

A scoping review of the ethical issues within telemedicine: Lessons from COVID-19 pandemic

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Abstract

Introduction: The use of telemedicine in medicine to reach remote patient populations, monitor chronic disease states, and prevent spread of the COVID-19 virus results in a needed pause for reflection on the ethical issues brought forth by e-health technology. The aim of this scoping review was to consolidate the main ethical concerns in telemedicine into a framework that can be used to guide training, policies, and further research as these platforms are implemented.

Methods: Two scoping searches were performed using Medline and Google Scholar for publications that address the ethical implications in telemedicine within the last 25 years. Protocol for Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) was followed.

Results: We compiled 20 articles published across the world in various contexts of telemedicine (i.e., pilot studies, literature review, chronic disease reports, etc.). Our literature review noted 4 areas of ethical concern: confidentiality, accessibility, effectiveness, and patient-physician relationship.

Conclusion: The success of telemedicine is dependent on patient selection and adaptability. The use of telemedicine must be accompanied by clinician competency training that addresses technology issues such as privacy and security, informed consent, observation using remote technology, and strategies to determine which patients are or are not suited for the platforms.

KEY WORDS: COVID-19 pandemic; healthcare access; informed consent; medical ethics; patient physician relationship; remote consultation; telemedicine.

INTRODUCTION

Technology has impacted many aspects of life, from general business services to grocery shopping. Medicine is no exception, as technological advancements have permitted new versions of care to emerge. Recent data suggests a majority of individuals (72%) who use the Internet has sought healthcare information [1, 2], thus, the emerging field of telemedicine is becoming increasingly prominent. Noting definitions from sources such as the World Medical Association (WMA) and World Health Organization (WHO), telemedicine is defined in this article as “the practice of medical consultation between physicians and patients using telecommunication systems over some distance” [2–6]. It is important to have a concrete definition of telemedicine and to distinguish between closely related fields such as telehealth. Whereas telehealth broadly includes the availability of health information on technology platforms, telemedicine is specific to the two-way communication between physicians and patients from distant sites during the provision of clinical care [2, 7].

Telemedicine has the potential to improve health care accessibility, patient satisfaction, and quality of care among patients, while also actively monitoring chronic disease, efficiently utilizing physicians’ time, and facilitating communication amongst medical professionals. The practice could address several barriers currently preventing populations from obtaining health care. For example, circumstances may make travel to a medical facility unfeasible and near impossible. Expansive physical distance makes it inconvenient and costly for anyone to attend face-to-face appointments, especially patients in isolated and rural communities or with financial concerns [6, 8, 9]. Immunocompromised and other homebound patients face another dilemma, weighing their need for medical attention against the safety of visiting health care facilities. Recently, the global COVID-19 pandemic poses additional reasons to avoid face-to-face contact (e.g., PPE shortages, on-site facility capacity limits, physical and social distancing to curb viral transmission risks) [10, 11]. In the setting of chronic disease, prevention and monitoring are critical to successful tre-

TAKE-HOME MESSAGE

COVID-19 pandemic has opened the door for wide adoption of telemedicine that is likely permanent. As such, telemedicine’s associated ethical matters need forethought and attention. Universal training should promote competency in using telecommunication systems, flexibility determining the appropriateness of use, and additional strategies to uphold quality of care. Continuing education should be offered in light of changing regulations and technologies.

Competing interests - none declared.

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atment, thus they should not be eliminated or reduced. However, regularly attending check-ups can be time-consuming and inconvenient for patients, particularly those who live in rural or remote areas, or regions which lack their specialty providers [6, 10, 11]. Telemedicine is a viable alternative that saves time for both the patient and physician provided it does not negatively impact quality of care. Questions have arisen as to how confidentiality, accessibility, effectiveness of administration, and the patient-physician relationship are altered by technology. Proactive reflection on telemedicine is essential to ensure these key ethical standards of patient care are upheld in telemedicine as in traditional settings [4, 6, 8, 14]. The aim of this paper was to review relevant articles, compile the findings into a cohesive reflection, and propose possible solutions to the main ethical concerns in telemedicine.

