

PRIMARY CARE & HEALTH SERVICES SECTION

Patients' Experiences with Telecare for Chronic Pain and Mood Symptoms: A Qualitative Study

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Abstract

Objective. Pain, anxiety, and depression commonly co-occur, can have reciprocal effects, and are associated with substantial disability and health care costs. However, few interventions target treatment of pain and mood disorders as a whole. The Comprehensive vs. Assisted Management of Mood and Pain Symptoms (CAMMPS) trial was a randomized trial comparing two pragmatic telecare interventions, a high- vs low-resource approach to pain and anxiety/depression treatment. The purpose of the current study is to better understand patients' perspectives on both intervention approaches, including intervention components, delivery, patient experiences, and patient outcomes. **Design.** Qualitative, semistructured interviews. **Setting.** A Veterans Affairs Medical Center. **Subjects.** Twenty-five patients were purposefully sampled from both study arms. **Methods.** Patients were interviewed about their experiences with pain and mood treatment, perceived benefits and changes, and experiences with the intervention model to which they were randomized. The constant comparison method guided analysis. **Results.** Pain was more important than mood for most participants. Participants described developing increased awareness of their symptoms, including connecting pain and mood, which enabled better management. Participants in the high-resource intervention described the added value of the study nurse in their symptom management. **Conclusions.** Patients in a telecare intervention for chronic pain and mood symptoms learned to connect pain and mood and be more aware of their symptoms, enabling more effective symptom management. Patients in the high-resource intervention described the added benefits of a nurse who provided informational and motivational support. Implications for tradeoffs between resource intensity and patient outcomes are discussed.

Key Words: Chronic Pain; Depression; Anxiety; Telehealth; Qualitative Research

Introduction

Pain is the most common symptom reported in both the general population and in primary care, accounting for more than \$500 billion annually in direct medical costs and lost worker productivity [1]. For many patients, pain

treatment is inadequate due to a variety of reasons, including uncertain diagnoses, social stigma, lack of access to effective treatments, and lack of knowledge about the best ways to manage pain [1]. Chronic pain is a significant source of suffering; pain can result in significant

psychological and social consequences, including fear, anger, depression, anxiety, and withdrawal from social roles [1,2].

Anxiety and depression are among the most common mental health problems seen in the general medical setting [3,4], and both are associated with substantial disability and health care costs [5,6]. Pain, anxiety, and depression frequently co-occur [7] and have additive adverse effects on health outcomes [8,9]. As a result, interventions are needed that target pain, anxiety, and depression symptoms as a whole.

The Comprehensive vs. Assisted Management of Mood and Pain Symptoms (CAMMPS) trial [10] is a randomized comparative effectiveness trial. CAMMPS compares two pragmatic telecare interventions, high- vs a low-resource approach to pain and anxiety/depression treatment. The assisted symptom management (ASM) intervention is the low-resource arm, consisting of automated symptom monitoring and prompted pain and mood self-management. The high-resource approach is the comprehensive symptom management (CSM) intervention, which combines ASM with optimized medication management and facilitated mental health care, administered by a nurse-physician team. The primary objective of the CAMMPS study was to compare 12-month pain and mental health outcomes between the two study arms.

The purpose of the current qualitative study is to explore patients' perspectives on intervention components, delivery, patient experiences, and patient outcomes. Although quantitative comparisons on pain and mood outcomes between the two study arms provide important information on whether a low- or high-resource intervention is more effective, qualitative inquiry is useful to further understand and interpret these results. This is especially true because in CAMMPS, patients in both study arms improved, although patients in the high-resource CSM arm showed greater improvement [10]. This finding gives rise to important questions, such as the tradeoffs between degree of patient improvement and resource expenditures. Qualitative inquiry can help us to evaluate these tradeoffs by revealing what aspects of each intervention were perceived as the most valuable and why patients believed they improved. Such data have the potential to elucidate participants' experiences that are not easily measured quantitatively and can be useful in planning future studies as well as informing plans for intervention implementation [11–13].

