

Perceptions of primary care physicians and patients about telemedicine during the COVID-19 pandemic: an integrative review

Percepções de médicos e pacientes da atenção primária sobre a telemedicina durante a pandemia de COVID-19: uma revisão integrativa

Percepciones de médicos y pacientes de atención primaria sobre la telemedicina durante la pandemia de COVID-19: una revisión integradora

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Abstract

Introduction: The COVID-19 pandemic imposed an urgent need to reorganize health services across the planet, including within the scope of primary health care. In this context, telemedicine soon proved to be a key strategy for maintaining the provision of essential health services. Among the obstacles to disseminating this type of care is the human factor. **Objective:** Accordingly, this study aimed to determine the perceptions of physicians and patients about telemedicine at the primary health care level during the COVID-19 pandemic. **Methods:** An integrative literature review of articles published up to April 1, 2022 was carried out in 3 databases (BVS, PubMed and Science Direct). Texts containing “COVID-19”, “telemedicina” and “atenção primária à saúde” (or their equivalents in English or Spanish) in their respective titles and/or abstracts simultaneously were included. After reading the abstract and full text, the following were excluded: replicated; without description of perceptions; with a limited focus on disease or medical specialty; without focus on primary health care, telemedicine or COVID-19; without an explicit or defined methodology; and not found online. At the end, selected publications were submitted to analysis and had their sociodemographic characteristics raised and emerging themes divided into categories, based on the Primary Care Assessment Survey, and classified into potentials or weaknesses in each area. Approval by the ethics committee was not required. **Results:** Thirteen works were selected using the described methods. These were subdivided into 2 groups, based on the focus of the perceptions found (doctors or patients). Texts were obtained from countries in the Americas (5 studies), the Middle East (4 studies), Europe (2 studies) and the Western Pacific (2 studies). Synchronous telemedicine was the most cited modality, with telephone and video as the most used media. **Conclusions:** Telemedicine has numerous potential applications at the primary health care level; in particular, with regard to its essential attributes of longitudinality and coordination of care. It can, however, exacerbate challenges already presented by health systems, while at the same time, it does not completely replace face-to-face service. Therefore, it should be considered a modality of individual and context-dependent health care.

Keywords: Primary health care; Telemedicine; COVID-19; Review.

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Resumo

Introdução: A pandemia de COVID-19 impôs a necessidade urgente de reorganização por serviços de saúde por todo o planeta, incluindo o âmbito da atenção primária à saúde (APS). Nesse contexto, a telemedicina (TM) logo se mostrou estratégia fundamental para a manutenção da prestação de serviços essenciais em saúde. Entre os obstáculos à disseminação dessa modalidade de cuidado, encontra-se o fator humano. **Objetivo:** Nesse sentido, o presente estudo objetivou verificar as percepções de médicos e pacientes sobre a TM, no nível da APS, durante a pandemia de COVID-19. **Métodos:** Realizou-se revisão integrativa de literatura, de publicações realizadas até 1º de abril de 2022, em três bases de dados (Biblioteca Virtual em Saúde, PubMed e Science Direct). Foram incluídos textos que contivessem “COVID-19”, “telemedicina” e “atenção primária à saúde” (ou seus correspondentes em inglês ou espanhol), simultaneamente, em seus respectivos títulos e/ou resumos. Submetidos à leitura de resumo e texto na íntegra, foram posteriormente excluídos aqueles repetidos; sem descrição de percepções; com foco restrito à doença ou especialidade; sem foco em APS, TM ou COVID-19; sem metodologia explicitada ou definida; e não encontrados, na íntegra, *online*. Publicações selecionadas, ao final, foram submetidas à análise e tiveram suas características sociodemográficas levantadas e temas emergentes divididos em categorias, com base no Primary Care Assessment Survey, e classificados em potenciais ou fragilidades em cada área. Não foi necessária aprovação pelo comitê de ética. **Resultados:** Treze trabalhos foram selecionados utilizando-se a metodologia descrita. Eles foram subdivididos em dois grupos, com base no enfoque das percepções encontradas (médicos ou pacientes). Foram obtidos textos de países das Américas (cinco estudos), Oriente Médio (quatro estudos), Europa (dois estudos) e Pacífico Ocidental (dois estudos). A telemedicina síncrona foi a modalidade mais citada, com telefone e vídeo como meios mais utilizados. **Conclusões:** A TM apresenta inúmeros potenciais de aplicação no nível da APS, especialmente no que concerne aos seus atributos essenciais de longitudinalidade e coordenação do cuidado. Pode, no entanto, agravar desafios já apresentados pelos sistemas de saúde; ao mesmo tempo que não substitui por completo o atendimento presencial. Deve ser considerada, assim, modalidade de atenção à saúde indivíduo e contexto-dependente.

Palavras-chave: Atenção primária à saúde; Telemedicina; COVID-19; Revisão.

