

COVID-19 Remote Consultation Services and Population in Health Inequity-Concentrating Territories: A Scoping Review

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Abstract

Background: This review aimed to map initiatives for measuring the satisfaction of vulnerable populations with teleconsultation services offered by public and private health care providers in their territories, during the coronavirus disease (COVID-19) pandemic. Systematic studies on the opinions of people most affected by health inequities are limited. Therefore, we included evaluations of teleconsultation-based services offered to socioeconomically disadvantaged and clinically vulnerable populations globally, with a focus on surveillance, treatment, and prevention of COVID-19.

Materials and Methods: This review includes analytical and descriptive observational studies primarily from MEDLINE, EMBASE, SCOPUS, and Web of Science databases, published after the World Health Organization received the first warnings about COVID-19 from Chinese authorities in December, 2019, until December 2020. The search strategy combined aspects of COVID-19, telemedicine, patient satisfaction, and key concepts of vulnerable populations.

Results: We selected 33 studies for full-text reading and 10 for critical appraisal. Two categories emerged from the qualitative analysis: telehealth evaluation and services during COVID-19, and opinions of vulnerable populations. Television and social networks play a crucial role in providing information. Although teleconsultations are practical and cost effective for patients, the majority preferred receiving in-person treatment in primary care clinics.

Conclusions: Listening to the opinions of vulnerable groups and their caregivers is critical both before and during adoption of COVID-19 control measures. Health managers need to monitor the health of and delivery of services to socioeconomically and clinically vulnerable people closely, to improve services, and provide care from a human rights perspective.

Keywords: Outcome and Process Assessment, health care, social determinants of health, telemedicine, telehealth

Introduction

Global confrontation of the coronavirus disease (COVID-19) pandemic has required rapid responses from local health systems. There has been an accelerated proliferation of remote consultation solutions because social isolation has been the primary containment measure for COVID in 2020. These actions have been strengthened in places where mature and operational teleconsultation services already existed.¹ In the contexts and areas where telemedicine is not yet in place, efforts in response to maintenance of care, need for mass surveillance and testing, and the strengthening social isolation measures have been made. These actions have been presented as innovations in health systems.²

Translational clinical research studies have shown results after the development and availability of several effective vaccines for nations that have access to them. Public health

challenges in 2021 have moved the major focus to immunization plans and distribution of immunobiologicals throughout the entire population of a territory, as well as surveillance of the most contagious mutations of SARS-CoV-2. However, special measures need to be adopted for target populations who are socially “invisible” to standard health and social care and live in service delivery locations where these have been precarious, leaving health care population gaps. Health inequity—defined as systematic inequality in health among socioeconomically distinct groups that is socially determined, is unfair, and that can be avoided—is a global concern,³ but is especially relevant for low- and middle-income countries (LMICs). The 33 countries of Latin America and the Caribbean (LAC) comprise the most inequitable regions of the world, resulting in a significant impact on the health of its population.⁴ Historically, most LAC countries have had two separate public sector systems: a social security system, which is better financed and offers comprehensive benefits; and a noncontributory system, which serves vulnerable populations. They also have a private insurance system that includes alternative supplementary coverage disproportionately provided for wealthy groups. A few countries, including Brazil, Costa Rica, and Cuba, unified their public systems decades ago. However, most other LAC countries have only relatively recently sought to equalize funding and benefits across the two public systems. The Pan-American Health Organization’s (PAHO) Sustainable Health Agenda for the Americas 2018–2030 states that there must be a focus on ensuring equity in health. There is a significant proportion of adults in LAC with chronic illnesses with trouble paying medical care and even difficulties accessing primary care.⁵

According to the Regional Panel of COVID-19 Americas, which shows the geographical distribution of cases and deaths by country, the cumulative rate of deaths in Colombia (79,760), Brazil (430,417), Peru (65,316), United States (578,984), and the Dominican Republic (3,565) is still growing, while vaccination is progressing unevenly in the world (May 15, 2021).⁶ However, in high-income countries, studies are showing that the highest incidence of COVID-19 mortality is among Hispanics, blacks, and immigrants.^{7,8}

In all nations, it is possible to find places where populations experience levels of social, economic, political, and digital exclusion that have resulted in poorer health. These groups have numerous vulnerabilities, are stigmatized, and the people live in ghettos.⁹ Decolonial¹⁰ and gender¹¹ studies have investigated these conditions and have determined that they are a legacy of the colonization and the black diaspora in these territories.

We conducted the present review to add to the knowledge of interventions and service delivery in territories with high degrees of inequities, such as the complex of slums (favelas) in Mangueiras and Maré, Rio de Janeiro, Brazil, within the scope of the Conexão Saúde Digital Project. The Conexão Saúde Digital Project has gathered six governmental and nongovernmental organizations since August 2020 to provide health services to 180,000 inhabitants¹² to reduce the impact of the COVID-19 pandemic.¹³ The project has proposed an alternative model of health surveillance, which incorporates digital health, expands access to health, and aims to generate quick and effective responses to the demands of the population.

Telehealth and new digital health activities are emerging in a global emergency context where the behavior of the COVID-19 virus variants is still being scientifically studied. The Brazilian SARS-CoV-2 P.1 mutation was first detected in Manaus, the largest Brazilian city in the Amazon region with >2 million inhabitants. The P.1 mutation seems to have been circulating in the Amazon region since November 2020. In Manaus, the number of cases involving the new strain increased from 52% to 85% between December 2020 and January 2021.¹⁴ This situation has caused uncertainty in the society there, especially among the classes most deprived of basic needs. In this sense, it is worth determining how well-established telemedicine actions, especially teleconsultation, might assist health care in these territories.

The purpose of this review was to gather and disseminate findings that provide an overview of how interventions are conducted, and to monitor and evaluate the satisfaction of populations served by these remote consultation services, globally. We chose an approach inspired by one used in the practice of evidence-based medicine (EBM)—a systematic approach that focuses on analysis of published articles as a basis for clinical decision making.¹⁵

Our objective was to provide information about teleconsultation services that have been designed or refurbished, especially for diagnosis, containment, or referral of COVID-19 cases in different contexts of clinical and social vulnerability.

Materials and Methods

There are several ways to review the literature to find support for effective health interventions. We opted for a scoping review, also known as a mapping review, since one of its functions was to perform a first summary of the literature regarding the research problem.¹⁶ We published the research protocol as a preprint, distributed it to reviewers as an instructive guide, and then conducted article selection, analysis, and discussion of results.¹⁷

Review Questions

What types of evaluations exist on remote consultation services/teleconsultations focused on the surveillance, prevention, and control of COVID-19 and other acute respiratory syndromes, considering the vulnerable populations living in territories with high degrees of inequities?

Additionally, we asked whether the teleconsultation service targeted the entire population of a given territory, and the evaluator of the teleconsultation service asked whether the service user considers the modality safe, effective, and quick in responding to the problem. Furthermore, we asked if the teleconsultation service had a counter-referral flow with all levels of the health care network, and if it had a cross-referral flow with social facilities in the territory in an intersectoral approach.

INCLUSION CRITERIA

Participants, concept, and context. This review considered studies that evaluated teleconsultation/remote consultation services offered to the population or to the socioeconomically and clinically disadvantaged groups in a given territory, focusing on surveillance, treatment, and prevention of COVID-19 and other acute respiratory syndromes.

This review included studies that explored the evaluation of the modalities of teleconsultation services with their respective developments, such as referrals to other levels of care according to the degree of severity of the disease. The core of the study is to understand the consolidated experiences of remote consultation in territories that especially shelter people in situations of extreme social vulnerability.

