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# Implementation of Virtual, Livestream Yoga Classes for Veterans at Home During the COVID-19 Pandemic: A Mixed-Methods Pilot Program Evaluation

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## Abstract

**Background:** The COVID-19 pandemic and shut down of in-person complementary and integrative (CIH) wellness services at the San Francisco Veterans' Affairs Healthcare System (SFVAHCS) required implementation of virtual program delivery. In May 2020, VA in-person group yoga classes pivoted to virtual classes for existing attendees. In October 2020, we partnered with SFVAHCS Integrative Health and the VA Office of Rural Health to formalize the TeleYoga Program to expand yoga access to Veterans in SFVAHCS' geographically dispersed area.

**Objective:** This pilot study evaluated Veterans' experiences and self-reported health outcomes after participating in at-home tele-yoga groups during the COVID-19 pandemic.

**Methods:** The RE-AIM framework guided program delivery evaluation. Reach was assessed with medical record data. Adoption was assessed by the number of new facilities providing referrals to tele-yoga. Implementation, satisfaction, and patient-reported outcomes, were evaluated through structured interviews with Likert scale and open-ended responses.

**Results:** We offered 4-6 weekly livestreamed classes between October 2020-September 2021. The program reached 70 Veterans, including 40 new participants, with 1208 total unique encounters. Referrals increased from 2 to 6 SFVAHCS facilities. Fourteen participants completed structured interviews. Over half rated highly the convenience and overall experience of tele-yoga classes and reported improvement with pain, stress management, exercise, and flexibility. Open-ended responses indicated opportunities for social connection, maintaining mental health, cultivating resilience, improving function, and managing pain. Suggestions for improvement focused on technological aspects, including audiovisual quality.

**Conclusions:** During the COVID-19 pandemic, we successfully transitioned and expanded virtual group yoga delivery to Veterans from all geographic locations within SFVAHCS. We attribute this success to existing infrastructure for telehealth and CIH services and a virtual program orientation for new participants. The results of this pilot study suggest in-person group yoga may be successfully implemented virtually, serving as a viable modality that contributes to holistic wellbeing for Veterans.

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## Keywords

yoga, veterans, telemedicine, whole health

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## Introduction

Yoga is a holistic system originating in India to support health and well-being that may include the practice of physical postures, breathing practices, and meditation. It is endorsed by the U.S. Veterans Health Administration (VA) as a mind-body movement practice to support health and wellbeing among Veterans.<sup>1</sup> There is increasing evidence of yoga's efficacy for health-related conditions prevalent among Veterans, including chronic pain and PTSD.<sup>2-7</sup> To address the substantial need for nonpharmacologic pain management strategies to mitigate opioid-related risks for Veterans, the Comprehensive Addiction and Recovery Act expanded complementary and integrative health (CIH) approaches and flagship facilities.<sup>8</sup> In parallel, VA Directive 1137 mandated eight CIH modalities (acupuncture, biofeedback, clinical hypnosis, guided imagery, massage therapy, meditation, Tai Chi, and yoga) to be included in standard VA medical benefits.<sup>1,8</sup> These initiatives have positioned yoga as a key component of the VA's Whole Health System transformation that focuses on holistic care to reach patient-determined health goals.<sup>9,10</sup> Furthermore, literature points to the increasing demand for yoga from Veterans and that yoga has been one of the top five Whole Health services delivered via telehealth.<sup>11,12</sup>

Pre-pandemic studies of synchronous telehealth yoga (tele-yoga) programs among Veterans have shown that patient-reported outcomes, attendance rates, and satisfaction rates are comparable to in-person yoga.<sup>13,14</sup> These early studies focused on tele-yoga groups taught by a yoga instructor at a VA medical center and broadcasted to a group of Veterans physically located at a community-based outpatient clinic.<sup>13</sup> During the COVID-19 pandemic, existing VA telehealth infrastructure supported rapid expansion of virtual delivery of CIH and Whole Health services including mind-body movement groups such as yoga.<sup>15-17</sup> Studies examining the conversion of in-person yoga classes to tele-yoga during the COVID-19 pandemic have identified key challenges such as internet connectivity, audiovisual technology quality, and safety monitoring.<sup>16,18-20</sup> However, few studies have assessed VA tele-yoga delivery via livestreamed, in-home platforms. Specifically, little is known about factors impacting implementation of VA tele-yoga programs and engagement among Veterans, including those living in rural areas and among other groups for whom community-based yoga is unavailable or inaccessible.

