

Covid-19 and Virtual Geriatric Care

Reshma A. Merchant¹, I. Aprahamian²

1. Division of Geriatric Medicine, Department of Medicine, National University Hospital, and Department of Medicine, Yong Loo Lin School of Medicine, Singapore; 2. Geriatrics Division, Department of Internal Medicine, Jundiai Medical School, Jundiai, Sao Paulo, Brazil

Corresponding Author: Associate Professor Reshma A Merchant, Division of Geriatric Medicine, Department of Medicine, National University Hospital, 1E Kent Ridge Road, Singapore 119228, Email: reshmaa@nuhs.edu.sg, ORCID iD: 0000-0002-9032-0184

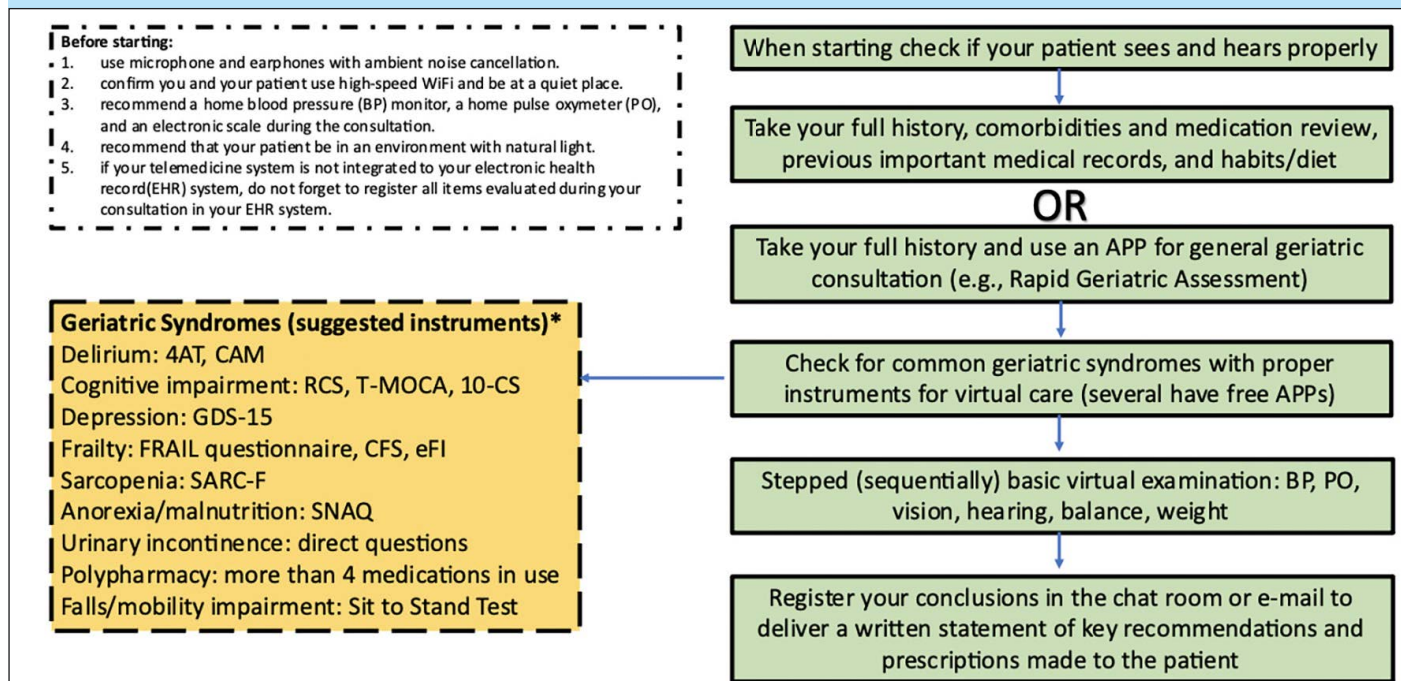
The COVID-19 pandemic has accelerated technology adoption and changed the overall landscape of care delivery for older adults. Initially, virtual care was shown to be beneficial for older inpatients and emergency triage of patients with acute respiratory syndrome. Nonetheless, virtual care has now been shown to be useful for supporting frail and / or disabled older persons and caregivers in the community, nursing home residents, assessment and management of cognitive impairment, geriatric psychiatry patients, symptom control at the end of life, wound care, assessment of falls risk factors and virtual rehabilitation (1-11).

