

World Journal of *Clinical Cases*

World J Clin Cases 2022 March 16; 10(8): 2363-2659



OPINION REVIEW

- 2363** eHealth, telehealth, and telemedicine in the management of the COVID-19 pandemic and beyond: Lessons learned and future perspectives
Giaccalone A, Marin L, Febbi M, Franchi T, Tovani-Palone MR

MINIREVIEWS

- 2369** Developing natural marine products for treating liver diseases
Wei Q, Guo JS

ORIGINAL ARTICLE

Case Control Study

- 2382** Analysis of bacterial spectrum, activin A, and CD64 in chronic obstructive pulmonary disease patients complicated with pulmonary infections
Fei ZY, Wang J, Liang J, Zhou X, Guo M

Retrospective Cohort Study

- 2393** Computed tomography perfusion imaging evaluation of angiogenesis in patients with pancreatic adenocarcinoma
Liu W, Yin B, Liang ZH, Yu Y, Lu N

Retrospective Study

- 2404** Epidemiological features and dynamic changes in blood biochemical indices for COVID-19 patients in Hebi
Nie XB, Shi BS, Zhang L, Niu WL, Xue T, Li LQ, Wei XY, Wang YD, Chen WD, Hou RF

Clinical Trials Study

- 2420** Identification and predictive analysis for participants at ultra-high risk of psychosis: A comparison of three psychometric diagnostic interviews
Wang P, Yan CD, Dong XJ, Geng L, Xu C, Nie Y, Zhang S
- 2429** Prognostic significance of peritoneal metastasis from colorectal cancer treated with first-line triplet chemotherapy
Bazarbashi S, Alghabban A, Aseafan M, Aljubran AH, Alzahrani A, Elhassan TA

Observational Study

- 2439** Effect of intraoperative cell rescue on bleeding related indexes after cesarean section
Yu YF, Cao YD

Prospective Study

- 2447 Effectiveness of the combination of workshops and flipped classroom model to improve tube fixation training for nursing students
Wang YC, Cheng HL, Deng YM, Li BQ, Zhou XZ

META-ANALYSIS

- 2457 Mortality in patients with COVID-19 requiring extracorporeal membrane oxygenation: A meta-analysis
Zhang Y, Wang L, Fang ZX, Chen J, Zheng JL, Yao M, Chen WY

CASE REPORT

- 2468 Escitalopram-induced hepatitis: A case report
Wabont G, Ferret L, Houdre N, Lepied A, Bene J, Cousein E
- 2474 Fatal community-acquired bloodstream infection caused by *Klebsiella variicola*: A case report
Long DL, Wang YH, Wang JL, Mu SJ, Chen L, Shi XQ, Li JQ
- 2484 Endoscopic extraction of a submucosal esophageal foreign body piercing into the thoracic aorta: A case report
Chen ZC, Chen GQ, Chen XC, Zheng CY, Cao WD, Deng GH
- 2491 Severe tinnitus and migraine headache in a 37-year-old woman treated with trastuzumab for breast cancer: A case report
Liu YZ, Jiang H, Zhao YH, Zhang Q, Hao SC, Bao LP, Wu W, Jia ZB, Jiang HC
- 2497 Metastatic urothelial carcinoma harboring *ERBB2/3* mutations dramatically respond to chemotherapy plus anti-PD-1 antibody: A case report
Yan FF, Jiang Q, Ru B, Fei XJ, Ruan J, Zhang XC
- 2504 Retroperitoneal congenital epidermoid cyst misdiagnosed as a solid pseudopapillary tumor of the pancreas: A case report
Ma J, Zhang YM, Zhou CP, Zhu L
- 2510 Immunoglobulin G4-related kidney disease involving the renal pelvis and perirenal fat: A case report
He JW, Zou QM, Pan J, Wang SS, Xiang ST
- 2516 Fluoroscopic removal of fractured, retained, embedded Z self-expanding metal stent using a guidewire lasso technique: A case report
Bi YH, Ren JZ, Li JD, Han XW
- 2522 Treatment and five-year follow-up of type A insulin resistance syndrome: A case report
Chen YH, Chen QQ, Wang CL
- 2529 Effective response to crizotinib of concurrent *KIF5B-MET* and *MET-CDR2*-rearranged non-small cell lung cancer: A case report
Liu LF, Deng JY, Lizaso A, Lin J, Sun S