The VA Office of Rural Health (ORH) has historically supported the use of telehealth to reduce barriers to care for Veterans living in rural areas.<sup>21</sup> ORH provided funding for a

pilot tele-yoga program based at the San Francisco VA Healthcare System (SFVAHCS) between October 2020 to September 2021. The goal of this pilot study was to evaluate program reach, Veterans' self-reported health outcomes, and overall experience participating in synchronous video-based tele-yoga groups at home during the COVID-19 pandemic.

## Methods

### Setting

The San Francisco VA Health Care System (SFVAHCS) is a multi-campus, public health-care system serving over 40,000 U.S. military Veterans throughout Northern California, close to one-third of whom are rural. The campuses include the main San Francisco VA medical center and seven community-based outpatient clinics (CBOCs), four of which primarily serve rural Veterans. The SFVAHCS Integrative Health (IH) Service is the first of its kind within the VA. The SFVAHCS IH service provides complementary and integrative clinical services including acupuncture, chiropractic, and multiple interdisciplinary integrative medicine clinics and a variety of group wellness programs such as biofeedback, mind-body skills, Mindfulness Based Stress Reduction, iRest yoga nidra meditation, yoga, tai chi, mindful and intuitive eating, acupressure and self-massage.<sup>9,22</sup>

The emergence of the COVID-19 pandemic and subsequent extended shut down of in-person complementary and integrative wellness services required implementation of virtual, livestreamed program delivery.<sup>16,20,23</sup> Prior to the pandemic, SFVAHCS veterans could access weekly in-person group yoga classes taught by VA staff in two locations. Due to space limitations at the medical center in San Francisco, two classes were taught by VA staff each week at a community studio. At a rural community-based outpatient clinic in Eureka, two classes were taught by VA staff each week. In-person yoga classes were shut down in March 2020 in accordance with shelter-in-place mandates for safety. In May 2020, SFVAHCS rapidly pivoted to offer virtual classes for existing in-person attendees. In October 2020, we formalized the TeleYoga Program with support from the VA Office of Rural Health. This allowed us to expand access for Veterans in SFVAHCS' geographically dispersed catchment area and enroll new participants. To enhance program visibility and reach, we conducted outreach presentations to clinicians at the main medical center and three CBOCs serving primarily rural Veterans. These presentations included instructions on how to place a Whole Health

outpatient consult to refer Veterans to tele-yoga and circulated flyers electronically.

### TeleYoga Program Components

The TeleYoga Program included the following components: (1) electronic medical record (EMR)-based referral; (2) intake and orientation process; and (3) drop-in virtual yoga classes.

- (1) To enroll in group yoga classes, Veterans were referred by a member of their clinical care team through a Whole Health outpatient consult (part of the IH service) placed within the electronic medical record. Any interested Veteran could join if they were cleared by a medical provider for low-impact movement groups.
- (2) Veterans were then contacted by the tele-yoga program coordinator, who conducted a phone intake to gather information about their goals, concerns, and prior experience with yoga. If assistance with setting up technology was needed, the coordinator facilitated virtual orientation sessions to assess Veterans' home set-up and to familiarize them with the videoconference platform. All Veterans received a welcome letter including general guidelines for virtual yoga groups and an illustrated guide to yoga props. The coordinator also mailed yoga props to Veterans as needed, including yoga mats, blocks, straps, and bolsters.
- (3) We offered 4-6 weekly drop-in classes including Gentle Yoga, Active Yoga, Yoga for Women, and iRest (Yoga Nidra Meditation).<sup>24</sup> Classes were taught by 5 SFVAHCS staff certified as yoga instructors with varied qualifications (RYT200, RYT500, Certified Yoga Therapist [C-IAYT]), yoga styles (hatha, vinyasa flow, and Iyengar yoga) and clinical backgrounds (i.e., dietician, nurse practitioner, social worker, peer support specialist) (Table 1). During this pilot year, yoga instructors also participated in monthly continuing education meetings and adaptive yoga training to learn new ways to teach yoga to participants with varied mobility levels. Adaptations learned in the trainings, such as providing variations

