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Rheumatology Clinicians' Perceptions of Telerheumatology Within the Veterans Health Administration: A National Survey Study

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ABSTRACT

Introduction

The Department of Veterans Affairs Veterans Health Administration (VA) Strategic Plan (Fiscal Year 2018–2024) identified four priorities for care including easy access, timely and integrated care, accountability, and modernization, all of which can be directly or indirectly impacted by telemedicine technologies. These strategic goals, coupled with an anticipated rheumatology workforce shortage, has created a need for additional care delivery methods such as clinical video telehealth application to rheumatology (ie, telerheumatology). Rheumatology clinician perceptions of clinical usefulness telerheumatology have received limited attention in the past. The present study aimed to evaluate rheumatologists' perceptions of and experiences with telemedicine, generally, and telerheumatology, specifically, within the VA.

Materials and Methods

A 38-item survey based on an existing telehealth providers' satisfaction survey was developed by two VA rheumatologists with experience in telemedicine as well as a social scientist experienced in survey development and user experience through an iterative process. Questions probed VA rheumatology clinician satisfaction with training and information technology (IT) supports, as well as barriers to using telemedicine. Additionally, clinician perceptions of the impact and usefulness of and appropriate clinical contexts for telerheumatology were evaluated. The survey was disseminated online via VA REDCap to members of the VA Rheumatology Consortium (VARC) through a LISTSERV. The study protocol was approved by the host institution IRB through expedited review. Survey responses were analyzed using descriptive statistics.

Results

Forty-five anonymous responses (20% response rate) were collected. Of those who responded, 47% were female, 98% were between 35 and 64 years old, 71% reported working at an academic center, and the majority was physician-level practitioners (98%). Respondents generally considered themselves to be tech savvy (58%). Thirty-six percent of the sample reported past experience with telemedicine, and, of those, 29% reported experience with telerheumatology specifically. Clinicians identified the greatest barrier to effective telerheumatology as the inability to perform a physical exam (71%) but agreed that telerheumatology is vital to increasing access to care (59%) and quality of care (40%) in the VA. Overall, regardless of experience with telemedicine, respondents reported that telerheumatology was more helpful for management of rheumatologic conditions rather than initial diagnosis.

Conclusions

While the majority of rheumatology clinicians did not report past experience with telerheumatology, they agreed that it has potential to further the VA mission of improved access and quality of care. Rheumatology clinicians felt the suitability of telerheumatology is dependent on the phase of care. As remote care technologies continue to be rapidly adopted into clinic, clinician perceptions of and experiences with telemedicine will need to be addressed in order to maintain high-quality and clinician- and patient-centric care within VA rheumatology.

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INTRODUCTION

In 2010, the Department of Veterans Affairs (VA) announced transformational initiatives with the intention of bringing VA into the modern era as a forward-looking, results-oriented, and Veteran-focused organization (Strategic Plan FY 2010–2014). These initiatives helped pave the way to further advance telehealth services or technologies such as audio and video tools used to deliver care across distance and time.¹ Telehealth technologies including asynchronous communications (ie, electronic consults, delayed messaging, store and forward telehealth) or synchronous communications (ie, video-based communications, telecommunications²) have been available to Veterans engaged in care at VA since 1994.³ However, with the introduction of the transformational initiatives, the VA has emphasized the expansion of synchronous real-time video communications or telemedicine, where patients and clinicians communicate remotely through video conferencing technologies in real time. As a result, by fiscal year 2013, more than 500,000 telemedicine encounters occurred in the VA across all available clinical areas, an increase from just over 150,000 in fiscal year 2010.³ More recently, the VA marked a milestone by providing over 1 million telemedicine visits in fiscal year 2018.⁴