- 2537** Idarucizumab reverses dabigatran-induced anticoagulation in treatment of gastric bleeding: A case report
Jia Y, Wang SH, Cui NJ, Liu QX, Wang W, Li X, Gu YM, Zhu Y
- 2543** Immunoglobulin G4-related disease involving multiple systems: A case report
An YQ, Ma N, Liu Y
- 2550** Daptomycin and linezolid for severe methicillin-resistant *Staphylococcus aureus* psoas abscess and bacteremia: A case report and review of the literature
Hong XB, Yu ZL, Fu HB, Cai ZH, Chen J
- 2559** Isolated scaphoid dislocation: A case report and review of literature
Liu SD, Yin BS, Han F, Jiang HJ, Qu W
- 2569** Dual biologic therapy with ocrelizumab for multiple sclerosis and vedolizumab for Crohn's disease: A case report and review of literature
Au M, Mitrev N, Leong RW, Kariyawasam V
- 2577** Cardiac rehabilitation in a heart failure patient after left ventricular assist device insertion and subsequent heart transplantation: A case report
Yang TW, Song S, Lee HW, Lee BJ
- 2584** Large retroperitoneal atypical spindle cell lipomatous tumor, an extremely rare neoplasm: A case report
Bae JM, Jung CY, Yun WS, Choi JH
- 2591** Hepatocellular carcinoma effective stereotactic body radiotherapy using Gold Anchor and the Synchrony system: Two case reports and review of literature
Masuda S, Tsukiyama T, Minagawa Y, Koizumi K, Kako M, Kinbara T, Haruki U
- 2604** Mantle cell lymphoma with endobronchial involvement: A case report
Ding YZ, Tang DQ, Zhao XJ
- 2610** Fatal systemic emphysematous infection caused by *Klebsiella pneumoniae*: A case report
Zhang JQ, He CC, Yuan B, Liu R, Qi YJ, Wang ZX, He XN, Li YM
- 2616** Takotsubo cardiomyopathy misdiagnosed as acute myocardial infarction under the Chest Pain Center model: A case report
Meng LP, Zhang P
- 2622** Cystic teratoma of the parotid gland: A case report
Liu HS, Zhang QY, Duan JF, Li G, Zhang J, Sun PF
- 2629** Silver dressing in the management of an infant's urachal anomaly infected with methicillin-resistant *Staphylococcus aureus*: A case report
Shi ZY, Hou SL, Li XW
- 2637** Drain-site hernia after laparoscopic rectal resection: A case report and review of literature
Su J, Deng C, Yin HM

- 2644** Synchronized early gastric cancer occurred in a patient with serrated polyposis syndrome: A case report

Ning YZ, Liu GY, Rao XL, Ma YC, Rong L

- 2650** Large cystic-solid pulmonary hamartoma: A case report

Guo XW, Jia XD, Ji AD, Zhang DQ, Jia DZ, Zhang Q, Shao Q, Liu Y

LETTER TO THE EDITOR

- 2657** COVID-19 pandemic and nurse teaching: Our experience

Molina Ruiz JC, Guerrero Orriach JL, Bravo Arcas ML, Montilla Sans A, Escano Gonzalez R

ABOUT COVER

Editorial Board Member of *World Journal of Clinical Cases*, Nicolae Gica, Doctor, PhD, Assistant Professor, Chief Doctor, Surgeon, Department of Obstetrics and Gynecology Surgery, Carol Davila University of Medicine and Pharmacy, Bucharest 063377, Romania. gica.nicolae@umfcd.ro

AIMS AND SCOPE

The primary aim of *World Journal of Clinical Cases* (WJCC, *World J Clin Cases*) is to provide scholars and readers from various fields of clinical medicine with a platform to publish high-quality clinical research articles and communicate their research findings online.

WJCC mainly publishes articles reporting research results and findings obtained in the field of clinical medicine and covering a wide range of topics, including case control studies, retrospective cohort studies, retrospective studies, clinical trials studies, observational studies, prospective studies, randomized controlled trials, randomized clinical trials, systematic reviews, meta-analysis, and case reports.

