



# Rehabilitation Service Needs and Preferences among Veterans with Tinnitus: A Qualitative Study

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## ABSTRACT

Tinnitus is prevalent among military Veterans, yet there is a gap between the demand and the provision of services for tinnitus rehabilitation services within the Veterans Health Administration (VHA). We sought to understand tinnitus rehabilitation service needs and preferences among Veterans with bothersome tinnitus who use Veterans Affairs (VA) services. We conducted semistructured telephone interviews in 2019 with Veterans diagnosed with tinnitus, who reported it as bothersome. Veterans were purposively sampled to represent national VA users, with and without comorbid traumatic brain injury (TBI), and who were or were not interested in tinnitus rehabilitation services. Qualitative data were analyzed using a modified grounded theory approach. Among 40 Veterans interviewed (32 men, 8 women; 50% with TBI), 72.5% endorsed being somewhat/very likely to be interested in tinnitus rehabilitation services while 27.5% were very/

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somewhat unlikely. Themes related to Veterans' interest in tinnitus rehabilitation services included barriers and facilitators to participation and preferences for receiving tinnitus services (e.g., individual vs. group-based; in-person vs. remote access). Our findings highlight factors that influence Veterans' reported need and preferences for, and readiness to engage in, rehabilitation services for tinnitus. Personalized or otherwise adaptable approaches to program delivery may help ensure maximal uptake among Veterans.

**KEYWORDS:** audiology, auditory rehabilitation, hearing healthcare, tinnitus, veterans

Tinnitus is defined as the sensation of ringing or other sounds in the ears or head without the presence of acoustic stimuli.<sup>1</sup> In the United States, chronic tinnitus is estimated to affect up to 15% of the general population, but with prevalence levels approximately two times higher among military Veterans than among non-Veterans.<sup>2-4</sup> High levels of noise exposure in the military are likely associated with the prevalence of tinnitus among Veterans.<sup>5</sup> Traumatic brain injury (TBI), another relatively common exposure among military Service members, particularly during post-9/11 conflicts, is also thought to contribute to increased rates of tinnitus among Veterans.<sup>6,7</sup>

Not all cases of chronic tinnitus are bothersome. However, for those that are, chronic, bothersome tinnitus can impact individuals' functioning and quality of life.<sup>5</sup> Although there is no "cure" for tinnitus, evidence-based rehabilitation services can improve comfort and functional status. Evidence-based clinical practice guidelines promote the provision of cognitive behavioral therapy (CBT) to reduce the distress and improve coping skills and functioning among those with bothersome tinnitus. The VA system of care offers CBT as part of its program of evidence-based practices for mental health disorders.<sup>8</sup> Additionally, the VA has endorsed a manualized (structured stepped approach curriculum), interdisciplinary program called Progressive Tinnitus Management (PTM) that includes provision of CBT for tinnitus by a behavioral health provider, along with structured support from an audiologist in learning how to effectively use sound as a coping strategy.<sup>9-11</sup> PTM is an evidence-based, patient-centered, and interdisciplinary program

designed to address the needs of Veterans with bothersome tinnitus; it involves group-based "workshops" or individualized sessions that can be conducted in-person or via telehealth. PTM provider teams include audiology, behavioral health, and Whole Health partners who work collaboratively to support Veterans and Service members in learning and practicing coping strategies to improve quality of life and functional status with tinnitus. A PTM workbook is provided for patients and includes introductory and educational materials about tinnitus, information, and exercises with goal setting and creating an individualized action plan on using sound to manage tinnitus, guidance on cognitive behavioral strategies (e.g., changing thoughts and feelings), and information on the use of protective devices.