In 2018, the VA identified four strategic goals: (1) easy access and greater choices, (2) timely and integrated care, (3) accountability and transparency, and (4) modernization (Strategic Plan FY 2018–2024).⁵ These larger priorities encompass areas such as improved access to care, reduced wait times, and IT modernization, all of which can be impacted by telehealth technologies. Notably, telemedicine has been credited with the ability to improve access to care for Veterans, particularly those in rural areas.⁶ In fact, 47% of telemedicine encounters in fiscal year 2013 included rural VA patients.³ A recent rapid review found that care received through telemedicine services was generally equivalent to in-person clinical visits in the areas of telemental health, telerehabilitation, teledermatology, teleconsultation, and other areas such as nutrition management and oral anticoagulation management.⁷ Moreover, patient satisfaction with telemedicine visits in a non-VA setting is generally high, and some patients report preferring telehealth visits over in-person encounters.⁸ Despite positive perceptions and continuous growth in clinical areas, telemedicine application to rheumatology (ie, telerheumatology) has received limited attention.²

Rheumatologic care is particularly important for the Veteran population, as Veterans experience higher rates of arthritis than the general population, and arthritis is the number one cause of disability within the VA.⁹ Despite this high prevalence and significant impact on quality of life, Veterans seeking specialty care for arthritis often face barriers in receiving rheumatologic care, such as distance to the nearest rheumatology clinician. The majority of Veterans live more than 40 miles from the nearest VA with rheumatology services.¹⁰

Additionally, a significant national rheumatology workforce shortage is predicted over the next decade,¹¹ and rheumatology has been highlighted as one of the top three specialties predicted to have a shortage of clinicians within the next 5 years in the VA.¹⁰ Telerheumatology has the potential to surmount barriers to rheumatology care such as geographical distance which includes concentrations of specialists in urban areas and a national rheumatology workforce shortage particularly impacting large swaths of rural areas.

While the infrastructure for telemedicine exists in the VA, telerheumatology is in its infancy, with limited study of clinician perceptions of clinical usefulness. Therefore, the objective of this study was to assess rheumatology clinician perceptions of, and experiences with, telemedicine generally and telerheumatology specifically within the VA, the largest integrated health care system in the United States.

METHODS

Participants

All members of the VA Rheumatology Consortium (VARC), an association of rheumatology clinicians who meet biannually to discuss the state of rheumatology in the VA, were invited to complete an electronic survey via email invitation sent to the VARC LISTSERV. At the time of the survey invitation, VARC membership totaled 224 members. The study protocol was approved by the host institution IRB through expedited review.

Survey Administration

VARC leadership (E.C. and J.S.R.) invited all members to take part in a survey “on your experiences with and/or attitudes towards telehealth services in rheumatology” through an email invitation that included a link to the survey. Research Electronic Data Capture (REDCap)^{12,13} hosted at Department of Veterans Affairs VA Information Resource Center (VIREC) was utilized for survey design and online dissemination. Respondents anonymously completed a 38-item survey, modeled after a general telehealth clinician’s satisfaction survey.¹⁴

The survey included a previously developed measure of clinician’s satisfaction with telehealth, a user experience short survey, and novel questions identified by the study team (described below). Participant demographics were also collected. For the current survey, some questions were adapted to be specific to telerheumatology, while others addressed telemedicine more broadly. The rheumatology-specific telemedicine survey assessed VA clinician satisfaction with training and information technology support, as well as barriers to using telemedicine systems. Additionally, questions regarding perceptions of telemedicine’s impact on care and appropriate clinical contexts for telerheumatology

TABLE I. Characteristics of VA^a Rheumatology Clinician Telerheumatology Survey Respondents (*n* = 45)

Characteristic	<i>N</i> (%) or Mean (Standard Deviation)
Female	21 (47%)
Age categories	
25–34 years	1 (2%)
35–44 years	9 (20%)
45–54 years	15 (33%)
55–64 years	12 (27%)
65–74 years	5 (11%)
75 years or older	3 (7%)
Practice setting	
Rural clinic	1 (2%)
Critical access hospital	5 (11%)
Academic center	32 (71%)
Other	7 (16%)
Provider type	
Physician-level clinician (MD, DO, MBBS, MD/PhD, etc.)	43 (96%)
Advanced practice provider (PA, NP, APRN, etc.)	2 (4%)
“I consider myself tech savvy,” proportion who reported “agree” or “strongly agree”	26 (58%)

^aDepartment of Veterans Affairs, Veterans Health Administration.

visits were included. The survey was developed through an iterative process with input from two VA rheumatologists with experience in telerheumatology (P.W. and B.E.) and a social scientist (G.M.) experienced in survey development.