As described in the review protocol, social vulnerability for this investigation is equivalent to a set of inequities (systematic inequality in health between socioeconomically distinct groups, and because it was socially determined, it was unfair and avoidable) related to the social determinants of health in a given location. For remote consultation or teleconsultation, we adopted the classic definition of an integrated health service delivery system that uses telecommunications and computer technology as a substitute for personal contact between the service provider and the client.^{18–20}

Our focus was on the receiving population's perception, especially economically disadvantaged groups, regarding the outcome of treatment according to the type of teleconsultation offered. We aimed to identify problems in the incipient service and to know whether it had contributed to the health of individuals within a locality, slowing down the possibility of contagion and identifying and transferring acute cases.

Discussion on whether teleconsultation has become a second-rate alternative, due to the absence of health professionals for in-person treatments, was delayed as a result of the

health emergency that occurred from the COVID-19 pandemic. However, since a remote consultation service is already digital, it can facilitate referral to spaces for social reintegration and provision of assistance to impoverished populations. Therefore, in addition to favorable outcomes for the individual served by the service, and the perception of that individual regarding the service, we also observed referrals to health units and social equipment that the service could possibly offer.

EXCLUSION CRITERIA

We did not include studies on teleconsultation services that did not focus on the population of a given territory, or if the evaluation did not consider the opinions of service users. Another exclusion criterion was if the service did not have a counter-referral flow with the health care network and social facilities in the declared territory.

TYPES OF SOURCES

We screened a variety of literature, including systematic reviews and experimental and quasi-experimental study designs, including randomized controlled trials, nonrandomized controlled trials, before and after studies, and interrupted time-series studies. In addition, we also considered analytical observational studies, including cohort studies, case-control studies, and analytical cross-sectional studies. Additionally, the review included descriptive observational study designs, case series, individual case reports, and descriptive cross-sectional studies. Finally, technical reports and opinion articles were also considered for inclusion.

REVIEW

This study was conducted in accordance with the Joanna Briggs Institute (JBI) methodology for scoping reviews.²¹ Two independent reviewers read the abstracts of the retrieved articles. A third reviewer read the articles in full to carry out the appraisal and extraction. Cohen-Fleiss Kappa coefficient (*k*) analysis was used to verify level of agreement concerning the items measured in each assessment instrument. Consensus on the responses was 0.242.²² The R program (version 3.6.2) was used to conduct the analysis.

SEARCH STRATEGY

The search strategy was aimed at capturing both published and unpublished primary studies, reviews, and text and opinion articles. An initial limited search of MEDLINE (PubMed) and Scopus (Elsevier) databases was performed to identify articles on the topic. Text words in the titles and abstracts of relevant articles, and index terms used to describe

the articles, were used to develop a full search strategy for MEDLINE, EMBASE, Scopus, and Web of Science databases. The strategy, including all identified keywords and index terms, was adapted for each information source. We screened for additional articles in the reference lists of selected articles,

to complete a full-text review. Articles without language limitations, published after December 2019 (the World Health Organization received the Chinese authorities' first warning about COVID-19 on December 31, 2019) were included; hence, the search covered articles on COVID-19 published in 2020.

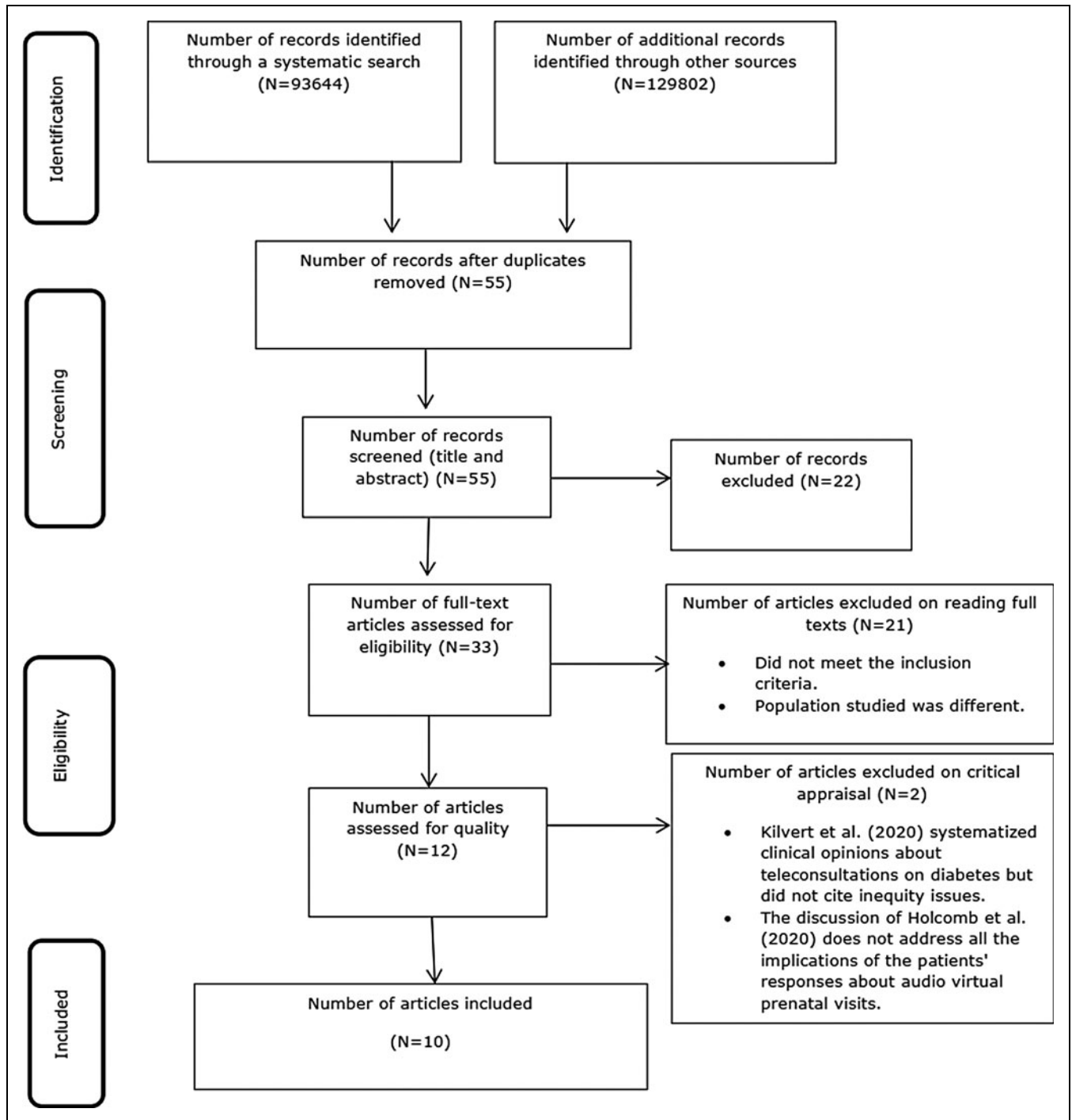


Fig. 1. PRISMA flow diagram of the process of search and study selection.

INFORMATION SOURCES

Sources were the MEDLINE, EMBASE, and Web of Science databases. Scopus was the source of unpublished studies and gray literature. Cross-references and suggestions from the research team were also considered.

