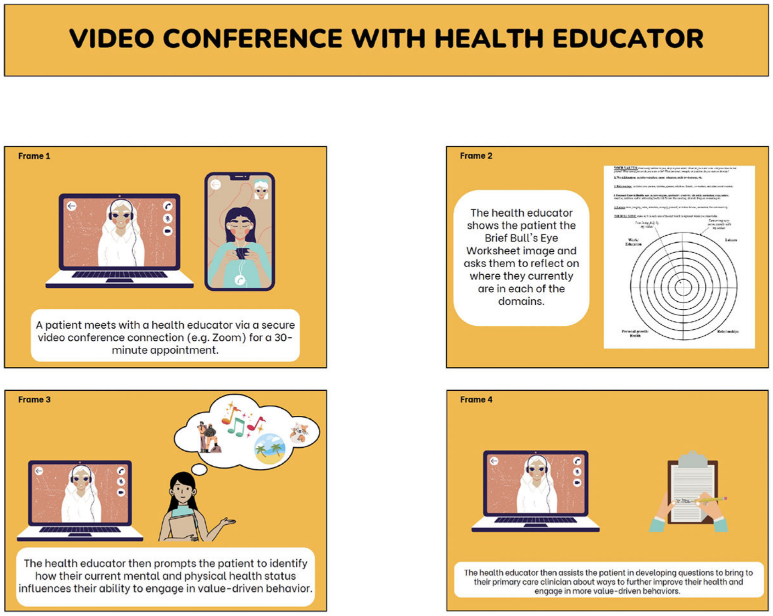
The 30 minute module is structured similar to a brief online course, with written text and video-based content. Within the module, the patient is prompted to rate the relative importance of the values listed in "A Quick Look at Your Values - page 1".

After rating the personal/relative importance of these values, the patient will be prompted to reflect (through open-ended questions) on how their current mental and physical health is a barrier or a facilitator to living/behaving in line with the top values.

Then, the patient is prompted to enter their top values, along with any notes that they think are relevant, to send in a message to their primary care clinician.

Fig. 3.

Scenario: brief online course



VIDEO CONFERENCE WITH HEALTH EDUCATOR

A patient meets with a health educator via a secure video conference connection (e.g. Zoom) for a 30-minute appointment.

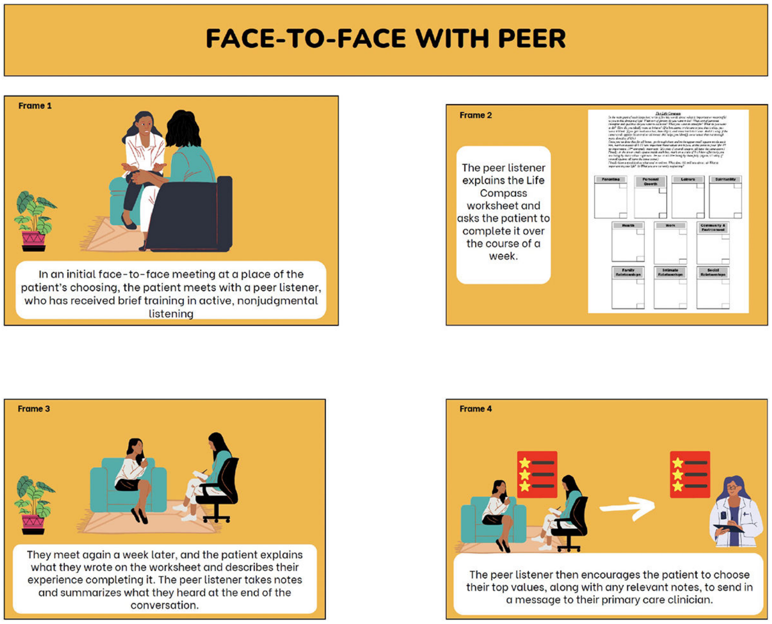
The health educator shows the patient the Brief Bull's Eye Worksheet image and asks them to reflect on where they currently are in each of the domains.

The health educator then prompts the patient to identify how their current mental and physical health status influences their ability to engage in value-driven behavior.

The health educator then assists the patient in developing questions to bring to their primary care clinician about ways to further improve their health and engage in more value-driven behaviors.

Fig. 4.

Scenario: health educator



FACE-TO-FACE WITH PEER

Frame 1

In an initial face-to-face meeting at a place of the patient's choosing, the patient meets with a peer listener, who has received brief training in active, nonjudgmental listening

Frame 2

The peer listener explains the Life Compass worksheet and asks the patient to complete it over the course of a week.