SURVEY DESIGN AND MEASURES

User Satisfaction with Telemedicine

The user satisfaction survey with telemedicine developed by Becevic and colleagues¹⁴ consisted of 18 telemedicine-related items that ask about the ease of use of telemedicine equipment, the quality of images and sounds, and how satisfied clinicians are with telemedicine appointments. Questions are asked on a 5-point Likert scaled from “strongly agree” to “strongly disagree.”

Usability Metric for User Experience (UMUX-LITE)

The Usability Metric for User Experience LITE is a 2-item standardized usability questionnaire.¹⁵ The measure asks respondents to rate, on a 7-point Likert scale (strongly disagree–strongly agree), the degree to which the telemedicine “system’s capability meet my requirements” and “is easy to use.” The UMUX-LITE is a reliable and valid measure of perceived usability.^{16,17}

Additional Telerheumatology-Specific Questions of Interest

To further assess clinicians’ perceptions of the appropriateness of telerheumatology, a series of questions were developed by the authors. Respondents were asked to identify particular clinical contexts in which telerheumatology would be most useful (eg, new inpatient/outpatient consult, follow-up,

acute visit, other). Respondents were asked to indicate for which rheumatologic conditions they felt telerheumatology would be helpful in diagnosing or in managing. Additionally, respondents were asked to rank three barriers to effective telerheumatology (eg, inability to perform a physical exam, quality of equipment, cost to provider due to loss of productivity, time commitment) from 1 (most important) to 3 (least important). Lastly, questions specific to VA care and priorities were included (eg, “I believe my role in providing telehealth services is vital to VA efforts to increase access to care,” “I believe my role in providing telehealth services is vital to VA efforts to increase quality of care”).

Analysis

Survey responses were analyzed using descriptive statistics. For questions related to clinician perception of the impact of telemedicine on VA strategic goals, response categories of “strongly agree or agree” or “disagree or strongly disagree” were combined.

RESULTS

A total of 45 responses were received, for a response rate of 20%. The overwhelming majority of the respondents (96%, Table I) identified as physician-level practitioners (ie, MD, DO, MBBS, MD/PhD) and had worked in an academic center (71%). Ninety-eight percent of clinicians were between 35 and 64 years old (35–44 years old, 20%; 45–54 years old, 33%; 55–64 years old, 27%), the remaining clinicians were between 25 and 34 years old (2%). Nearly half of respondents identified as female (47%), and 58% considered themselves to be “tech savvy.”

Telemedicine User Experience

Sixteen respondents (36%) reported being trained to use telemedicine services including but not limited to telerheumatology. Of those 16, 50% reported using telemedicine services for any specialty at least once per week. Satisfaction with telemedicine systems in general was mixed. Forty-four percent felt their telemedicine system is easy to use, and 53% felt "confident and at ease" when using a telemedicine system. Approximately half of clinicians felt they had received an appropriate amount of training in (44%) and that their institution had adequate support for telemedicine services (56%). In contrast, only 38% of respondents felt they could provide high-quality rheumatology care through telemedicine systems.

Perceptions of Telerheumatology

All respondents ($n = 45$), regardless of experience with telemedicine systems, were asked to rank their top 3 perceived barriers to telerheumatology. The majority of clinicians (71%) ranked the inability to perform a physical exam as the top barrier. The barrier most often ranked second most important was phase of care (31%), followed by the type of rheumatologic condition (ie, connective tissue disease; 16%). Type of rheumatologic condition (16%) was also the barrier most often ranked third most important to clinicians as well as cost to clinician due to loss of productivity (16%). The cost to clinic/institutions for set-up and maintenance of telehealth technologies (4%) and time commitment (6%) were ranked least often as barriers to effective telerheumatology. Most clinicians agreed or strongly agreed that their role in providing telemedicine services was "vital" to VA efforts to increase access to care (59%), while fewer clinicians agreed or strongly agreed that it is vital to VA efforts to improve quality of care (40%) or to improve IT infrastructure (28%; Fig. 1). Almost half of respondents (42%) neither agreed nor disagreed that providing telemedicine services is best for patients, while approximately one-third of clinicians (36%) felt that providing telemedicine services is best for patients.