and modifications for physical postures, use of props such as chairs and walls to enhance stability and proprioceptive awareness, and focusing on developing interoceptive awareness were incorporated throughout classes to increase accessibility for attendees with disability.<sup>12</sup> Yoga classes were delivered synchronously during weekday business hours (i.e. 10am, 11am, 3pm) through the videoconferencing platform WebEx. During the COVID-19 public health emergency, WebEx was approved by the VA as a telehealth platform to facilitate rapid implementation of telehealth services. We chose to use WebEx over Veteran Video Connect (VVC) because it allowed drop-in attendance and a better user experience during group movement classes. Key adaptations made by instructors for tele-yoga delivery included use of high-quality microphones and large monitors to view participants, visual and verbal demonstrations of poses, and time at the beginning of classes to settle in and socialize (with the instructor and other participants) if desired.

Since tele-yoga classes were offered as part of standard care and not as a research intervention, no specified or standardized protocol was used for class content. Instructors followed standard safety procedures for telehealth encounters and noting participants' physical location and emergency contact. Each class was 60-minute and typically included the following elements: asanas (yoga poses), pranayama (breathing practices), and trauma-informed teaching strategies. Specifically, strategies included use of permissive language to empower participants to choose a different posture, move at their own pace, disengage from the practice, or to keep the eyes open during relaxation or restorative postures.

### Study Design

We conducted an evaluation of the SFVAHCS TeleYoga program guided by the Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) implementation framework.<sup>25</sup> This evaluation focused on

**Table 1.** Tele-Yoga Program Instructors.

Yoga Training	Yoga Style	Professional Background
1 C-IAYT (certified yoga therapist, international association of yoga therapists), CIYT (certified iyengar yoga teacher), E-RYT200 (experienced registered yoga teacher, yoga alliance)	Iyengar, integrative restoration (iRest) yoga nidra meditation	Medical anthropologist, certified yoga therapist
2 RYT200 (registered yoga teacher, yoga alliance)	Hatha	Registered dietitian
3 RYT200	Vinyasa flow	Social worker
4 RYT200	Hatha	Peer support specialist
5 RYT500	Hatha	Nurse practitioner

Veterans' experience and the impact of initial program implementation. This study was part of a larger quality improvement initiative evaluating the implementation of a pilot tele-yoga program intended to inform VA operations. The San Francisco VA Healthcare System Human Subjects Protection Program determined the activities of this quality improvement project to be non-research and exempt from institutional review board (IRB) approval.

### Data Collection

To assess program reach, we collected participant characteristics and yoga attendance during fiscal year 2021 (October 2020 to September 2021) from VA administrative databases. Program adoption was measured by the number of CBOCs whose clinicians referred Veterans to the tele-yoga program. We assessed program implementation and perceived effectiveness by conducting structured interviews with a subset of tele-yoga participants. We recruited participants using a convenience sampling approach.<sup>26</sup> Between August and September 2021, tele-yoga program staff and instructors made announcements in tele-yoga classes and provided information for Veterans to contact the study team if they were interested in participating a voluntary, phone-administered survey and structured interview. Of the 17 Veterans who were recruited, 14 completed the survey and structured interview (Table 2). After obtaining verbal consent, the tele-yoga

program coordinator administered the survey and structured interview questions and recorded responses directly into VA REDCap.