INDEXING/ABSTRACTING

The WJCC is now indexed in Science Citation Index Expanded (also known as SciSearch®), Journal Citation Reports/Science Edition, Scopus, PubMed, and PubMed Central. The 2021 Edition of Journal Citation Reports® cites the 2020 impact factor (IF) for WJCC as 1.337; IF without journal self cites: 1.301; 5-year IF: 1.742; Journal Citation Indicator: 0.33; Ranking: 119 among 169 journals in medicine, general and internal; and Quartile category: Q3. The WJCC's CiteScore for 2020 is 0.8 and Scopus CiteScore rank 2020: General Medicine is 493/793.

RESPONSIBLE EDITORS FOR THIS ISSUE

Production Editor: Hua-Ge Yin, Production Department Director: Xu Guo, Editorial Office Director: Jin-Lei Wang.

NAME OF JOURNAL

World Journal of Clinical Cases

ISSN

ISSN 2307-8960 (online)

LAUNCH DATE

April 16, 2013

FREQUENCY

Thrice Monthly

EDITORS-IN-CHIEF

Bao-Gan Peng, Jerzy Tadeusz Chudek, George Kontogeorgos, Maurizio Serati, Ja Hyeon Ku

EDITORIAL BOARD MEMBERS

<https://www.wjgnet.com/2307-8960/editorialboard.htm>

PUBLICATION DATE

March 16, 2022

COPYRIGHT

© 2022 Baishideng Publishing Group Inc

INSTRUCTIONS TO AUTHORS

<https://www.wjgnet.com/bpg/gerinfo/204>

GUIDELINES FOR ETHICS DOCUMENTS

<https://www.wjgnet.com/bpg/GerInfo/287>

GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH

<https://www.wjgnet.com/bpg/gerinfo/240>

PUBLICATION ETHICS

<https://www.wjgnet.com/bpg/GerInfo/288>

PUBLICATION MISCONDUCT

<https://www.wjgnet.com/bpg/gerinfo/208>

ARTICLE PROCESSING CHARGE

<https://www.wjgnet.com/bpg/gerinfo/242>

STEPS FOR SUBMITTING MANUSCRIPTS

<https://www.wjgnet.com/bpg/GerInfo/239>

ONLINE SUBMISSION

<https://www.f6publishing.com>



eHealth, telehealth, and telemedicine in the management of the COVID-19 pandemic and beyond: Lessons learned and future perspectives

Andrea Giacalone, Luca Marin, Massimiliano Febbi, Thomas Franchi, Marcos Roberto Tovani-Palone

Specialty type: Public, environmental and occupational health

Provenance and peer review: Invited article; Externally peer reviewed.

Peer-review model: Single blind

Peer-review report's scientific quality classification

Grade A (Excellent): 0
Grade B (Very good): B
Grade C (Good): C
Grade D (Fair): D
Grade E (Poor): 0

P-Reviewer: Apiratwarakul K, Gonzalez FM, Ozair A

Received: September 3, 2021

Peer-review started: September 3, 2021

First decision: December 1, 2021

Revised: December 11, 2021

Accepted: January 27, 2022

Article in press: January 27, 2022

Published online: March 16, 2022



Andrea Giacalone, Department of Industrial Engineering, Technologies for Sports Medicine and Rehabilitation, University of Rome Tor Vergata, Rome 00133, Italy

Luca Marin, Department of Research, Asomi College of Sciences, Marsa MRS 19112, Malta

Massimiliano Febbi, Department of Research, Asomi College of Sciences, Marsa MRS 19112, Malta

Thomas Franchi, The Medical School, The University of Sheffield, Sheffield S10 2RX, United Kingdom

Marcos Roberto Tovani-Palone, Department of Pathology and Legal Medicine, Ribeirão Preto Medical School, University of São Paulo, Ribeirão Preto 14049-900, Brazil

Corresponding author: Marcos Roberto Tovani-Palone, PhD, Academic Research, Department of Pathology and Legal Medicine, Ribeirão Preto Medical School, University of São Paulo, 3900 Bandeirantes Ave, Ribeirão Preto 14049-900, Brazil. marcos_palone@hotmail.com