STUDY/SOURCE OF EVIDENCE SELECTION

After the search was completed, all identified records were grouped and entered into Zotero 5.0.88 (Digital Scholarship, VA), and duplicates were removed. As a pilot test, two independent reviewers selected titles and abstracts for evaluation according to the inclusion criteria. Potentially relevant documents were retrieved in full, and their citation details were imported into the JBI System for Unified Information Management, Evaluation, and Review (JBI SUMARI; JBI, Adelaide, Australia). The selections for full-text screening were evaluated in detail by two independent reviewers, based on the inclusion criteria. Reasons for excluding full-text articles that did not meet the inclusion criteria were recorded and reported. At each stage of the selection process, any disagreements between reviewers were resolved through discussion or by a third reviewer. Results are presented according to PRISMA guidelines for Scope Reviews.²³

DATA EXTRACTION, ANALYSIS, AND PRESENTATION

We extracted data from the articles included in the scoping review by two or more independent reviewers using the data extraction tool from JBI SUMARI. Extracted data included specific details about participants, concepts, context, study methods, and key findings relevant to our review questions. After extraction, the team made a critical appraisal of each evidence source, according to type of study or article. We used specific forms to evaluate cross-sectional studies, case reports, prevalence studies, and opinion articles.

A narrative summary from the consensus of the two rounds of reviews described how mapped results related to the review's objective and the questions asked.

Results

We identified 33 articles for full reading and assessment (*Fig. 1*). Detailed reasons for excluding studies^{24,25} from full-text screenings are in the *Supplementary Appendices SA1 and SA2*.

CHARACTERISTICS OF INCLUDED STUDIES

In the final selection process, we included four cross-sectional studies, two prevalence studies, a case-control study, a case report, an ecological study, and a clinical opinion, all of which were submitted from April to December 2020 (*Fig. 2*). Previous chronic conditions, such as hypertension,²⁶

arthritis,²⁷ cancer,²⁸ epilepsy,²⁹ and neurodevelopmental disorders in children,³⁰ were the clinical topics of the investigations. The following factors were repeatedly observed: elderly,³¹ women,^{28,32} blacks,²⁶ and mental health of immigrants.³³ Acute conditions little explored in the literature on telehealth, such as neurosurgical care at a national referral hospital for the less privileged population,³⁴ were a prominent topic. Researchers also addressed family planning during COVID-19 with proposals that changed the care process, including telemedicine care in performing legal abortion (*Table 1*).³⁵ The Supplementary File provides additional details on these studies (*Supplementary Appendix SA3*).

REVIEW FINDINGS

After a complete reading, we listed the following analytical categories: (1) configuration and recommendations for COVID-19 and telemedicine services; (2) media preferences of the vulnerable individuals who had been surveyed, and the COVID-19 information sources used by this group; (3) human rights and its intersectionality with gender, ethnic, and racial issues in the evolution of telemedicine to combat the pandemic; (4) low-income territories and communities; (5) mental health treatment through telemedicine; (6) evaluation of patient satisfaction during the pandemic; (7) a patient and caregiver voices category regarding patients' opinions about telemedicine services that were conducted or created to avoid disease spread; and (8) telehealth evaluation regarding telemedicine and telehealth assessment features in the COVID-19 era.

Appraisal of the 10 articles and division into categories revealed 2 operational dimensions of the interventions: (1) telehealth services and their evaluation during COVID-19 (*Fig. 3*); and (2) the opinions of vulnerable groups using health care services (*Fig. 4*). According to our reviewers' evaluations and postdiscussions, we classified the findings as unequivocal, credible, or not supported. Then, we presented a narrative of the eight unequivocal findings in the words of the authors.

According to the article by George et al., evaluation of telehealth services by users and providers must be continued, as they advocate that ...continued *assessment of inequities in access to care and the optimal use of telehealth are important as the pandemic continues*. (p. 11)²⁷

Cohen et al. reported that protocols should guarantee the privacy of patients in teleconsultations, giving the following example:

...use of an evidence-based tool such as Confidentiality, Universal Education and Empowerment, Support (CUES) [...] a trauma-informed intervention available to providers to facil-

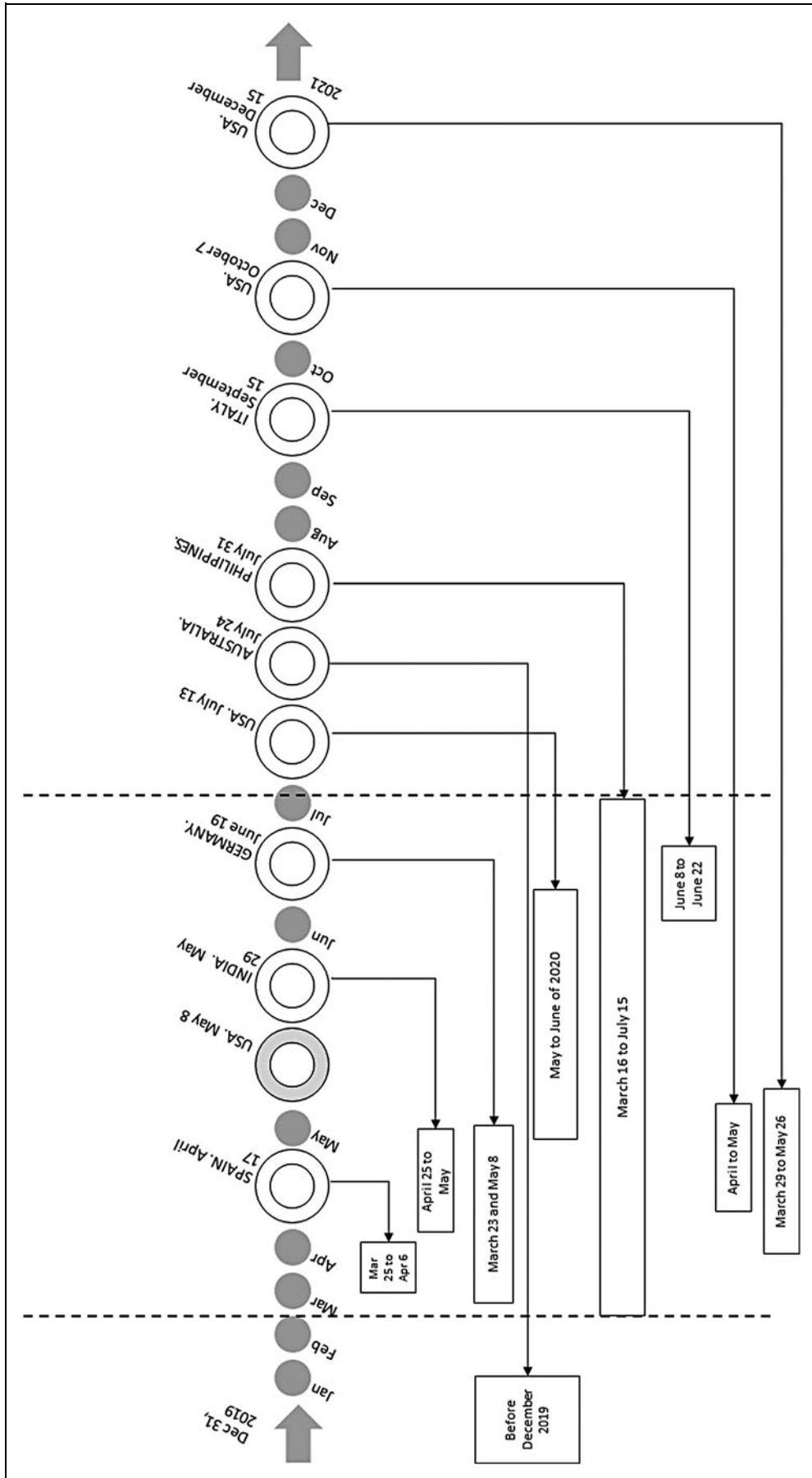


Fig. 2. Timeline of the selected studies with submission dates and the period of related intervention.