### Measures

The survey and structured interview was designed to assess participant satisfaction and overall experience with the tele-yoga program, prior experience with yoga, goals for participating, and self-reported health outcomes (Supplemental File 1). For each survey item, participants also had the opportunity to elaborate in more detail and responses were recorded verbatim in REDCap. Structured interview questions were open-ended prompts about satisfaction with provision of yoga props, what participants liked least and best about the program, and suggestions for improvement.

### Data Analysis

The responses to Likert scale questions were converted into numerical values. Descriptive statistics of means and standard deviations of the converted numerical values were conducted, along with percent of responses for each survey item that were reported as "Moderate Amount" or higher (Tables 3 and 4). Open-ended responses were analyzed using directed content analysis guided by key categories from the RE-AIM framework (i.e., effectiveness and implementation) and

**Table 2.** TeleYoga Program and Interview Participant Characteristics.

Demographic	TeleYoga Program Participants (N = 70)		Interview Participants (N = 14)	
	N	%	N	%
Rurality				
Rural	22	31	4	29
Urban/Suburban	48	69	10	71
Age				
65+ years	34	49	11	79
Under 65	36	51	3	21
Gender				
Women	18	26	4	29
Men	52	74	10	71
Race				
American indian/Alaska native	1	1	0	0
Asian	6	9	0	0
Black/African american	4	6	3	21
Native Hawaiian/Pacific islander	1	1	0	0
White	34	49	9	64
Multi-racial	2	3	0	0
Unknown	22	31	2	14
Ethnicity				
Hispanic or Latino	5	7	1	7
Not Hispanic or Latino	48	69	12	86
Unknown	17	24	1	7

**Table 3.** TeleYoga Program Delivery Survey Responses.

On a Scale of 1-4 (Poor to Excellent), How Would You Rate...		
1 = Poor		
2 = Fair		
3 = Good		
4 = Excellent	% Good or Excellent	Mean Score
Your ability to see your instructor by video during the online VA yoga classes?	79	3.2
Your instructor's ability to see you by video during the online VA yoga classes?	50	2.3
The sound quality of the online VA yoga classes?	86	3.3
Your personal comfort during the online VA yoga classes?	100	3.6
The sense of personal connection with other participants in the online VA yoga classes?	71	2.7
The convenience of the online VA yoga classes?	93	3.5
How your confidentiality was respected during the online VA yoga classes?	93	3.7
Your overall experience with the online VA yoga classes?	93	3.7

**Table 4.** Impact of TeleYoga on Health and Quality of Life Outcomes.

Taking TeleYoga Over the Last Month has Helped me...		
1 = Not at all		
2 = A Little Bit		
3 = Moderate Amount		
4 = Quite a Lot		
5 = Very Large Amount	% Who Answered Moderate or Higher	Mean Score
Improve my flexibility	86	3.8
Exercise and move more	64	3.3
Reduce my stress	64	3.1
Improve my self-awareness	64	3.1
Manage pain	57	2.8
Improve my strength	57	2.7
Manage my mood and mental health	50	2.7
Improve sleep	36	2.0
Improve my body image	36	1.9

literature related to tele-yoga delivery.<sup>18,25,27</sup> Responses were exported to Microsoft Excel and organized by structured interview question. Corresponding deductive codes were applied to the following domains: audio-visual and technology aspects of program delivery; convenience; goals; impact on health and quality of life outcomes; overall experience; and suggestions for improvement. A discussion-based consensus process was used to finalize the primary code for each open-ended response and interpretation.

## Results

### Reach and Adoption

The SFVAHCS tele-yoga program reached 70 Veterans between October 2020 and September 2021 (Fiscal Year 2021), including 40 who had previously not attended in-person classes. There were a total of 1195 encounters with a range of 1-126 classes attended per participant during FY21. The mean number of classes attended was 9.68 and the

median was 3 encounters. Close to one-third of tele-yoga participants lived in rural areas or identified as women, with roughly half of the sample aged 65 and older. Based on electronic medical record data, about half of participants were White and the other half identifying with diverse racial groups (Table 2). Among the subsample of 14 structured interview participants, about one-third were from rural areas and had no experience with in-person VA yoga classes before joining the tele-yoga program. We distributed yoga props to 45 Veterans, including 33 yoga mats, 32 pairs of yoga blocks, 29 belts, and 14 bolsters. Referrals to the TeleYoga Program increased from 2 to 6 SFVAHCS facilities. No adverse safety events were reported during the program.