Resumen

Introducción: La pandemia de COVID-19 ha impuesto la necesidad urgente de reorganizar los servicios de salud en todo el planeta, incluso en el ámbito de la Atención Primaria de Salud. En este contexto, la telemedicina pronto demostró ser una estrategia fundamental para mantener la prestación de los servicios esenciales de salud. Entre los obstáculos para la difusión de este tipo de atención se encuentra el factor humano. **Objetivo:** En ese sentido, el presente estudio tiene como objetivo verificar las percepciones de médicos y pacientes sobre la MT, a nivel de la Atención Primaria de Salud, durante la pandemia de la COVID-19. **Métodos:** Se realizó una revisión bibliográfica integradora de publicaciones realizadas hasta el 1 de abril de 2022 en tres bases de datos (BVS, PubMed y Science Direct). Los textos que contenían “COVID-19”, “telemedicina” y “atenção primária à saúde” (o sus equivalentes en inglés o español) se incluyeron simultáneamente en sus respectivos títulos y/o resúmenes. Sujetos a la lectura del resumen y del texto completo, fueron excluidos: repetidos; ninguna descripción de las percepciones; con un enfoque estrecho en la enfermedad o especialidad; sin enfoque en Atención Primaria de Salud, telemedicina o COVID-19; sin una metodología explícita o definida; y no encontrado, en su totalidad, en línea. Al final, las publicaciones seleccionadas fueron sometidas a análisis y se plantearon sus características sociodemográficas y temáticas emergentes divididas en categorías, con base en la Encuesta de Evaluación de la Atención Primaria, y clasificadas en potencialidades o debilidades en cada área. No se requirió la aprobación del comité de ética. **Resultados:** Trece trabajos fueron seleccionados utilizando la metodología descrita. Estos se subdividieron en dos grupos, según el enfoque de las percepciones encontradas (médicos o pacientes). Los textos se obtuvieron de países de las Américas (cinco estudios), Medio Oriente (cuatro estudios), Europa (dos estudios) y el Pacífico Occidental (dos estudios). La telemedicina síncrona fue la modalidad más citada, siendo el teléfono y el video los medios más utilizados. **Conclusiones:** La telemedicina tiene numerosas aplicaciones potenciales a nivel de la APS; en particular, en cuanto a sus atributos esenciales de longitudinalidad y coordinación asistencial. Sin embargo, puede exacerbar los desafíos que ya presentan los sistemas de salud; al mismo tiempo que no reemplaza completamente la atención presencial. Por lo tanto, debe ser considerada una modalidad de atención a la salud individual y dependiente del contexto.

Palabras clave: Atención primaria de salud; Telemedicina; COVID-19; Revisión.

INTRODUCTION

On January 30, 2020, the coronavirus disease (COVID-19) reached the status of a Public Health Emergency of International Importance.¹ With the overload of health systems, due to the greater demand for care for people with the disease and the continued health care of other individuals (with the risk of increasing direct and indirect mortality due to other conditions), the pandemic imposed the urgent need to reorganize health services across the planet, with the aim of ensuring that limited resources enable the best care possible for these populations.²

In this context, primary health care (PHC), responsible for coordinating care, assumed an important role, since it was estimated that up to 80% of COVID-19 cases could be managed at this level of care.³ Likewise, it was believed that it would be capable of reorganizing itself, avoiding the discontinuity of attention to most health demands of the enrolled populations.⁴

Still in this sense, with the adoption of measures such as social distancing and quarantine, aiming to break the chain of transmission of the disease and limit its impact on individuals and health systems,⁵ telemedicine (TM) soon proved to be a key strategy for maintaining the provision of essential health services,² recognized by the Pan American Health Organization,⁶ such as:

[...] the provision of health services by all health professionals, where distance is a critical factor, using information and communication technologies (ICT) to exchange valid information for diagnosis, treatment and prevention of diseases and injuries, tests and evaluation, and for the continuing education of health care providers, all in the interest of promoting the health of individuals and their communities,

Although it is not new in itself, with the incorporation of ICT foreseen by the World Health Organization (WHO) since 2005, and being associated with ensuring greater access to health services as well as increasing the quality of care and efficiency organizationally, few TM initiatives had been able, until then, to consolidate and be incorporated in health processes.⁶ Part of this phenomenon could be explained by the “human factor”, exemplified by resistance to change, previous opinions about TM and the level of competence in digital environments of those involved.⁶

In the pandemic context, however, given the urgent need for strategic adaptations by health services and the WHO’s recognition of TM as a safe and effective alternative for the assessment of suspected cases of COVID-19 and guidance on diagnosis and treatment of these patients,⁷ different TM actions were observed worldwide. And, as the pandemic progresses and is more under control, it is essential that such measures are reevaluated, aiming to identify the factors related to their greater or lesser effectiveness and the possibility of their maintenance in this and in different health care contexts.²

Therefore, the aim of the present study was to determine the perceptions of doctors and patients about TM, at the PHC level, during the COVID-19 pandemic, with a focus on describing the factors that influenced their respective experiences and identifying possible potentials and weaknesses.

METHODS

We conducted an integrative literature review, an approach that, through identification, analysis and synthesis of studies with different designs, experimental and non-experimental, aims to determine current knowledge about a phenomenon in question, enabling a comprehensive understanding of it. Its stages are: elaboration of a guiding question; broad and diversified search in databases, based on inclusion and exclusion criteria in accordance with the guiding question; data collection based on a previously established instrument; critical analysis of included studies; discussion of results, compared to current literature; and presentation of the integrative review.⁸

Accordingly, the guiding question of the present study was: “What were the perceptions of doctors and patients about TM, within the scope of PHC, during the COVID-19 pandemic?”. The articles were selected through a simultaneous search, carried out on April(1, 2022, in the Virtual Health Library

(VHL), PubMed and ScienceDirect databases; using the following descriptors in Health Sciences, as well as their respective counterparts in English and Spanish: “COVID-19”, “telemedicine” and “primary health care”.

We included articles found that simultaneously contained all of the aforementioned descriptors (or their equivalent in English or Spanish) in their titles and/or abstracts, published up to April 1, 2022. Table 1 illustrates the research strategies respectively used in each of the databases.

Chart 1. Investigation strategy used in each database.

Database	Investigation strategy
BVS	(ab:(covid-19)) AND (ab:(telemedicine) OR ab:(telemedicine)) AND (ab:(primary health care) OR ab:(primary health care) OR ab:(primary health care))
PubMed	((covid-19[Title/Abstract]) AND (telemedicine[Title/Abstract])) AND (primary health care[Title/Abstract]) ((covid-19[Title/Abstract]) AND (telemedicine[Title/Abstract])) AND (primary health care [Title/Abstract]) ((covid-19[Title/Abstract]) AND (telemedicine[Title/Abstract])) AND (primary health care [Title/Abstract])
ScienceDirect	Title, abstract, keywords: covid-19, telemedicine, primary health care Title, abstract, keywords: covid-19, telemedicine, primary health care Title, abstract, keywords: covid-19, telemedicine, primary health care

The exclusion criteria were: duplicate articles; articles not describing the perceptions of the agents involved; articles with a focus limited to a disease or medical specialty; articles not focused on PHC or including other levels of care in their analysis; articles not focused on TM or only addressing it tangentially; articles not focused on the COVID-19 pandemic or including data prior to that period, without discrimination in the results; articles without an explicit or defined methodology; and articles not found, in full, online.