Methods

The CAMMPS Study

CAMMPS was a 12-month randomized comparative effectiveness trial comparing a low-resource, automated intervention to a higher-resource intervention that adds to the automated intervention a nurse-physician team using a telecare approach. A full description of the study and

protocol can be found elsewhere [14]. A brief description is provided here.

Two hundred ninety-four patients participated in the CAMMPS study—147 per arm. Participants were veterans aged 18 years or older who had musculoskeletal pain for at least three months with at least moderate pain severity, defined as an average severity score of ≥ 5 on the Brief Pain Inventory [15,16]. All participants had used medication to treat their pain. Participants also had psychiatric comorbidity including at least one of the following: moderately severe depression (PHQ-8 score ≥ 10) [17], moderately severe anxiety (GAD-7 score ≥ 10) [18], or mixed anxiety-depression (combined PHQ-8 and GAD-7 score ≥ 12) [18]. The primary outcome measure was the composite z-score of the main pain, anxiety, and depression (PAD) scales used in CAMMPS: the BPI, GAD-7, and PHQ-9 [14]. Study procedures were reviewed and approved by the local institutional review board (IRB) and the local VA Medical Center Research and Development Committee. Signed informed consent was obtained for all participants.

The Assisted Symptom Management Intervention

This low-resource intervention consisted of 1) automated symptom monitoring and 2) prompted pain and mood self-management. Participants completed regular symptom surveys either by automated telephone calls or via an Internet portal, depending on patient preference. These contacts occurred weekly for the first month, twice per month in months 2–6, and monthly for the remainder of the 12-month intervention. Surveys included brief measures of pain, depression, and anxiety; questions about sleep, fatigue, and irritability; questions about global change; questions about the degree to which symptoms interfered with activities; and items to prompt use of the pain and mood self-management educational modules. These modules were web-based (with the option to have a hard-copy binder) and included topics such as pain coping, pain medications, depression, anxiety, sleep, and anger management.

The Comprehensive Symptom Management Intervention

This higher-intensity intervention included a nurse care manager who provided optimized pain medication management in consultation with the physician, facilitated mental health care, and enhanced education, motivation, and care coordination through phone contacts. Contact frequency and the content of each call varied based on individual patient needs. Scheduled contacts occurred at baseline, one week, and one, three, six, and nine months; symptom-triggered contacts were initiated based on reports from the automated symptom monitoring. Further details about each intervention and the CAMMPS trial are published elsewhere [14].

Main Study Results

At 12 months, the composite PAD score improved in both groups: 0.65 for the high-intensity CSM group and 0.52 for the lower-intensity ASM group. The between-group difference was statistically significant ($P = 0.003$). Moreover, at 12 months, patients in the CSM (i.e., high-resource) group were more likely than ASM patients to report being "much improved" (39.5% vs 26.8%) and less likely to report worsening of symptoms (19.4% vs 35.8%) [10].

Eligibility and Recruitment

Participants who completed the 12-month trial and were willing and able to return to the medical center for a face-to-face qualitative interview were eligible to participate in this qualitative study. Participants were purposefully sampled from this group to include those randomized to both intervention arms. Patients were invited by phone to participate in interviews within one month of study completion to facilitate recall of study experiences. Seventy-one patients were asked to participate in interviews; 41 agreed. However, because saturation (i.e., collecting additional data no longer led to new theoretical insights or further developed existing themes in the data) [19] was reached after 25 interviews, the remaining interviews were not scheduled. The average time between study completion and qualitative interview participation was 17 days. Participating patients were compensated \$50 for their time.

Interviews

Qualitative, semistructured interviews were conducted face to face in a private room by study personnel trained in qualitative interviewing (EE, BP, SM). Interviews lasted from 25 to 75 minutes (average length: 60 minutes). Interview questions covered areas such as why patients participated in CAMMPS; changes in pain, mood, or other symptoms since their participation; successes, difficulties, and sources of support for their symptom management; and perceived benefits (or lack of benefit) of different components of the study. It was in this latter category that questions varied based on whether patients were randomized to the ASM or CSM arm. Interviews were digitally audio-recorded, professionally transcribed, de-identified, and imported into NVivo 10 for analysis.