A recent study of Veterans who use Veterans Affairs (VA) healthcare found that approximately 13% of all VA users had been diagnosed with tinnitus at least once in the prior 5 years<sup>12</sup>; those with TBI diagnoses were between two and three times more likely to be diagnosed with tinnitus than those without. Despite carrying a tinnitus diagnosis in their health record, many Veterans may not be receiving services to help with their tinnitus. For example, among those diagnosed with tinnitus but not with hearing loss, only 79% had received services in audiology and 23% in otolaryngology clinics, suggesting that a large proportion of Veterans with tinnitus are not receiving audiologic services unless they also have hearing loss (those with hearing loss had higher utilization of both audiology and otolaryngology services).<sup>12</sup> The proportion of Veterans seeking services from tinnitus, both inside or outside the VA, is

unknown. However, of the Veterans who do seek care, few are likely receiving evidence-based therapies like PTM.<sup>13</sup>

The gap between potential *need* for evidence-based tinnitus services and Veterans' *receipt* of tinnitus services is likely due to a variety of factors involving the healthcare system, healthcare providers, and patients' needs and preferences. This article examines the latter. To inform the provision of evidence-based rehabilitative services for patients with tinnitus, we interviewed Veterans with diagnosed and bothersome tinnitus (i.e., tinnitus that impacts functioning and quality of life)—with and without co-diagnosed TBI—to develop a better understanding of their (1) perceived need for tinnitus rehabilitation services with a focus on PTM; (2) barriers and facilitators related to PTM participation; (3) perspectives on mental health involvement in PTM; and (4) preferences for communication about receipt of tinnitus services, particularly PTM.

## METHODS

This qualitative study utilized data from a national survey of Veterans who used VA healthcare between 2011 and 2016 and had been diagnosed with tinnitus; survey details are published elsewhere.<sup>14,15</sup> In brief, tinnitus diagnosis was defined as those with  $\geq 1$  International Classification of Diseases—9th Revision—Clinical Modification (ICD-9/10) diagnosis codes for tinnitus during a VA inpatient stay or  $\geq 2$  ICD-9/10 codes during a VA outpatient encounter. Surveys were mailed to a random sample of 1,800 Veterans stratified by age category (18–34, 35–49,  $\geq 50$ ) and the presence of a TBI co-diagnosis (yes; no), also based on ICD-9/10 diagnosis codes (i.e., one or more inpatient encounters or two or more outpatient visits for TBI). Past research has shown that ICD codes are not reliable for categorizing the severity of Veterans past TBI events<sup>14,15</sup>; however, it is known that most TBIs among Veterans were “mild” in severity rather than “moderate” or “severe,”<sup>14,16</sup> suggesting that the majority of survey respondents diagnosed with TBI had experienced mild TBI. Surveys focused on Veterans' experiences with tinnitus and their interests in, and past receipt

of, tinnitus-related healthcare. The severity of tinnitus impact was measured by responses to the Tinnitus Functional Index (TFI), a self-assessment tool that measures the impact of a patient's tinnitus on their daily functioning and quality of life.<sup>17</sup> In our study, bothersome tinnitus was defined as a TFI score of 25 or more, indicating the participant's tinnitus was considered at least a small problem. Notably, survey respondents with co-diagnosed TBI were more likely than those without TBI to report experiencing tinnitus that was “very severe,” according to scores greater than 72 on the TFI (34.1 vs. 17.8%, respectively),<sup>18</sup> highlighting the potential for differential tinnitus rehabilitation preferences among this patient population. Respondents to the survey were also asked to indicate their willingness to participate in a subsequent interview related to the same topics; those who agreed to this served as the sampling frame for the current study. All activities conducted as part of this study were approved by the VA Portland Health Care System Institutional Review Board (IRB).

## Participants

We used a maximum variation sampling approach to hear a range of perspectives from 40 participants with bothersome tinnitus.<sup>19,20</sup> The presence of bothersome tinnitus served as a criterion for PTM program eligibility. Interested participants were stratified by TBI diagnosis status and, from both strata, we purposively sampled men and women; those who indicated in the survey they would, and would not be, interested in receiving PTM services; and a range of ages, geographic locations, and tinnitus severity levels, as measured in the survey. Follow-up recruitment occurred by phone using numbers from Veterans' VA healthcare records. Participants were offered \$40 as an incentive for participation.

