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Review

Review

Challenges and strategies for promoting health equity in virtual care: findings and policy directions from a scoping review of reviews

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ABSTRACT

Objective: We sought to understand and synthesize review-level evidence on the challenges associated with accessibility of virtual care among underserved population groups and to identify strategies that can improve access to, uptake of, and engagement with virtual care for these populations.

Materials and Methods: A scoping review of reviews was conducted (protocol available at doi: 10.2196/22847). A total of 14 028 records were retrieved from MEDLINE, EMBASE, CINAHL, Scopus, and Epistemonikos databases. Data were abstracted, and challenges and strategies were identified and summarized for each underserved population group and across population groups.

Results: A total of 37 reviews were included. Commonly occurring challenges and strategies were grouped into 6 key thematic areas based on similarities across communities: (1) the person's orientation toward health-related needs, (2) the person's orientation toward health-related technology, (3) the person's digital literacy, (4) technology design, (5) health system structure and organization, and (6) social and structural determinants of access to technology-enabled care. We suggest 4 important directions for policy development: (1) investment in digital health literacy education and training, (2) inclusive digital health technology design, (3) incentivizing inclusive digital health care, and (4) investment in affordable and accessible infrastructure.

Discussion and Conclusion: Challenges associated with accessibility of virtual care among underserved population groups can occur at the individual, technological, health system, and social/structural determinant levels. Although the policy approaches suggested by our review are likely to be difficult to achieve in a given policy context, they are essential to a more equitable future for virtual care.

Key words: virtual care, telemedicine, health equity, social determinants of health, scoping review

BACKGROUND

Access to and outcomes of health care are determined in important ways by the influence of a series of intersecting social systems that create opportunities and challenges for particular communities of people.[1,2] These intersecting systems are associated with the identity characteristics conferred upon particular groups and individuals, such as age, gender, socioeconomic status, race and ethnicity, education levels, and neighborhood characteristics.[2,3] The compounding influence of systems that result in communities being identified as racialized, lower income, or lesser educated (for example) leads to greater challenges in obtaining meaningful health services and achieving improved health outcomes as a result.[4,5] In recognition of the influence of these intersecting systems that confer advantage and disadvantage on access to and outcomes of health care, we refer to communities characterized by relative disadvantage as *underserved* by health care systems. This observation is true of in-person health care services and virtual care services as well.[6]

Bi-directional virtual care (also known as eHealth, telemedicine, telecare, and telehealth) has been proposed as a promising healthcare delivery approach to improving access to care, such as for individuals living in rural or remote areas.[7] Defined as "any interaction between patients and/or members of their circle of care, occurring remotely, using any forms of communication or information technologies," virtual care can employ a broad array of modalities to provide care such as telephone calls, video visits, secure messaging, and email consultations.[8] Since the onset of the COVID-19 pandemic, the use of virtual care has increased in part, to ensure sustained and continued access to care while adhering to physical distancing measures.[9–11] Provision of virtual care in specific contexts has demonstrated benefits such as increased access to health services and education, cost-effectiveness, and improved health outcomes, quality of life, social support and quality of care.[12,13]

Despite these benefits, there are increasing concerns regarding the impact of virtual care on existing health disparities including inequalities being generated by health care interventions among underserved population groups.[3,14–16] The presence of a digital divide between those who enjoy access, literacy, and motivation to engage with digital technologies for health care and those who do not means that the benefits of virtual care only accrue to certain segments of society (ie, those who are empowered to engage with health systems virtually).[3,17,18] Many challenges may prevent access to, uptake of and engagement with virtual care, such as the absence of socioculturally tailored and age-appropriate technology that represents and meets the needs of diverse communities.[19,20]

To ensure health equity is maintained and promoted in the delivery of virtual care, an in-depth and systematic inquiry into existing identified challenges or barriers of access to, uptake of, and engagement with virtual care is required for diverse underserved communities. This becomes important particularly as the use of virtual care has increased dramatically during the COVID-19 pandemic, and has very likely become a more prominent feature of care delivery models that will be sustained into the future. The literature also provides a tremendous opportunity to learn from strategies that have been used to alleviate challenges specifically experienced by underserved communities to ensure equitable access and participation in virtual care. Thus, the objectives of this scoping review of reviews were: (1) to synthesize review-level evidence on challenges associated with accessibility of virtual care in underserved population groups and (2) to identify strategies that can improve access to, uptake of, and engagement with virtual care for these same population groups.