Data Analysis

The first author (MM) led data analysis, which was guided by the constant comparison method [19,20]. In this iterative process, three team members (MM, EE, BP) analyzed the data in two broad phases. The first phase, open coding, involved reading all transcripts and noting common, recurrent, unique, and salient themes within and among transcripts. Through this process, an initial code list was developed and refined. Once codes were

stable and consistent, the second phase, focused coding, took place. In this phase, codes developed in the first analytic phase were applied to all transcripts. Analysis involved use of procedures outlined in the literature on qualitative methods to ensure rigor and validity, including depth of description (seeking the rich, detailed accounts of participants' experiences and descriptions), practicing reflexivity (questioning interpretations, being aware of one's own expectations in the data), and seeking out data that might challenge the study's interpretations and conclusions [19,21,22].

Results

After interviewing 25 participants, we determined that thematic saturation was reached [19]. Participants' ages ranged from 30 to 69 ($M = 55.8$, $SD = 10.7$) years; five were female. Two participants were black, and the remainder were white. All were non-Hispanic. Fourteen participants had been randomized to the CSM arm; 11 were in the ASM arm. See Kroenke et al. [14] for demographics for the full trial sample.

Participants discussed reasons for participating in CAMMPS, including whether their pain or mood symptoms were more important. Participants also discussed a number of ways in which they benefitted from study participation: connecting mood and pain, monitoring pain levels, learning to manage pain, and learning to manage mood. Finally, participants in the CSM arm discussed the role of the nurse care manager as a facilitator to pain and mood management in CAMMPS.

Pain vs Mood

CAMMPS focused equally on pain and mood (depression and/or anxiety). However, for all but six participants, pain was the more important symptom to address. This prioritization often came with the recognition that mood follows from pain, as the following two participants noted:

Obviously, the mood is a direct result of the severe pain. So first the pain comes, and it [lasts] so long that you start to get aggravated. I think when I'm not in pain, the mood is better. (Participant 1181, CSM Arm)

Pain [is more important], because it affects my mood. (1196, CSM)

Another participant prioritized pain because of the effects it had on his sleep:

I have different problems with my back. I've had titanium clamps. I've had shots, and I have a lower back problem, upper back problem between my spine and my shoulder blade, and...a damaged nerve in my shoulder and my neck. So now when I try and sleep, I either got the

problem with my back, or my arm is in really bad pain. (1216, ASM)

Although most participants believed pain was the more important symptom, six identified mood as their priority. The common theme among these participants was that they had already learned to live with and manage their pain, but mood was still a struggle:

I can handle pain. I've got a very high tolerance to it. But the mood, I can handle that to a point, but then it gets to the point where I'm just aggravated as hell with everybody for no reason. Kind of like a wooden rollercoaster, up and down, but you're getting thrown side to side. (1176, ASM)

The chronic knee problems, I've kind of learned to live with. Like I've said, I've got a limp. I should wear a brace and I sometimes have to use a cane, but the mental issues were far worse, more severe, and happened more often. (1218, ASM)

Connecting Mood and Pain

Although some participants showed a clear preference for which symptom they found more troublesome, participants also described discovering that their pain and mood were related and that one affected the other, which ultimately helped with management of both.

I didn't so much feel the connection of the pain and the mood [before the study]. I just knew that I had both. I had the depression before I had the pain, but it was kind of like for me like an excuse. If I wasn't feeling good, if my back was hurting, it was like I don't wanna get up. I don't wanna do anything, and now I don't have to because my back hurts. (1211, CSM)

I think I was trying to focus on the pain. . .when the pain didn't need the attention that I was giving it. . . I think with what I was going through with the depression and anxiety and stuff, I think I was making more of the pain than what had actually needed to be made of it. . . My whining and moaning was more depression than it was the actual pain. (1233, CSM)

I think the study made me realize that the depression, and maybe panic attacks, have something to do with my pain. (1149, CSM)

Sometimes reaching a greater awareness of the connection between mood and pain helped patients to manage their symptoms, as with the following participants:

[Participating in CAMMPS] allowed me to realize what I can do on my own as far as managing my own pain at the times I have it and then my mood swings. . .that helped me quite a bit to realize exactly what I'm going through mentally with the pain issues. (1230, ASM)

I can deal with [the pain] better. . . I know the signs. For example, when I know my hands are tensing up like I can feel the fibromyalgia's coming. I know I'm anxious about something, so I'm trying to figure out what I'm anxious about so I can stop being anxious about that and stop being in pain. (1204, CSM)

Monitoring Pain and Mood

Part of the CAMMPS study involved participants responding to regular automated phone calls or e-mails to monitor their symptoms. For many, just answering these questions seemed to increase their awareness of their mood and/or pain symptoms.

Well, the fact that I had to sit there and answer questions and then answer follow-up questions forced me to stop and evaluate and reevaluate my mindset and what I'm thinking. . . It brought awareness of my own issues, which allows me to work on it, vs just status quo. And so I think the benefit was it made myself far more aware than what I was before. (1180, CSM)

Well, it [the automated questions] opens it up more. It makes you think a little bit more what your answers were. Why was it 10 on this one and only 7 on that one? And yet basically, the question was the same thing. . . It made me think about it. (1147, ASM)

Increased awareness sometimes helped patients recognize triggers for pain or mood symptoms, as with the following patient:

The [automated reports] made me more aware of how I was feeling overall about things. Made me kind of aware of my trigger points that I try to avoid. Like talking about my sister for one, that could trigger, that did trigger something the other day, but it made me think about, you know, the different areas. It's not just one area. It affects more than just, like your mood, your appetite, your interaction with other people. I think it made me realize that a lot more. (1149, CSM)

You get a chance to think about it. . . I used to get mad, or my mood swings would change. Then, I'd catch myself. I wondered why. . . But like we were having those things here on different tests that you do between 1 to 10, and you answer the different questions. I learned how to adjust and deal with it even better. (1150, ASM)

Learning to Manage Pain

Patients described coping strategies they learned from participating in the study. A commonly expressed sentiment was that the pain was still there, but they learned strategies to keep moving, keep working, push aside thoughts about the pain, and manage expectations.

The biggest thing I remember is you've got to work through your pain to keep right on going—that

was...[the] thing that I kind of latched onto. No matter how much pain I was in, I still had to get the work done, and I think it helped get me limber and keep moving. You know the pain's still there, but I'm moving. (1147, ASM)
As far as having the pain or the issues, you've just got to get it out of your mind that it hurts and go anywhere anyway. (1230, ASM)

Sometimes patients described learning to adjust either their expectations or their activity level to manage their pain more effectively, as with the following two patients:

I don't expect as much anymore. I don't put as much on me anymore. It's not that I don't challenge myself. It's just that I understand my limitations. (1197, CSM)

I have noticed when I do my activities. I say, "Does this hurt me 1 to 10?"... I compare my levels all and almost every day if I'm doing something...I know when to go get a pain pill... I don't think my pain is any different...just learned to live with it better. (1126, ASM)

Some patients did note that their pain was lower than at the start of the study. One participant described becoming more physically active as a result of study participation: "Because I was forced to think about it. I've started exercising again and stretching, and I guess ways to alleviate pain. I'm more proactive about it. Fortunately, I have benefited" (1180, CSM).

Similarly, another participant recognized the importance of self-care to reduce pain:

The study helped me understand more about my pain. It helped me understand things I can do better to control my pain...and as long as I follow the rules of taking care of myself, I'm able to bring that pain level down. (1206, ASM)

Finally, similar to the participants who recognized the relationship between pain and mood, one participant described working on his mood first to improve the pain: "I wasn't gonna put up with it no more. I decided that my mood had to change if the pain was gonna change" (1207, ASM).