METHODS

Study design and procedure

This study was completed as a 'scoping review'. This style is best suited to answering broader questions on a topic when the existing literature has not yet been comprehensively reviewed or exhibits a complex nature not suitable for precise systematic review. Our topic, the ethics of telemedicine, does fit these criteria. Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) was followed [15–17].

Search strategy and selection criteria

Multiple structured searches were used to categorize existing literature on telemedicine in terms of nature, key points, and relevancy. During the summer of 2020, Google Scholar and MEDLINE were searched using the following keywords: 'telemedicine', 'telemedicine ethics', 'ethical concerns', 'chronic disease monitoring', 'virtual health consultation', 'technology and continuity of care'. Articles in any language from the past 25 years were included if they met the following criteria: original article, journal article, case report, re-

view article including meta-analysis, clinical trial, guidelines, human species. The abstracts of these articles were read and noted for publication year and ethical topics that were initially chosen from personal and professional conversation points concerning virtual medicine (e.g., privacy, confidentiality, informed consent, patient-physician relationship).

A secondary search of any type of article using the same strategy but with new search terms relating to socioeconomics and trial studies was also performed: 'access to telemedicine', 'socioeconomic factors in telemedicine', 'telemedicine trials', and 'disparities in telemedicine'.

Papers on ethics containing abstracts and papers with no abstracts were fully read for further exploration of ethical content (including dilemmas and posed solutions). Articles within the reference lists of the retrieved articles were also included for review when relevant. The additional articles were included when they added a perspective on the topic that was previously absent from the reference list.

Methods for applying selection criteria

One review author (JX) ran the search strategy and excluded any obviously irrelevant titles. To reduce risk of bias, manuscripts were screened for eligibility by two independent reviewers (AW, KAB), with a third available in the event of disagreements. Results were grouped and analyzed qualitatively.

RESULTS

Results of the research

During the initial search, we screened approximately 50 titles and abstracts and applied selection criteria to 31 full papers. 16 of these 31 full papers were excluded: 4 as they were abstracts only, 11 as they did not meet our inclusion criteria, and 1 as it was a duplicate. In the second search, we screened an additional 15 full papers and excluded 7 of these, as they did not fit our inclusion criteria. Major reasons as to why papers did not meet our criteria were that the paper discussed practical aspects of telemedicine rather than ethicality (approximately 60%) or that the

paper discussed other aspects of virtual healthcare that were outside of our definition of telemedicine (approximately 40%). This left 22 papers that met our criteria to be included in the scoping review. Of those, 2 papers were excluded due to lack of relevant topic insight (see Figure 1).

Characteristics of included papers

Of the included papers, 6 were expert opinions (2 consensus reports), 4 were reviews (1 systematic), 3 were survey reports, 2 were qualitative studies, 2 were clinical trials, 1 was an observational study, 1 was a focus group study, and 1 was an international association publication (see Table 1 for specific descriptions). Most commonly telemedicine was in the context of the following medical specialties: medical ethics, cardiology, chronic disease, and surgery. Five articles were specifically focused on COVID-19. The collections' scope extended internationally, including publications from the United States (n = 10), United Kingdom (n = 2), Australia (n = 2), Italy (n = 2), Canada, Germany, Bosnia, and Korea. The following ethical themes were identified: confidentiality, accessibility, effectiveness, and the patient-physician relationship.

DISCUSSION

Confidentiality

Patient privacy, confidentiality, and security of information are important aspects of healthcare. They are just as, if not more, important in telemedicine due to the added technology component of remote clinical care delivery (i.e., data transmission, storage, security, e-consent). Patients have often reported concern about the confidentiality of their personal information in the setting of telemedicine [2, 4]. Especially with asynchronous information exchange, patients are not always aware of who will be responding to or viewing this information [1]. Sharing of information across several platforms increases the likelihood of breaching confidentiality, whether accidentally or via third-party hackers [1, 4, 6, 14]. Breaches are a viable operational concern that can be resolved by extra attention to security measures and upgrades to technological systems to ensure the safety of personal health and identifying data. This includes ensuring proper protocols to access patient data, encryption, or identification techniques such as facial recognition [5, 10, 18]. Aligning with the fact that healthcare providers are responsible for the quality of care they provide,