Abstract

In this article, we discuss evidence supporting the effective implementation of eHealth, telehealth, and telemedicine during the coronavirus disease 2019 pandemic, with a view towards its permanent future integration in healthcare. We performed a literature search for articles describing the use of telehealth/telemedicine in the pandemic context using five databases. The articles selected describe the use of telemedicine as its advantages in terms of practicality and cost-effectiveness. This synthesis of articles is applicable to high-, middle- and low-income countries. Some of the notable benefits include breaking down geographical and time barriers, reducing waiting lists and crowding in healthcare facilities, and saving on national healthcare expenditure. However, there are a number of difficulties with the widespread implementation of telemedicine services that mainly relate to bureaucratic and regulatory concerns. Moreover, it is also important to make healthcare professionals and providers aware of the limits of this tool to avoid potential cases of negligence. Patients in turn will have to be made aware of and be educated on the use of this new healthcare modality before it is accepted by them. In the current socio-economic climate, it is therefore essential to implement a telehealth model aimed at efficiency and continuity of healthcare, as well as leading to an improvement in the quality of life of patients,

whilst optimising existing resources and reducing costs. In that regard, the adoption of eHealth, telehealth, and telemedicine services should be considered highly timely, despite current existing limitations.

Key Words: eHealth; Telehealth; Telemedicine; Coronavirus disease 2019; Pandemics; Delivery of healthcare

©The Author(s) 2022. Published by Baishideng Publishing Group Inc. All rights reserved.

Core Tip: In an attempt to contain the spread of coronavirus disease 2019, increasing pressure was placed on the healthcare sector to adapt to challenge of delivering care, thereby necessitating the adoption of innovative telehealth solutions to both ensure and optimize patient care. This has resulted in the accelerated development, utilisation and acceptability of telemedicine in several fields. In this sense, the current pandemic presents a once-in-a-generation opportunity for countries to implement appropriate telemedicine services. As healthcare continues to evolve and innovate, one of the main shifts in practice that we are likely to experience will be the growing use of digital healthcare technologies.

Citation: Giacalone A, Marin L, Febbi M, Franchi T, Tovani-Palone MR. eHealth, telehealth, and telemedicine in the management of the COVID-19 pandemic and beyond: Lessons learned and future perspectives. *World J Clin Cases* 2022; 10(8): 2363-2368

URL: <https://www.wjgnet.com/2307-8960/full/v10/i8/2363.htm>

DOI: <https://dx.doi.org/10.12998/wjcc.v10.i8.2363>

INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic represents the most serious public health threat in modern times, with long-lasting negative sequelae being seen in several sectors of the normal lives of those in affected countries around the world. In an attempt to contain the spread of the disease, increasing pressure was placed on the healthcare sector to adapt to challenge of delivering care, thereby necessitating the adoption of innovative telehealth solutions to both ensure and optimize patient care [1]. This has resulted in the accelerated development, utilisation and acceptability of telemedicine [2,3]. Prior to the pandemic, the use of telehealth was limited, with the main use cases of telehealth interventions being the care of patients with noncommunicable diseases, such as diabetes; however, the pandemic has propelled the widespread adoption of eHealth across numerous settings [4-6].

Telemedicine brings with it a host of benefits to patients, healthcare providers and the wider society, including reductions in the need for hospitalizations or readmissions, as well as on overall costs of healthcare and length of inpatient stay. In addition, it has been suggested that its use may provide psychological benefits to patients, including greater rates of satisfaction and medication adherence [7]. eHealth, telehealth and telemedicine solutions can be used interchangeably, providing convenient, low cost, and accessible health-related information and communication remotely, using internet-based technologies [8].

Several areas of healthcare have seen the successful adoption of telemedicine during the COVID-19 pandemic, ranging from mental health services to physical therapy and many others [4-6]. This article highlights the evidence for and opportunities presented by the use of telehealth/telemedicine during a pandemic scenario, as well as in periods of normality.

METHODS

A thorough literature search for articles was performed using five academic literature databases: CINAHL, MEDLINE/PubMed, Web of Science, Scopus, and Google Scholar. The search was done by combining keywords related to COVID-19, eHealth, telehealth and telemedicine, using the Boolean operators AND, OR, or NOT. The most recent, relevant and reliable scientific articles were considered and included in the review.

TELEHEALTH FOR PHYSICAL AND MENTAL WELLBEING

The incidence of mental health conditions saw a steep incline during the pandemic, likely due to measures of social isolation and fear of social interaction. Although mental health services began experimenting with the use of telemedicine as a means of providing mental health care in the period prior to the pandemic, this practice had only been implemented in less than 1% of consultations[9]. Peri-pandemic, these numbers have increased exponentially, with data revealing that 41% of mental health care and/or substance abuse services were facilitated by telemedicine interventions[10]. Indeed, Zhou *et al*[11] have recommended the implementation of ‘telemental health’ services as a viable and appropriate approach to supporting patients, their families, and healthcare providers during these challenging times.