### Implementation

*Veteran Experience with the SFVAHCS TeleYoga Pilot Program (Table 3).* Of the 14 survey respondents, almost all rated their overall experience with VA tele-yoga classes as “good” or “excellent,” with some stating their experience was “beyond

excellent” and “it’s just what I need.” However, one participant rated their overall experience with tele-yoga as “fair” (“I’m not an online person, I don’t care for it”). Another stated that “it was easier to attend online, but it was more personal with in-person [classes].” Overall, participants rated the convenience of tele-yoga classes highly, with the majority selecting “good” or “excellent.” Responses to open-ended questions about what Veterans liked the best highlighted how the TeleYoga Program increased access to yoga through convenient, safe access during the COVID-19 pandemic. For example, one Veteran noted that tele-yoga improved accessibility and time management (“not having to drive, that would be a dealbreaker, I need this to be online”). Others noted reduced travel time and expenses, practicing yoga from the comfort of their home, and increased frequency of taking yoga classes. Additionally, participants expressed how access to tele-yoga was important for safe access to mind-body movement classes during the COVID-19 pandemic (“I’ve been very careful going out during COVID and this [tele-yoga] has been really good for me”). More than half of survey participants requested props, most of whom reported high levels of satisfaction with the process of receiving yoga props.

While all participants rated personal comfort of the tele-yoga classes highly and most highlighted its benefits on concentration and control of one’s own comfort (“unlike a group setting, setting, I’m arranging my own comfort,” “I’m at home and there’s nothing to interfere with or distract me.”), one participant felt that yoga in the home setting was difficult due to demands and pressures of things needing to be done (“there’s times it’s difficult to focus on yoga” because “there’s lots of things you could be doing at home.”). Most participants rated the opportunity to share their thoughts during online VA yoga classes as “good” or “excellent,” relaying that they enjoyed “time at the beginning and end of class” to socialize with other participants and that “the instructors gave [them] opportunity to send messages through the chat or speak up.” In contrast, some participants missed some aspects of in-person classes, such as the ability to ask the yoga instructor questions, the “non-verbal direction” of a yoga instructor directly “physically adjusting poses,” as well as “on-the-spot corrections.”

Although most participants rated highly their sense of personal connection with others in the tele-yoga classes (e.g. “There’s good camaraderie and I’m very comfortable with the group”), some Veterans who had previously attended in-person expressed a loss of social interaction and missed “the group energy of in-person classes.” Participants pointed out that instructors “do a ‘roll call’ so everyone feels included,” and that they “always seem to notice me.” On the other hand, one Veteran appreciated that in an online class, they had “the freedom to engage or not engage without any disrespect or feeling that I’ve disrupted anybody.” Almost all survey participants reported their confidentiality was respected during tele-yoga classes (“good” or “excellent”); one individual rated it as fair.

**Technology and Audio-Visual Quality.** Half of survey participants reported using a laptop to access TeleYoga classes, with the other half endorsing use of other modalities (e.g., iPad or tablet, desktop computer, smartphone). Most respondents reported their ability to see the yoga instructor during the online VA yoga classes was “good” or “excellent” (Table 3). When asked to rate the instructor’s ability to see them during tele-yoga classes, half rated this as “good” or “excellent.” However, some participants described the limitations of following the yoga instruction when “facing away from the screen” with a virtual at-home class and stated that “compared to an in-person yoga studio, there’d be mirrors all around the room and you have people around you.”

When asked to rate the sound quality of the tele-yoga classes, over three-quarters of survey participants rated the sound quality as “good” or “excellent.” Multiple participants reported that sometimes an instructor’s Bluetooth microphone would cut out, but this was not a common occurrence. However, participants explained that microphone placement was critical for instructors who use wired, external microphones because sometimes the sound would fade if the instructor turned their head away from the microphone.

