

Qualitative Insights Regarding the Use of Tai Chi for Pain Management Among Adults With HIV

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Abstract

Background: Approximately one-half of all adults with HIV experience chronic pain. Needed are nonpharmacological approaches to improve pain management in this population.

Methods: For this study, we conducted in-depth qualitative interviews (n = 20) with thirteen adults with HIV and 7 HIV care providers regarding their perceptions of Tai Chi for chronic pain management. The interviews were audio recorded, transcribed, double-coded, and analyzed using applied thematic analysis.

Results: HIV patients had limited prior exposure to Tai Chi and had not previously considered this practice for pain management. However, after viewing a brief video demonstration of Tai Chi, patients recognized potential benefits, including relaxation, stress reduction, and pain lessening. Patients were surprised by the gentle nature of Tai Chi and expressed enthusiasm to learn more about Tai Chi. HIV healthcare providers similarly had limited knowledge of Tai Chi for pain management. HIV care providers shared several helpful insights on the potential implementation of Tai Chi with this population.

Conclusions: Adults with HIV and healthcare providers were optimistic that Tai Chi would reduce stress and ease chronic pain. These data suggest that Tai Chi would be of interest to HIV patients and care providers as a novel pain management strategy.

Keywords

HIV, chronic pain, qualitative research, Tai Chi

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Introduction

Adults with HIV experience higher rates of chronic pain compared to the general public.¹ The prevalence of chronic pain among people with HIV has been estimated at 39%-67% and is often comorbid with anxiety, depression, and substance use.^{1,2} Factors contributing to chronic pain include HIV disease progression, medication side effects, elevated stress, and aging.¹ Managing stigmatized chronic health conditions, like HIV and chronic pain, increases cumulative stress and adversely affects biological systems.³ Better management of chronic pain among adults with HIV can improve quality of life and lower healthcare costs.⁴ Given the ineffectiveness and

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over-reliance on opioid medications for chronic pain, there is a need for affordable, non-pharmacological approaches to managing pain.

One non-pharmacological approach to managing pain is Tai Chi – an ancient practice that combines gentle movements, focused breathing, and mindful meditation. Meta-analyses demonstrate positive effects of Tai Chi on health outcomes, including regulating immune health and reducing inflammation.⁵⁻⁷ Symptoms and conditions responsive to mind-body therapies, such as pain, fatigue and depression, are associated with changes in inflammatory processes.⁷ For example, Tai Chi interventions are linked to changes in genomic markers of inflammation among cancer patients, including cellular inflammatory responses and proinflammatory mediators.⁸ A recent study of Tai Chi among older adults with chronic pain demonstrated changes in levels of the opioid system hormone beta-endorphin among participants who completed at least 70% of intervention sessions.⁹

Practicing Tai Chi can improve physical functioning, including musculoskeletal strength, cardiovascular fitness, and balance.¹⁰ The focus on balance while practicing Tai Chi is especially beneficial for older adults with chronic pain.¹¹ A recent meta-analysis of randomized controlled trials found that practicing Tai Chi helped to reduce chronic pain among patients with osteoarthritis and osteoporosis.¹² Tai Chi also improves patient-reported psychological and behavioral outcomes.^{6,13-15} A review of Tai Chi among adults with chronic rheumatic diseases found the practice to be safe and effective at improving physical and mental health outcomes.¹⁶ In fact, Tai Chi has been found to be more effective than standard aerobic exercise at improving primary fibromyalgia symptoms, while also reducing anxiety and enhancing pain coping self-efficacy.¹⁰

These findings may be of particular interest for populations with compromised immune health, such as adults with HIV. Although promising, integrative health practices, such as Tai Chi, are not always accessible to minoritized populations. Despite the scarcity of evidence on Tai Chi for improving the health of adults with HIV, some evidence suggests that this population is interested in exploring integrative, mind-body approaches.¹⁷ One study found that adults with HIV expressed interest in physical activities, such as Tai Chi and yoga.¹⁸ Specifically, participants in this study were enthusiastic about Tai Chi because it was easy to follow, used fluid movements, required a low level of physical fitness, and could help to manage stress.¹⁸ Thus, the use of Tai Chi by adults with both HIV and chronic pain warrants further study.