Learning to Manage Mood

Participants also described strategies they used to cope with their depression or anxiety. Some described learning how to improve their mood by consciously reducing stress and avoiding worry:

I've kind of learned ways kind of subside the mood and everything like that and try to reduce stress in my life. (1186, CSM)

As far as moods, anxiety, things like that, it's improved. Because the best policy with that is just don't worry about it. Don't think about the bad stuff. Think about improvement. Think about the things that you can do. Get up and do them. (1230, ASM)

While some participants, such as those above, described improved mood, many did not think their mood had improved, but, similar to pain symptoms, they simply learned more effective coping strategies:

It's not so much has it [mood symptoms] gotten better or worse. It's gotten where I can know how to deal with it or adjust to it. Y'all taught me how to deal with it better...more control and how to deal with anger because of stress, and all of those things come into play. I learned how to adjust and deal with it better. That's the biggest thing that it has done. (1150, ASM)

Patient: I don't know if [my depression] has changed, as much as I've adapted to deal with it better than what I was. I think that's probably the better way of phrasing it is I've learned to adapt a little more than what I was.

Interviewer: Can you give me any examples of how you adapted?

Patient: Yeah, kind of shifting my focus, stopping for a second when I get anxious...thinking things through and breathing and just getting control back... The study, I don't know if it really turned a light onto anything I didn't know, but it just kind of brought back some of the things that I may not have been practicing and some of the stuff that I had heard elsewhere and kind of blew off. (1233, CSM)

The Nurse Care Manager

CAMMPS participants were randomized either to a low-resource automated intervention (the ASM arm) or a high-resource, comprehensive intervention that added a nurse-physician team to the automated intervention (the CSM arm). A number of participants in the CSM arm identified the study nurse care manager as an important facilitator for successful pain and/or mood management.

Informational Support

Participants described the study nurse as a valuable source of information and feedback.

So talking to [the study nurse], having them validating and noticing things and then providing information is the most beneficial... There were times where she opened my eyes to different things...which made it very beneficial. (1180, CSM)

She had a lot of good ideas... We'd talk about the mood. We'd talk about the pain, what I was feeling, what could be done. She gave me some ideas on...dealing with the pain and the mood. She would always ask me if I needed a change of medication. (1211, CSM)

One participant noted the importance of the study nurse in helping him to process and understand the study

materials, such as the informational videos. One participant in the CSM arm, when asked how the study might have been different for him had he been randomized to the automated arm, replied:

You need somebody to guide you. You need somebody else to see if there is or to ask questions. Because you're going to watch the videos and you're going to forget the next day. If you're not going to talk to somebody else, you're going to forget about the pains. If you don't talk to somebody else, you're going to forget about so many things. It helps to talk to people, and you can talk to a nurse. (1226, CSM)

Another participant described how the nurse reinforced what he learned, much like a school teacher would:

[In] working with her, I would interact with my modules, and it's like in high school, like working with the teacher kind of. . . . It's more you know when you talk to somebody, RN and call me up and things of that nature, more so than the Internet I think. That was really beneficial. (1092, CSM)

"A Sense of Caring"

Informational support was important for patients in the CSM arm. For many patients, this support extended into a form of emotional support, wherein patients felt cared for and understood. The following patient described both the information and the sense of caring he felt from the study nurse care manager:

I think just the awareness that was while you were in the study, you're answering the questions. You're speaking to the nurse, and you get an actual sense of well, they're thinking about me and I'm thinking about me, and hey, look, we're trying to tweak some of these meds that are non-narcotic to try to help you better, and is there any way that we could help, and sometimes they actually sent a note to [my primary care team]. So a sense of caring. That was helpful. (1181, CSM)

You know, caring. She's a real caring person. When I talk to her, that was really, really nice. (1092, CSM)

It's so wonderful to know that someone cares about the way you feel. (1228, CSM)

Many of these discussions involved being able to talk with someone who understood what the participants were experiencing.