Virtual geriatric care is a broad term which includes geriatric telehealth and telemedicine (12). The term “telemedicine” was initially coined by the American Thomas Bird in 1970’s, where “tele” translated from Greek and “mederi” from Latin word into “distance” and “to heal” respectively (13). The American Telemedicine Association established in 1993 with the aim of advancing telehealth, and ensuring “everyone has access to safe, affordable, and appropriate care when and where they need it” (14). “Telemedicine” and “telehealth”

are often used interchangeably with significant overlap. The WHO policy in 1997 defined telemedicine as “health related activities, services and systems, carried out over a distance by means of information and communication technologies for the purposes of global health promotion, disease control and health care, as well as education, management, and research for health” (15). Virtual care can be delivered through synchronous, asynchronous, and remote monitoring. Synchronous requires providers and patients to communicate and exchange information in real-time (Figure 1), whereas asynchronous refers to “store-and-forward” concept where images, reports, symptom survey questionnaires and so forth can be shared at any convenient time for the provider to review (16). Synchronous virtual care is advocated more in recent times, and tele-consultation with older adults has its own challenges. After hundreds of telemedicine consultations, we suggest a flow chart aimed to help those who are new to this modality (Figure 1).

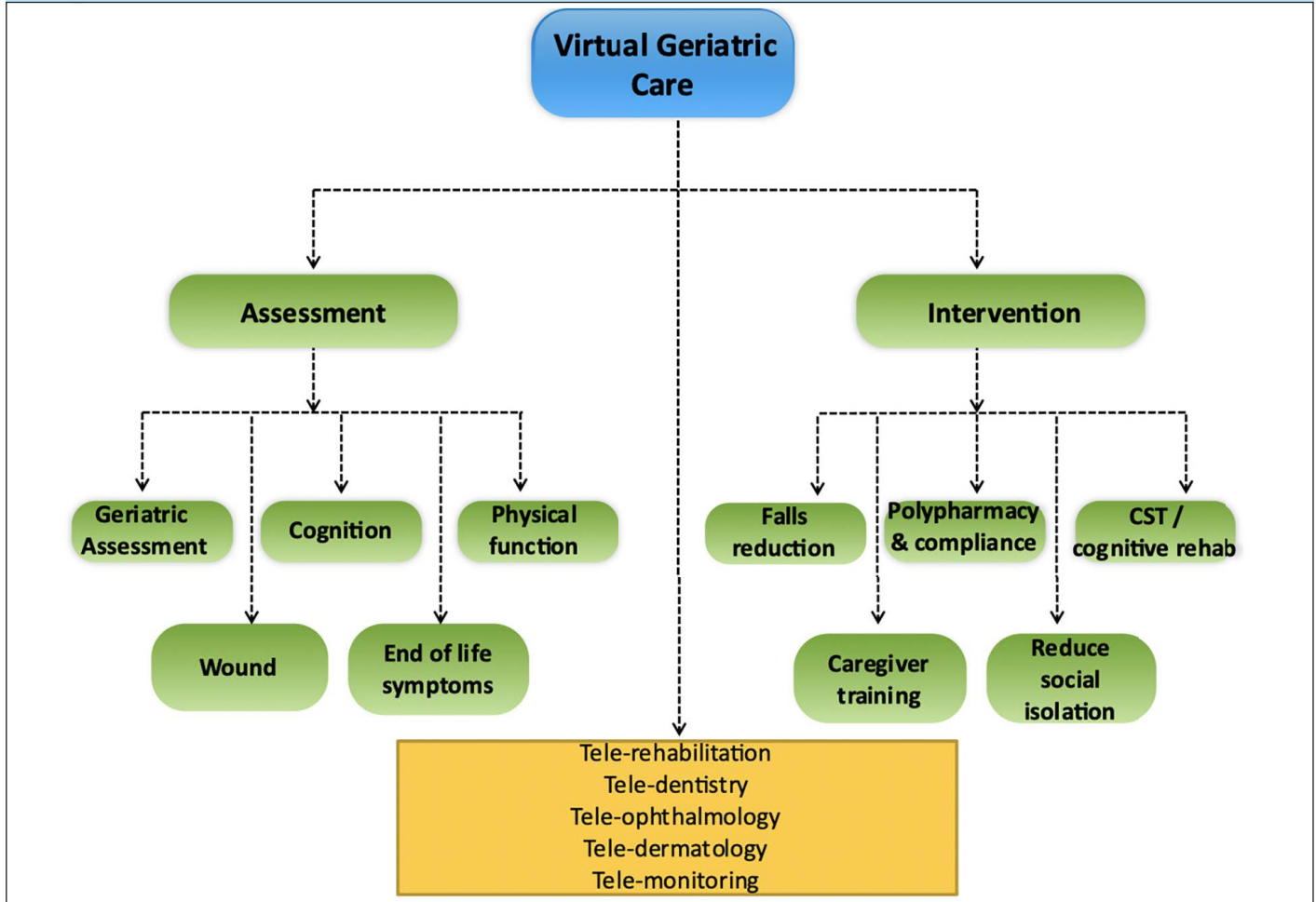
Covid-19 brought virtual healthcare to the forefront to ensure accessible, sustainable and quality healthcare when many countries implemented country-wide lockdown in 2020