A total of 359 publications were identified: 180 in VHL, 64 in PubMed and 115 in ScienceDirect. It is worth noting that the search for descriptors in Portuguese and Spanish did not generate any results in the PubMed database, and, in Portuguese, no results in the ScienceDirect database. Of the initial publications, 54 were excluded because of duplication. The remaining 305 then had their titles analyzed, resulting in the exclusion of 95 due to a focus limited to specific diseases and 45 due to a focus limited to medical specialties.

The remaining 165 articles were subjected to title and abstract reading, with the exclusion of: 19 for not focusing on PHC or including other levels of health care in their investigations, without distinction in the results obtained; 44 for not addressing TM or doing so only tangentially, not focusing on the work in question; one for not focusing on the COVID-19 pandemic; and 80 for not including, in their analyses, the perceptions of doctors and/or patients.

In the end, after reading 20 of the 21 remaining texts in full (one of them could not be obtained online, being removed from the sample), the following were excluded: two because they did not focus on TM; three for not focusing on COVID-19; and two for not having a well-defined methodology. The methodology used for article selection is depicted in the flowchart in Figure 1.

Thus, 13 publications were included in the final sample of this study, where seven were indexed in VHL, six in PubMed and none in ScienceDirect. And, according to the focus of their respective investigations, it was possible to divide them into two subgroups: 1) doctors’ perceptions, with eight works; and 2) patients’ perceptions, with five studies.

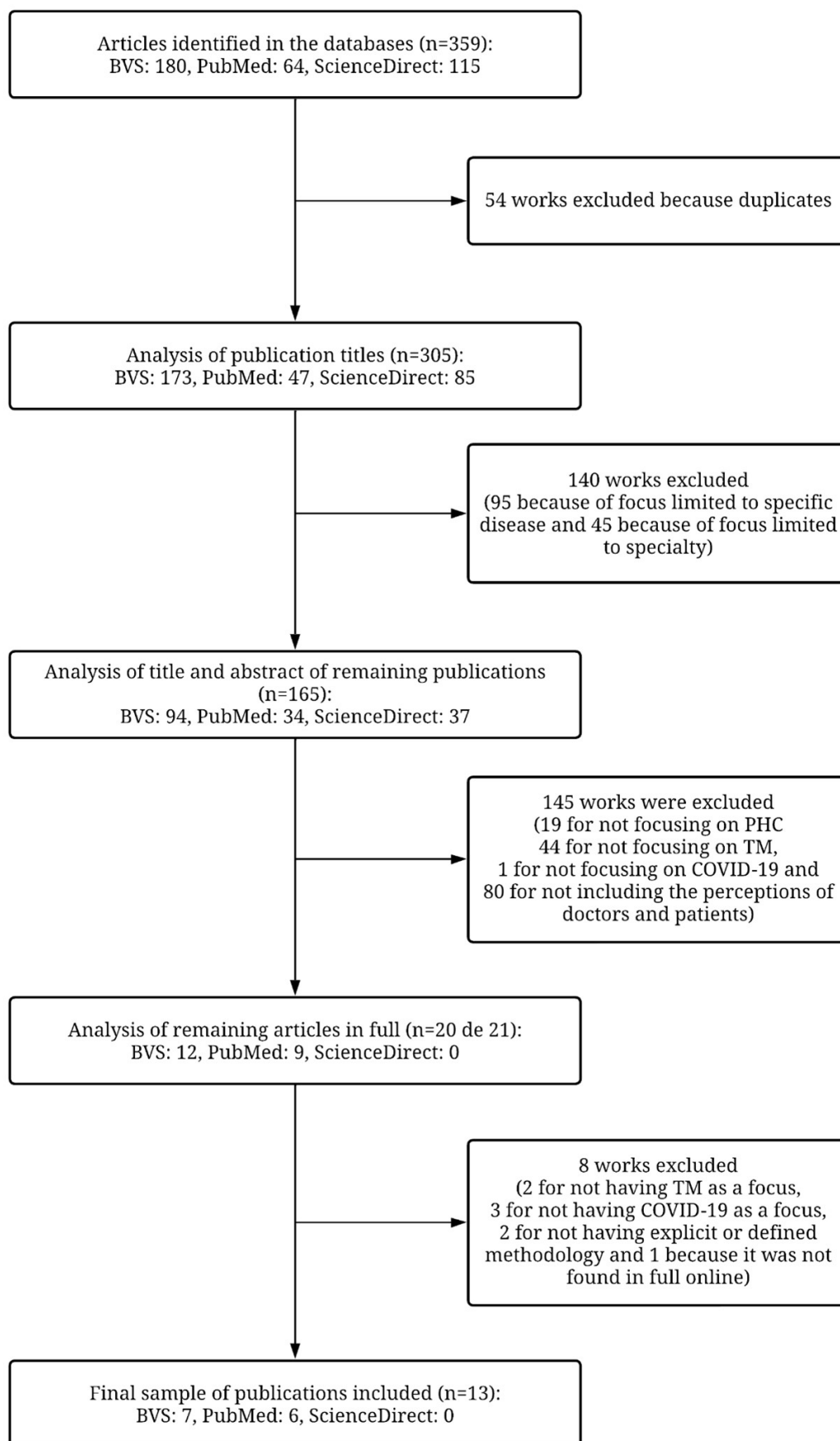


Figure 1. Flowchart of methodology used in selecting the studies found.

We then identified the demographic characteristics of the participants involved and the emerging themes in their reports. Given the absence of a specific instrument for this last analysis, the categories proposed by the Primary Care Assessment Survey (PCAS) were used as inspiration, a questionnaire developed for the assessment of PHC by patients, based on 11 scales, representing the operationalization of formal definitions of this level of care.⁹ The adaptations made, aiming to formulate more generalizable categories, are represented in Figure 2.