The fact is, I think that there was somebody to talk to about issues that I couldn't talk to my doctor about was helpful, definitely was helpful. (1197, CSM)

And to have the chance to talk to somebody that they understand your pain, somebody that understands your moods; that helps a lot. (1226, CSM)

Having somebody that understood if you will, being a counselor and understanding how things work, she understood where I was coming from. She had a basic understanding of what I was feeling. Yeah, somebody to talk to. Somebody to vent to if that's all I needed to do. Yeah, it was good. (1211, CSM)

One participant in particular took this sense of caring and understanding to another level, describing the nurse's efforts to keep her on track with her self-management goals:

I like [Study Nurse], she's like a tough mom. . . . She has like that tough love kind of thing [laughs]. So she was good; I liked her a lot, and you know she was like, "Okay, you need to do this but then you better continue. Like you need to work towards your goals and stuff like that." So she was really good. (1204, CSM)

Managing Without the Study Nurse

Participants in the ASM arm did not have the benefit of the study nurse to talk to. These patients were asked whether they thought they would have benefitted more if they had had the nurse care manager to work with. One participant said,

Yes, I do think I, yes, I would prefer having someone to talk to in that realm of expression, because I think bringing it out is more helpful than just thinking about it. And if you've got somebody who can respond immediately then to what you're saying, feeling, or trying to you know describe, then I think it's better. (1206, ASM)

Another participant, similar to the patient who compared the nurse to a school teacher, indicated that it might have been helpful to have someone to reinforce the study materials:

I think having somebody to talk to and being on a computer with the person helping you do that too is more helpful. I think that it penetrates more. . . . I hate reading. . . . I would have liked it more if I would have been working with the nurse. (1216, ASM)

One participant, although he thought he might have gotten more out of the CSM arm, indicated that he was proud of himself for his accomplishments without anyone's help:

Well, [the nurse] might have had more advice to give. . . . She may have had different ideas than what I [had] done on how to get through it. She may have helped me to get through it a little bit faster. But I got through it and did it all myself, and I'm pretty proud of that. . . . I don't feel like I'm a failure. I don't feel like I'm down in the dumps anymore. I'm flying high right now [laughs]. (1207, ASM)

Another participant in the ASM arm commented that trying to coordinate a phone call with someone is "too much of a hassle":

It was better the way it was. Because...when they call, you're always doing something else. So you never can [talk to them]. It seems like you can't get your timing correct so that she calls when you're ready to do it. Now, you've got to hustle and bustle to get here in order to get the computer opened up so that you can get to the website so that you can talk to her, and it's just too much of a hassle. (1191, ASM)

Discussion

The Comprehensive vs. Assisted Management of Mood and Pain Symptoms trial was a randomized comparative effectiveness trial in which a lower-resource, automated system alone was compared to a higher-resource intervention that included the automated components but added a study nurse care manager who maintained regular contact with patients and tailored the content of the sessions to patients' individual symptoms and needs. Both groups improved on the primary outcome, a composite pain-anxiety-depression z-score (0.65 for the CSM group, 0.52 for the ASM group), although the CSM group experienced greater improvement.

While all CAMMPS trial participants had both chronic pain and either depression or anxiety, pain was the more important symptom for most patients who were interviewed. Some patients believed that their mood issues were a direct result of their pain; thus, they reasoned that if they could work on the pain, mood improvement would naturally follow. For the patients who prioritized mood, pain was something they had learned to live with. Most interesting, however, was that patients described learning through the study that their pain and mood were related. For some, making this connection enabled them to better manage one or both symptoms. This finding is similar to a study of patients who participated in a nurse-delivered pain self-management intervention that also included brief cognitive behavioral therapy. Participants in that study described a similar phenomenon, in which their understanding of how their thoughts and emotions affected their experiences of pain evolved during the trial, with some recognizing that pain and depression can create a cycle in which each exacerbates the other [11]. Helping patients with pain and mood disorders recognize the relationship between the two may help patients better monitor and manage both symptoms.

A common feature in both interventions was the automated symptom monitoring, in which participants either called or logged into an automated system to report their symptoms. Asking these questions forced patients to think about their symptoms, leading some to more actively self-manage their symptoms. Such a low-resource intervention could be an important and easily implemented tool to help patients manage pain and mood symptoms.