Table 1. Main Characteristics of Included Studies

AUTHORS, COUNTRY, TYPE OF STUDY, AND DATE OF SUBMISSION	PARTICIPANTS AND GROUPS	SETTING, CONTEXT, AND CULTURE	OUTCOMES MEASURED OR DISCUSSED	RESULTS
<p>Goodman-Casanova et al.³¹ Spain Case-Control April 17, 2020</p>	<p>Community-dwelling older adults with cognitive impairment or dementia participated by telephone. Intervention group: Participants trained in the use of TV-AssistDem and had daily access to the service in their home environment. Control Group: Treatment as usual.</p>	<p>To address the COVID-19 emergency, the TV-AssistDem team adapted the service to provide tailored support. It offered detailed information on the coronavirus through a health education function with selected content from official sources. Enabled visualization of physical activity videos at home, communication with loved ones and health professionals through video calls, and cognitive stimulation with memory games. Evaluated through a telephone-based survey from March 25 to April 6, 2020.</p>	<p>Health status (COVID-19); health management; groceries/pharmacy; mental health and wellbeing; physical, intellectual, recreational, and social activities.</p>	<p>Mean age was 73.34 years (SD 6.07); 60/93 (65%) were women; and 69 (74%) lived accompanied. Lockdown measures forced 17/93 participants (18%) to change their living arrangements. There were no significant differences between intervention and control groups in any sociodemographic, health status, or other variables associated with COVID-19. Respondents with TV-AssistDem performed more memory exercises than control group. Compared with participants who lived with others, participants living alone reported less wellbeing, anxiety, and more sleeping problems. Participants frequently reported being sad and bored; however, these last results were only marginally significant.</p>
<p>Cohen et al.³² United States Review May 8, 2020</p>	<p>Johns Hopkins University School of Medicine clinical opinion about women's health, predominantly about ambulatory gynecologic patients in minority communities.</p>	<p>The pandemic has altered medical practice. Although much of the emphasis in obstetrics and gynecology to date has been on the yet uncertain effects of COVID-19 on pregnancy and changes in surgical management, the pandemic has broad implications for ambulatory gynecologic care.</p>	<p>Teleconsultation confidentiality; safety and mental health; prevention of unintended pregnancy; access to legal abortion services; pre-pregnancy and inter-reception care; sexual health; breast and cervical cancer screening.</p>	<p>Use of an evidence-based tool such as Confidentiality, Universal Education and Empowerment, Support, a trauma-informed intervention available to providers to facilitate discussions regarding unhealthy relationships, and potential consequences of relationship-based violence for patient populations, including American Indians and Alaskan Native people; adolescents; homosexuals, bisexuals, transgenders, and gender-nonconforming individuals; and people living with HIV. Telemedicine can be used to evaluate breast complaints, determine the need for in-person visits or referral, counsel patients on appropriate follow-up guidelines, and alleviate anxiety associated with delayed cancer follow-up timelines. To expand the use of patient-collected HPV self-swabs, potentially leading to increased screening of underrepresented populations such as transgender, gender-nonconforming patients. Offer telemedicine visits to counsel women on reproductive life planning, self-administer depot medroxyprogesterone acetate if desired, and considering the advanced provision of emergency contraception. Medication abortions may be conducted, given the safety, efficacy, and patient satisfaction of direct-to-patient provision of mifepristone and misoprostol for at-home use.</p>

continued →

Table 1. Main Characteristics of Included Studies *continued*

AUTHORS, COUNTRY, TYPE OF STUDY, AND DATE OF SUBMISSION	PARTICIPANTS AND GROUPS	SETTING, CONTEXT, AND CULTURE	OUTCOMES MEASURED OR DISCUSSED	RESULTS
Muruganandam et al. ³⁶ India Cross-Sectional May 29, 2020	132 patients 18–55 years of age with schizophrenia, schizoaffective disorder, bipolar affective disorder, and major depressive disorder, who were in treatment at the center for a minimum of 1 year and clinically stable for the previous 3 months, and their adult caregivers, staying with them at least a year before the assessment.	The acceptance of teleconsultation is limited among patients with severe mental illness in low- and middle-income country. Nationwide lockdown from March 25, 2020, and strict home confinement was enforced. A cross-sectional telephonic survey through phone calls conducted in a general tertiary hospital in South India in April 2020, for 1 month.	Awareness about symptoms of COVID-19 and the need for quarantine. Precautions and prevention methods, mode of spread, perceived social support and perceived verbal and physical aggression (from the patient). The status of illness, the impact of COVID-19 on patients' mental status, medication compliance, psychiatric consultation, biological functions (from caregivers).	Mean age was 33.9 years (SD = 10.9); women (52.3%); lower socioeconomic status (60.6%); education up to tenth grade (52.3%). Most patients (73.5%) did not report fear or worries about contracting the infection. Participants reported sleep impairment (37.9%), food intake (23%), and personal care (20%). 39 patients (29.5%) showed re-emergence of previous psychiatric symptoms. Nineteen patients (14.4%) expressed suicidal ideas during this period, and among them, 5.3% reported an increase in suicidal thoughts. Sixty patients (45.5%) perceived inadequate social support. Regarding appointments with treating mental health professionals, 80% missed it in the previous month, but 12.8% could contact them directly or through teleconsultations. Younger age (weak correlation), greater educational attainment, higher socioeconomic status, and increased levels of perceived social support were associated with significantly higher knowledge scores. Over the last month, patients who consulted mental health professionals with less burdened caregivers and perceived financial difficulties during the lockdown, had better knowledge about COVID-19. Caregivers mean age was 45.4 years (SD = 11.8); mostly parents (43.9%), followed by spouse (35.6%), siblings (15.9%), and children (4.5%); 83 caregivers (62.9%) said they were facing financial difficulties during this lockdown period.
von Wrede et al. ²⁹ Germany Prevalence June 19, 2020	239 patients with epilepsy > 18 years of age were counseled and treated through telemedicine.	Telemedicine appointments started in March 2020 at the tertiary epilepsy center. Chronic diseases necessitate special care and development of a personal relationship with individual physicians. The survey assessed telemedicine's acceptance and appreciation by patients usually seen in an outpatient setting. Part of quality measures that allowed timely clinical care improvements during restrictions due to the COVID-19 pandemic. A structured audit was conducted between March 23 and May 8, 2020.	Seizure frequency; satisfaction; comprehensibility of illness; and interaction during teleconsultation; desired frequency for future appointments onsite.	Mean age was 41.5 ± 17.2 years; 53% women. Eighty-four (35%) patients were seizure free, 44 with lower seizure frequency (18%), and 111 with higher seizure frequency (46%). Six participants had first-ever visits, and 233 participants had follow-up visits; 82% were satisfied with their appointment. Participants considered no transport (71%), more comfort (64%), short waiting time (51%), and no travel expenses (41%) as advantages of TM appointments. Ability to better follow conversation (6%) and prepare for the appointment (12%) were considered less important. Nineteen participants (8%) stated that teleconsultations avoid or reduce infection risk. Participants considered lack of personal contact (44%) and further diagnostics (45%) as disadvantages of TM appointments. Leaving habitual surroundings (7%), meeting other patients with epilepsy (9%), lack of immediate prescriptions (9%), as well as technical (10%) or cognitive problems (3%) were less important to them. Most patients who already had appointments through telemedicine and onsite rated the quality similarly. The potential efficacy of treatment, at least from the patients' point of view (in terms of expected adherence), was estimated to be similar.