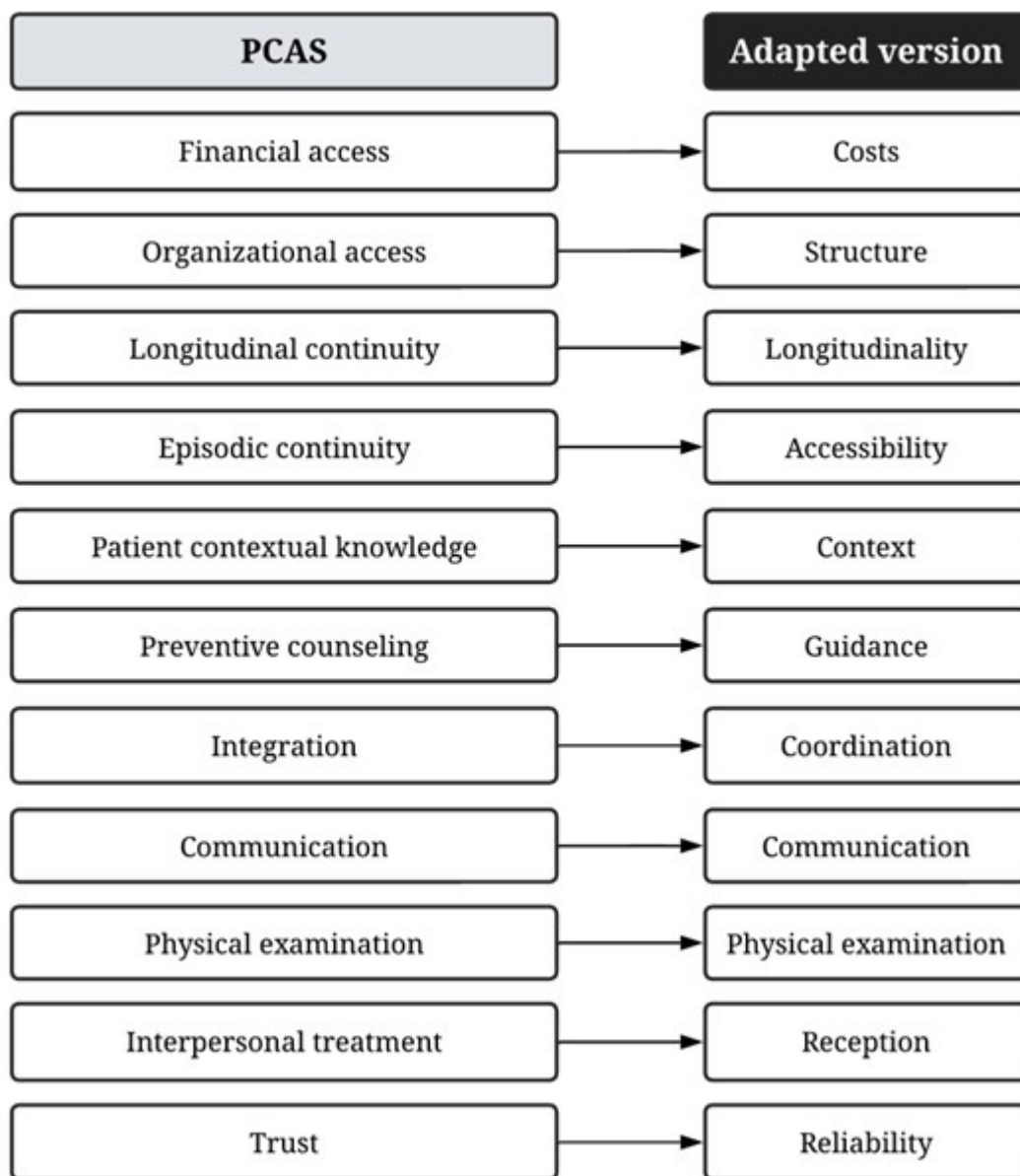


Figure 2. Flowchart of categories formulated inspiration from Primary Care Assessment Survey for the classification of emerging themes in the present study.

Thus, using the Microsoft Excel program, emerging themes were categorized and, subsequently, subclassified into: potentials or weaknesses, as they favor or disfavor the application of TM and mitigate or aggravate challenges observed in health systems, respectively. There was no need for approval by the local ethics committee, as the present study did not require the identification or sensitive data of human beings.

RESULTS

Thirteen works were found using the described strategy. Its bibliometric characteristics are summarized in Chart 2.

Chart 2. Bibliometric characteristics of selected studies.

Title	Authors (Period evaluated)	Journal (original language)	Country (region)	Type of study (sample)	Objective	Telemedicine modality (Medium used)
GROUP 1 – Doctors' perceptions						
A Qualitative Study of Primary Care Physicians' Experiences with Telemedicine During COVID-19	Teresita Gomez, Yohualli B. Anaya, Kevin J. Shih, Derjung M. Tarn (03/19/2020-05/31/2020)	The Journal of the American Board of Family Medicine (English)	United States (Americas)	Qualitative (11 doctors and 4 interns in medicine)	To identify the variety of perceptions of PHC doctors about the benefits and challenges of using MT, especially in doctor-patient interactions	2.4.1 Consultations between remote patient and health care professional (not specified)
A Stepwise Transition to Telemedicine in Response to COVID-19	Sabrina L. Silver, Meghan N. Lewis and Christy J. W. Ledford (03/16/2020-06/12/2020)	The Journal of the American Board of Family Medicine (English)	United States (Americas)	Quantitative-qualitative, prospective study (22 doctors)	To identify characteristics that are suitable for TM, focusing on patient, consultation, and doctor factors	2.4.1 Consultations between remote patient and health care professional (video and telephone)
GP perceptions of telehealth services in Australia: a qualitative study	Keshia R, De Guzman, Centaine L. Snoswell, Chantelle M. Giles, Anthony C. Smith, Helen H. Haydon (not reported)	BJGP Open (English)	Australia (Western Pacific)	Qualitative study (14 doctors)	To investigate the perceptions of generalists in the provision of telehealth services (consultations via telephone and video) in Australia	2.4.1 Consultations between remote patient and health care professional (video and telephone)
Perspectives of primary care clinicians in Massachusetts on use of telemedicine with adults aged 65 and older during the COVID-19 pandemic	Gianna M. Aliberti, Roma Bhatia, Laura B. Desrochers, Elizabeth A. Gilliam, Mara A. Schonberg (09/2020-02/2021)	Preventive Medicine Reports (English)	United States (Americas)	Qualitative study (163 doctors)	To use qualitative methods to continue learning from PHC clinicians how to best use and integrate MT into primary care for adults over 65	2.4.1 Consultations between remote patient and health care professional (video and telephone)
Physician's Perception Toward Using Telemedicine During COVID-19 Pandemic in King Abdulaziz Medical City, Riyadh, Saudi Arabia	Bader A. Altulaihi, Khalid G. Alharbi, Abdulrahman M. Alhassan, Abdullah M. Altamimi, Mouneera A. Al Akeel (not reported)	Cureus (English)	Saudi Arabia (Middle East)	Quantitative-qualitative study (219 doctors)	To evaluate barriers, benefits and perceptions of TM doctors in a PHC center in Riyadh, Saudi Arabia	2.4.1 Consultations between remote patient and health care professional (not specified)