MATERIALS AND METHODS

A detailed description of the methods for this scoping review is available in our published protocol paper available at doi:10.2196/22847.[5] This scoping review was registered with the National Collaborating Centre for Methods and Tools (#71).[21] The PRISMA-Scoping Review Extension was utilized for reporting.[22]

Research question, search strategy, and selection criteria

We proposed the following research question for our scoping review of reviews: "What challenges and strategies related to enabling the access to, uptake of, and engagement with virtual care for people from underserved communities have been documented in the literature?." We defined underserved population groups as groups of individuals with increased susceptibility to health and health care disparities due to the relative disadvantage conferred upon them by social determinants of health (individual, environmental, and/or social factors). Table 1 provides a list of specific population groups that were selected as the focus for this review that are commonly reported in the literature as being underserved and as determined through discussion with the research team. We also used the Place, Race, Occupation, Gender, Religion, Education, Socioeconomic status, Social capital (PROGRESS) framework to guide our approach.[23,24] Virtual care was operationalized as health care delivered through technologies that facilitated bi-directional communication between patients and providers (Table 1). We focused on bi-directional communication as a core component of virtual care, either as a supplement or as a replacement to in-person care. Lastly, we also focused on literature from high-income countries to ensure applicability of findings to provincial health and social care systems in Canada.

Based on these operational definitions and the review objectives, a search strategy was designed and conducted by a health sciences librarian in MEDLINE including in-process and other nonindexed citations on Ovid, EMBASE on Ovid, CINAHL on EBSCO, Scopus and Epistemonikos on June 20, 2020, and an updated Scopus search was conducted on July 25, 2020 (see Supplementary Table S1 for full search strategies). The databases were selected based on subject area coverage and functionality.[25,26]

A mixture of subject headings, text words, and other search fields were used to search for our 2 key concepts of virtual care and underserved populations. Several search filters and search strategies in other published reviews were consulted to inform the development of these concepts.[27–33] To retrieve reviews, a third concept to search specifically for reviews was added to the MEDLINE, EMBASE, CINAHL, and Scopus search strategies, and database filters were used in Epistemonikos. To create the review concept, a combination of several filters was consulted and adapted for use.[34–37] A date limit of 2005 to present was applied to all database searches except Epistemonikos, as this was determined to be the most relevant time in the development of virtual care during which the literature would have been usefully reviewed. A total of 14 028 records were retrieved. Retrieved records were deduplicated using Endnote reference management software (version x9, Clarivate)[38] and imported into the Covidence platform (version summer 2020)[39] where further deduplication occurred resulting in a total of 9666 records.

Five members of the research study team (JKF, KD, PC, SB, and TTJ) formed the review team and each independently reviewed a

Table 1. Inclusion and exclusion criteria

	Inclusion criteria	Exclusion criteria

Types of participants	• Studies on human populations
	• At minimum 50% of studies included in the review have objectives focused on underserved populations, equity, vulnerable populations defined as:
	  • People of older age (age 50+)
	  • People identifying as nonheterosexual or noncis gender
	  • Racial or cultural minority groups
	  • Immigration status (recent immigrants to country of focus, refugees)
	  • People with low income, low socioeconomic status, or poverty
	  • People living in rural or remote areas
	  • People who are homeless
		• Animal studies/models, nonhumans or vertebrae studies
		• Reviews with focus on a population group outside of those in our inclusion criteria
		• Reviews with less than 50% of included studies focused on population groups within our inclusion criteria
		• Reviews focused on general populations or clinically at-risk population groups (eg, individuals with risk factors specific to certain diseases not in our listed underserved population groups)