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Table 1. Main Characteristics of Included Studies *continued*

AUTHORS, COUNTRY, TYPE OF STUDY, AND DATE OF SUBMISSION	PARTICIPANTS AND GROUPS	SETTING, CONTEXT, AND CULTURE	OUTCOMES MEASURED OR DISCUSSED	RESULTS
Mills et al. ²⁶ United States Cross-Sectional July 13, 2020	587 low-income and minority patients with hypertension, age >40 years; participants from the IMPACTS-BP (Implementation of Multifaceted Patient-Centered Treatment Strategies for Intensive Blood Pressure Control) study.	Louisiana was under a stay-at-home state from March 22 to May 14, 2020, and Mississippi, from April 1 to April 27, 2020. A team from a cluster-randomized trial testing implementation of an intensive blood pressure treatment intervention in 36 federally qualified health center clinics in the two states, conducted a telephone survey in May and June 2020.	The effects of COVID-19 and hearing the experiences, perceptions, and beliefs, including access to health care for chronic disease management.	Mean age was 59.4±9.0 years. Most participants were women (59.7%), black (65.1%), 57.7% were living below the federal poverty level, 58.2% had high school or lower education, 61.6% were retired or unemployed, 81.1% had Medicare/Medicaid insurance, and 14.8% were uninsured. Comorbidities were diabetes mellitus (39.5%), clinical depression (32.5%), and history of a significant cardiovascular disease event (19.4%). Respondents reported their general health to be excellent (56.9%), fair (32.4%), or poor (10.7%). Respondents (687) and nonrespondents (849) did not differ in sociodemographic and clinical indicators, such as age, race, sex, and medical history. The only significant difference was a lower attained education level among nonrespondents than among respondents. Black women were more likely to wear a mask (85.7%) than black men (74.5%), nonblack women (70.6%), and nonblack men (50.0%). Furthermore, 11.2% reported they were not willing to return to their primary care clinics to receive care; those ≥65 years of age were significantly less willing to return than younger participants. 44.5% received care through telehealth visits. Participants reported negative personal and financial impacts of the pandemic after COVID-19 diagnosis, family members/friends' death, job loss, and food insecurity.
Smith et al. ²⁸ Australia Cross-Sectional July 24, 2020	144 women screened for breast cancer.	The BreastScreen Australia Remote Radiology Assessment Model is an initiative developed to address the challenges of inadequate access to a local radiological workforce in regional Australia, where a radiologist would be co-located with practice staff during assessment clinics.	Acceptability of remote radiology services	Women >40 years of age, with only four Aboriginal and Torres Strait Islanders (2.4%). Most were 50–59 years of age (38.2%). Most had attended a Breast Screen service for either screening or assessment on a total of two to five occasions (59.9%). Client acceptability supports the continued use of remote radiology. It is essential, as travel restrictions consequent from the COVID-19 pandemic limit mobility of interstate radiology workforce, thus stimulating greater uptake of telemedicine alternatives.
Ferraris et al. ³⁴ Philippines Cross-Sectional July 31, 2020	57 patients of socioeconomically disadvantaged populations from the Philippine archipelago, requiring neurosurgical care in the Capital city.	Changes in care to a telemedicine format in a tertiary hospital—a national reference in neurosurgical procedures. Patients participated in a survey about teleconsultation from March 16 to July 15, 2020.	The efficiency, adequacy, timeliness, and overall satisfaction of patients' telemedicine experience; expenditures for medical assistance.	Mean age was 39 ± 13 years. Most were men (57%), considered their places of residence to be far from the neurosurgical/medical center (77%), and had a monthly income ≤10,000 Philippine pesos (67%). Fewer than 2% of respondents provided a score <5 out of a possible 10 for either efficiency or adequacy of teleconsultation. Telemedicine averted catastrophic expenditures for 32% of respondent patients. Among the impoverished, 42% reported having no income during the pandemic and were already living below the poverty line, to begin with.

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Table 1. Main Characteristics of Included Studies *continued*

AUTHORS, COUNTRY, TYPE OF STUDY, AND DATE OF SUBMISSION	PARTICIPANTS AND GROUPS	SETTING, CONTEXT, AND CULTURE	OUTCOMES MEASURED OR DISCUSSED	RESULTS
Taddei and Bulgheroni ³⁰ Italy Case Report Sept 15, 2020	20 families and caregivers of children with neurodevelopmental disorders, such as intellectual disability, psychomotor delay, autism spectrum disorder, and neurological diseases at the Developmental Neurology Unit	Children with disabilities face challenges because of functional limitations and conditions of fragility, requiring long-term treatment and nonhospital support. There is a need to maintain continuity of services during quarantine. Adaptation of the Child Neurology and Developmental Neuropsychology Service, responsible for cognitive and behavioral assessment of children with neurodevelopmental disorders and neurological diseases, on an inpatient/outpatient basis. Parents and caregivers filled out questionnaires during June 8–22.	An emergency response model's feasibility and inclusiveness applied to children with neurodevelopmental and neurological disabilities in Italy.	20 out of 28 families (71%) participated in teleconsultations during the COVID-19 quarantine. In satisfaction questionnaires, families reported high satisfaction regarding the accessibility of the service and timesaving in telemedicine. Children rarely presented more complicated or intense needs correlated to quarantine or general worsening of the clinical behavioral manifestations, likely because families gave adequate attention to maintenance of domestic routines and structured activities, as suggested by official guidelines. Most children were peaceful and calm, perhaps taking advantage of the continuous presence of parental care and domestic routines, which are less demanding than those when children spend most of their time at school, rehabilitation centers, and sports facilities. Mainly, parents expressed doubts regarding social isolation and extra-home activity reduction on children's development and disorders. They felt responsible for possible understimulation of their children, and they needed psychoeducational advice. Parental concerns also include when their children might participate again in outdoor activities. The quarantine may cause a restriction of the adaptive and functional behavioral repertoire of the child and raise more rigid adherence to solitary activities (e.g., use of tablets and screens) that can increase the isolation of children who are already at risk.
Serafini et al. ³³ United States Prevalence October 7, 2020	35 Hispanic patients with pre-existing psychiatric diagnosis and low income participated.	The East Harlem Health Outreach Partnership (EHHOP) is a free medical clinic that serves members of the East Harlem, NY, community. Participants must demonstrate ineligibility to receive health insurance and lack residency documentation. The EHHOP Mental Health Clinic (MHC) serves 58 patients, providing health professionals, in-clinic pharmaceutical dispensing, and referral to legal and social service teams. Surveys were administered at staggered times over April and May 2020.	Impact of COVID-19 on mental health (three inventories); Access to essential needs; Feedback on Telepsychiatry sessions; Presence of depression, anxiety, post-traumatic stress, alcohol use, or adjustment disorders.	Overall, 74–80% of respondents were women, mostly ages from 40 to 49 years. "Depressive Disorder" was the most prevalent disorder, followed by "Anxiety Disorder" and "Post-traumatic Stress Disorder." Forty-eight patients at the MHC were effectively transitioned to telepsychiatry between February and March of 2020. Seventeen (48.57%) and 16 (45.71%) respondents reported increased levels of anxiety and depression due to COVID-19, across the different survey assessments. Twenty participants reported being worried about contracting the coronavirus infection. Two (5.71%) participants reported a lack of access to medical care should they become infected, 10 (28.57%) believed they did have adequate access to health care, and 23 (65.71%) were unsure. All participants reported difficulty accessing at least one of their essential needs since the beginning of pandemic. Those who reported that telepsychiatry's availability helped them manage their overall mental health were also likely to report that it helped them manage their depression and anxiety levels.
George et al. ²⁷ United States Ecological December 15, 2020	1,517 adults, >18 years of age, with rheumatoid arthritis, psoriatic arthritis, ankylosing spondylitis, and systemic lupus erythematosus. One group from an urban area and another from rural area.	Participants from the Creaky/Joints patient community or the ArthritisPower PPRN, a patient-led online registry of patients with rheumatic conditions. Surveys were completed from March 29 to May 26, 2020.	Comorbidities, rheumatic conditions, and use or interruption of the disease-modifying antirheumatic drug (DMARD) were analyzed; concerns about COVID-19; respiratory illnesses; testing; avoidance of office visits; telehealth availability.	Mean age was 55.1 years, 88.3% were female, and 89.5% white. COVID-19 concerns were similar across the country and were higher among biologic users ($p < 0.001$). Avoidance of doctors' office visits (56.6%), laboratory testing (42.3%) and use of telehealth (29.5%) were more common in urban areas. Among participants receiving DMARD without COVID-19 or other respiratory illness, 14.9% discontinued it, and in 78.7% of cases, this was not recommended by a physician. DMARD discontinuation was more common among participants with a lower socioeconomic status and who avoided an office visit (OR 1.46, 95% CI 1.04–2.04) or reported lack of telehealth availability (OR 2.26, 95% CI 1.25–4.08).