Continue...

Chart 2. Continuation.

Title	Authors (Period evaluated)	Journal (original language)	Country (region)	Type of study (sample)	Objective	Telemedicine modality (Medium used)
Suitability of Video Consultations During the COVID-19 Pandemic Lockdown: Cross-sectional Survey Among Norwegian General Practitioners	Tor Magne Johnsen, Børge Lønnebakke Norberg, Eli Kristiansen, Paolo Zanaboni, Bjarne Austad, Frode Helgetun Krogh, Linn Getz (04/14/2020-05/03/2020)	Journal of Medical Internet Research (English)	Norway (Europe)	Cross-sectional study (855 doctors)	To explore how generalists in Norway perceived the suitability of video consultations compared to in-person consultations during the COVID-19 pandemic	2.4.1 Consultations between remote patient and health care professional (video)
The Telemedicine Takeover: Lessons Learned During an Emerging Pandemic	Jeffrey A. Wilhite, Lisa Altshuler, Harriet Fisher, Colleen Gillespie, Kathleen Hanley, Eric Goldberg, Andrew Wallach, Sondra Zabar (05/20/2020-06/20/2020)	Telemedicine and e-Health (English)	United States (Americas)	Quantitative-qualitative (152 doctors)	To describe attitudes and challenges about offering quality virtual patient care	2.4.1 Consultations between remote patient and health care professional 2.4.4 Case management consultations between health care professionals (video and telephone)
The Use of Telephone Consultation in Primary Health Care During COVID-19 Pandemic, Oman: Perceptions from Physicians	Said Al Hasani, Thamra Al Ghafri, Hussain Al Lawati, Jamshid Mohammed, Ameena Al Mukhainai, Fatma Al Ajmi, Huda Anwar (05/01/2020-06/31/2020)	Journal of Primary Care & Community Health (English)	Oman (Middle East)	Quantitative-qualitative study (22 doctors)	To describe attitudes and challenges about offering quality virtual patient care to explore doctors' perceptions regarding the implementation of the teleconsultation service in PHC in Muscat, Oman, with respect to: teleconsultation implementation process; challenges and limitations; lessons learned and future	2.4.1 Consultations between remote patient and health care professional (telephone)

Continue...

Chart 2. Continuation.

Title	Authors (Period evaluated)	Journal (original language)	Country (region)	Type of study (sample)	Objective	Telemedicine modality (Medium used)
GROUP 2 – Patients' perceptions						
A cross-sectional online survey on patients' satisfaction using store-and-forward voice and text messaging teleconsultation service during the COVID-19 pandemic	Nazanin Jannati, Nouzar Nakhaee, Vahid Yazdi-Feyzabadi, Dian Tjondronegoro (09/2020-01/2021)	International Journal of Medical Informatics (English)	Iran (Middle East)	Cross-sectional study (396 patients)	To examine the satisfaction of TM patient during the COVID-19 pandemic	2.4.3 Transmission of medical data to the health care professional (instant messages)
Grado de satisfacción de los pacientes de la Unidad de Salud Familiar Vitrius con la teleconsulta durante la pandemia del COVID-19	S. Gomes-de Almeida, T. Marabujo, M. do Carmo-Gonçalves (04/01/2020-05/01/2020)	Semergen (Spanish)	Portugal (Europe)	Cross-sectional study (253 patients)	To evaluate the degree of patient satisfaction with teleconsultation during the COVID-19 pandemic at the Vitrius family health unit and compare individuals' access to consultation before and during the pandemic	2.4.1 Consultations between remote patient and health care professional 2.4.3 Transmission of medical data to the health care professional (phone and email)
Patients' preferences for telemedicine versus in-clinic consultation in primary care during the COVID-19 pandemic	I. Mozes, D. Mossinson, H. Schilder, D. Dvir, O. Baron-Epel, A. Heymann (not reported)	BMC Primary Care (English)	Israel (Middle East)	Qualitative study (72 patients)	To investigate the concepts that could form the attributes that influence patient choice for Hybrid Medicine and quantify patient preferences that led to the success of its implementation during the COVID-19 period	2.4.1 Consultations between remote patient and health care professional 2.4.3 Transmission of medical data to the health care professional (video, phone, online portal, mobile app)
Patient Satisfaction and Trust in Telemedicine During the COVID-19 Pandemic: Retrospective Observational Study	Sharon Orrange, Arpna Patel, Wendy Jean Mack, Julia Cassetta (03/10/2020-04/17/2020)	JMIR Human Factors (English)	United States (Americas)	Quantitative, retrospective study (368 patients)	To examine correlations of patient satisfaction with the TM visit	2.4.1 Consultations between remote patient and healthcare professional (video and telephone)

Continue...

Chart 2. Continuation.