The purpose of this qualitative study was to explore pre-existing knowledge and perceptions related to the art of Tai Chi among adults with HIV and HIV healthcare providers. Further, we sought to determine whether adults with HIV would be interested in Tai Chi generally and as a potential approach for management of chronic pain. Using rigorous qualitative methods, we sought to elicit perceptions of Tai Chi

among adults with HIV and HIV care providers. We also queried adults with HIV and their healthcare providers to determine potential barriers and facilitators to engaging in a Tai Chi intervention. Based on prior research,¹⁸ we anticipated that adults with HIV and their healthcare providers would have limited prior knowledge about Tai Chi or associated benefits, and that greater awareness of the practice would increase interest in Tai Chi for pain and stress management.

Methods

Participants

HIV patients and providers were recruited from an outpatient HIV healthcare center in the New England region of the United States. Eligibility criteria for patients were: (a) age ≥ 18 years; (b) having clinically diagnosed HIV infection; (c) having a musculoskeletal and/or neuropathic chronic pain condition based on self-report and confirmed by clinical records; and (d) English speaking. Healthcare providers were eligible if they held a professional position (eg, physician, physician assistant, psychologist, nurse, social worker) and were employed at the clinic for at least 1 year.

Procedures

Recruitment and Participation. Study procedures were approved by the institutional review board (IRB) for Lifespan Health System in Providence, Rhode Island. A research assistant reviewed the medical charts of patients with upcoming appointments to screen for initial eligibility. Telephone calls were used to assess interest and confirm eligibility. Those who expressed interest were scheduled to attend an in-person visit to provide signed informed consent and complete the qualitative interview. Interviews were audio-recorded, and patient participants were compensated \$40 for the interview. Recruitment emails were distributed to healthcare staff at the clinic, providing details about the study and contact information to reach study staff. HIV healthcare providers received a \$20 gift card for their participation.

Qualitative Interview

Details on the development of the semi-structured qualitative interviews and extensive interviewer training have been previously described.¹⁹ First, participants were asked to share their pre-existing knowledge and perceptions of Tai Chi (eg, “*tell me what you know about Tai Chi*”), as well as sources of information, such as seeing others practice in public or through media sources. Participants were then shown a three-minute video of a group Tai Chi practice. The practice video demonstrated the “Tai Chi Easy” method developed by Roger Jahnke, which includes 5 forms: *Harmonizing Yin and Yang* (also known as *Part the Wild Horses Mane*); *Brush Knee*,

Send Qi (also known as *Brush Knee Twist*); *Cutting a Path to Clarity* (also known as *Repulse the Monkey*); *Wave Hands in Clouds*; and *Gather Heaven and Earth*. The video contained instrumental music, no spoken instructions, and displayed the names of each form (the demonstration video is publicly available on YouTube²⁰ and more information about the practice can be found at TaiChiEasy.org). After viewing the video, participants were invited to share any initial reactions to the Tai Chi practice. Next, participants were asked to discuss their opinion of Tai Chi for pain management. The interviewer asked participants how adults living with HIV and chronic pain might respond to a Tai Chi intervention. Lastly, participants shared feedback on the design of a future pilot trial, including potential facilitators and barriers to recruiting and retaining adults with HIV in a Tai Chi program for chronic pain. [Table 1](#) provides sample questions and prompts from the interview agendas.

Data Management and Analyses

The interviewer completed a written debrief immediately following the interview, which included any information that may not have been captured by an audio recording (eg, participant affect, body language) and a review of key topics to monitor thematic saturation. Audio recordings were professionally transcribed by Landmark Associates, Inc. The transcriptions were checked by a research assistant for accuracy and corrected as needed, including removing any identifying information. Transcriptions were imported into NVivo qualitative software for coding.²¹ An initial coding structure was created based on the interview agenda. The first 3 transcripts were coded by 3 members of the research team (triple-coded) to establish the coding protocol, add emergent codes to the codebook, and training of coders. All subsequent interviews were independently coded by 2 members of the research team (double-coded). Coders met regularly to review

discrepancies and reach consensus on a final set of codes. Disagreements were reviewed with a third coder and resolved through discussion. Analysis was guided by an applied thematic analysis approach, including content-driven exploration and inductive coding based on emergent themes.²² The qualitative analysis presented in this manuscript focused on participants' responses regarding their knowledge and perceptions of Tai Chi, including its potential utility as a pain management approach.