CI, confidence interval; COVID-19, coronavirus disease; DMARD, disease-modifying antirheumatic drug; EHHOP, East Harlem Health Outreach Partnership; MHC, Mental Health Clinic; OR, odds ratio; TM, telemedicine.

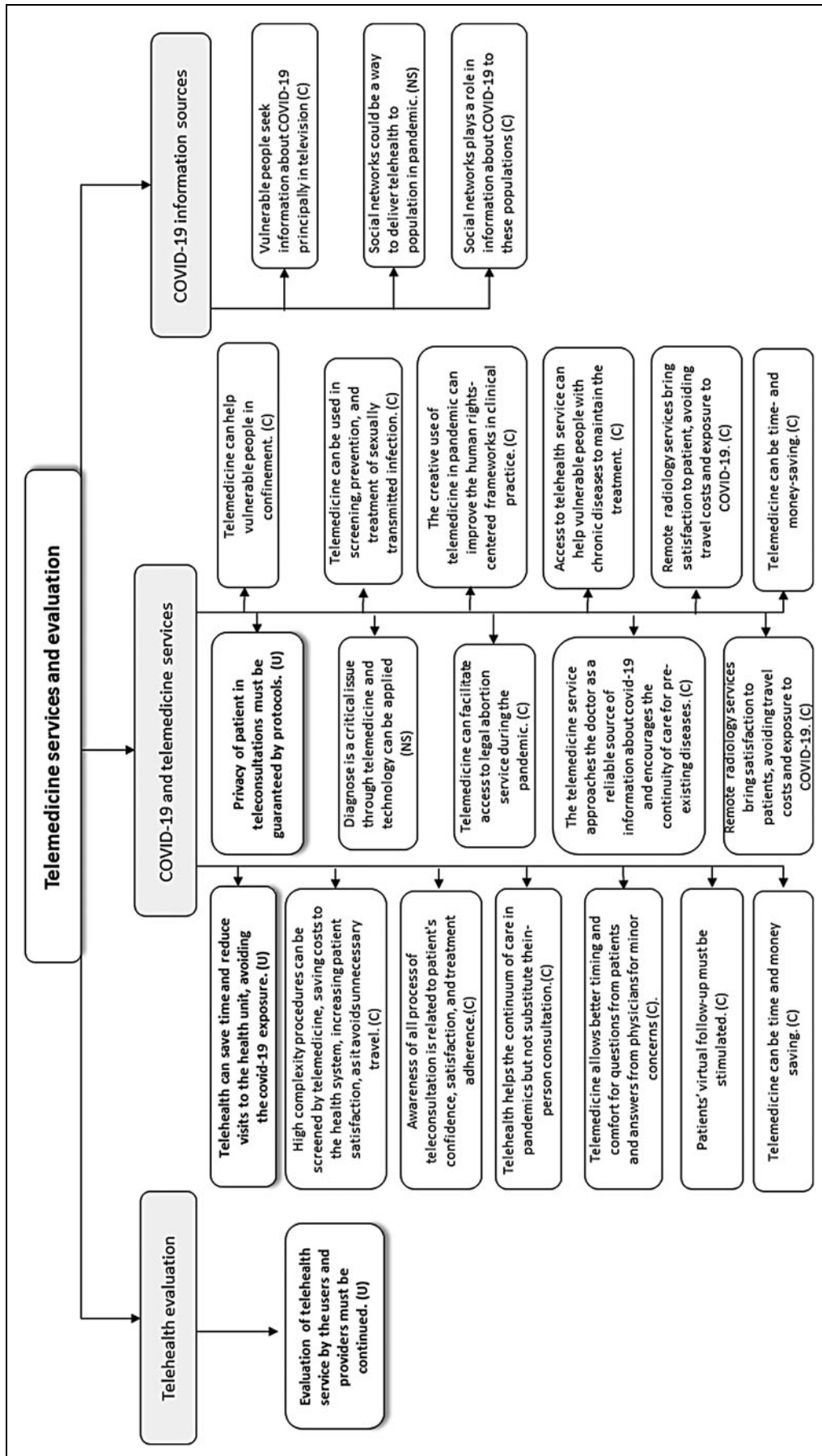


Fig. 3. Meta-aggregative flowchart of content analysis: Dimension of telemedicine services and evaluation.