Figure 1. Suggested flow chart of virtual geriatric telemedicine for clinical practice



*Notes: CAM = Confusion Assessment Method; RCS = Rapid Cognitive Screening; T -MOCA = Telephone Montreal Cognitive Assessment; 10-CS = 10 Cognitive Screener; GDS -15 = Geriatric Depression Scale 15 items; CFS = Clinical Frailty Scale; eFI = electronic Frailty Index; SNAQ = Simplified Nutritional Assessment Questionnaire.

Figure 2. Virtual Geriatric Care



CST: cognitive stimulation therapy

and healthcare systems were under significant strain (17, 18). Within a few months, most countries introduced telemedicine governance and legislations and provided incentives to encourage widespread implementation and adoption including virtual hospital and nursing home visits for caregivers (19, 20). Older adults have been most at risk during Covid-19 pandemic, not just from the disease but also the consequences of lockdown measures such as functional decline, loneliness, social isolation, delay in diagnosis and remain at the greatest risk for digital divide (18, 21, 22). The challenges for technology adoption in older adults include lack of access, confident and familiarity with technology, cognitive impairment, hearing and vision impairment (18). Many countries developed initiatives to reduce digital divide amongst older adults such as 'Seniors Go Digital' movement with 'SG Digital' community hubs, and mobile plans at subsidised rates to accelerate digital adoption in Singapore (23).

Virtual healthcare has enabled efficient healthcare delivery, reduce acute hospital events, shortened waiting times, improved quality of life, enabled successful polypharmacy reviews and is cost-effective (8, 24). Prior to COVID-19, many physicians were reluctant to adopt telemedicine or virtual care with the perception that communication may be a barrier especially for those with visual, hearing and / or cognitive

impairment, difficulty with billing, unable to perform physical exam and confidentiality issues (24). While many older adults were initially hesitant, recent studies show older adults and caregivers were overall satisfied with virtual visits (over 90% of satisfaction) with travel time saved and overall cost savings (25).

Studies have shown virtual healthcare to be beneficial in the assessment and management both for older adults and caregivers (Figure 2). Although less than 10 studies have been published in virtual geriatric care (24), results point towards reduction in hospital admission and general cost, and better medication management with telehealth and telemedicine. However, negative points have also been raised in these studies, such as lower confidentiality and privacy, occurrence of technical problems, communication difficulties during consultation, and a lack of virtual protocols or models for telemedicine (24). In our personal experience, other barriers should be considered such as the quality of video and audio which is crucial for the assessment of older person which demands specific (and sometimes costly) infrastructure; insurance coverage for virtual care may demand a teleconsultation through specific electronic health record (EHR) system; the EHR may not be friendly to external non-technical users (e.g., patients); delivery of physical interventions by

physical and occupational therapists e.g caregiver training, managing transfers may be difficult in virtual care and legal problems due to lack of specific legislation on virtual attendance.