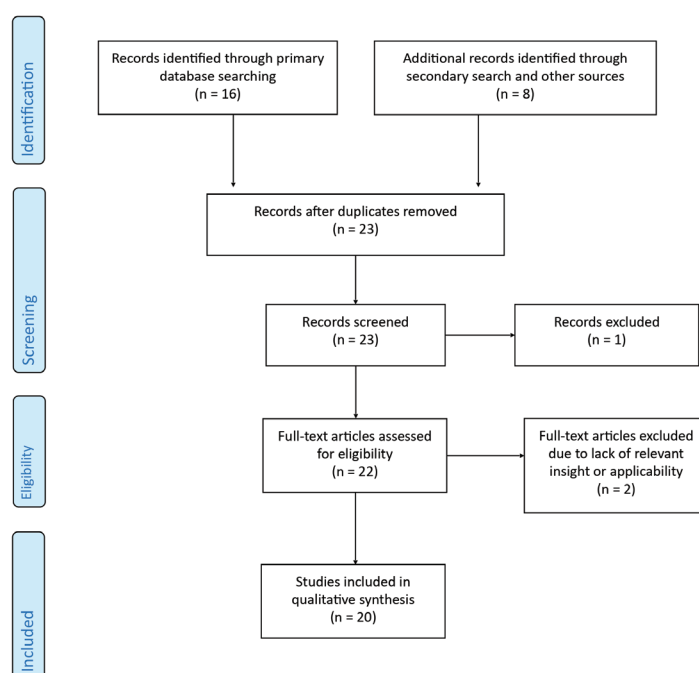


Figure 1. Diagrammatic representation of the review.

Table 1. Studies included in the review ($n = 20$).

Ref #	Authors and year	Country of publication	Category	Main findings	Key ethical themes
1	Mehta (2015)	United States	Expert Opinion	New technology has to be effective for improving Patient-doctor relationship and curb threats to patient privacy.	Patient Physician Relationship, Privacy, Effectiveness,
2	Moghbeli et al. (2017)	Bosnia	Review Article	Telemedicine should be used by therapists.	Patient Physician Relationship, Privacy, Informed Consent, Effectiveness
3	The World Medical Association (2018)	International Assembly, Denmark	Policy Statement	Telemedicine should be supplemental to physical encounters.	Physician Patient Relationship, Privacy, Informed Consent, Accessibility
4	Stanberry (2001)	United Kingdom	Expert Opinion	Successful implementation of telemedicine requires proactive measures.	Informed Consent, Privacy, Universal Standards
5	Eliasson & Poropatich (1998)	United States	Expert Opinion	Performance improvement initiatives should focus on areas of medical practice that are high volume, problem prone, or high cost.	Universal Standards, Data Security, Informed Consent
6	Clark et al. (2010)	United States	Review Article	Telemedicine can be medically, legally and ethically justified if proper guidelines are established nationally.	Informed Consent, Beneficence, Justice, Historical Background
7	Silverman (2003)	United States	Review Article	Telemedicine needs federal and international leadership to establish a comprehensive ethical standard.	Universal Standards, Patient Physician Relationship, Legality, Privacy
8	Lavrentyev et al. (2007)	United States	Observational Study	Telemedicine was implemented effectively for pre-operative and postoperative appointments.	Informed Consent, Effectiveness, Benefits
9	Hiratsuka et al. (2013)	United States	Focus Group Study	Telemedicine is effective in bridging physical distance, but cultural and social barriers exist.	Patient Physician Relationship, Continuity of Care, Accessibility, Chronic Disease
12	Demolles et al. (2004)	United States	Clinical Trial	Telemedicine showed in increase to CPAP adherence and reduction in symptoms.	Effectiveness, Chronic Disease
13	Friedman (1996)	United States	Clinical Trial	Telemedicine improved health outcomes and most patients reported satisfaction.	Chronic Disease, Effectiveness
14	Chaet et al. (2017)	United States	Expert Opinion	Telemedicine needs to match the modality of care on a case-by-case basis.	Informed Consent, Privacy, Adaptability, Continuity of Care
18	Nittari et al. (2020)	Italy	Review Article	There are ethical gaps in telemedicine regarding the lack of homogeneous regulations and patient access to their data.	Informed Consent, Regulations, Privacy
19	Noh et al. (2014)	Korea	Qualitative Research	Telemedicine platforms should be simplified to increase accessibility and effectiveness.	Accessibility, Effectiveness
20	Estacio et al. (2017)	United Kingdom	Survey Report	Improving health literacy improves access to digital healthcare.	Accessibility, Health Literacy
21	Bramstedt (2016)	Australia	Qualitative Research	Overcoming logistical issues makes telemedicine easily accessible to the general public.	Accessibility, Privacy, Effectiveness
22	Loeb et al. (2020)	United States	Expert Opinion	Accelerated adoption of telemedicine has been critical to the safe and effective continuation of this orthopedic department.	COVID-19, Guidelines, Training
23	Boehm et al. (2020)	Germany	Survey Report	Many urological patients prefer to have telemedicine appointments to in-person due to preexisting risk factors for COVID-19.	Effectiveness, Demographic Analysis, COVID-19
24	Gill et al (2020)	Canada	Survey Report	Oncologists concerned about the safety of their patients, family members, and selves preferred using telemedicine during the pandemic.	COVID-19
25	Blignault & Kennedy (1999)	Australia	Expert Opinion	Building video-conferencing skills and disseminating resource materials are effective training measures for telemedicine.	Training, Accessibility