**Perceived Effectiveness and Impact on Patient-Reported Health Outcomes.** In general, at least half of participants noted multiple changes in their ability to manage their physical and mental health, with improvements in awareness and their view of their body. At least half of survey participants reported a “moderate” to “very large amount” of improvement with managing pain (Table 4). At least half (50%–86%) also reported improvement in frequency of exercise, flexibility, and strength. These ratings are supported by multiple qualitative reports that tele-yoga classes improved participants “managing pain,” “stretching, getting muscles more limber,” and building “strength, stamina, and flexibility.” One participant stated, “As I get older, I’ve been concerned with balance (preventing falls) and I like that every yoga class, we’re working on balance and strengthening legs.”

Over half reported improvement in stress, mood, and mental health (Table 4). One Veteran stated that participating in tele-yoga classes “relaxes me [and] puts me in a good frame of mind.” Another Veteran stated that yoga helped them with “anger management, PTSD, and mitigates the background noise in [their] head.” Participants also reported improvement in self-awareness and body image. One Veteran said, “I look forward to the [classes], I feel fulfilled and it truly helps my veteran status. I was a combat medic with lots of memories, PTSD, anger, and all of that is assuaged and helped by yoga. Wonderful that it’s body, mind, emotion all in one place.”

**Suggestions for TeleYoga Program Improvement.** Suggestions for improving the program included refining audio-visual quality and increasing class offerings, including evenings and weekends. Feedback on what Veterans liked the least included loss of social interaction compared to in-person yoga

classes and technology challenges. Specifically, Veterans requested improvements to audio and visual capability through better quality cameras and microphones for tele-yoga instructors. A few Veterans requested late afternoon, evening, or weekend classes, which was also requested during the intake and scheduling process.

## Discussion

This study evaluated reach, adoption and Veteran experience with implementation of a pilot tele-yoga program at one VA healthcare system during the COVID-19 pandemic. During the pilot year, the number of yoga participants participating in SFVAHCS tele-yoga classes doubled in comparison to in-person yoga class participants in the previous year. While recent studies have evaluated the transition of CIH services in the VA from in-person to virtual care during the COVID-19 pandemic from the perspective of clinicians,<sup>16,20,28,29</sup> this study demonstrates the unique benefits and minor limitations of in-home tele-yoga delivery from patients' perspectives. In addition, this study illustrates the impact of a tele-yoga among a diverse group of Veterans, varying in geographic location, age, and prior experience with yoga.

Overall, participants were highly satisfied with all aspects of program delivery and rated convenience as a key factor. Multiple Veterans spoke about the reduced burden of time and transportation with virtual at-home delivery, and the increased comfort of practicing in their home. However, some qualitative reports indicated that despite the convenience of tele-yoga, some Veterans missed parts of in-person yoga instruction such as hands-on instructor feedback and socializing with others. Virtual delivery increased access for rural Veterans, older Veterans, and other participants who would have otherwise not had access to in-person VA yoga classes. Other studies have also reported that convenience and increased access are the main benefits of tele-yoga,<sup>30</sup> and that attendance for tele-yoga is similar to in-person yoga.<sup>10,13</sup> However, previous studies that have evaluated tele-yoga as part of care within the VA focused on live-broadcast delivery from a medical center-based instructor to an in-person group of Veterans at a community clinic.<sup>13</sup> This form of telehealth delivery still presents transportation barriers, limits class sizes due to space constraints, and was not possible during COVID-19 due to shelter-in-place orders. Our study piloted delivering yoga to Veterans' personal devices at home which, as supported by prior literature, provided additional benefits of reduced transportation barriers, convenience, comfort, and privacy.<sup>30,31</sup>