Another important aspect of consideration is that during the periods of confinement due to COVID-19, many people experienced a change in their eating habits and a reduction in physical activity levels. An illustrative example of the use of telemedicine can also be seen here. Increases in body weight in patients with non-alcoholic fatty liver disease (NAFLD) may lead to disease progression, whilst weight gain in patients with human immunodeficiency virus (HIV) has been associated with the onset of cardiovascular disease. Policarpo *et al*[12] monitored the eating habits of these patients through a telemedicine dietary intervention, which successfully limited weight gain in NAFLD-HIV patients, serving to reinforce the effectiveness of using such tools in the management of patients’ conditions.

TELEHEALTH AND ITS WIDER APPLICATIONS

A recent study by Kichloo *et al*[13] highlights various advantages of telemedicine, including its cost-effectiveness, increased access to speciality services, and key potential to help mitigate the growing worries of physician shortage. Miller *et al*[14] validated these advantages in their study that assessed the implementation of telehealth physical therapy services in the context of the COVID-19 pandemic, in which the authors identified several strategies to aid its implementation. Over the three-month period from March to May 2020, the authors conducted 4548 physical therapy sessions remotely *via* a telehealth platform. A survey completed by each patient to assess the effectiveness of this intervention, revealed that 94% of participants felt satisfied with the outcome they received from the sessions and that 92% would attend another telehealth session. These novel findings provide important patient-focused evidence to support the implementation of telehealth physical therapy as a feasible alternative to in-person visits during, and indeed after, the pandemic.

Stanhope *et al*[15] have additionally substantiated these findings and recommended the continuation of telephysiotherapy as a form of primary care post-COVID-19, prior to face-to-face sessions where needed, due to its particularly successful implementation during the pandemic. In this context, it is also worth noting that the telemanagement of patients with home-based bilevel positive airway pressure ventilation has been found to reduce the need for endotracheal intubation in the early stages of COVID-19 pneumonia, whilst decreasing contact time with healthcare staff and the possibility of transmission of COVID-19. Thus, the practice of such telehealth intervention could prevent disease progression and hospitalization in some cases[16].

Furthermore, Thatcher *et al*[17] highlighted in their work several opportunity costs of attending orthopedic clinic consultations in person. Their survey found that patients often miss work (46%), lose income (34%) and drop out of their usual recreational activities (27%) in order to attend consultations. Patients became aware that through telemedicine it is possible to avoid the need for travel or time spent waiting in the clinic, resulting in time saved to dedicate to their usual activities. However, most patients (61%), preferred for their first consultation to be in-person, with telemedicine used for orthopedic follow-up care. Telemedicine can reduce both overcrowding in outpatient clinics and waiting lists. This would be an advantage for severe acute respiratory syndrome coronavirus 2 infection prevention as well as ensuring timely access to treatment for all those in need[18].

TELEHEALTH-BASED MODELS OF CARE

A model of care based on the use of telemedicine from the first contact between healthcare professionals and patient (in a primary care setting), has been shown to be of fundamental importance. Gudi *et al*[19] outlined how telehealth interventions have the potential to address persistent challenges in primary care worldwide, while strengthening the public health response to COVID-19. Further, Monaghesh *et al*[20] corroborated this notion in their systematic review of eight studies, which concluded that telehealth interventions are able to improve the overall delivery of care whilst maintaining the safety of patients and healthcare providers during the pandemic.

Looking forwards, Doraiswamy *et al*[21] provided compelling evidence for the ongoing application of telehealth interventions in the future landscape of healthcare. However, this review highlights discrepancies in the application of telemedicine in resource-limited settings, which may serve to widen the economic and societal divide already seen in healthcare. This concern is of course valid, given that many

countries do not have any form of telemedicine integrated into their national healthcare systems. Although there is a strong focus on the growth of telemedicine in high-income countries, the telemedicine revolution could have an even greater benefit in low- and middle-income countries, where it has the potential to improve healthcare access to the most vulnerable and geographically remote patients[22]. In this sense, the COVID-19 pandemic could be viewed as a once-in-a-generation opportunity for countries to implement telemedicine services through an appropriate regulatory framework[23]. For this to become a reality, aspects such as privacy and data protection should also be addressed by governments and health authorities in order to ensure the safety of users[24].