they should only use telemedicine systems and platforms with robust security standards that reflect regional regulatory considerations (e.g., the Health Insurance Portability and Accountability Act in the United States or the General Data Protection Regulation in the European Union) [4, 9, 14, 18, 20].

Accessibility

Telemedicine has the potential to make healthcare more accessible to some patients, but there is also the risk of isolating others, making equity issues an ethical concern. Not all patients have the technology required to utilize telemedicine. Limitations to access include affordability of such technology [1–3, 14, 20]. For example, some patients lack reliable or high-speed internet access and/or lack cell phones. Some have cell phones which are not smartphones or use older technologies and are not upgradeable to be compatible with telemedicine software platforms and video-enabled apps. Some patients have cell phones but lack data plans. Some patients have impairments such as vision, hearing, or dexterity that render use of Smartphones and some telemedicine platforms difficult [14, 20]. There can also be socio-cultural barriers (Amish, Orthodox Jews), or lack of familiarity and comfort with using such systems [1–4, 6, 14, 18–20]. Considering the above, the operationalization of telemedicine makes it a tool that is personalized, rather than generalized. Clinicians who initiate telemedicine should be wary of how they might accentuate or contribute to pre-existing socioeconomic gaps and take appropriate proactive measures to address and prevent such issues [20].

Effectiveness

It is important that the effectiveness of telemedicine is evaluated in a cost-benefit analysis because telemedicine is more than an economic issue (cost effectiveness) [1, 3–6]. The patient must be the primary beneficiary and if this is not the case, telemedicine should not be used regardless of the physician's advantage. Our review notes that telemedicine has exhibited effectiveness in various healthcare

settings [6, 8–11]. For example, a US study has shown telemedicine facilitated affordable and accessible preoperative surgical consults for patients in correctional facilities [8]. Telemedicine has also been shown to be an effective tool for screening global living kidney donor candidates for transplant teams [21]. In the setting of the COVID-19 pandemic, telemedicine has been able to effectively ensure access to contact-free continuity of care for orthopedic surgery patients, urology patients, and oncology patients among many others [22–24]. As telemedicine is further implemented into healthcare, additional studies should be employed in parallel so the effectiveness can be continually monitored and methods adjusted [3–5, 25].

As mentioned, successful telemedicine is personalized, not one-size-fits-all. Any implementation of technology in healthcare should emphasize the importance of a case-by-case approach to determining when to use telemedicine, how to use it in the best interest of the individual patient, and when to defer to a face-to-face consult [3–4, 14]. The responsibility remains with the physician to ensure they are meeting the same ethical standards as they would in traditional settings, so they must acknowledge the limitations posed and be highly competent in adapting their recommendations [1, 4–6, 8]. While telemedicine has potential to improve care, this can be diminished if physicians fail to account for individual variation. For example, a tech-savvy patient with a busy career may benefit from telemedicine's time savings with relatively little cost as this patient likely already has all the digital tools enabled. However, a hearing-impaired patient without technology-enabled devices would likely find his/her experience stressful due to inability to hear the provider and trouble navigating the platform [1]. A stay-at-home parent might need an appointment time that coincides with their child's nap schedule in order to gain a 'quiet zone'. Some patients might have Internet bandwidth that is optimized at only certain times of the day and this would need consideration for telemedicine scheduling. This brea-

depth of examples highlights the importance of clinicians to be cognizant of the suitability of each patient to telemedicine solutions.