Concept	• At minimum 50% of studies included in the review have objectives focused on health care focused technologies used to enable bi-directional patient-provider communication remotely (ie, not in-person)
	• Reviews focused on virtual care interventions as defined in Section 2.4.1 in the World Health Organization's Classification of Digital Health Interventions (consultations between remote client and healthcare providers)[42]
	  • Telephone communication
	  • Video communication
	  • Text messaging (asynchronous)
	  • Email messaging (asynchronous)
	  • Portals, apps, and other applications for bi-directional patient-provider communication
	  • Remote monitoring tools with feedback loop and bi-directional patient-provider communication through one of the above modalities
	• Reviews focused on virtual care if it is being provided adjunctively with in-person care. Virtual care does not necessarily need to replace in-person care, but can be a supplement to in-person care process
	• Reviews focused on individual, neighborhood, organizational, policy, and/or systemic level barriers or strategies to increase adoption, access, and utilization
		• Reviews of technological interventions that do not explicitly focus on replacing in-person care or bi-directional provider-patient communication (eg, patient portals that only focus on providing patients with access to their health information, functionality, provider-provider communication tools, education, prevention, health promotion apps without 2-way communication, etc.)

Context	• Reviews focused on health system settings in high-income countries (as defined by The World Bank[43]) • Reviews focused on health system settings with high- and middle-income countries together	• Reviews focused on middle income and/or low-income countries

Types of evidence	• Any of the following methods-driven literature reviews:
	  • Systematic reviews
	  • Scoping reviews
	  • Meta-analyses
	  • Meta-syntheses
	  • Realist reviews
	  • Critical interpretive syntheses
	• English-language studies only
		• Any reviews not listed in the inclusion-criteria list or nonmethods-based reviews or knowledge syntheses
		• Primary research studies using qualitative and quantitative methods (eg, randomized controlled trials and case studies)
		• Opinion papers, commentaries, editorial reviews, and letters to the editor
		• Study protocols, theses, dissertations, and conference abstracts

sample of 100 study titles and abstracts to test the screening guide inclusion and exclusion criteria. Following discussion and revisions, a revised screening guide was created, and the full list of 9666 study titles and abstracts were screened (each title and abstract was screened by 2 reviewers randomly assigned to each study by the Covidence software). All conflicts were resolved via discussion as a group. Following title and abstract screening, 131 articles were moved forward for full text review. Each article was reviewed by 2 reviewers and the primary reason for exclusion was noted. Any conflicts were resolved through group discussion. Figure 1 presents the PRISMA Flow Diagram of the scoping review.

To supplement the search, reference tracking was conducted using Scopus, however no additional studies were identified. Furthermore, an additional Google Scholar search was conducted by a