## Data Collection

Interviews were conducted in 2019 by telephone in private office space at the investigators' institution. Interviews lasted approximately 45 minutes and were led by an investigator with

support from at least one other research team member who served as a note taker. After welcoming participants and further orienting them to the format and expectations of the interview, the investigator completed the informed consent process. The research investigator/team member then led participants through the interview, adhering to the IRB-approved interview guide. The main points that emerged during each section were summarized and checked for accuracy with participants prior to moving to subsequent sections/questions. At the conclusion of the interviews, Veterans were thanked for sharing their experiences and provided the opportunity to further discuss interview points or ask questions of the research team. Debriefings between research team members were held after each interview. All interviews were audio recorded and subsequently transcribed by note takers or other team members who had experience in transcription as well as in-depth knowledge of audiological terminology.

Interview guides were developed to elicit responses from participants relevant to their tinnitus and tinnitus-related healthcare needs and interests. Table 1 provides examples of interview questions asked to participants.

## Data Analysis

We used a two-phase analysis process informed by the work of Crabtree using open and axial coding procedures and principles of an immersion-crystallization process to guide the interpretive process.<sup>21</sup> We followed the constant comparative method in which codes, participants, and categories were analyzed to identify consistencies and differences with a main aim toward conceptual refinement.

This article presents data relevant to three codes related to Veterans' needs and preferences for receiving tinnitus rehabilitation services: (1) Veterans' perceptions of their life with tinnitus (i.e., need for PTM), (2) conditions that would encourage/discourage Veterans to try PTM, and (3) preferences for receiving care for tinnitus.

## RESULTS

Interviews involved Veterans between the ages of 18 and 34 ( $n = 17$ ), 35 and 49 ( $n = 12$ ), and  $\geq 50$  ( $n = 11$ ); women Veterans ( $n = 8$ ); those with ( $n = 20$ ) and without ( $n = 20$ ) TBI; and those who endorsed being "somewhat likely to very likely" to be interested in receiving tinnitus rehabilitation services ( $n = 29$ ). Additional participant characteristics are summarized in Table 2.

**Table 1** Sample interview questions

Domain	Questions
Interest in PTM	- "Have you ever heard of Progressive Tinnitus Management/PTM? If so, how?" - (After reading a description of PTM) "Would this be a type of service you could picture yourself receiving? Why or why not?"
Barriers and facilitators related to participation in PTM	- "What are the biggest things that would help [or prevent] you from participating in PTM?"
Perspectives on mental health and coping	- "What do you think about learning "coping skills" to improve your quality of life with tinnitus?" - "Does the term "coping skills" affect your opinion about PTM? Why or why not?" (Probe: How best could we describe this part of the program?) - Does the fact that you would be working with a mental health provider affect your opinion about it at all?
Preferences for receiving tinnitus services	- "How would you like to receive tinnitus services? For example, in-person in a clinic, by telephone with your clinician(s), or in another way (e.g., self-help books, video-telehealth)?"

Abbreviation: PTM, Progressive Tinnitus Management.

**Table 2** Characteristics of 40 Veteran VA users diagnosed with tinnitus who participated in qualitative interviews

Veteran characteristics	n (%)
Total	40 (100%)
Sex	
Male	32 (80.0%)
Female	8 (20.0%)
Race	
White	33 (82.5%)
Other than White	7 (17.5%)
Age (y)	
18–34	17 (42.5%)
35–49	12 (30.0%)
50–89	11 (27.5%)
Marital status <sup>a</sup>	
Married/in a relationship	27 (69.2%)
Not married	12 (30.8%)
Education level <sup>a</sup>	
High-school graduate/vocational training	4 (10.3%)
Some college or associate degree	16 (41.0%)
Four-year college degree or higher	19 (48.7%)
Military branch	
Air force	3 (7.5%)
Army	23 (57.5%)
Marine corps	7 (17.5%)
Navy	7 (17.5%)
Time served in the military	
1–4 y	17 (42.5%)
5–10 y	11 (27.5%)
> 10 y	12 (30.0%)
TBI diagnosis	
Yes	20 (50.0%)
No	20 (50.0%)
Likelihood of interest in PTM if offered	
Very unlikely	5 (12.5%)
Somewhat unlikely	6 (15.0%)
Somewhat likely	18 (45.0%)
Very likely	11 (27.5%)

Abbreviations: PTM, Progressive Tinnitus Management; TBI, traumatic brain injury; VA, Veterans Affairs.