In the field of cognition, cognitive assessment, virtual training for caregivers to manage behavioural and psychological symptoms and interventions such as cognitive stimulation therapy virtual program, virtual mindfulness, virtual cognitive rehabilitation and provision of care support services have been shown to be useful (26-30). In the field of falls and balance, studies have shown that certain virtual physical assessments such as 30s arm curls test, chair-stand test and 2-min step test to be reliable (31, 32). Falls risk factor assessment such as vision and high-risk medication education and assessment can be done virtually through tele-ophthalmology and tele-pharmacy (6, 33). In addition, tele-pharmacy and / or virtual assistant programs have shown to improve medication adherence, enhance support to clinical services, provide patient and caregiver education and effective in reconciliation of medications (6, 34). Augmented reality has shown promising results on planning home modifications to reduce falls (35). Multidisciplinary home tele-health program to prevent falls which includes exercise has been shown to reduce falls in older adults (36).

Virtual care has also shown to be beneficial and cost-effective in end of life and palliative care, especially if used as to supplement face-to-face care for symptom control, emotional support, patient participation in hospice team meetings and medication titration (7). Chronic wound telemedicine care has been existent well before Covid-19 pandemic which incorporates image assessment followed by video consultation and/or text and telephone consultation and can be in the form of blended or purely virtual care (5). Tele-dentistry is becoming increasingly popular in certain countries especially for nursing home and assistant living residents and can also serve as a triage to assess who will benefit from timely dental care (37, 38).

Virtual geriatric assessment including frailty and sarcopenia assessment can be done in asynchronous or synchronous way. There are many web- and app-based software for assessment of frailty or sarcopenia but very few are available for remote assessment and with assisted management pathway (39,40). The Rapid Geriatric Assessment App is one example that authors have a good experience during telemedicine consultation. Self-administered rapid geriatric assessment and transmission of information to the provider holds promise for the future to prioritise care for high-risk individuals (41).

Covid-19 has created opportunity for geriatric medicine services and care delivery to be re-designed, with options to provide targeted virtual care for those at high risk of hospitalisation. Virtual care may not be suitable for those with new onset symptoms which requires onsite assessment and treatment such as chest pain or acute neurological symptoms, sharing bad news, undifferentiated acute issues, lack of privacy or in situations where there is a language barrier (42). For virtual healthcare to be sustainable in longer term and serve as a complementary role to in-person visit, certain enablers need to be put in place such as access to diagnostic tests, investigations and technology, and implementation need to be tailored based

on needs (43). In this sense, we suggest a flowchart to guide teleconsultation in geriatric clinic (Figure 1).

Conflicts of interest: Authors declare no conflict of interest.