Title	Authors (Period evaluated)	Journal (original language)	Country (region)	Type of study (sample)	Objective	Telemedicine modality (Medium used)
Telehealth consultations in general practice during a pandemic lockdown: survey and interviews on patient experiences and preferences	Fiona Imlach, Eileen McKinlay, Lesley Middleton, Jonathan Kennedy, Megan Pledger, Lynne Russell, Marianna Churchward, Jacqueline Cumming, Karen McBride-Henry (04/20/2020-05/13/2020)	BMC Family Practice (English)	New Zealand (Western Pacific)	Quantitative-qualitative study (1,010 patients)	To explore: what type of contact patients had with general practitioners during lockdown; positive and negative experiences with telehealth during lockdown; how patients would like to use telehealth in the future	2.4.1 Consultations between remote patient and health care professional (telephone, online portal, email, instant messaging)

Chart 3. Summary table of emerging themes after review.

	Doctors	Patients
COSTS		
P	<ul style="list-style-type: none"> • Extra remuneration ^{10,12} 	<ul style="list-style-type: none"> • Good acceptance similar to that of face-to-face consultation²² • Little concern²¹
F	<ul style="list-style-type: none"> • Insufficient financial support ^{11,12,13,17} 	<ul style="list-style-type: none"> • Difficulties paying for consultation²² • Insufficient evidence on cost-effectiveness^{13,14,15,16,17,18,19} • Poor acceptance of charging similar amount as for in-person consultation²²
ESTRUTURA		
P	<ul style="list-style-type: none"> • Inadequate technical quality¹⁵ 	<ul style="list-style-type: none"> • Low incidence of technical problems²¹
F	<ul style="list-style-type: none"> • Inconsistency of protocols¹⁷ • Inadequate infrastructure^{11,12,13,16,17} • Need for equipment^{10,13} • Possible work overload^{10,11,15,16} • Insufficient technical support^{13,17} 	<ul style="list-style-type: none"> • Inadequate infrastructure^{18,22}
LONGITUDINALITY		
P	<ul style="list-style-type: none"> • Alternation between face-to-face and non-face-to-face consultations^{10,13,16} • Greater suitability in the presence of a previous relationship ^{12,15} • More contact opportunities^{12,14,17} • Monitoring of chronic diseases^{13,16,17} 	<ul style="list-style-type: none"> • Routine assessment of preference for services in telehealth²² • Greater suitability in the presence previous relationship^{20,22}
F	<ul style="list-style-type: none"> • Difficulty maintaining bonds¹⁶ • Less suitability in the absence of a prior relationship^{12,14,15} 	

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Chart 3. Continuation.

	Doctors	Patients
	ACCESSIBILITY	
P	<ul style="list-style-type: none"> • Convenience^{10,11,12,13,16} • Greater coverage^{10,16} • Social pressure¹² 	<ul style="list-style-type: none"> • Convenience^{18,20,21,22} • Greater coverage²² • Possibility of prior contact^{21,22} • Reduction of inequities²²
F	<ul style="list-style-type: none"> • Low digital competence/familiarity^{10,13,16,17} • Personal resistance^{10,12,13} 	<ul style="list-style-type: none"> • Low digital competence/familiarity²² • Exclusion of patients²²
	CONTEXT	
P	<ul style="list-style-type: none"> • Access to home environment^{10,13} • Facilitated access to medications in use^{10,16} • Better history taking¹⁰ 	<ul style="list-style-type: none"> • Personal factors positively associated with satisfaction^{18,21} • Little concern for security and privacy^{19,21} • Better history taking¹⁸ • Establishment of privacy parameters²² • People without diabetes mellitus¹⁹
F	<ul style="list-style-type: none"> • Less privacy^{10,16} • Damage to history collection¹⁶ 	<ul style="list-style-type: none"> • Personal factors negatively associated with satisfaction^{18,21} • Less privacy²² • Individual preference for in-person consultation²²
	GUIDANCE	
P	<ul style="list-style-type: none"> • Possibility of counseling and discussions^{10,17} 	<ul style="list-style-type: none"> • Easy understanding of health status necessary care¹⁸
F	<ul style="list-style-type: none"> • Difficulties in health education¹⁶ 	
	COORDINATION	
P	<ul style="list-style-type: none"> • Suitability in specific contexts^{10,11,13,15,16,17} • Involvement of family members^{10,13} • Avoidance of unnecessary demands^{10,17} 	<ul style="list-style-type: none"> • Suitability in specific contexts^{18,20,22} • Use of adaptations²²
F	<ul style="list-style-type: none"> • Difficulties in teamwork^{11,13,16,17} • Serious, complex problems and/or those that require a physical examination^{10,12,13,15,16} • Risk of overprescription¹⁰ 	<ul style="list-style-type: none"> • Inadequate for acute, new or more complex complaints²² • Greater use of antibiotics²²
	COMMUNICATION	
P	<ul style="list-style-type: none"> • Importance in choosing the medium¹² 	<ul style="list-style-type: none"> • Importance of choosing the medium^{20,22} • Importance of clarity and comprehensibility²²
F	<ul style="list-style-type: none"> • Less ease of discussion¹⁰ • Patient factors^{10,13,16} • Data loss^{10,16} • Triangulation^{10,13,16,17} 	<ul style="list-style-type: none"> • Patient factors²²
	PHYSICAL EXAMINATION	
P	<ul style="list-style-type: none"> • No need associated with a feeling of resolution and evaluation of the treatment¹¹ • Possibility of adaptation for “virtual” physical examination^{13,16} 	<ul style="list-style-type: none"> • Possibility of adaptation to “virtual” physical examination²¹ • Less concern with context-specific absence²²
F	<ul style="list-style-type: none"> • Impossibility of carrying out a physical examination^{10,11,12,13, 14,15,16} 	<ul style="list-style-type: none"> • Impossibility performing the physical examination²²

Continue...

Chart 3. Continuation.