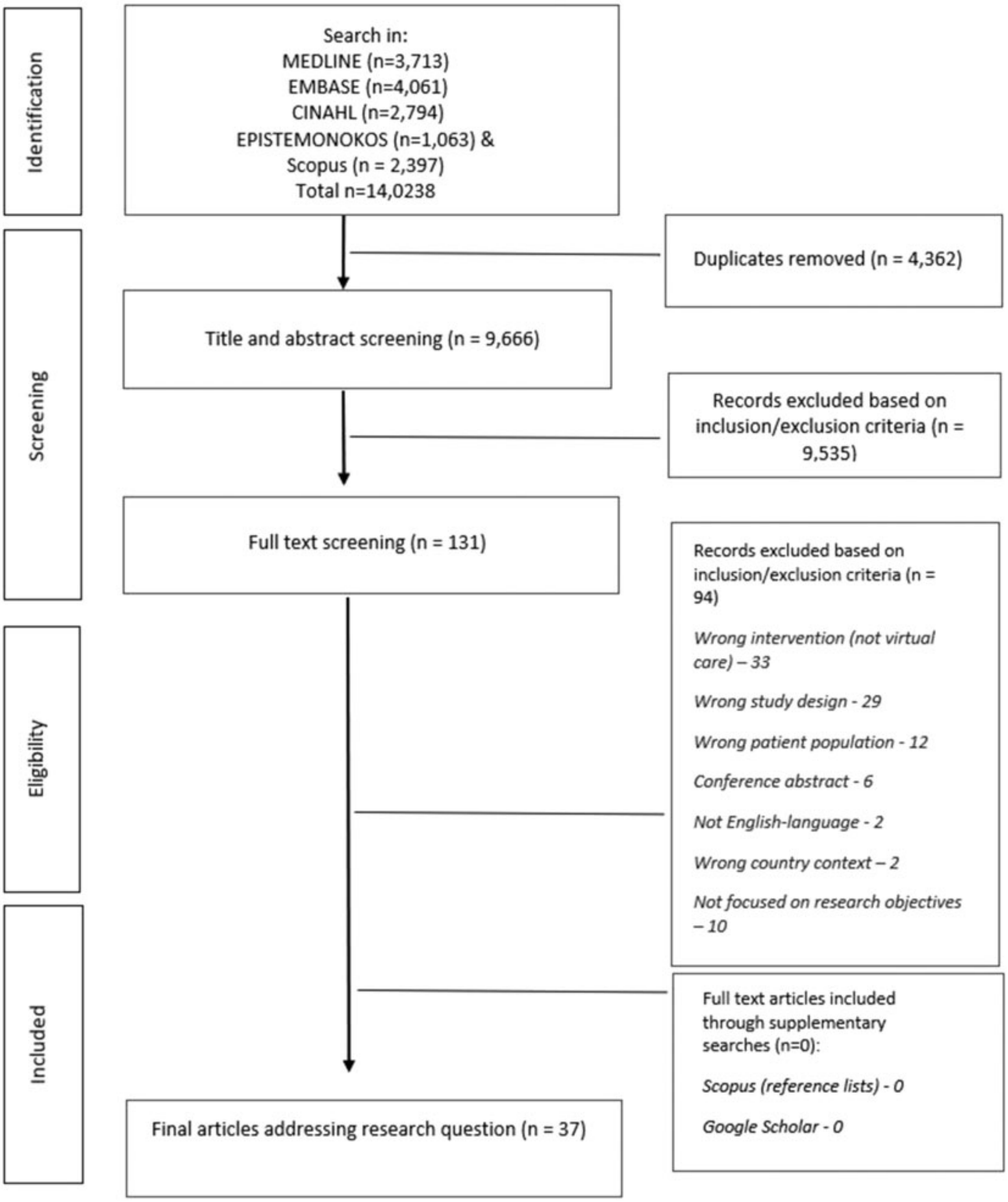

Figure 1. Flow of scoping review.

single reviewer who ran 81 searches between October 16 and 29, 2020. The first 3 pages on Google Scholar were reviewed for each search run for any relevant studies that had not already been included. These supplementary searches identified no additionally relevant citations.

Charting, collating, summarizing, and reporting the results

A total of 37 review studies were included for abstraction and charting of data. Two review studies were used to pilot the abstraction tool with each of the reviewers (JKF, KD, PC, SB, and TTJ) to establish consistency in abstraction. Key data points of abstraction included type of review, review objectives, description and type of virtual care technology, study population(s), key strategies and challenges to access to, uptake of, or engagement with virtual care, and a summary of other outcomes and conclusions. Following discussion, the abstraction tool was finalized (see Supplementary Table S2) and the total number of reviews was divided between reviewers (JKF, KD, PC, RDS, SB, and TTJ) for abstraction. Due to the high consistency of abstracted data across reviewers within the pilot, each of the remaining reviews was abstracted once by reviewers.