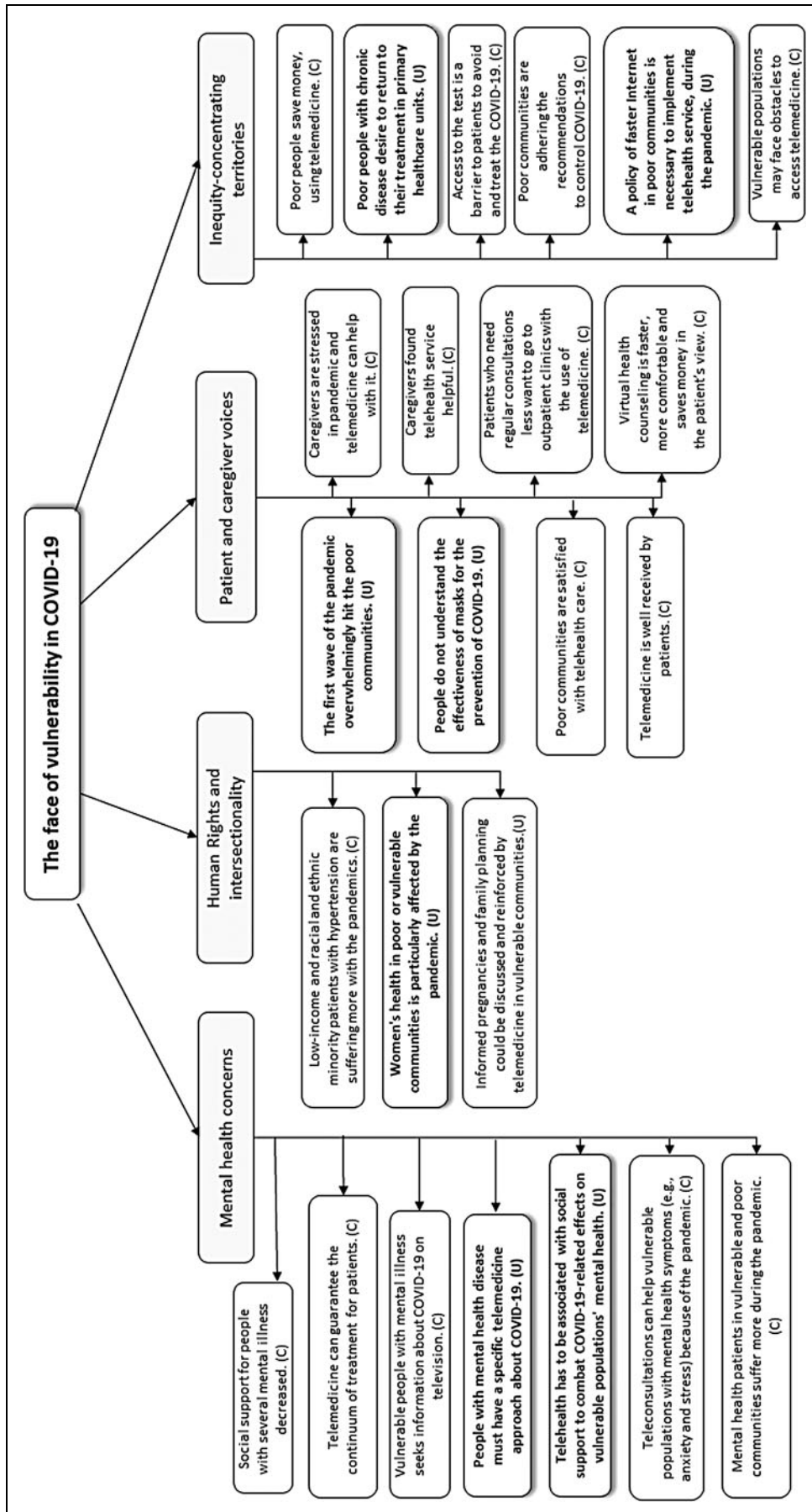


Fig. 4. Meta-aggregative flowchart of content analysis: Dimension of vulnerable populations' opinions.

itate discussions regarding unhealthy relationships and potential consequences of relationship-based violence for various patient populations including American Indian and Alaskan Native people; adolescents; lesbian, bisexual, gay, transgender, and gender nonconforming individual. (p. 373)³²

Muruganandam et al. provided evidence from their study in India that people with mental illness require a specific telemedicine approach to COVID-19:

...demonstrated that nearly three fourth of patients with severe mental illness did not have adequate knowledge about symptoms (72%) and precautionary measures (64%) about COVID-19 (p. 4). [...] Telemedicine provides new opportunities to address the mental health needs of patients with SMI [severe mental illness] with regard to creating awareness and treatment implementation. (p. 5)³⁶

Mills et al. investigated the opinions of homeless, impoverished, and black populations living in the southern U.S. states of Mississippi and Louisiana regarding health care, including teleconsultation services. This area is the closest experience in the United States to Brazilian and other LMIC slums. The investigators found that people with chronic diseases desired to return to treatment at primary health care units, ...almost 90%... of the respondents in their survey. *Participants reported negative personal and financial impacts of COVID-19 through COVID-19 diagnoses, death of family members and friends, job losses, and food insecurity.* They went further, and investigated the use of masks, and documented the following:

...three common reasons for not wearing them were the beliefs that masks do not protect against COVID-19, only sick people need to wear them, and the government should not tell people to wear one. These responses indicate there is a need for clearer messaging around the importance and effectiveness of masks for the prevention of COVID-19.²⁶

In their study on immigrants, Serafini postulated that telehealth has to be associated with social support to combat COVID-19-related effects on the mental health of vulnerable populations. ...*low-income immigrants, who are especially vulnerable to public health crises due to factors such as close-quarters living, inadequate financial resources for survival without employment, inaccessibility of public health insurance, and avoidance of health care institutions for fear of deportation.*³³

Cohen attests that women's health in poor or vulnerable communities is particularly affected by the pandemic:

COVID-19 itself may disproportionately affect minority communities for a variety of reasons, and there have been well-documented crises within vulnerable populations, including on Native American reservations, in incarcerated populations, in African American communities, and in immigrant and refugee populations. [...] Women are about twice as likely as men to experience depression during their lifetime, and this risk may be pronounced at specific reproductive periods, such as adolescence, pregnancy, postpartum, and during the menopausal transition. The psychological effects of isolation or quarantine and fear of contagion for oneself or dealing with illness and death in friends or family members may predispose to or exacerbate underlying mental health problems, especially among patients with a history of trauma. (p. 373)³²

This clinical opinion adds that informed pregnancies and family planning could be discussed and reinforced by providing telemedicine in vulnerable communities:

Women who are poor, PLHIV [people living with HIV/aids], and adolescents, have higher rates of unintended pregnancy. Although there are no data yet to suggest that unintended pregnancies will increase during the COVID-19 crisis and previous studies of pandemic situations have found that fertility may actually decrease, patients may face challenges in accessing contraceptive care, transport to pharmacies, and supply chain issues. (p. 374)³²

Taddei and Bulgheroni stated that a policy of faster internet in poor communities is necessary to implement telehealth services during the pandemic. *Technical problems in internet connectivity may be overcome by improving financial funding of fast internet network to assure a wider diffusion of efficient web connection; moreover, appropriate devices should be provided to health services and to families in socioeconomic disadvantage.* (p. 4)³⁰

Smith's study concluded that telehealth could save time and reduce visits to the health unit, avoiding COVID-19 exposure. *Other reasons included the efficiency of the staff, the way the clinic was run, and being able to have further procedures (such as biopsies) performed on the same day.* (p. 4)²⁸

SUMMARY OF HIGHLIGHTS FROM THE REVIEWED STUDIES

We summarized what the researchers highlighted after they observed the delivery of services and talking to patients. Studies in the archipelagic states in the Philippines pointed out that high-complexity procedures could be screened using telemedicine, saving costs to the health system, and increasing patient satisfaction, as it would eliminate unnecessary travel.

Remote radiology services brought fulfillment of the needs of patients in Australia, preventing travel expenditures and exposure to the disease.

Telemedicine can help vulnerable people in confinement, and facilitate the continuum of care in pandemics. It can save time and reduce visits to the health unit. However, it should not substitute for in-person consultation. Access to telehealth services can support vulnerable people with chronic diseases in maintaining their treatment.

Telemedicine allows better timing and more comfort for questions from patients and answers from physicians for minor concerns. Diagnosis is a critical activity that can be performed through telemedicine, and technology can be applied. According to a Johns Hopkins University research group, health services could use telemedicine to screen, prevent, and treat sexually transmitted infections. They also claimed that telemedicine could facilitate access to legal abortion services in the pandemic.

The creative use of telemedicine in pandemics improves human rights-centered frameworks in clinical practice. Awareness of all of the processes of teleconsultation is related to patient confidence, satisfaction, and treatment adherence. The patient's virtual follow-up can be effectively arranged with telemedicine. Telemedicine services make the doctor available as a reliable source of information about SARS-CoV-2, and allows continuity of care for pre-existing diseases.

Vulnerable people seek information about COVID-19 on television. However, health professionals have said that social networks could be a way to deliver telehealth during the pandemic. Social networks play a role in providing information about COVID-19 to these populations, and television is the principal source of information about the situation.

The studies found that low-income, racial, and ethnic minority patients with hypertension have suffered more during the pandemic, and women's health in poor and vulnerable communities is also singularly affected. Vulnerable women may face obstacles in accessing telemedicine, making a policy of faster internet in poor communities necessary. Disadvantaged communities are adhering to the recommendations to control COVID-19; however, access to testing is a barrier for individuals living in these communities, leading to avoidance of testing and problems in treating the disease.

Telemedicine can guarantee a continuum of treatment for patients with severe mental health disease (MHD). Primarily, people with MHD seek information about COVID-19 on television. Social support for this population has decreased, according to the studies. MHD patients in vulnerable and poor communities suffer more from the pandemic and need a specific telemedicine approach regarding COVID-19. Teleconsultations can help vulnerable populations with mental

health symptoms because of the pandemic, such as anxiety and stress. Telehealth needs to be associated with social support to combat COVID-19-related effects on the mental health of vulnerable populations.