Usefulness of Telerheumatology

Clinicians overwhelmingly identified telerheumatology as useful for managing, rather than diagnosing, rheumatologic conditions (Figs 2 and 3). Gout or calcium pyrophosphate dihydrate deposition disease (CPPD; 29%), rheumatoid arthritis (RA; 24%), fibromyalgia (20%), and osteoarthritis (20%) were considered the most appropriate conditions to manage via telemedicine technologies by those who reported experience with telerheumatology. Similarly, those reporting no experience with telerheumatology considered gout or CPPD (44%), osteoarthritis (38%), and RA (33%) to be conditions most appropriately managed via telemedicine. A majority of clinicians did not consider telerheumatology useful for the diagnosis of rheumatologic conditions. Conditions with the highest responses

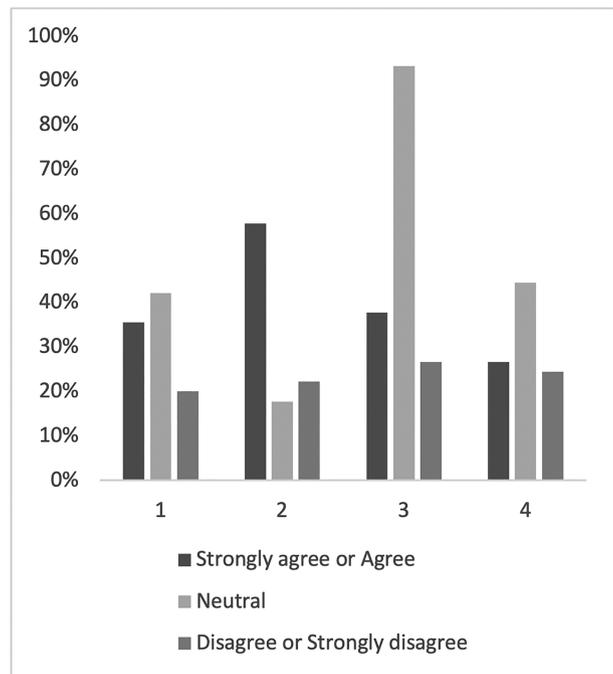


FIGURE 1. Rheumatologist perceptions of benefits of telehealth services for VA¹ strategic goals ($n = 45$). 1 I believe my role in providing telehealth services is best for patients. 2 I believe my role in providing telehealth services is vital to VA efforts to increase access to care. 3 I believe my role in providing telehealth services is vital to VA efforts to increase quality of care. 4 I believe my role in providing telehealth services is vital to VA efforts to improve IT infrastructure. While perceptions were mixed, most clinicians agreed or strongly agreed that telemedicine was vital to VA efforts to increase access to care (59%). Clinician feelings on whether medicine is best for patients were less clear as nearly half of respondents neither agreed nor disagreed with the statement (42%). Telemedicine offers the opportunity to expand care to harder to reach populations (eg, rural Veterans), but clinician attitudes towards the treatment modality may be a barrier to adoption. As the push to move routine clinical care to telemedicine continues, health systems should recognize and work to address clinician perceptions of telehealth technologies.

for usefulness of telerheumatology for diagnosing among clinicians reporting experience with telerheumatology were osteoarthritis (16%), fibromyalgia (16%), gout or CPPD (11%), RA (4%), seronegative spondyloarthropathy (4%), and Sjogren syndrome (4%). Among clinicians who did not have experience with telerheumatology, osteoarthritis (24%), fibromyalgia (22%), gout or CPPD (16%), and RA (13%) were considered the rheumatologic conditions most appropriately diagnosed through telemedicine technologies. There were no statistically significant differences between responses of clinicians with experience with telemedicine compared to those without in the perceived usefulness of telerheumatology for diagnosing or managing any of the rheumatologic conditions ($P > 0.05$). Clinicians were given the opportunity to select "other" and provide an open-ended response to the usefulness of telerheumatology in diagnosing and managing conditions. Some clinicians (18%), regardless of telemedicine experience, noted that "none of the above" conditions would be appropriate to diagnose via telerheumatology.