Data abstraction related to strategies and challenges were compiled for each review paper. Next, each review paper was categorized into a population group or intersecting population group category (Supplementary Table S4). From this table, analysis was conducted on the commonly occurring strategies and challenges across population groups and key thematic categories were extracted and developed.

Following abstraction and thorough discussion, key themes of strategies and challenges to promote access to, uptake of and engagement with virtual care for underserved population groups were abstracted and summarized in tables (Supplementary Tables S3 and S4, Table 2). The analysis of strategies and challenges were informed by 2 distinct ideas in the literature on disparities in virtual care. First, our analysis was based on the well-documented observation that the benefits of digital technologies accrue to those who have the resources to adopt and use them.[40] In this way, disparities in virtual care develop over time, as outlined in detail in the literature on the digital divide.[18,41] Second, we sought to articulate a more specific and practically oriented set of observations about whether and how people from underserved communities engage with virtual care. To do so, we adopted the logic from Veinot et al[3] in which various phases of engagement need to be understood separately. Specifically, we examined "access to, uptake of, and engagement with" virtual care technologies drawing on the theoretically informed notion that each of these 3 phases would involve challenges and strategies. Building on these theoretical foundations, we sought to articulate challenges as circumstances that interfere with access to, uptake of, and engagement with virtual care, and strategies as specific actions that can be taken to enhance access to, uptake of, and engagement with virtual care.

RESULTS

Characteristics of included studies

Supplementary Table S3 provides a summary of included reviews ($n = 37$). The vast majority of studies were systematic reviews ($n = 26$), followed by scoping reviews ($n = 6$), meta-analyses ($n = 2$), realist reviews ($n = 2$), and critical review ($n = 1$). Most articles were published in or following 2016 ($n = 30$) and were published in the United States ($n = 11$) and Canada ($n = 9$).

Equity was explicitly stated as a consideration in 10 of the included reviews.[20,24,44–51] Overall, most reviews were focused on older adults ($n = 16$),[12,20,44,52–64] followed by individuals living in rural or remote areas ($n = 12$)[12,24,46,49,52,65–71] suggesting the in-depth study of these population groups individually or in conjunction with other or intersecting population groups. Similarly, challenges and strategies for Indigenous peoples were reviewed in a total of 9 papers,[12,24,45,46,49–51,66,72] as well as for racial or cultural minorities ($n = 9$).[24,44,47,48,69,73–76] No reviews were found that focused specifically on gender identity. We did not examine the overlap of primary studies across reviews in our extraction and analysis that may be potentially present among reviews addressing similar population groups and topics.

Five papers explicitly stated a theoretical perspective.[20,24,48,63,68] Theories referenced were: (1) Diffusion of Innovation,[63] (2) Health Equity Impact Assessment framework,[20,77] (3) Pettigrew and Whipp's model of strategic management of change,[68,78] (4) Reach, Efficacy, Adoption, Implementation, Maintenance (REAIM) framework,[24,79] (5) the Template for Intervention Description and Replication (TIDieR) framework,[24,80] (6) the Place, Race, Occupation, Gender, Religion, Education, Socioeconomic status, Social capital (PROGRESS) framework,[23,24] and (7) Glanz' health behavior theories.[48,81]

Video communication was examined in a total of 30 reviews,[12,20,24,46–49,51–53,55–57,59–73,75,82] followed by telephone communication ($n = 22$),[12,20,24,46,48–51,55,56,60–64,67–70,74–76] text messaging ($n = 17$),[24,45–50,60,61,68–70,72,74–76,82] and e-mail ($n = 10$).[47,61,65,67–70,72,75,82] Other virtual care modalities were also focused on in included reviews such as patient portals, remote monitoring, mobile apps, and web-based interventions.

Key objectives of included reviews included an assessment of the design, usage, acceptance, feasibility, implementation, and effectiveness of virtual modalities and/or interventions using virtual tools. Reviews also assessed impact, mapped evidence on culturally competent components and approaches, and directly evaluated barriers and enablers to delivery of virtual care to underserved population groups.