Results

Participant Characteristics

Participants were 13 adults with HIV and chronic pain ("patient participants") and 7 members of their healthcare team ("HIV care provider participants"). Among the patient participants, the majority (62%) identified as male and White/Caucasian (62%), with 23% Black/African American and 15% Hispanic/Latinx. Mean age for patient participants was 56.3 years ($SD = 7.5$; range: 40-66). The most frequently reported pain condition was chronic low back pain (77%). In contrast, HIV care provider participants were primarily female (71%) and White/Caucasian (71%). Healthcare providers included 3 infectious disease physicians, 1 physician assistant, and 3 mental health professionals. Average interview duration was 54 minutes (range: 30-97) with patient participants and 32 minutes (range: 27-44) with health care provider participants. Eight of our 13 patient participants are quoted and identified here by gender, race/ethnicity, and decade of age (eg, *White Female, 50s*). Four of our 7 provider participants are quoted and classified only by professional role, as additional demographic information would increase risk of identification given the relatively small clinical staff. All participant interviews contributed to the thematic analysis, despite some not being directly quoted in the results.

Table 1. Sample Questions and Prompts for the Patient and Provider Qualitative Interviews.

| Domain | Question/Prompt |
|-----------------------------|--|
| Adults with HIV | |
| Prior knowledge | "Can you tell me what you know about Tai Chi?" "Have you ever seen anyone doing Tai Chi? If so, where?" |
| Reaction to video | "Now that you have seen Tai Chi, what are your reactions?" "How did the video compare to what you previously thought about Tai Chi?" |
| Tai Chi for pain management | "What do you think about Tai Chi as a possible way to help with your pain?" "How might a person with HIV and pain feel about this as a pain management option?" |
| HIV care providers | |
| Prior knowledge | "What have you heard about Tai Chi?" |
| Reaction to video | "What are your reactions to the Tai Chi video?" |
| Tai Chi for pain management | "How might your patients benefit from Tai Chi?" "How would you recommend Tai Chi for adults with HIV and chronic pain?" |

Emergent Themes: Patient Participant

Limited Knowledge of and Exposure to Tai Chi. Nearly all patient participants were naïve regarding Tai Chi as a form of integrative health or mind-body practice. One participant noted they “*don’t know anything about*” Tai Chi and they “*were never introduced to stuff like that*” (Black/Native American Male, 60s). Patient participants explained that their pre-existing beliefs or assumptions about the practice of Tai Chi were derived from popular culture, such as television series, movies, or commercials. Some participants previously associated Tai Chi with more physically demanding martial arts, such as karate, jiu-jitsu, and kickboxing.

Perceived Benefits of Tai Chi. Participants shared their reactions after viewing a brief video demonstration of Tai Chi. They described several potential benefits of the gentle movement practice. Adults with HIV were attracted to the perceived deep relaxation and meditative aspects of Tai Chi. The following patient quote is one example of this theme: “*It seems like something that releases stress... I can see that moving around like that would ease my mind about things. It’s like a deep meditation*” (White Female, 50s). Echoing the contrast to prior misperceptions related to Tai Chi, another patient participant noted, “*I never thought it would be relaxing like that - never. I thought it would be something like Kung Fu*” (White Female, 40s).

Adults with HIV described the mind-body connection and the role of stress as it relates to the experience of pain. Participants provided the following reflections on the potential for Tai Chi to improve pain management:

I think that you would feel less pain because it would relax your body. If your mind is relaxing, your body would be relaxed... It might just help relax you, I think, and make you feel calmer. It would help your pain. I think it might. It just might help the pain. Just relax your mind so that you’re not dwelling on the pain because, a lot of times, when you’re in pain, you dwell on it, and that seems to make the pain worse. If you’re not thinking about that, and you’re thinking of calm things, then I would think that you wouldn’t be in as much pain. – White Female, 60s

I think that would help. I mean it’s relaxing and if you can stretch with that, I think it’s mostly mental, probably. The mind is a powerful thing and definitely can block out pain. Why not? I think it’s a good idea. I definitely would try it... close your eyes and just go with the flow, and I mean it’s like you forget about the world. It helps your spirit. Why not? That’ll help me. I mean it’s not going to kill the pain [laughter], but it’ll definitely help... It’s something that helps you deal with the pain... I think it’s awesome. If you can control your body like that and relax your mind at the same time and just let everything flow, I think it’s good for the circulation, good for the mind, good for the soul. – Hispanic Male, 60s

Relieving a lot of stress, anxiety, depression, pain. I would say it would relieve some type of pain, physical pain, mental pain. Yeah, to exhaust anything that they might be feeling that could take them over the edge, so it’s like a form of relaxation... I see they’re moving around. It would be helpful for physical pain because they’re moving around and they’re stretching. They’re moving some of their body parts, their legs, their hands. Even though it’s helping them out mentally, it’s also helping them out physically. It’s like a form of stretching. – White Male, 50s

I think relaxation and meditation and all that is important. I think it very much is helpful for certain situations, but I don’t see how that would help—it’ll help you deal with the pain, but it won’t help ease the pain... It helps you take the focus off the pain. – White Female, 50s

In addition to managing stress and pain, adults with HIV anticipated other psychological and physical benefits resulting from Tai Chi. Participants noted that Tai Chi practice might ease symptoms of depression and elevate mood. Interestingly, participants posited several physiological mechanisms by which Tai Chi would improve pain management and health outcomes. For example, they noted that the slow movements and relaxed breathing would likely improve circulation and regulate blood pressure.