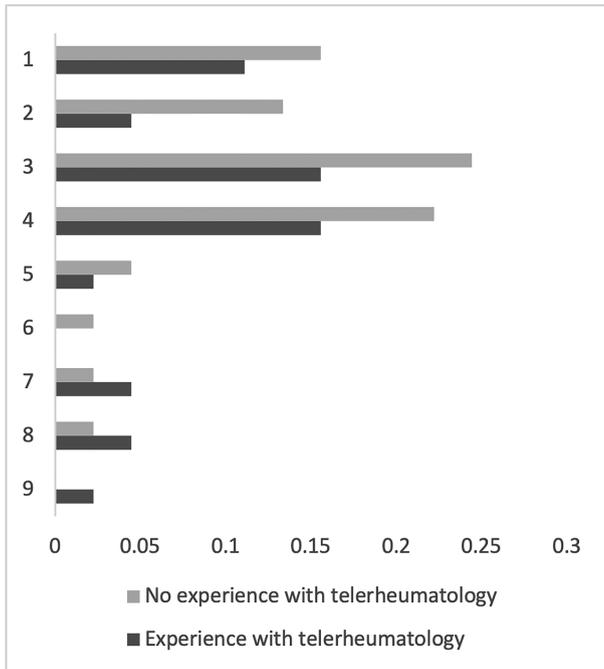


FIGURE 2. Proportion of rheumatologists who believe telerheumatology is useful for *diagnosing* ($n = 45$). 1 Gout or calcium pyrophosphate dihydrate deposition disease (CPPD). 2 Rheumatoid arthritis. 3 Osteoarthritis. 4 Fibromyalgia. 5 Lupus. 6 Systemic sclerosis. 7 Seronegative spondyloarthritis. 8 Sjogren syndrome. 9 Vasculitis. Most clinicians, regardless of experience with telemedicine, did not consider telerheumatology useful in diagnosing rheumatologic conditions. Clinicians with experience considered telerheumatology useful in diagnosing slightly more conditions than those without experience with telerheumatology. Health systems should consider phase of care when adopting, implementing, and developing standard practices with telehealth systems to maintain the quality of care delivered.