RISKS AND LIMITATIONS OF TELEHEALTH

As with face-to-face medical consultation, telehealth and telemedicine practices similarly carry liability risks. The three main areas for telecare pitfalls relate to: Documentation issues, poor triage decisions, and a dysfunctional office system. This can lead, in some cases, to superficial use of defined care pathway that can put the patient at risk[25]. In addition to the risks to patient, healthcare professionals must take responsibility for their actions within the scope of their competence. This means being aware of the legal aspects relevant to the delivery of telehealth and telemedicine services. Thus, telemedicine service providers are encouraged to determine in advance what each local region's policies and requirements are for informed consent, malpractice insurance coverage and maintaining privacy and security in this type of setting[26].

It is noteworthy that not all medical consultations can be performed through telemedicine, so healthcare professionals must be able to assess whether or not the situation is suitable for remote consultations. Moreover, patients should always be informed about the functionalities and limitations of this type of health care delivery[27]. This is especially pertinent given the relatively low levels of patient awareness regarding telemedicine and that many patients have never used it before[28].

In the current healthcare service environment, there remains a concern that system security can be targeted by a cyberattack. In order to guarantee the security of patients and their data, it is important to ensure adequate and effective security measures are in place[29].

CONCLUSION

As healthcare continues to evolve and innovate, one of the main shifts in practice that we are likely to experience will undoubtedly be the growing use of digital healthcare technologies, such as the Internet of Things, the Internet of Medical Things, big data analytics, artificial intelligence, machine learning, 5G and beyond telecommunications, and blockchain technology[30,31]. Whilst not discounting the high initial costs when adopting telehealth approaches to care[32], we conclude that there is currently sufficient evidence in the literature to validate telehealth and telemedicine interventions as viable alternative to providing optimal patient management in many areas of healthcare[33].

FOOTNOTES

Author contributions: Giacalone A conceptualized the study and wrote the original draft; Franchi T and Tovani-Palone MR helped with literature acquisition and data validation; Marin L, Febbi M, Franchi T and Tovani-Palone MR helped in writing the original draft; Giacalone A, Franchi T and Tovani-Palone MR wrote the review; Franchi T and Tovani-Palone MR edited the manuscript; Tovani-Palone MR supervised the study.

Conflict-of-interest statement: The authors declare no conflicts of interests.

Open-Access: This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <https://creativecommons.org/licenses/by-nc/4.0/>

Country/Territory of origin: Brazil

ORCID number: Andrea Giacalone 0000-0002-4779-0340; Luca Marin 0000-0002-4185-7428; Massimiliano Febbi 0000-0003-1091-997X; Thomas Franchi 0000-0003-2565-8098; Marcos Roberto Tovani-Palone 0000-0003-1149-2437.