Participants remarked on the slow and gentle nature of Tai Chi as a method of enhancing bodily control, which may be particularly important to individuals with chronic pain who fear injury and pain exacerbation:

It looks like it’s very relaxing. At the same time, you’re relaxing, you’re getting a little exercise from your body moving. Control of your body. That’s the thing I’m looking for... the answer: control. – Black/Native American Male, 60s

Willingness to Practice Tai Chi. Adults with HIV expressed interest in practicing Tai Chi for pain management. Specifically, they inquired about whether they could be included in a future clinical trial or Tai Chi groups. The following comments provide support for this theme:

I want to join. I definitely would like to do that. I think a lot of people would like to try that. Just to really get the movements and even if that’s what you get, but I mean it helps. I know it will help the stretching, with the mind thing. I think it would help with the pain, too. – White Female, 50s

I have one question... when is it going to start? You have my number, so as soon as it comes up, call me, because I’m very interested. – Black/Native American Male, 60s

I want to be involved if the Tai Chi thing comes us. I would like to. It’s nice. I always think about that kind of stuff, like how come they didn’t do an exercise program. Coming out with the Tai Chi thing is pretty nice. Or something different than exercise, like Tai Chi is different. It’s low body movement and mind movement

and relaxation. It's one of those things where I want to get away to an island and go do it. – White Female, 50s

Participants were also particularly keen on the idea that they could learn Tai Chi and then practice on their own time and in their own environment. Tai Chi as self-management for pain appeared to fit into their lives in a way that they could practice with other meaningful people.

Something fun you can do with your partner, with your kids... In my living room, probably, with [my partner]. I'd say, "Come on, do this yoga stuff." We would laugh about it, make jokes about it, but we'll get it done. – White Male, 40s

Emergent Themes: HIV Care Provider

Limited Knowledge of Tai Chi. Similarly to patients, HIV care providers had limited prior knowledge of Tai Chi for pain management and also responded positively after viewing the brief video demonstration of Tai Chi. HIV care providers acknowledged the need for better pain management options for their patients and thought that Tai Chi could be beneficial, with one provider noting "*I'm sure those kinds of approaches would help [adults with HIV] for all kinds of things, not just pain*" (*Infectious Disease Physician*). Another HIV care provider commented that "*you just see the fatigue in [adults with HIV and chronic pain] and them wanting to try something new*" (*Mental Health Professional*) to relieve pain.

Tai Chi as Self-Management Practice. The value of Tai Chi as an accessible and affordable *self-management* approach was also an observation of HIV care providers. HIV care providers also thought that there were likely to be free or low-cost resources to support home practice, such as Tai Chi practice videos online. One provider stated that patients could learn Tai Chi and practice at home (ie, rather than in a clinical setting):

Things that people can do on their own to improve their quality of life I think are particularly meaningful to patients... If they find an intervention that works that they can do at home, I think that's a huge bonus to them." (*Infectious Disease Physician*).

Potential Barriers to Consistent Practice. However, HIV care providers acknowledged that getting patients to consistently practice health behaviors at home was challenging (eg, medication adherence, physical therapy exercises). In this regard, one provider stated how important it is to focus on the "*why*" of health behaviors:

It's about anchoring them back to 'why am I doing this' - I often have people who say, 'I want to do everything you're saying. It sounds amazing. But then I get back to my home environment and I'm done. I don't think about it. I don't want to do anything.' What I've tried to encourage people is we create something that

will cue you and remind you why you're doing this behavior, to help them tie back to why it's important for them to practice. It may take some coaching around how can we have you do this when you have your morning coffee or tying it to another behavior that they are saying, "No matter how chaotic life is, this is a behavior I do every day." It's like, "Well can we tie your home practice to that?" It's very similar to adherence, what we do for medications. It's like trying to problem solve, like "what would make this successful for you?" It may even be when you're talking about home practice with people, like let's strategize together. "How can we make this work in your everyday life?" – Mental Health Professional

Discussion

This study conducted in-depth interviews with adults with HIV and their medical teams to understand the perceptions of Tai Chi as a potential intervention approach for chronic pain management. Adults with HIV had limited prior exposure to Tai Chi practices for pain management, and HIV care providers had not previously viewed Tai Chi as an option for pain management. However, perceptions of Tai Chi were overwhelmingly positive following a brief demonstration video. Adults with HIV and their medical teams expressed interest in Tai Chi, with positive expectancies regarding stress management and pain relief.