References

- Zubatsky M. Virtual Groups to Address the Health of Homebound Adults During COVID-19: A Biopsychosocial Framework. *The journal of nutrition, health & aging.* 2021 2021/03/01;25(3):281-283. doi:10.1007/s12603-021-1584-8.
- Valiani V, Lauz  M, Martel D, Pahor M, Manini TM, Anton S, Aubertin-Leheudre M. A new adaptive home-based exercise technology among older adults living in nursing home: A pilot study on feasibility, acceptability and physical performance. *The journal of nutrition, health & aging.* 2017 2017/07/01;21(7):819-824. doi:10.1007/s12603-016-0820-0.
- Integrated Telehealth and Telecare for Monitoring Frail Elderly with Chronic Disease. *Telemedicine and e-Health.* 2018;24(12):940-957. doi:10.1089/tmj.2017.0322.
- Jen SP, Bui A, Leonard SD. Maximizing Efficiency of Telemedicine in the Skilled Nursing Facility during the Coronavirus Disease 2019 Pandemic. *Journal of the American Medical Directors Association.* 2021;22(6):1146-1148.e2. eng. Epub 2021/04/20. doi:10.1016/j.jamda.2021.04.009.
- Kim PJ, Homsy HA, Sachdeva M, Mufti A, Sibbald RG. Chronic Wound Telemedicine Models Before and During the COVID-19 Pandemic: A Scoping Review. *Advances in skin & wound care.* 2022 Feb 1;35(2):87-94. eng. Epub 2022/01/21. doi:10.1097/01.ASW.0000805140.58799.aa.
- Le T, Toscani M, Colaizzi J. Telepharmacy: A New Paradigm for Our Profession. *J Pharm Pract.* 2020 Apr;33(2):176-182. eng. Epub 2018/08/01. doi:10.1177/0897190018791060.
- Dolan H, Eggett C, Holliday L, Delves S, Parkes D, Sutherland K. Virtual care in end of life and palliative care: A rapid evidence check. *J Telemed Telecare.* 2021 Dec;27(10):631-637. eng. Epub 2021/11/03. doi:10.1177/1357633x211046118.
- Morley JE. Editorial: Telehealth and Geriatrics. *The journal of nutrition, health & aging.* 2021;25(6):712-713. eng. doi:10.1007/s12603-021-1643-1.
- Doraiswamy S, Jithesh A, Mamtani R, Abraham A, Cheema S. Telehealth Use in Geriatrics Care during the COVID-19 Pandemic—A Scoping Review and Evidence Synthesis. *International Journal of Environmental Research and Public Health.* 2021;18(4):1755. doi:10.3390/ijerph18041755.
- Chi N-C, Demiris G. A systematic review of telehealth tools and interventions to support family caregivers. *Journal of telemedicine and telecare.* 2015;21(1):37-44.
- Jennings SC, Manning KM, Bettger JP, Hall KM, Pearson M, Mateas C, Briggs BC, Oursler KK, Blanchard E, Lee CC, Castle S, Valencia WM, Katzel LI, Giffuni J, Kopp T, McDonald M, Harris R, Bean JF, Althuis K, Alexander NB, Padala KP, Abbate LM, Wellington T, Kostra J, Allsup K, Forman DE, Tayade AS, Wesley AD, Holder A, Morey MC. Rapid Transition to Telehealth Group Exercise and Functional Assessments in Response to COVID-19. *Gerontology and Geriatric Medicine.* 2020 2020/01/01;6:2333721420980313. doi:10.1177/2333721420980313.
- Senderovich H, Wignarajah S. COVID-19 Virtual Care for the Geriatric Population: Exploring Two Sides of the Coin. *Gerontology.* 2021;1-6. doi:10.1159/000516298.
- Strehle EM, Shabde N. One hundred years of telemedicine: does this new technology have a place in paediatrics? *Archives of disease in childhood.* 2006;91(12):956-959. doi:10.1136/adc.2006.099622.
- The American Telemedicine Association Available from: <https://www.americantelemed.org/about-us/>
- A Health Telematics Policy in support of WHO's Health-for-All Strategy for Global Health Development. 1998. Available from: https://apps.who.int/iris/bitstream/handle/10665/63857/WHO_DGO_98.1.pdf?sequence=1&isAllowed=y
- Mechanic OJ, Persaud Y, Kimball AB. Telehealth Systems. StatPearls Publishing, Treasure Island (FL); 2021 2021. eng. <http://europepmc.org/abstract/MED/29083614>
- Merchant RA, Chen MZ, Ng SE, Sandrasageran S, Wong BLL. The Role of a Geriatrician has Become Even More Important in an Academic Institution during COVID-19. *The journal of nutrition, health & aging.* 2020 2020/06/01;24(6):681-682. doi:10.1007/s12603-020-1387-3.
- Martins Van Jaarsveld G. The Effects of COVID-19 Among the Elderly Population: A Case for Closing the Digital Divide. *Frontiers in psychiatry.* 2020;11:577427-577427. doi:10.3389/fpsy.2020.577427.
- Organization WH. Implementing telemedicine services during COVID-19: guiding principles and considerations for a stepwise approach. 2020.
- Wong BLL, Merchant RA. Virtual visiting for older hospitalised people: the next best thing to stay connected during COVID-19 . *Internal Medicine Journal.* 2021 2021/02/01;51(2):306-307. doi:https://doi.org/10.1111/imj.14999.
- Creese B, Khan Z, Henley W, O'Dwyer S, Corbett A, Vasconcelos Da Silva M, Mills K, Wright N, Testad I, Aarstrand D, Ballard C. Loneliness, physical activity, and mental health during COVID-19: a longitudinal analysis of depression and anxiety in adults over the age of 50 between 2015 and 2020. *International Psychogeriatrics.* 2021;33(5):505-514. Epub 2020/12/17. doi:10.1017/S1041610220004135.