Frame 3

They meet again a week later, and the patient explains what they wrote on the worksheet and describes their experience completing it. The peer listener takes notes and summarizes what they heard at the end of the conversation.

Frame 4

The peer listener then encourages the patient to choose their top values, along with any relevant notes, to send in a message to their primary care clinician.

Fig. 5.

Scenario: Face to face with peer

Table 1.

Demographics

Gender		
Women	22	75.9%
Men	7	24.1%
Non-binary	1	3.4%
Age		
Mean	59.3	
Range	26–92	
Race/Ethnicity		
White	22	73.3%
African American/Black	5	16.7%
Asian	2	6.7%
Hispanic/Latinx	0	0%
Decline to Respond	1	3.3%
PHQ-9		
Mean	8.7	
Standard Deviation	5.3	
Range	0–22	
GAD		
Mean	5.7	
Standard Deviation	4.3	
Range	0–15	

Table 2.

Storyboard scenario descriptions

Component	Mental health clinician	Brief online course	Video conference with health educator	Face-to-face with peer
Scenario overview	Clinician discusses how living in line with one's values can improve mental and physical health. Clinician assists patient in summarizing health-related values, which gets sent to PCP in an electronic health record (EHR).	Patient rates top values and is prompted to reflect on how their mental and physical health affects ability to live in line with their values, which then gets sent to their PCP in an EHR.	Health educator asks patient to identify how their mental and physical health status influences their ability to live in line with their values. The health educator assists the patient with developing questions to bring to PCP about engaging in more value-driven behaviors.	Peer listener explains the work-sheet to the patient where they get a week to complete it before meeting again to discuss it. Peer listener encourages patient in choosing their top values and relevant notes to share with their PCP in an EHR.
Format	Face-to-face	Self-directed course	Video conferencing	Face-to-face
Technology-enabled service	Mental health clinician utilizing EHR messaging to share summary of health-related values with PCP	Values elicitation is done independently on the patient portal, which then gets shared with the PCP in an EHR	Videoconferencing platform to facilitate values elicitation, after which the patient brings the newly formed questions to their PCP	Peer listener utilizing EHR to share summary of health-related values with PCP
Facilitator	Mental health clinician	Self	Health educator	Peer listener
ACT-based worksheet	"Clarifying Your Values"	"A Quick Look at Your Values"	"Brief Bull's Eye"	"Life Compass"

Note: Appendix A includes images and contents of each scenario.

Table 3.

Scenario advantages and disadvantages

Scenario	Advantages	Disadvantages
Mental health clinician	Credible facilitator, integrates physical and mental health	Appointments take too much time, overwhelming to meet two clinicians
Brief online course	Independently done, integration with electronic health record	Cognitively demanding, impersonal
Video conference with health educator	Convenience of teleconference, supports patient in navigating health issues	Lack of credibility, unsure how to integrate into care team
Peer listener	Relatable listener, time in-between appointments to reflect	Lack of credibility, unable to provide treatment options

Table 4.

Role of technology for supporting values elicitation among people with anxiety or depression

Theme	Example concern	Role of technology	Implications for design
Perceptions of rationale, benefits, and risks of values elicitation	After putting in effort into values elicitation activities, patients are concerned that their doctor will fail to incorporate their values into their care plan.	A patient portal like MyChart can document the patient's values, provide "read receipts," and be used as a discussion tool with their PCPs to regularly check-in on their health goals and progress.	Patients should be able to verify when their PCPs have confirmed receipt of their values on the portal. Further, a guide informing the patient of how these values will be used can allay concerns surrounding misuse or lack of use of their values.
Importance of facilitator credibility, training, and capacity to help	Patient is concerned that the facilitator does not have the proper training or credentials to discuss nuanced challenges of living with MCC, anxiety, and depression.	A descriptive website associated with a health care organization that provides values elicitation facilitator biographies can demonstrate legitimacy and credibility.	Facilitator biographies should include information about training and certifications, as well as personal statements of how they use values to guide patients in achieving goals. Such information demonstrates skill and dedication to the beneficence of the patient.
Assessing and navigating personal capacity	Patients have limited time due to attending multiple health visits.	Telehealth offers flexibility for patients with limited time and energy to attend many appointments. Brief, user-friendly electronic forms can reduce undue stress.	Clinicians can provide more telehealth opportunities. Designers can create simple and navigable eHealth platform interfaces, preventing patients from being deterred.