Strategies and challenges

Supplementary Table S4 presents challenges and strategies for each underserved population group described in the literature. While most reviews were focused on one underserved population group ($n = 26$),[20,45,47,50,51,53–65,67,68,70–72,74–76] others ($n = 11$)[12,24,44,46,48,49,52,66,69,73,82] often examined and reported challenges and strategies collectively on multiple population groups or intersecting identities (eg, older adults and individuals living in rural or remote areas). These reviews are presented separately within Supplementary Table S4.

For Indigenous peoples, commonly reported challenges included technology not being culturally and/or contextually relevant, low trust in relationships with providers and technology, and poor access to Internet and technology. Strategies to mitigate these challenges included ensuring cultural safety, relevance and appropriateness of technology and provided services, and engagement of participants and community in development of technology-embedded health services. Similar challenges and strategies were identified for racial or cultural minorities. For individuals living in rural or remote areas, the focus for included reviews was on funding, infrastructure, and governance challenges, with some unique strategic recommendations on what could be done to alleviate these challenges. For older adults, challenges and strategies focused on the design and customization of the technology, self-efficacy and digital literacy, and trust and acceptance.

Table 2 summarizes commonly occurring challenges and recommended strategies across underserved population groups included in this review.

DISCUSSION

This scoping review of reviews provides a summary of challenges and strategies to improve access to, uptake of, and engagement with virtual care for underserved communities as identified through 37 published reviews. The primary contribution arising from the review is the clear statement of common challenges and strategies across underserved communities, which inform the development of an agenda for research and policy oriented to enhancing the meaningful use of virtual care among members of these communities. In this discussion section we outline the significance of these challenges and strategies and present an agenda for future work on this topic.

Much past work has generated conceptual resources for understanding why people from particular communities engage less with digital technologies relative to those who experience greater privilege.[6,40] Drawing on foundational work on the digital divide, Fang et al[83] presented a framework informed by theory on intersectionality that outlined the influence of social positioning on access to technology, along with socially conscious facilitators to enhance access for structurally marginalized groups. Their work provides important

Table 2. Common challenges and recommended strategies across underserved population groups

Thematic category	Challenges	Strategies
Individual level		
1. Person's orientation toward health-related needs	• Lack of perceived effectiveness of technology in meeting needs • Competing health and social needs	• Develop health literacy initiatives
2. Person's orientation toward health-related technology	• Preference for in-person care • Lack of trust (in technology, health care providers, health system, or privacy protections) • Lack of interest in technology	• Build accessible, trustworthy privacy policies • Enable anonymity • Counteract stigma of health-related issues addressed by technology applications
3. Person's digital literacy	• Low self-efficacy in using technology • Lack of technology training opportunities	• Develop digital literacy training initiatives located in communities • Provide easily accessible technical support
Technology level		
4. Technology design	• Lack of compatibility with other technologies or applications • Lack of clarity in operating instructions • Lack of inclusive, user-friendly interface • Inability to provide input into design • Lack of cultural safety • Lack of adaptability	• Focus on inclusive design or codesign of technologies • Ensure cultural, religious, and contextual relevance of technologies • Gamification of design • Focus on accessible design • Ensure compatibility with low-cost devices • Ensure interoperability and compatibility with other technologies or applications • Enable multiple modalities of communication or interaction • Facilitate networks through technology use
Health system level		
5. Health system structure and organization	• Low health care provider acceptance of technology • Lack of health care provider training opportunities • Challenges building technology into health care workflows • Policy barriers to using technology in health care (eg, privacy policies) • Lack of infrastructure • Costs of implementation and use	• Make connections between technology and other health care programs • Make low-technology options to access care available • Provide cultural safety training in technology-enabled care • Maintain opportunity for in-person care and mixed-modality care • Enable direct communication between patients and providers • Employ culturally or racially similar providers for communities • Financially incentivize health care providers to use technology • Fit technology into provider workflows • Build opportunities to adapt technology
Social/structural determinants level		
6. Social and structural determinants of access to technology-enabled care	• Lack of available social support • Poor access to internet or cellular connectivity • Unaffordable out of pocket costs • Systemic racism • Inaccessible health care	• Employ culturally safe methods of implementation • Make high speed Internet access available • Make digital devices available

insights into the causes of the digital divide and policy-level strategies to mitigate the digital divide at the population level. Although a very helpful foundation for understanding why and how the digital divide exists among the communities on which we are focused in the present paper, their contribution, and others like it provide less insight specifically in terms of virtual care.