22. Aroos R, Wong BLL, Merchant RA. Delayed health consequences of COVID-19 lockdown in an older adult. *Age Ageing*. 2021 May 5;50(3):673-675. Epub 2021/02/24. doi:10.1093/ageing/afab052.
23. Belleville S, Cuesta M, Bieler-Aeschlimann M, Giacchino K, Widmer A, Mittaz Hager AG, Perez-Marcos D, Cardin S, Boller B, Bier N, Aubertin-Leheudre M, Bherer L, Berryman N, Agrigoroaei S, Demonet JF. Rationale and protocol of the StayFitLonger study: a multicentre trial to measure efficacy and adherence of a home-based computerised multidomain intervention in healthy older adults. *BMC Geriatr*. 2020 Aug 28;20(1):315. Epub 2020/08/30. doi:10.1186/s12877-020-01709-2.
24. Murphy RP, Dennehy KA, Costello MM, Murphy EP, Judge CS, O'Donnell MJ, Canavan MD. Virtual geriatric clinics and the COVID-19 catalyst: a rapid review. *Age and Ageing*. 2020;49(6):907-914. doi:10.1093/ageing/afaa191.
25. Iyer S, Mehta P, Weith J, Hoang-Gia D, Moore J, Carlson C, Choe P, Sakai E, Gould C. Converting a Geriatrics Clinic to Virtual Visits during COVID-19: A Case Study. *Journal of primary care & community health*. 2021 Jan-Dec;12:21501327211000235-21501327211000235. eng. doi:10.1177/21501327211000235.
26. Gosse PJ, Kassardjian CD, Masellis M, Mitchell SB. Virtual care for patients with Alzheimer disease and related dementias during the COVID-19 era and beyond. *Canadian Medical Association Journal*. 2021;193(11):E371-E377. doi:10.1503/cmaj.201938.
27. Xu J, Jo H, Noorbhai L, Patel A, Li A. Virtual mindfulness interventions to promote well-being in adults: A mixed-methods systematic review April 18, 2021. *J Affect Disord*. 2022 Jan 4;300:571-585. eng. Epub 2022/01/07. doi:10.1016/j.jad.2022.01.027.
28. Sanchez CP. Efficacy of cognitive stimulation therapy virtual program for older adults with dementia in COVID-19 isolation. *Alzheimers Dement*. 2021 Dec;17 Suppl 8:e056213. eng. Epub 2022/01/01. doi:10.1002/alz.056213.
29. Yan M, Yin H, Meng Q, Wang S, Ding Y, Li G, Wang C, Chen L. A Virtual Supermarket Program for the Screening of Mild Cognitive Impairment in Older Adults: Diagnostic Accuracy Study. *JMIR Serious Games*. 2021 Dec 3;9(4):e30919. eng. Epub 2021/12/07. doi:10.2196/30919.
30. Twaddle IKB, Hattori-Uchima MP, Orallo RG, Gutierrez NJ. Telehealth outreach programming in the Pacific island of Guam: Providing access to dementia care support services during the COVID-19 pandemic. *Alzheimers Dement*. 2021 Dec;17 Suppl 8:e050134. eng. Epub 2022/01/01. doi:10.1002/alz.050134.
31. Ogawa EF, Harris R, Dufour AB, Morey MC, Bean J. Reliability of Virtual Physical Performance Assessments in Veterans During the COVID-19 Pandemic. *Arch Rehabil Res Clin Transl*. 2021;3(3):100146-100146. doi:10.1016/j.arrct.2021.100146.
32. Ho VW-T, Merchant RA. Digitally administered SARC-F or the 5-time chair rise: Which is better? *Geriatrics & Gerontology International*. 2021;21(10):964-966. doi:https://doi.org/10.1111/ggi.14261.