S-Editor: Liu JH

L-Editor: A

P-Editor: Liu JH

REFERENCES

- 1 **Orlando JF**, Beard M, Kumar S. Systematic review of patient and caregivers' satisfaction with telehealth videoconferencing as a mode of service delivery in managing patients' health. *PLoS One* 2019; **14**: e0221848 [PMID: 31469865 DOI: 10.1371/journal.pone.0221848]
- 2 **Uscher-Pines L**, Thompson J, Taylor P, Dean K, Yuan T, Tong I, Mehrotra A. Where Virtual Care Was Already a Reality: Experiences of a Nationwide Telehealth Service Provider During the COVID-19 Pandemic. *J Med Internet Res* 2020; **22**: e22727 [PMID: 33112761 DOI: 10.2196/22727]
- 3 **Yap KY-L**, Liu J, Franchi T, Agha RA. The launch of the International Journal of Digital Health: ensuring digital transformation in healthcare beyond Covid-19. *Int J Dig Health* 2021; **1**: 2 [DOI: 10.29337/ijdh.27]
- 4 **North S**. Telemedicine in the Time of COVID and Beyond. *J Adolesc Health* 2020; **67**: 145-146 [PMID: 32605827 DOI: 10.1016/j.jadohealth.2020.05.024]
- 5 **Yadav SK**, Yadav N. Continuity of cancer care in the era of COVID-19 pandemic: Role of social media in low- and middle-income countries. *World J Clin Cases* 2021; **9**: 291-295 [PMID: 33521097 DOI: 10.12998/wjcc.v9.i2.291]
- 6 **Batalik L**, Filakova K, Batalikova K, Dosbaba F. Remotely monitored telerehabilitation for cardiac patients: A review of the current situation. *World J Clin Cases* 2020; **8**: 1818-1831 [PMID: 32518772 DOI: 10.12998/wjcc.v8.i10.1818]
- 7 **Hjelm NM**. Benefits and drawbacks of telemedicine. *J Telemed Telecare* 2005; **11**: 60-70 [PMID: 15829049 DOI: 10.1258/1357633053499886]
- 8 **Vidal-Alaball J**, Acosta-Roja R, Pastor Hernández N, Sanchez Luque U, Morrison D, Narejos Pérez S, Perez-Llano J, Salvador Vèrges A, López Seguí F. Telemedicine in the face of the COVID-19 pandemic. *Aten Primaria* 2020; **52**: 418-422 [PMID: 32402477 DOI: 10.1016/j.aprim.2020.04.003]
- 9 **Patel SY**, Huskamp HA, Busch AB, Mehrotra A. Telemental Health and US Rural-Urban Differences in Specialty Mental Health Use, 2010-2017. *Am J Public Health* 2020; **110**: 1308-1314 [PMID: 32673109 DOI: 10.2105/AJPH.2020.305657]
- 10 **Busch AB**, Sugarman DE, Horvitz LE, Greenfield SF. Telemedicine for treating mental health and substance use disorders: reflections since the pandemic. *Neuropsychopharmacology* 2021; **46**: 1068-1070 [PMID: 33479513 DOI: 10.1038/s41386-021-00960-4]
- 11 **Zhou X**, Snoswell CL, Harding LE, Bambling M, Edirippulige S, Bai X, Smith AC. The Role of Telehealth in Reducing the Mental Health Burden from COVID-19. *Telemed J E Health* 2020; **26**: 377-379 [PMID: 32202977 DOI: 10.1089/tmj.2020.0068]
- 12 **Policarpo S**, Machado MV, Cortez-Pinto H. Telemedicine as a tool for dietary intervention in NAFLD-HIV patients during the COVID-19 Lockdown: A randomized controlled trial. *Clin Nutr ESPEN* 2021; **43**: 329-334 [PMID: 34024536 DOI: 10.1016/j.clnesp.2021.03.031]
- 13 **Kichloo A**, Albosta M, Dettloff K, Wani F, El-Amir Z, Singh J, Aljadah M, Chakinala RC, Kanugula AK, Solanki S, Chugh S. Telemedicine, the current COVID-19 pandemic and the future: a narrative review and perspectives moving forward in the USA. *Fam Med Community Health* 2020; **8** [PMID: 32816942 DOI: 10.1136/fmch-2020-000530]
- 14 **Miller MJ**, Pak SS, Keller DR, Barnes DE. Evaluation of Pragmatic Telehealth Physical Therapy Implementation During the COVID-19 Pandemic. *Phys Ther* 2021; **101** [PMID: 33284318 DOI: 10.1093/ptj/pzaa193]
- 15 **Stanhope J**, Weinstein P. Learning from COVID-19 to improve access to physiotherapy. *Aust J Prim Health* 2020; **26**: 271-272 [PMID: 32669194 DOI: 10.1071/PY20141]
- 16 **Adly AS**, Adly MS, Adly AS. Telemanagement of Home-Isolated COVID-19 Patients Using Oxygen Therapy With Noninvasive Positive Pressure Ventilation and Physical Therapy Techniques: Randomized Clinical Trial. *J Med Internet Res* 2021; **23**: e23446 [PMID: 33819166 DOI: 10.2196/23446]
- 17 **Thatcher MD**, Thatcher MW, Smith MC, McCarron M, Reed J. Opportunity costs of attending surgical clinic appointments and experiences with telemedicine for follow-up care. *SAGE Open Med* 2021; **9**: 20503121211045247 [PMID: 34527246 DOI: 10.1177/20503121211045247]
- 18 **Chin BZ**, Nashi N, Lin S, Yik K, Tan G, Kagda FH. Telemedicine use in orthopaedics: Experience during the COVID-19 pandemic. *J Telemed Telecare* 2021; 1357633X211041011 [PMID: 34541945 DOI: 10.1177/1357633X211041011]
- 19 **Gudi N**, Konapur R, John O, Sarbadhikari S, Landry M. Telemedicine supported strengthening of primary care in WHO South East Asia region: lessons from the COVID-19 pandemic experiences. *BMJ Innovations* 2021; **7**: 580-585 [DOI: 10.1136/bmjinnov-2021-000699]
- 20 **Monaghesh E**, Hajizadeh A. The role of telehealth during COVID-19 outbreak: a systematic review based on current evidence. *BMC Public Health* 2020; **20**: 1193 [PMID: 32738884 DOI: 10.1186/s12889-020-09301-4]
- 21 **Doraiswamy S**, Abraham A, Mamtani R, Cheema S. Use of Telehealth During the COVID-19 Pandemic: Scoping Review. *J Med Internet Res* 2020; **22**: e24087 [PMID: 33147166 DOI: 10.2196/24087]
- 22 **Hoffer-Hawlik MA**, Moran AE, Burka D, Kaur P, Cai J, Frieden TR, Gupta R. Leveraging Telemedicine for Chronic Disease Management in Low- and Middle-Income Countries During Covid-19. *Glob Heart* 2020; **15**: 63 [PMID: 33150128 DOI: 10.5334/gh.852]
- 23 **Ohannessian R**, Duong TA, Odone A. Global Telemedicine Implementation and Integration Within Health Systems to Fight the COVID-19 Pandemic: A Call to Action. *JMIR Public Health Surveill* 2020; **6**: e18810 [PMID: 32238336 DOI: 10.2196/18810]
- 24 **Leite H**, Hodgkinson IR, Gruber T. New development: 'Healing at a distance'—telemedicine and COVID-19. *Publ Money Manag* 2020; **6**: 483-485 [DOI: 10.1080/09540962.2020.1748855]
- 25 **Mukhopadhyay M**, Ghosh K. Risk and opportunity of telemedicine in healthcare management. 2020 [DOI: 10.2139/ssrn.3635122]
- 26 **Cypher RL**. Telehealth and Telemedicine During a Crisis: Tips to Reduce Liability Risk. *J Perinat Neonatal Nurs* 2020; **34**: 205-207 [PMID: 32697538 DOI: 10.1097/JPN.0000000000000502]
- 27 **Jin MX**, Kim SY, Miller LJ, Behari G, Correa R. Telemedicine: Current Impact on the Future. *Cureus* 2020; **12**: e9891 [PMID: 32968557 DOI: 10.7759/cureus.9891]
- 28 **Wang Y**, Yang J, Ma H, Dong X, Xie G, Ye S, Du J. Application of telemedicine in the COVID-19 epidemic: An analysis