	Doctors	Patients
RECEPTION		
P	<ul style="list-style-type: none"> • Greater efficiency in the use of time^{10,12,13,14} 	<ul style="list-style-type: none"> • Reported suitability^{18,21,22} • Important role of the health professional²¹
W	<ul style="list-style-type: none"> • Difficulty in establishing a bond^{10,16} • Impossibility of performing “care rituals”¹⁰ • Longer duration^{10,13,16} • Higher level of tiredness¹⁶ • Extra breaks¹⁶ 	<ul style="list-style-type: none"> • Impact of lack of engaging in bonding²² • Need to develop reception skills in a virtual environment²¹
RELIABILITY		
P	<ul style="list-style-type: none"> • Similar or greater suitability^{12,13,15} • High levels of satisfaction^{12,13,15} • Future for telemedicine^{10,13,16} • Mechanisms to guarantee confidentiality¹⁷ • Preference for telemedicine¹¹ 	<ul style="list-style-type: none"> • Meeting health needs¹⁸ • High levels of satisfaction^{19,21,22} • High level of interest in telemedicine in future^{19,21,22} • Confidence in the technical capacity attending doctor²¹
W	<ul style="list-style-type: none"> • Impossibility of completely replacing face-to-face consultations presenciais^{12,13} • Inability to identify signs of severity¹⁵ • Preference for face-to-face consultations^{13,14} • Insufficient training in telemedicine^{11,14,16} 	<ul style="list-style-type: none"> • High levels of dissatisfaction¹⁸ • Impossibility of completely replacing face-to-face consultations¹⁹ • Insufficient training in telemedicine²¹

P: observed potentials; W: observed weaknesses; diagonal line: no findings.

Twelve of the works were in English and one in Spanish. No articles were found in Portuguese. Regarding the periods evaluated, the studies were mostly concentrated (61.5%) in the first half of 2020; while two evaluated the last months of 2020 and the first months of 2021 and two did not specify the period.

Likewise, they are represented, considering the division of the planet into regions proposed by the WHO:²³ Americas (five studies), Middle East (four studies), Europe (two studies) and Western Pacific (two studies). Regarding the characteristics of the country of origin,²⁴ the articles can also be classified into: nine from developed economies (72.7%) and four from developing economies (27.3%); and in relation to gross domestic product per capita, 12 from high-income countries and one from a low- to middle-income country. There was no representation of countries from Africa or Southwest Asia, economies in transition or upper-middle or low income.

Among the studies in group 1, the mean number of participants was 182, varying between 11 and 855. Data from participants who did not have their perceptions about TM analyzed were not used in the calculation. Among studies in group 2, the mean number of participants was 420, varying between 72 and 1010. Demographic data, due to their absence or partial description in the original texts, could not be jointly evaluated. It is worth mentioning, in any case, considering the characteristics proposed by Cochrane for the stratification of population samples in health (PROGRESS-Plus),²⁵ that analyses were mentioned regarding: sex (76.9%); personal characteristics associated with discrimination (age, 69.2%; disability, 7.7%); education (61.5%); race/ethnicity/culture/language (30.8%); occupation (23.1%); socioeconomic status (15.4%); and place of residence (7.7%). Religion, social capital, relational aspects and time-dependent relationships were not assessed.

Regarding the TM modality, according to the classification proposed by the WHO,²⁶ the majority (90.9%) reported its use with the aim of enabling synchronous TM, also mentioning: asynchronous TM in 18.2%; remote health monitoring in 9.1%; and interprofessional consultations in 9.1%. For this contact, telephone (69.2%) and video (53.8%) were the most reported, with two articles not explaining the media used.

The emerging themes, in turn, due to the vastness and variety observed, are summarized in Chart 3.

DISCUSSION

The Alma Ata Declaration, in 1978, already advised that primary care be based on scientifically well-founded and socially acceptable methods and technologies, accessible to the entire country and its population.²⁷ A study conducted before the COVID-19 pandemic also highlighted the importance of telehealth in disaster and public health emergency situations.²⁸ In this sense, analyzing the perceptions of professionals and patients directly involved in the dissemination of recently observed TM initiatives^{28,29} provides an important window for evaluating telehealth³⁰ itself as a care modality, as well as its suitability in the context of PHC.

In general, corroborating the findings of pre-existing and contemporary studies,^{28,31,32} participants in the articles selected in this review (with the exception of one)¹⁸ reported a satisfactory level and/or suitability for consultations carried out via TM in at least half of the cases.^{12,13,15,18,19,21,22} They also expressed interest in a new similar contact or the possibility of including the respective modality used in their daily professional practices, in a post-pandemic future.^{10,13,16,19,21,22} This result, however, was not observed uniformly, being influenced by numerous individual, structural factors and the nature of the care itself.

It was therefore observed that TM was considered acceptable for a myriad contexts, such as assessment of less complex or chronic health problems, routine consultations, mental disorders, introduction or adjustment of medications, health education, provision of medical documents and discussion of complementary tests, among others.^{10,11,13,15-18,20,22} Especially in the management of chronic diseases such as high blood pressure or diabetes mellitus, a systematic review had already revealed the potential benefit of asynchronous TM;³³ reservations exist, however, regarding the ideal context of its application, considering the possibility of multiple comorbidities or worsening of the clinical condition.^{28,33}

Likewise, TM seems to be particularly inappropriate for first consultations or evaluation of a serious, complex problem or one that requires a physical examination;^{10,12,13,15,16,22} there is a risk of overprescription of medications (especially antibiotics) and neglect of signs of severity.^{10,15,22} Despite conflicting data on the occurrence of inappropriate prescription of medications,³³ previous studies already converged on considering that TM would not be compatible with the assessment of each and every complaint and that it was up to the health professional, or the platform used, based on alert keywords, determine when a face-to-face consultation could be necessary.^{28,33}

A preponderant factor in this context, cited by most publications involving doctors as the main challenge, is the impossibility of carrying out the physical examination.^{10-16,22} Also associated with the impairment of other levels of assessment, such as non-verbal and paraverbal communication of the patient,^{10,16} this aspect also compromises the execution of the so-called “care rituals” (described by doctors and patients as the symbolic and relational meaning attributed to physical touch, essential to clinical examination),¹⁰ which increases the level of insecurity in relation to the quality of care offered and the level of patient adherence.