Adults with HIV posited several mechanisms by which Tai Chi might improve their physical and psychological well-being, including muscle stretching, mental relaxation, improved circulation, and achieving a state of flow. Interestingly, several participants demonstrated insight into the potential cognitive-emotion regulation (eg, not dwelling on the pain), and body awareness/control that a mindful movement such as Tai Chi might cultivate. Moreover, adults with HIV and chronic pain were willing to participate in Tai Chi if they were provided with basic education about the gentle movement practice and potential benefits. Our findings corroborate prior research that has revealed that this population frequently explores new methods to manage chronic pain, with varying degrees of pain relief.¹⁸

The results of this study suggest that adults with HIV recognize the potential relaxing and meditative qualities of Tai Chi and would welcome the practice. Most notably, adults with HIV and chronic pain recognize the bi-directional relationship between stress and the experience of pain. Several patients noted the potential relaxing qualities of Tai Chi, as well as the ability to focus inward through breathwork and meditation. Participants thought that the practice of Tai Chi would (a) directly reduce their pain symptoms and that (b) the meditative aspect of the practice might further reduce stress and indirectly lessen the experience of pain through improved emotional regulation. Others mentioned that Tai Chi has the potential to foster control of their body through gentle exercise, a powerful statement and indicator of bodily autonomy and self-efficacy. Lastly, participants stated that they could

engage in Tai Chi at home, empowering them in managing their pain. Participant responses suggested openness to aspects of Tai Chi, such as the cultivation of mindfulness, body awareness and its importance in reframing pain experiences.

Current non-pharmacological interventions for chronic pain include psychological approaches, such as cognitive behavioral therapy (CBT) and acceptance and commitment therapy (ACT). CBT focuses on addressing problematic thinking patterns (eg, catastrophizing) and maladaptive coping behaviors (eg, inactivity) related to the pain experience.²³ In ACT, therapeutic practices guide patients towards an acceptance of the emotional and physical experiences of pain and a willingness to engage in activities consistent with their personal values.²⁴ Commonly, psychological interventions for chronic pain encourage patients to engage in physical activity safely. The results of this qualitative inquiry suggest that adults with HIV would welcome training in Tai Chi as a pain management treatment option. The gentle movements, breathing, and meditation of Tai Chi provide the safe physical activity necessary for patients managing chronic pain, while facilitating additional health benefits associated with mindfulness. Given the elevated stress experienced by adults with HIV, this mind-body practice may provide valuable psychological and physical benefits for this population.

Prior studies suggest that Tai Chi promotes self-awareness and acceptance, decreases emotional/stress reactivity and maladaptive behavior, and increase self-efficacy and empowerment.²⁵ Interventions that focus on mindfulness and relaxation have the potential to engage multiple brain regions and neural pathways which alter the subjective pain experience, including reducing pain intensity and overall unpleasantness.²⁶⁻²⁸ Neurologically, mindful meditation reduces pain-related afferent processing and activates the orbitofrontal cortex, a region associated with contextualizing sensation.²⁹ Reduced pain intensity increases activity in the anterior cingulate cortex and anterior insula, areas involved in the cognitive regulation of tissue damage information processing, otherwise known as nociception.^{30,31} Not surprisingly, mindfulness practices are associated with greater improvement in back pain and functional limitations compared to control conditions.^{32,33}

This qualitative study is limited by the modest sample size. However, we used rigorous applied thematic analysis to explore interview data and we reached saturation on the themes of prior knowledge and future interest in Tai Chi. The results may also be limited by factors such as geographical location; in this regard, we note that the racial and ethnic diversity of participants in this sample were consistent with adults with HIV in Rhode Island, where 23% identify as Black/African American and 26% identify as Hispanic/Latinx.³⁴

In summary, these data indicate that adults with HIV and chronic pain are highly interested in Tai Chi as an integrative pain management approach despite limited prior knowledge

of Tai Chi. Furthermore, HIV providers were enthusiastic about including Tai Chi in the armamentarium of pain management strategies for their HIV patients. These findings provide support for future research to explore the feasibility and acceptability of Tai Chi for adults with HIV and chronic pain.

Declaration of Conflicting Interests

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Ethical Statement

Ethical Approval

All procedures were reviewed and approved by a hospital-affiliated institutional review board.

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