- of Gansu Province in China. *PLoS One* 2021; **16**: e0249872 [PMID: [34347779](#) DOI: [10.1371/journal.pone.0249872](#)]
- 29 **Kim DW**, Choi JY, Han KH. Risk management-based security evaluation model for telemedicine systems. *BMC Med Inform Decis Mak* 2020; **20**: 106 [PMID: [32522216](#) DOI: [10.1186/s12911-020-01145-7](#)]
- 30 **Ting DSW**, Carin L, Dzau V, Wong TY. Digital technology and COVID-19. *Nat Med* 2020; **26**: 459-461 [PMID: [32284618](#) DOI: [10.1038/s41591-020-0824-5](#)]
- 31 **Franchi A**, Franchi L, Franchi T. Digital health, big data and connectivity: 5G and beyond for patient-centred care. *Int J Dig Health* 2021; **1**: 1 [DOI: [10.29337/ijdh.24](#)]
- 32 **Wade VA**, Karnon J, Elshaug AG, Hiller JE. A systematic review of economic analyses of telehealth services using real time video communication. *BMC Health Serv Res* 2010; **10**: 233 [PMID: [20696073](#) DOI: [10.1186/1472-6963-10-233](#)]
- 33 **Dorsey ER**, Topol EJ. State of Telehealth. *N Engl J Med* 2016; **375**: 154-161 [PMID: [27410924](#) DOI: [10.1056/NEJMr1601705](#)]



Published by **Baishideng Publishing Group Inc**
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA

Telephone: +1-925-3991568

E-mail: bpgoffice@wjgnet.com

Help Desk: <https://www.f6publishing.com/helpdesk>

<https://www.wjgnet.com>