<sup>a</sup>n = 1 missing response.

services to improve their quality of life, one Veteran said,

Just to be able to cope and enjoy, I have a granddaughter so I would like to enjoy my granddaughter. When she's screaming, so that way the tinnitus doesn't affect me. Cause now if she's a little active and it bothers me, I really can't really enjoy my time with her" (Participant 1729, p. 16).

When asked about whether respondents could envision themselves participating in a PTM program, a cluster of respondents said "no" for several reasons. Participants said that they had learned or discovered tinnitus management skills on their own, that their tinnitus was not bothersome enough to seek out a PTM program, or that they would have participated years ago, presumably around the time of diagnosis, but that it was no longer needed or high priority enough to pursue. In reference to the former sentiment, one Veteran stated,

For something like the last 15 years I've built my own coping mechanisms and sometimes I do get annoyed but I think for someone [newly diagnosed], dealing with it physically, it might be better for them ... but a five session thing for someone that's been doing it for 15 years, I've kind of gone through college and everything, dealing with it, I don't know, I feel like it would be redundant. I figured out my own way to kind of cope with it (Participant 1314, p. 2).

Speaking of her willingness to participate at an earlier time, one participant stated,

I mean well I think you know 8 or 10 years ago when this started that would have been more helpful but, at this point, I don't see myself taking a couple of hours off of work each day for 5 weeks to do that (Participant 1103, p. 2)

### Interest in PTM: Mixed Results

Many Veterans expressed a willingness to try PTM because they saw it as an opportunity to potentially improve their quality of life and functioning. In reference to receiving PTM

### Managing Busy Lives: Schedule and Distance Barriers

Respondents commented on scheduling as a barrier to attending in-person PTM classes.

The constraints associated with scheduling included problems with being able to attend PTM classes due to busy schedules (work, school, and family). For example, one Veteran stated, “Right, it’s just like, you know, that’s kind of what I’m doing. Plus running a company, and everything else, would it be worth my time to get on this program?” (Participant 2144, p. 14).

Distance was another barrier invoked primarily because a cluster of respondents live far away from VA medical centers. As one Veteran noted,

That’s another big thing would be the travel. I think that Veterans, or even me, would be less likely to say, hey you have to go for this half hour meeting but the meeting is like an hour away. It’s like neh (Participant 1235, p. 3).

In some cases, respondents felt that meeting once a week for a 5-week period, which is the recommended schedule for in-person PTM programs, would be fine among those who are retired, live close to their local VA, or who are already highly engaged in VA healthcare, but for most, distance was a significant barrier. As one retiree commented, “Sure! Like, I’m retired, so I don’t do anything anyway” (Participant 2504, p. 17).

### **Understanding PTM: Knowledge as a Facilitator**

When asked what would help participants decide to attend a PTM program, a common theme was the need for more information about PTM, including the research supporting the approach, and what Veterans can expect in terms of outcomes (e.g., what Veterans learned from the class). In reference to getting information on the research associated with PTM, one respondent stated, “I guess at this point in time, just research and the ability to know that there is a positive outcome no matter what the negative effects might be going through it” (Participant 1016, p. 3). In reference to the need for information on PTM outcomes (e.g., improvements in quality of life), another Veteran elaborated the point in this way,

Something that reinforces that it works, or that there’s some kind of progress that you can expect from it. I don’t know if you can say you can expect to be better in a couple of weeks, or notice certain effects in a couple of weeks or something that kind of shows you, like kind of gives you kind of a, not a goal, but maybe kind of like a check-point that you can expect to reach at some point (Participant 1435, p. 451).