Over half of survey participants reported a "moderate" to large improvement in stress management and increased self-awareness after taking VA tele-yoga classes, similar to other studies that showed improvement in stress regulation and perceived stress from at-home yoga groups during the COVID-19 pandemic.<sup>30-32</sup> Half of survey participants reported improvement in mood and mental health after taking

tele-yoga, and other tele-yoga studies have found that mental health and mood benefits from tele-yoga are still comparable to in-person yoga.<sup>30</sup> Qualitative findings highlighted the impact of tele-yoga on mental health (i.e., managing anxiety and PTSD) and physical health benefits (i.e., improved flexibility, strength, and pain management) which is consistent with previous yoga research.<sup>2,3,6,17,33</sup>

The success of the pilot program may be due to a number of programmatic and clinical factors, including infrastructure, staffing, and the virtual orientation. Having an integrative health service and holistic, whole-health program readily facilitated clinician referrals to the yoga program through the electronic medical record. Also, the presence of multiple, existing staff with yoga teaching certifications allowed for a variety of yoga offerings and increased recruitment of yoga participants without needing to hire new employees or contract yoga teachers. The synchronous, virtual orientation gave new tele-yoga participants a personalized introduction to yoga and familiarized them with the process of joining the virtual classes. This approach has been utilized in other telehealth CIH intervention studies,<sup>16,18,34,35</sup> suggesting that tele-yoga programs must have adequate staffing resources for program orientation and technology support.<sup>19</sup>

We found that a number of barriers impacted tele-program implementation, especially technical difficulties. Similar to other recent studies of at-home delivery of virtual CIH group interventions, some participants found it challenging to join the classes, or did not have devices with large screens or microphones.<sup>16,18,34-36</sup> Future efforts to implement and expand video-based telehealth group yoga should consider the necessary resources to facilitate the technological aspects of the program for participants and instructors such as ensuring instructors have access to high quality audio-visual technology including high-resolution webcams, microphones, and large monitors. One access barrier to the tele-yoga program was that Veterans who did not have internet access or webcam-devices could not join the program, though over time we were able to provide video-enabled tablets and internet access to Veterans through VA's Digital Divide program.<sup>37,38</sup>

Prior studies have identified potential safety concerns with home-based virtual yoga delivery<sup>16,18,36,38</sup> because yoga instructors are not able to immediately assess and respond to safety-related health events. These concerns were mitigated in this study by requiring clearance for low-impact movement by participants' primary care provider, following medical center standard procedures for telehealth encounters and emergency contacts, and providing yoga instructors opportunities for continuing education and adaptive yoga training to enhance skills for teaching yoga to participants across a range of ages and mobility levels. These strategies align with adaptations made to ensure safety in other recent studies about virtual group CIH interventions.<sup>38,39</sup>

One limitation of this study was the small convenience sample of participants who voluntarily participated in the



evaluation were frequent attendees of the tele-yoga classes and thus may have been a self-selecting sample. Another limitation was that our evaluation used retrospective patient self-reports so there is no comparison to baseline characteristics or health outcomes before the tele-yoga intervention. Moreover, as the yoga program was delivered as part of usual care, there was no control group. We attribute these study limitations to a rapid implementation process. A larger research study of tele-yoga could compare the effectiveness of virtual, at-home yoga compared to in-person classes.

## Conclusion

The results of this study suggest that in-person yoga can be effectively and safely adapted to virtual delivery — with the potential to improve patient-reported health outcomes across diverse Veteran populations. System-level, programmatic, and technology-related factors that contributed to success of tele-yoga delivery included existing infrastructure for telehealth and complementary and integrative health services, focused outreach to rural clinics, and a virtual program orientation for new participants. Importantly, reducing inequity in technology access by providing devices if needed and having dedicated staff for technology support can support tele-yoga program implementation and delivery. As the VA and other healthcare systems expand access to virtual yoga and mind-body movement programs, these lessons learned can inform delivery and opportunities to systematically measure health-related outcomes and implementation outcomes.

## Author's Note

The views expressed in this article are the authors' and are not an official position of the U.S. Department of Veterans Affairs or VA Office of Rural Health.

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## Supplemental Material

Supplemental material for this article is available online.

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