Although many patients' pain and mood improved, as measured by the composite pain-anxiety-depression score, patients tended to emphasize learning to manage and cope with their pain and mood symptoms to a

greater degree than they emphasized symptom reduction. This is important given that patients rarely experience complete relief from symptoms, and it corroborates previous findings from a study focused on pain (but not mood) management [11]. A 30% reduction in pain severity or interference is considered a clinically significant improvement [23], as is a 50% reduction in depression or anxiety [24,25]. Thus, many patients with clinically significant improvement will still have residual pain or mood symptoms, and learning effective self-management and coping skills is important to manage the symptoms that remain.

Patients in the CSM arm had access to extra resources through the nurse care manager, with whom they had regular contact. Patients who received the CSM intervention described the nurse's role in disseminating and reinforcing self-management information. Patients also described feeling cared for and supported by the nurse; they appreciated having someone to talk to who, they believed, understood their symptoms. Some patients also described the nurse's role in connecting them to the care they needed, working with them to try to find the most effective medications, and providing encouragement to keep them on track with their self-management goals. Nurse care managers have been identified as important, indeed, even as critical, in prior studies of chronic pain self-management interventions [11–13,26]. Provision of information as well as listening, understanding, motivating, and providing accountability, have all been described as important for patients learning pain self-management strategies. In some cases, patients saw this provision of support as more important than the self-management information and strategies themselves. It appears from the current study that patients' views of the nurse care manager's role in self-management extend beyond pain management, and these ideas are also relevant for the management of comorbid anxiety and depression.

This finding, which corroborates past research, leads to questions about participants in the ASM arm, who did not have the benefits described above from a nurse. Some patients did indeed believe that they would have experienced greater benefit if they had "someone to talk to." One patient, who noted that he hated to read, thought that having someone to go over the written information provided during the study would have been helpful. However, not everyone missed having a nurse care manager or other intervention facilitator. Some believed they did just fine without anyone, and one person even noted that it is too much of a hassle to coordinate calls. Importantly, though, patients in the ASM arm were almost twice as likely as those in the CSM arm to report worsening of symptoms at 12 months—suggesting that the perceptions of patients who have access to a nurse care manager may indeed translate into measurably better outcomes.

Although having a nurse care manager or other facilitator has been repeatedly identified as important to self-

management, especially for chronic pain, such interventions are resource-intensive and may not be readily implementable. CAMMPS demonstrated that patients, even without such a facilitator, in a purely automated setting can still experience benefits. Not only did pain-anxiety-depression symptoms improve, but patients described how this improvement took place. For many, the regular monitoring of symptoms served as a reminder and a means to keep track of symptoms, which helped patients to adjust their activity, anticipate triggers, and thus better manage their symptoms. And while some patients in the ASM arm indicated that they would have preferred a nurse or other intervention facilitator, this was not a pervasive theme in the data. Of the 11 participants from the ASM arm, only three indicated that they would have preferred to have the nurse. Although this qualitative sample is small and not generalizable, it does serve as an indication that the resource tradeoff may be worth considering, as long as patients' symptoms are closely monitored over time for potential worsening of symptoms.

This study has some limitations that should be acknowledged. First, all participants were veterans from one VA medical center who agreed to enroll in a randomized controlled trial. As such, the majority of participants were white males; because of this lack of diversity, the perspectives reported in this study might not be reflective of a more diverse population. Second, because all participants were veterans who obtained health care at a VA medical center, study results might not apply to patients with chronic pain and mood disorders in other health care settings. Third, although we sampled to saturation, it is possible that we missed key themes because patients with other perspectives declined to participate or were simply not contacted; given the large sample of the main study, this is a possibility. Finally, because participants were interviewed by members of the CAMMPS study team, it is possible that they felt compelled to report only positive feedback about the intervention. However, because patients provided rich details and examples of their experiences, provided suggestions for improvement, and were sometimes critical, we believe that such social desirability bias is unlikely.

Conclusions

CAMMPS compared a low-resource, automated pain and mood self-management intervention to a higher-resource intervention that had both the automated features and a nurse-physician care management team. Quantitative results indicate that, while patients in both interventions improved, those randomized to the higher-resource CSM intervention improved more. This qualitative study provides insights into participants' experiences and suggests avenues for future interventions and implementation.

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