33. Walsh L, Hong SC, Chalakkal RJ, Ogbuehi KC. A Systematic Review of Current Teleophthalmology Services in New Zealand Compared to the Four Comparable Countries of the United Kingdom, Australia, United States of America (USA) and Canada. *Clinical ophthalmology (Auckland, NZ)*. 2021;15:4015-4027. doi:10.2147/OPHT.S294428.
34. Roca S, Lozano ML, García J, Alesanco Á. Validation of a Virtual Assistant for Improving Medication Adherence in Patients with Comorbid Type 2 Diabetes Mellitus and Depressive Disorder. *Int J Environ Res Public Health*. 2021 Nov 17;18(22). Epub 2021/11/28. doi:10.3390/ijerph182212056.
35. Miranda-Duro MDC, Nieto-Riveiro L, Concheiro-Moscoso P, Groba B, Pousada T, Canosa N, Pereira J. Occupational Therapy and the Use of Technology on Older Adult Fall Prevention: A Scoping Review. *International Journal of Environmental Research and Public Health*. 2021;18(2):702. doi:10.3390/ijerph18020702.
36. Bernocchi P, Giordano A, Pintavalle G, Galli T, Ballini Spoglia E, Baratti D, Scalvini S. Feasibility and Clinical Efficacy of a Multidisciplinary Home-Telehealth Program to Prevent Falls in Older Adults: A Randomized Controlled Trial. *J Am Med Dir Assoc*. 2019 Mar;20(3):340-346. eng. Epub 2018/10/23. doi:10.1016/j.jamda.2018.09.003.
37. Ghai S. Teledentistry during COVID-19 pandemic. *Diabetes & metabolic syndrome*. 2020 Sep-Oct;14(5):933-935. eng. Epub 2020/06/16. doi:10.1016/j.dsx.2020.06.029.
38. Rahman N, Nathwani S, Kandiah T. Teledentistry from a patient perspective during the coronavirus pandemic. *British Dental Journal*. 2020 2020/08/14. doi:10.1038/s41415-020-1919-6.
39. Chang R, Low H, McDonald A, Park G, Song X. Web-based software applications for frailty assessment in older adults: a scoping review of current status with insights into future development. *BMC Geriatrics*. 2021;21(1). doi:10.1186/s12877-021-02660-6.
40. Merchant RA, Hui RJY, Kwek SC, Sundram M, Tay A, Jayasundram J, Chen MZ, Ng SE, Tan LF, Morley JE. Rapid Geriatric Assessment Using Mobile App in Primary Care: Prevalence of Geriatric Syndromes and Review of Its Feasibility [Original Research]. *Frontiers in Medicine*. 2020 2020-July-08;7. doi:10.3389/fmed.2020.00261.
41. Tan LF, Chan YH, Tay A, Jayasundram J, Low NA, Merchant RA. Practicality and Reliability of Self Vs Administered Rapid Geriatric Assessment Mobile App. *J Nutr Health Aging*. 2021;25(9):1064-1069. doi:10.1007/s12603-021-1672-9.
42. Blain H, Gamon L, Tuailon E, Pisoni A, Giacosa N, Albrand M, Miot S, Rolland Y, Picot MC, Bousquet J. Atypical symptoms, SARS-CoV-2 test results and immunisation rates in 456 residents from eight nursing homes facing a COVID-19 outbreak. *Age Ageing*. 2021 May 5;50(3):641-648. Epub 2021/02/24. doi:10.1093/ageing/afab050.
43. Vas V, North S, Rua T, Chilton D, Cashman M, Malhotra B, Garrood T. Delivering outpatient virtual clinics during the COVID-19 pandemic: early evaluation of clinicians' experiences. *BMJ Open Qual*. 2022 Jan;11(1). doi:10.1136/bmjopen-2020-001313.

How to cite this article: Merchant, R.A., Aprahamian, I. Covid-19 and Virtual Geriatric Care. *J Nutr Health Aging*. 2022;26(3):213-216, <https://doi.org/10.1007/s12603-022-1755-2>