Other frameworks have focused more specifically on virtual care. For example, a series of contributions have identified phases in the technology use process at which engagement with virtual care specifically might break down. Veinot et al[3] proposed a framework illustrating how people from underserved communities might experience barriers in access, uptake, adherence, and effectiveness of virtual care interventions. Other contributions have outlined the various levels of influence that need to be acknowledged to adequately understand why and how people from underserved communities might be excluded from virtual care. For example, Crawford and Serhal[14] outlined the influence of macro-social, health system, and individual-level influences on whether and how people from underserved communities use and maintain interaction with virtual care. Building on these bodies of literature, the unique contribution of our study is to synthesize empirical research on these topics and generate a clear and practically oriented statement of challenges and strategies that look across the phases of technology use and across levels of influence from the individual to the societal.

At the individual level, we identified that virtual care usage is subject to 3 important influences as described in Table 2. These 3 challenges provide additional nuance to the literature examining the individual-level influences on how and why people from underserved communities engage with virtual care. Individual-level influences are essential to understand, but of course must be placed into broader social context for a comprehensive understanding of how and why individuals access virtual care.

Beyond these individual level challenges, we therefore also identified challenges at 3 additional levels as outlined in Table 2: the technological level, the health system level, and the social/structural determinants level. Each of these levels of influence represent a challenge stated in a single category. These inter-related levels of influence shape the interest and possibility of people to engage with virtual care. Resonating with more advanced theoretical developments on the digital divide,[41,84] we emphasize 2 important points to frame the significance of these levels of influence. First, their impact should not be understood independently, but in confluence across the levels. Just as the mechanisms through which the social determinants of health have their impact must be understood as acting through multiple, related, intersecting pathways,[18] so too these influences on engagement with virtual care must be understood as always intersecting in how they encourage or discourage use of virtual care.

The second point we emphasize is that the levels of influence we identify here might point to very different specific challenges and strategies for specific communities of focus. For example, our literature search strongly suggests that the unique history of colonization and inter-generational trauma in settler states means that efforts to engage Indigenous Peoples in the use of virtual care requires very specific consideration.[12,24,45,46,49–51,66,72] The meaning and significance of cultural safety in virtual care for people from Indigenous communities is very different than it is for white, older North American settlers living in rural areas. The themes are thus to be understood as categories requiring deep consideration in terms of specific implications for specific communities.

The implication of these inter-related levels of influence is the need for comprehensive strategies to enable meaningful engagement with virtual care among people from underserved communities. Simply making broadband Internet available will not suffice, but must be understood in the context of influences related to a person' orientation toward health and technology, the accessible design of a digital tool, adequate funding and availability of care, and the time and infrastructure required. Looking across these levels both provides a comprehensive understanding of engagement with virtual care and points toward a set of high-level strategies for investment among health systems and policymakers. Moreover, virtual care does not exist on its own, but is situated within and delivered through existing health care systems. As such, to deliver equitable virtual care, equity must also exist in the underlying health care system that supports the delivery of virtual care. If access to, uptake of, and engagement with nonvirtual health care services in the health care system are inequitable, it is likely that equitable access to, uptake of, and engagement with virtual care within the same health care system will also be limited.