TM may also be especially inaccessible (or not very accessible) to groups with some difficulty communicating and/or less digital competence/familiarity.^{10,13,16,17,22} Thus, older patients, with cognitive limitations or disabilities hearing, speakers of other languages and those with a lower income level can be directly harmed.^{10,13,16,17,22} The occurrence of triangulation, in this context, can be even more harmful to care, with distractions, overlapping of voices, difficulties in understanding the complaint and maintaining

patient privacy.^{10,13,16,17} It is therefore proposed that older patients may benefit more from face-to-face consultations;³⁴ while age patterns perhaps reflect deeper differences between urban and rural regions, exemplified by those concentrating younger and technologically literate populations and those populations whose sense of community drives the preference for face-to-face consultations.³⁴

On the other hand, the convenience of TM, associated with the absence of the need for physical travel or absence from work and reduced stress and loss of useful time, as well as greater availability of access to the doctor/patient,^{10-13,16,18,20-22} can be an important factor in approaching absentee patients, with some personal resistance to physically seeking health services or with reduced mobility.^{10,12,13,16,22} In addition to recognizing the aforementioned, current literature adds to groups of potential beneficiaries living in rural areas and patients enrolled in health services with a scale;^{10,12-14} for others, there was a perception of longer consultation durations, with the need for extra breaks (due to technical problems), a higher level of tiredness and a preference for face-to-face consultations.^{10,13,14,16} On the contrary, a systematic review evaluated remote consultations as potentially more effective in terms of costs and duration (compared to face-to-face), and are even considered a solution to the increased workload and the lack of generalists.³⁴

Furthermore, the shorter time for contact was associated with difficulties in establishing a bond.^{10,16,22} Still, many patients assessed the attention, time and care offered as adequate;^{18,21,22} with active engagement of the professional seen as essential in building personal connection in this environment.^{21,22}

Regarding the multidisciplinary aspect, difficulties were reported in terms of collaboration, communication and division of roles within the team; with potential loss of data on care provided, work overload and burnout.^{11,13,16,17} Such elements cause significant insecurity for professional practice, since comprehensive documentation is considered a key factor in legal and financially supported execution of care via TM.²⁸ Interestingly, however, the discussion about legal aspects was not observed in any of the selected studies, which can be explained by the legal flexibility observed during the pandemic.

One can also mention the pertinent report of the lack of protocols (or inconsistency in their implementation) and the insufficient training of professionals involved in the actions carried out;^{11,14,16,17,21} thus highlighting the need to develop clear and well-designed guidelines and technical training for healthcare professionals in digital environments. Proposals were made regarding the inclusion of specific content in the professional training process, aiming at the development of skills, such as reception and “adapted” physical examination (with the already existing validation of methods such as assessment of hearing acuity via telephone and gait and mobility via video).¹³ WHO document on 40 years of PHC also reinforces the possibility of carrying out training in the virtual environment for this purpose.³⁶

Another limiting component reported was the inadequacy of the infrastructure for providing care via TM, which includes: connectivity problems, lack of physical space and equipment, unsuitable platforms, low image and/or sound quality, insufficient technical support, among others.^{11-13,16,17} The deleterious potential is even greater when considering the preference for video as a communication medium,^{21,22} given the amount of data it requires in transit and the lack of evidence on how to successfully scale its use in different contexts.³⁵ Among the selected studies, telephone and email were cited as the most convenient and most accepted medium, respectively.^{19,22}

The harm to care is greatly aggravated when the potential for exclusion of socially and economically disadvantaged people is considered.²² Some studies propose the routine assessment of patients' preference for telehealth services; as well as contact prior to the teleconsultation, aiming to identify the feasibility of carrying it out and provide adequate technical support so that it occurs with the highest possible quality.¹²

In any case, despite being essentially structural problems and, known to require the joint, coordinated, integrated and simultaneous intervention of several social actors,³⁰ professionals reported insufficient investment to maintain TM services. And, although some of them see the possibility of extra remuneration in this type of care provision,^{10,12} difficulties associated with payment were also cited, such as: undefined coverage models, low familiarity (or confidence) with payment methods online and conflicts regarding the values assigned (compared to face-to-face consultations).^{11,12,13,17,22} There is evidence of the importance of adequate remuneration as a facilitator of the dissemination of TM services.³³

Finally, this is one of the most cited and controversial aspects in the current literature: the lack of data on the cost-effectiveness of TM.¹³⁻¹⁹ Although the WHO considers the evidence base to be consistent,³⁰ the studies included in this analysis, as well as systematic review consulted,³³ support, for the most part, the need for new investigations that guarantee professionals and patients the safety of the highest quality care possible. It is worth noting that health care via TM cannot be seen as a simple transposition of face-to-face services into the virtual space, given the peculiarities and the need for adaptations specific to each of these environments.

This study has some limitations: first, the high level of heterogeneity observed between the samples of selected works; second, the potential bias, caused by the pandemic itself, of a higher level of acceptability of TM due to the possibility of access to scarce health services in this context;^{29,32} third, with the progression of the pandemic, the comparison between different periods possibly being a factor of confusion; fourth, the non-existent representation of some regions and the care scenario for specific diseases or the work of specialists in PHC; fifth, the high use of intentional/convenience sampling, with commitment to the generalization of data to all the public; and sixth, the tiny amount of comparative data or information on the cost-effectiveness of TM.

The WHO estimates that 3 billion more people could be directly impacted by the use of digital health interventions.³⁷ The present study contributes to this discussion by compiling and analyzing the perceptions of PHC doctors and patients involved in TM, at a time when this goes beyond the spaces usually known due to necessity, being adopted in a multitude of unprecedented scenarios for all agents involved. Consequently, it allows us to raise essential questions, although not definitive, for the assessment of potentials and weaknesses in the adoption of these technologies in the context of PHC.

After the present investigation, and corroborating some generalized findings from other health contexts,³¹ it can be stated that TM has numerous potential applications at the PHC level; especially with regard to its essential attributes of longitudinality and coordination of care. It cannot be ignored, however, that numerous challenges facing health systems can be aggravated by its use;²⁶ at the same time, it does not have the capacity to completely replace face-to-face services.³¹ Therefore, it should be considered as a valid option of health care in a context and individual-specific way.

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CONFLICT OF INTERESTS

Nothing to declare.

AUTHORS' CONTRIBUTIONS

FHMP: conceptualization, data curation, formal analysis, investigation, methodology, writing – original draft. CANS: conceptualization, methodology, supervision, writing – review & editing.

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