Patient-physician relationship

A therapeutic alliance based on trust is vital between doctors and their patients [2, 18, 20]. There is concern that the physical distance innate to telemedicine could depersonalize the doctor-patient relationship [2-4, 6, 7, 9]. With transparency, trust, and respect as key components of this relationship, there is a need to preserve these elements in settings which lack physical contact between the patient and clinician. For example, transparency and trust are facilitated by a robust (yet remote) informed consent process that can. Accordingly, lay language consent documents that describe data collection, storage, and sharing can be provided in advance to patients via email or postal mail giving ample time for reading, rather than moments prior to the online session. Trust and respect are also facilitated by lay language explanations rather than tech-savvy jargon about app design. Similarly, privacy policies should also be written in common terminology, avoiding legal verbiage that is only comprehensible by attorneys.

Another aspect of respect is assuring the patient's right to withdraw from telemedicine if/when the patient feels quality of care is diminished [2]. Clinicians should always be monitoring to ensure that telemedicine is appropriate for their patients (e.g., looking for visual cues that the patient is engaged in the encounter, including eye contact and absence of distractions such as barking dogs, music or television; awareness of clinical complexity or deterioration that requires on-site care). However, even with engagement the patient might feel that telemedicine is not personally suitable. For example, some patients might welcome the private clinic space of a physician office complete with all the comforting medical tools such as physical examination with touch rather than dialing in from their bathroom (if it is the only quiet and private space in their home). Some patients might have more privacy when physically at the

clinic setting if their home setting cannot be controlled for eavesdropping children or spouses. Telemedicine requires sharing, listening, and asking questions, yet for some patients, the best setting for these aspects of the encounter will be the clinic rather than their home.

Sometimes telemedicine is best as a supplement to regular care, not as a replacement [3, 6, 8, 9]. For example, pilot studies regarding CPAP (Continuous Positive Airway Pressure) adherence in patients with sleep apnea, as well as blood pressure monitoring in patients with hypertension revealed that telemedicine for supplemental monitoring and counselling increased adherence and benefit of treatment [6, 10, 11]. In these studies, telemedicine's use as supplemental to usual care was shown to improve outcomes, but its use as a complete alternative was not addressed. Until proven, telemedicine should not be viewed as an equal replacement a face-to-face encounter [3].

CONCLUSION

Analyzing these ethical issues, it's clear that the success of telemedicine is dependent on patient selection and adaptability [20]. The use of telemedicine must be accompanied by clinician competency training that addresses general technical issues such as privacy and security, as well as patient specific informed consent [2, 4, 6, 21]. Ideally, this training should be part of medical school curricula addressing e-health [18]. Expanded post-graduate training in telemedicine should also be made available [25]. Completion of such universal training should require physicians to achieve competency using telecommunication systems, including promoting privacy and confidentiality, determining the appropriateness of its use on a case-by-case basis, and applying additional strategies to avoid 'tele-negligence' [4, 18]. Continuing education should be offered in light of changing regulations and technologies [25]. As mentioned, training should reflect regional legal understandings of informed consent, privacy, and data protection that are not globally harmonized [4-7,18].

Our findings are subject to the limitations of a scoping review [15–17]. We acknowledge that our findings may not be entirely comprehensive of such a broad topic and our hand-search leaves room for error. The references may show selection bias due to multiple searches that were not systematic in nature, although we consciously attempted to include articles from diverse sources. While our paper focuses on specific issues in medical ethics, we acknowledge that telemedicine raises other issues not formally addressed in

this paper that are also important such as the regulation of telemedicine across borders, the funding of telemedicine equipment, insurance benefits/coverage for patients, and liability issues for providers. These matters must also be suitably addressed in order to provide telemedicine in a manner that is safe and effective for both patients and providers. Further research should use this article as a framework to conduct a more precise, systematic review or design a study to test the effectiveness of implementing our proposed solutions.

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