Another Veteran provided an example of a VA information campaign that could be used as a template to disseminate to Veterans for informational purposes,

It’s kind of like what I learned about PTSD. They gave out detailed descriptions of why it’s happened or facts, things that, successful cases, anything, pictures, diagrams, things like that. Ways it does affect, visually seeing things in flyers, pamphlets and things like that was helpful, especially the PTSD side of it. Learning how it affects even the brain, a lot of things like that. Any kind of knowledge that’s out there would be helpful in some of those things ... (Participant 1991, p. 25).

### **Hearing from Veterans: Peer Knowledge as a Facilitator**

Another aspect of information about PTM that participants would appreciate is hearing from other Veterans about what worked for them in terms of PTM strategies that they learned. For example, the type of information that one respondent wanted to hear from other Veterans was,

If it was part of the program, like a DVD or something like that or in the reading materials sent out ahead of time that said, ‘yeah this worked for me, this is what I did.’ Yeah, that would be useful (Participant 1023, p. 9).

Also, in referencing peer knowledge, one Veteran stated, “Yeah, what other Veterans have thought about it. What they have gotten out of it (Participant 1613, p. 19).

In addition, Veterans cited a range of preferences for the formats for hearing about Veteran stories, including blogs, written materials, or video testimonials. As one Veteran explained,

...having those testimonials through that virtual platform would be huge, and, you know, like a small bio of the individual that's giving the testimonial, that truly believes in it, and maybe they're really bad, and by the way, this helped me (Participant 2144, p. 27).

### ***Mental Health and Coping: Not a Barrier to Participating in PTM***

Since the evidence-based practice for delivering PTM involves the collaboration between audiologists and behavioral health clinicians, we asked participants whether the involvement of mental health clinicians would be perceived of as a barrier to Veterans' willingness to participate in a PTM program. Interestingly, Veterans said that the involvement of mental health was relatively unproblematic because some of the Veterans already receive mental health services for other issues. For example, one Veteran described his experience in the following way,

I've been through many psychologists and psychiatrists and doctors of all sorts, you know. I'll do anything if it's going to improve my quality of life ... If I have to meet with a mental [health doctor], great, I have no qualms about any of that as long as it helps to improve my quality of life, yes, you bet" (Participant 2221, p. 421).

In reference to the participation of mental health providers in PTM, one Veteran explained,

I can see why they [mental health clinician] would be there...when I was first going through it, I mean it affects sleep, it affects you during the day, it messes with everything. So, I can definitely see how being able to talk to a mental health provider as well would definitely help (Participant 1094, p. 2).

Another participant commented on the need for mental health support because tinnitus can exacerbate other medical conditions, "Yeah, because I know how ringing in the ears affects PTSD and makes you think some crazy things" (Participant 1711, p. 53).

In general, Veterans reported that the use of the phrase "coping skills" would not influence one's desire to participate in a PTM program. As one Veteran stated, "Yep, because it's reality. You're telling me that there's no treatment, you've got to cope with it. Give me the tools to cope with it, and I will move on in life. I like that" (Participant 10111, p. 1). Another participant explained the meaning of coping in this way,

Because I mean to me when you say coping you are giving me something to get by with. You know to, you're giving me something to utilize to help deal with it. Instead of just dealing with it with nothing. That's the best way I can explain it (Participant 1807, p. 17).

### **Preferences for Receiving Tinnitus Services**

Veterans expressed a preference for receiving tinnitus services in-person, that is, one-on-one with a clinician in a clinical setting. Some Veterans with concurrent hearing problems preferred one-on-one sessions, explaining that they would need to see a clinician face-to-face. Others preferred one-on-one sessions because they believed that they would receive more individualized treatment and could easily ask questions in a more private setting. Due to time and scheduling barriers, some Veterans mentioned the convenience and accessibility of a remote modality via phone or telehealth. As one Veteran stated, "... if it can be done remotely, then definitely I would because I work full-time, and I am also full-time in a Master's program, so finding the time during the week is problematic, and I have classes on weekends" (Participant 1454, p. 38).