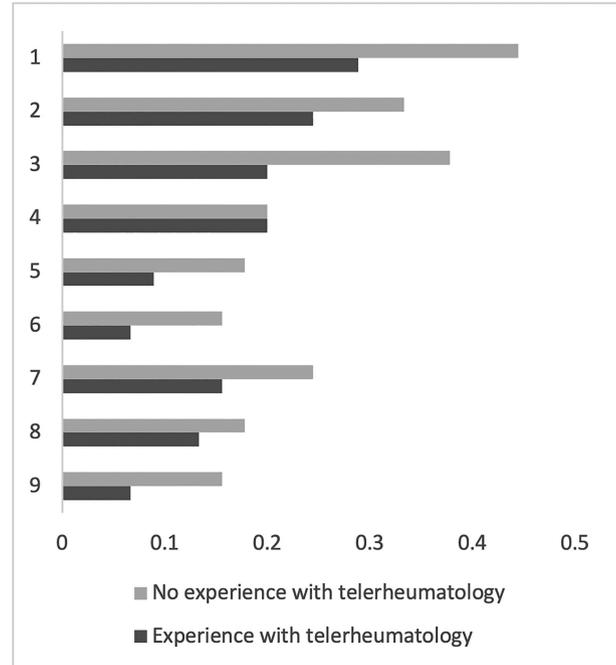


FIGURE 3. Proportion of rheumatologists who believe telerheumatology is useful for *managing* ($n = 45$). 1 Gout or calcium pyrophosphate dihydrate deposition disease (CPPD). 2 Rheumatoid arthritis. 3 Osteoarthritis. 4 Fibromyalgia. 5 Lupus. 6 Systemic sclerosis. 7 Seronegative spondyloarthritis. 8 Sjogren syndrome. 9 Vasculitis. Overall, clinicians considered telerheumatology more useful in managing rheumatologic conditions. Clinicians with past experience with telerheumatology generally considered the modality appropriate for managing more conditions than those who had no experience with telerheumatology. Clinicians indicated that phase of care is an important consideration when evaluating the usefulness of telerheumatology. It is important for health systems to work closely with clinicians to identify the most appropriate and useful way to incorporate telehealth technologies into clinical care.

DISCUSSION

The present study is the first national survey of VA rheumatology clinician attitudes toward telerheumatology. Overall, results suggest that direct experience with telemedicine is infrequent and satisfaction with telerheumatology is suboptimal. However, most clinicians agreed that telemedicine is essential to increasing access to care and indicated that telerheumatology would be most useful for managing established patients with a rheumatologic diagnosis. Rheumatologic conditions such as osteoarthritis or fibromyalgia were viewed as more appropriate for telehealth, whereas more complex autoimmune conditions with heterogeneous clinical presentations such as systemic lupus erythematosus were viewed as requiring face-to-face care. The most commonly identified barriers to effective telerheumatology were the inability to perform a physical exam, phase of care, and training of presenters at the patient sites. The majority of respondents had not previously used telemedicine systems.

The current findings support prior literature outside of rheumatology that suggests clinicians consider telemedicine technologies an acceptable way to increase access to care¹⁸ despite overall low uptake.^{19–21} This study confirms what has been shown among other subspecialty clinician attitudes to

telemedicine (hepatitis C experience, rural providers, etc.). It also underscores a need to more systematically elicit VA rheumatology clinician experiences, attitudes, and concerns as the field of telerheumatology grows to serve an expanding, older population with arthritis and disability while, at the same time, the nation faces a shortage of rheumatology clinicians.¹¹ This need is particularly relevant to the VA as it is the largest integrated healthcare system in the United States and is dedicated to continuing and expanding care for rural Veterans who are notoriously hard to reach. Additionally, pairing a robust, efficient, and common-sense approach to telerheumatology with the expansion of rheumatology knowledge and connection to primary care clinicians through the newly establish VA Rheumatology ECHO (Extension for Community Healthcare Outcomes) program will provide needed support for local non-specialist telehealth presenters and further the overarching mission to increase access while simultaneously delivering high-quality care in rheumatology.

This study is not without limitations, which include the low response rate and relatively small sample size. However, it is worth noting that the response rate is comparable to other clinical survey studies and nearly twice that

of online surveys of clinicians.^{22,23} No validated surveys of telerheumatology exist. Therefore, we adapted a previously published instrument on telehealth for telerheumatology with a team that included experienced rheumatologists practicing telerheumatology and an expert in survey design. Despite these limitations, these findings have important implications for the adoption of telerheumatology technologies. A deeper understanding of the barriers to effective telerheumatology within the VA system from both clinician and patient perspectives will help with implementation. Specifically, as VA telemedicine services grow to include more subspecialties, more efforts can be made to expose and familiarize clinicians to telehealth technologies through “hands-on” trainings. Additionally, probing clinicians’ attitudes about telerheumatology can provide the foundation for guidelines for telemedicine clinical visits.

This study aimed to characterize rheumatology clinician perceptions and experiences with telemedicine technologies and adds to the literature that supports telehealth as a valuable care delivery method. Future studies are needed to further assess the acceptability, feasibility, and effectiveness of telerheumatology, especially for specific rheumatologic conditions.

CONCLUSION

A majority of VA rheumatologists report that telerheumatology is vital to increasing access to care in VA; however, clinician respondents indicated the suitability of telerheumatology is dependent on the phase of care. Most VA rheumatology clinicians have yet to provide telerheumatology care. As remote care technologies are increasingly adopted, continued attention to clinician experience and readiness will need to be addressed in order to maintain high-quality, patient-centered care systems within VA rheumatology.

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