We suggest that there are 4 important directions for policy development that arise from our findings. First, health systems and governments should invest in much more comprehensive approaches to digital health literacy education and training, in ways that are linked to the delivery of virtual care. Digital health literacy is not simply digital literacy, or health literacy, but the intersection between the 2. Drawing on the individual level of influence in our study findings, this approach will inform the evolution of the individual's orientation in relation to digital health where such evolution is possible and desirable.

Second, health systems and governments should build incentives for technology providers to make deep investments in inclusive digital health technology design. Inclusive design means designing with people who are not the "typical" patient and building technologies that can meet widely diverse needs. Technology companies are not naturally incentivized to work in this way, and policy incentives will be essential.

Third, health systems and governments should put in place policies that support and incentivize inclusive digital health care. This means planning virtual health care services in ways that are culturally safe, affordable, and accessible to people from underserved communities. Accomplishing this goal might require novel programs, such as those making digital devices available to people who do not otherwise have access to them.

Fourth and finally, health systems and governments must invest in infrastructure that is affordable and accessible to people from underserved communities. The most obvious consideration here is broadband Internet that is available in all communities, but the point about infrastructure extends to affordable digital devices, the availability of cellular connectivity and physical infrastructure such as safe spaces to conduct visits as well. Investments in infrastructure require a long-term perspective on accessible virtual care.

This study had some limitations. First, due to feasibility constraints, we did not evaluate the quality of reviews that were included in this study. Second, given the wide range of approaches utilized in reviews, as well as the sizable number of studies included in each review, it was not always clear or feasible to determine the specific technology modalities under investigation and whether they were bidirectional and aligned with our operational definition of virtual care. In turn, we may have inadvertently included reviews with studies that were focused on eHealth or telemedicine more generally with a focus on nonbidirectional modalities. Similarly, reviews differed in their focus on specific or multiple population groups, and in how they summarized their findings. We also acknowledge that one's experience of health care is shaped by intersecting factors (eg, race, socioeconomic status, education, age, etc.). Because of these reasons, we were unable to conduct our analysis based on mutually exclusive categories of population groups. Furthermore, due to feasibility constraints, we were unable to focus on all underserved populations, such as individuals with disabilities, and as a result, findings from this review may not be applicable to all undeserved population groups. Lastly, due to the nature of scoping reviews, we were unable to determine the effectiveness of strategies to resolve challenges that were mentioned. A valuable next step from this scoping review that would add to the literature would be a systematic review to determine the effectiveness of strategies used to increase access to, uptake of, and engagement with virtual care.

CONCLUSION

Overall, findings from this study suggest key areas of challenges and strategies that can be implemented to enhance access to, uptake of, and engagement with virtual care for underserved population groups. We have identified 6 thematic areas into which challenges and strategies can be grouped, and we emphasize the unique nature of challenges and strategies within these thematic areas for specific underserved communities. Although the policy approaches suggested by our review are likely to be difficult to achieve in a given policy context, they are essential to a more equitable future for virtual care.

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AUTHOR CONTRIBUTIONS

SB: conceptualization, data curation, formal analysis, investigation, methodology, project administration, supervision, validation, writing original draft, and writing review and editing. JF, TTJ, KDV, PC, and RDS: conceptualization, data curation, formal analysis, writing review, and editing. KF: conceptualization, data curation, investigation, methodology, project administration, validation, writing review, and editing. SS and SC: conceptualization, project administration, writing review, and editing. SH: conceptualization, writing review, and editing. RSB: conceptualization, funding acquisition, resources, investigation, supervision, writing review, and editing. ES: conceptualization, data curation, formal analysis, investigation, methodology, project administration, supervision, resources, validation, writing review, and editing. JS: conceptualization, funding acquisition, data curation, formal analysis, investigation, methodology, project administration, supervision, resources, validation, writing original draft, and writing review and editing.

SUPPLEMENTARY MATERIAL

Supplementary material is available at *Journal of the American Medical Informatics Association* online.

CONFLICT OF INTEREST STATEMENT

None declared.

DATA AVAILABILITY

All underlying data for this review article are available in the article itself and online Supplementary Tables.

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