While some Veterans welcomed the camaraderie of a group session and the opportunity to learn from other Veterans with tinnitus, others expressed a dislike of groups either due to PTSD symptoms or due to general group

dynamics. As one Veteran remarked, “I typically prefer one-on-one. I am not a big fan of crowds. And some people are pretty annoying and can really throw off a setting like that if you were trying to really pay attention” (Participant 1094, p. 13).

## DISCUSSION

This article examined rehabilitation service needs and preferences in Veterans with bothersome tinnitus. Our findings highlight that while many Veterans held favorable views about participating in evidence-based programs such as PTM, they also indicated that scheduling and distance could be barriers to attending PTM group-based sessions. Some Veterans lived far away from a VA Medical Center, so commuting long distances for a 1-hour PTM session was prohibitive. Other Veterans reported that, with work, family, or school, it would be difficult to make time for the PTM group sessions; although if they were convinced that PTM would be helpful and worth their time, that might encourage participation. These findings suggest that offering PTM via telehealth as a supplement to traditional PTM might improve access and/or uptake.

In fact, there is emerging evidence on patient uptake, and provider acceptance, of telehealth services. In one case study, a hybrid delivery model (in-person for audiological assessment, coupled with telehealth for counseling and education) showed promise to both the patient and provider to the extent that it supported continuity of care during the COVID-19 pandemic.<sup>22</sup> In another study on the use of a virtual platform for tinnitus management for providers, speech therapists indicated a high degree of acceptance,<sup>23</sup> which is an important contextual factor for the implementation of innovative practices in healthcare.<sup>24</sup> Finally, high acceptance of telehealth was reported in a study of patients with bothersome tinnitus. Those who declined cited limited access to suitable technology and lack of confidence that telehealth services would be effective.<sup>25</sup>

The proliferation of telehealth for the delivery of healthcare services during the COVID-19 pandemic provides an opportunistic backdrop for offering remote tinnitus reha-

bilitation services. In fact, a recent commentary, reacting to a report of the prevalence of tinnitus across Western Europe, indicates that the COVID-19 pandemic has highlighted the importance of using technological interventions (digital, telehealth) to mitigate the treatment-demand gap.<sup>26</sup> Also, a randomized clinical trial that compared the effectiveness of an Internet-based CBT program for tinnitus (that included asynchronous guidance by a clinician) to that of individualized in-person clinical care for tinnitus found that the two were equally effective for reducing tinnitus distress.<sup>27</sup> Remote delivery of services and computer-based programs may now be more viable and necessary options to increase access to evidence-based tinnitus rehabilitation services.

To facilitate participation in PTM, respondents indicated that having two forms of knowledge about PTM would be helpful to assist with decision-making on whether to sign up for PTM services. First, participants cited the need for goal-oriented information, such as how PTM might improve quality of life. For example, some respondents wanted information about what to expect in terms of progress with managing their tinnitus as a result of attending PTM sessions. This finding regarding the need for more information on what to expect from PTM presents an opportunity to implement low-cost, high-visibility information about PTM. This would best be accomplished using pragmatic messaging about what to expect in terms of participation, quality of life, and functional status in language that takes into account various health literacy levels.<sup>28,29</sup>

Occa and colleagues outline the development of evidence-based patient education program on tinnitus as including education and messaging on tinnitus and its management, and the implementation of patient-centered collaborative and individualized management plans.<sup>30</sup> In the VA context, ideally this messaging would reach people where they are (e.g., flyers in VA elevators, posters in VA clinical settings depicting Veterans with tinnitus, or posters in rehabilitative, primary care, and geriatric settings) and when they need it. Several Veterans who reported that they were not interested in PTM explained that they would have been interested had they received the services when they really



needed them. That is, when they were first diagnosed. They lamented that they had been offered the services 10 to 15 years too late, after they had already developed their own coping mechanisms without the benefit of being helped by programs such as PTM.