The first wave of the pandemic, remarkably, hit poor communities, and patients received telemedicine services. In general, they were satisfied with telehealth care. With the availability of telemedicine, patients who need regular consultations want to go to outpatient clinics less often. Virtual health counseling is faster, more comfortable, and saves money in the patient's view. Caregivers found telehealth services helpful as they find themselves overloaded during the pandemic. According to a compilation of testimonies, vulnerable groups do not understand the effectiveness of masks for COVID-19 prevention, which increase the need to stimulate population compliance with scientific recommendations.

Discussion

Mobile telehealth apps with their big data for rapid decision making and telemedicine cabins are the new health care instruments for populations living in vulnerable territories in Brazil and other countries.³⁷ Digital health policies and strategies need to identify potential health inequities and address them in programs so that existing health inequities will not be reengraved onto virtual health landscapes.³⁸

The classic concept of EBM, a systemic approach for analyzing published research as the basis for clinical decision making, is a crucial strategy for revealing the causes of global inequities related to COVID-19.³⁹ Scientists in all knowledge areas need to confront the proliferation of fake news and political appropriation of cures and treatments for COVID-19, using integrated communication systems.⁴⁰ There are many sources of misinformation, coupled with a feeling of disbelief in science, as demonstrated in the global antivaccine movement.^{41,42}

The qualitative synthesis from this review indicated that mobile applications and television, which are sources of information for the population in various contexts and countries, should be used to track vaccinated people and make information public and accessible, to expand the scope of combat strategies against COVID-19.

Full knowledge of COVID-19's molecular pathogenesis is currently under investigation. In the United Kingdom, researchers have identified eight mutations of SARS-CoV-2 with potential genetic risk for mortality among individuals with white British ancestry.⁴³ Genetic informed teleconsultation is necessary to deliver high-quality health care and minimize risk factors. Research and financial support to construct, maintain, and link national biobanks, including in the LMIC, should be part of a global plan against the spread of

the virus. In parallel with these measures, the population needs to understand virus mutation mechanisms and the social aspects that involve this issue, such as lockdown periods, intensive use of masks, and efficacy of vaccines and shots. In this sense, scientific communication walking *pari passu* with basic research is as important as closing country borders to contain the spread of the disease.⁴⁴

Furthermore, vulnerable groups and others deprived of basic needs, such as fresh water, and who are living and sleeping in the same rooms, or on the streets, have different problems and require special communication. They need to be treated in a specific way that preserves their rights and allows them to survive in the pandemic times. This means that for the medium term, a restructuring of markets and social protection systems is required. Telehealth spots in inequity-concentrated territories could play a role in extrapolating conventional clinical diagnoses and helping with basic needs, such as documentation or improving public Wi-Fi connections.

Researchers at the University of Ottawa discussed federalism, responsibility, civil liberties, equality, work, and global health to show that COVID-19 reinforces existing vulnerabilities and creates new ones. They listed pre-existing structural inequality sites, even in high-income countries, particularly those affected by the pandemic, such as long-term care homes, prisons, immigration detention centers, indigenous reserves, and slaughterhouses. The alleged reasons for these structural inequality sights are government policies, financial choices of companies, colonialism, and systemic discrimination. These factors influence chronic underfunding of essential services and infrastructure, increasing the vulnerability of indigenous people and causing global health problems.⁴⁵

Before large-scale production of the vaccine, the Ottawa group enumerated actions that nations could choose to perform to appropriately contain the effects of COVID-19, such as taxing and spending in ways that would be beneficial for a social category or group. They added other possible actions as well, such as a choice of whether or not to intervene in the economy when market forces prevent individuals from meeting basic needs; to regulate in particular ways; and to adopt particular foreign policies toward international cooperation, including foreign aid. As an example, in the area of HIV treatment and prevention, these types of actions are a lesson for health managers, the judiciary, and health systems worldwide.^{46,47} These authors also recommended that society must combat views that health is a product of the combination of luck and personal choices, rather than as a product of colliding social, economic, and political factors.

Bachelet, United Nations High Commissioner for Human Rights, said that shortly postpandemic, the vaccine against in-

equality and the lack of social protection in peripheral countries is human rights. However, the disaggregation of statistical data using variables of race/color, sex, gender, sexual orientation, territory, chronic conditions, among others, is necessary, so that they can be compared between countries and reveal what happens to those who are invisible. The records of teleconsultations for COVID-19 are important documents that can inform future achievements on the use of human rights-centered frameworks in clinical practice, as cited in the retrieved studies.⁴⁸

Telehealth services and applications used during the pandemic need to consider the “forgotten ones” in their evaluation algorithms and frameworks. Intersectionality studies point to these emerging issues. In addressing disaster capitalism and COVID-19, Angela Davis cited different prison methods: traditional incarceration, distortions of the quality-of-life concept, and structural racism. These amplify the pandemic and create a demand for global measures such as the enhancement of international solidarity of feminist human-centric telehealth policies and institutions.⁴⁹

From the perspective of public health policymaking, a study about social capital and Covid-19 in 37 countries concluded that higher COVID-19 mortality rates were associated with higher population density, an aging population, fewer hospital beds, and lower government effectiveness—a prevalent reality in health inequity-concentrating territories. Community attachment and social trust were associated with more COVID-19-related deaths. In contrast, family bonds and security were associated with fewer COVID-19-related deaths. Therefore, this involves a set of behavioral situations that can lead to many unfavorable outcomes.⁵⁰ Remote consultation services need to address these issues, as what could be called a second pandemic, driven by the coronavirus, is about mental suffering, a recurring theme that appeared in our review. This second pandemic could likely have long-term consequences that health care services will need to deal with.

Our results indicated that when there were well-designed clinical trials in progress^{26,28,31} or patients with common problems,²⁷ it was easier to conduct observational analytical studies and listen to the members of the population under study. Most of the authors of the retrieved studies had not done previous work on telehealth, with the exceptions of Smith²⁸ and Goodman-Casanova.³¹ Ferraris colleagues deepened their knowledge about offering telemedicine care in neurosurgery to poor and vulnerable populations in the Philippines by conducting comparative studies between countries and evaluating the use of new digital technology to plan treatment before surgery.⁵¹ The present is an opportune time when the conduct of gold standard epidemiological studies can be combined with telehealth and digital health among various medical specialties,

and expanded so that a synthesis of evidence might be achieved in looking at specific research questions.

Vulnerability among individuals can be either clinical or socioeconomic, or the two may be associated, depending on the context. The results of our review indicate that there are territories in which these two types of vulnerabilities are combined, and significantly increase morbidity and mortality from COVID-19, requiring specific coping strategies. In August 2020, response to the pandemic in Maré and Manguinhos, territories that have a history of concentration of vulnerabilities, began late. Global COVID-19 remote consultation planning might have benefited from the findings of this review.

Limitations of this study include the following: a short analysis period of a process that is still ongoing in 2021; only texts in English were screened, even after removing the search limit to languages; the choice of indexed scientific databases, even with the fast-track publication process as a source, excluded a range of documents that might have been instructive to understand a context that is in constant and rapid change; qualitative synthesis without comparative meta-analysis increased the selective outcome reporting bias, which we tried to minimize through exhaustive discussion of the retrieved literature, following the recommendations of the Joanne Briggs Institute for scoping reviews.

Conclusions

The small number of published articles resulting from our systematic review indicates that further studies, focused on different vulnerabilities associated with pandemics and their implications in many nations are required. Listening to the opinions of vulnerable groups and their caregivers is critical both before and during adoption of COVID-19 control measures. Health managers need to monitor the health of and delivery of services to socioeconomically and clinically vulnerable people closely, to improve services and provide care from a human rights perspective across the globe.

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Disclaimer

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Supplementary Material

Supplementary Appendix SA1

Supplementary Appendix SA2

Supplementary Appendix SA3

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