Second, hearing from Veteran peers about their experiential knowledge of PTM would be an important factor in determining whether to participate in PTM. Harnessing patient stories about what worked or did not work for them is consistent with other research showing that patients want information, from other patients, about chronic health conditions,<sup>31</sup> particularly with conditions for which there is no cure.<sup>32</sup> Although peer support holds promise for guiding Veterans with tinnitus to evidence-based therapies, further research is needed to explore the use and impact of patient narratives on tinnitus-related health outcomes.<sup>33</sup>

When asked about whether the involvement of mental health providers in PTM, or the use of the term “coping,” would influence Veterans’ willingness to participate in PTM, respondents in this study reported that these factors would not impact decision-making to participate in PTM. Many Veterans in this study acknowledged seeing psychology providers for other issues and, thus, not feeling a sense of stigma due to the involvement of mental health teams. Additionally, there appears to be a perception that the VA is doing a good job with its implementation of the Whole Health model, which specifically highlights the relationship between physical health, mental health, and the social determinants of health. The end result is that mental health terminology and the receipt of mental health services does not seem to impact help-seeking behaviors in this study. These findings diverge from research involving the general population—and military service members—which indicates that stigma related to the receipt of mental health services is prevalent.<sup>34</sup> Many active duty Service members, particularly those from the Operation Iraqi Freedom and Operation Enduring Freedom eras, eschewed mental health services out of fear of stigma,<sup>35–38</sup> concerns about career advancement, or being perceived as unfit for duty.<sup>38</sup>

Participants expressed straightforward preferences regarding the modality of accessing PTM. Patients wanted choices in terms of accessing tinnitus services to mitigate barriers associated with managing busy lives. The sentiments expressed by participants were consistent with VA initiatives to apply patient-centered principles to VA operations to increase patient access to VA services, including scheduling services as part of a rubric of Veteran-centric care.<sup>39</sup> It was notable that no clear differences in preferences emerged between Veterans with a history of TBI and those without, despite the greater likelihood of “very severe” tinnitus among those with TBI.<sup>18</sup> The VA’s TBI/Polytrauma System of Care is an integrated, interdisciplinary system developed to ensure the myriad symptoms and sequelae of TBI—including tinnitus and other audiologic needs—are addressed early and consistently in this patient population. Our work suggests that the flexibility in care delivery offered through the TBI service network would support Veterans with comorbid TBI and tinnitus; this structure may also be of particular benefit to Veterans with tinnitus who do not have a history of TBI.

## LIMITATIONS

Results of this study should be taken into context with potential limitations. A strength of this work was its starting place with Veteran survey respondents who were previously diagnosed with tinnitus and who did, versus did not, endorse an interest in evidence-based tinnitus rehabilitation practices if offered to them. This allowed our team to purposively sample a diverse group of interview participants with varied opinions about PTM and rehabilitation services more generally, as well as by sex, age, geographic residence, TBI status, and tinnitus severity. However, this purposive sampling strategy may yield results that are not generalizable to our original sampling frame or to the broader population of Veterans with tinnitus. Additionally, this study took place prior to the global COVID-19 pandemic, which has led to major changes in VA, as well as non-VA, healthcare delivery, including a much larger

reliance on, and patient and provider openness to, telehealth modalities. Although our interview guide asked Veterans their opinions about the delivery of PTM by telephone, many of the telehealth developments have incorporated video technology, which was not prompted. Thus, responses to interview questions about PTM delivery modalities—particularly by telephone—may have been different than what Veterans would share with us in 2022 and beyond.

## CONCLUSION

The results of this study have implications for the delivery of healthcare services to Veterans with tinnitus. Overall, these findings show a substantial need for evidence-based tinnitus services among Veterans and highlight preferences for flexible methods of service delivery that are accessible to Veterans early (i.e., upon tinnitus diagnosis) and often (as coping mechanisms develop or change over time). Further research is needed to close the gaps between Veterans' needs and interests, and their receipt of evidence-based practices like PTM, both inside and outside VA healthcare settings. Additional efforts to understand how video telehealth may play a role in closing this service gap would also benefit this line of research.

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## CONFLICT OF INTEREST

None declared.

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