Case Report

Telerehabilitation for Geriatric with Dementia and Long Covid-19

Melinda Harini[1], Ika Fitriana[2], Satyanaya Widyaningrum[1], Deddy Tedjasukmana[1], Yunisa Trivarsary[1], Intan Savitri[1], Siti Dwi Astuti[1] *[1]Universitas Indonesia, Faculty of Medicine, Department of Physical Medicine and Rehabilitation, Jakarta, Indonesia*
[2]Universitas Indonesia, Faculty of Medicine, Department of Internal Medicine, Jakarta, Indonesia

Correspondent:
Melinda Harini, Department of Physical Medicine and Rehabilitation, Faculty of Medicine, Universitas Indonesia, Jl. Diponegoro no. 71 Jakarta Pusat 10430, Jakarta, Indonesia, Email: melindaharini@gmail.com

Article info:

Received: December 27, 2023

Received in revised: August 7, 2024

Accepted: August 20, 2024

Published: August 28, 2024

Cite this as: Melinda Harini, Ika Fitriana, Satyanaya Widyaningrum, Deddy Tedjasukmana, Yunisa Trivarsary, Intan Savitri, Siti Dwi Astuti. Telerehabilitation for Geriatric with Dementia and Long Covid-19. SPMRJ Vol 6 No. 2, 195-210

Abstract

Rehabilitation is crucial for individuals who have survived COVID-19, particularly those who are older and have pre-existing health conditions. These survivors may experience long COVID symptoms up to four months after infection and face difficulties in undergoing conventional rehabilitation methods due to limitations in mobility, lack of social interaction, and inadequate healthcare accessibility. As a result, telerehabilitation (TR) has arisen as an alternate form of care. This case report intends to present empirical evidence on the enhancement of functional status in a geriatric long COVID patient following telerehabilitation. We present a case of an elderly woman with underlying dementia who developed long COVID symptoms including dyspnea and mobility impairment. Considering the circumstances of the COVID-19 pandemic, telerehabilitation is a more suitable option than traditional rehabilitation approaches. Our telerehabilitation program consists of a three-week plan that involves tailored exercise sessions based on the patient's follow-up monitoring report derived from their logbook. The program comprises active mobilization, respiratory and aerobic exercises, as well as a range of motion exercises. After three sessions of TR supervised by family and professional caregivers, we could see improvement in her Physical Mobility Scale (PMS). After 20 days, the patient's PMS score increased by 3 points. The patient experienced functional improvement, characterized by proper body alignment and enhanced cardiorespiratory function. She exhibited enthusiasm and a greater inclination to engage in diverse forms of physical activity when aided by her caregiver. Our patient did not experience any negative occurrences throughout the entire duration of the telerehabilitation sessions.

Keywords: *caregivers, dementia, geriatric, long covid, telerehabilitation*

INTRODUCTION

The coronavirus disease 2019 (COVID-19) infects more than 600 million people globally.[1] Even though most COVID-19 patients recover fully from the disease, approximately 5–10% experience prolonged symptoms for several months following the acute COVID-19 phase, defined as long COVID-19 syndrome.[2] Many survivors, especially those of older age with long COVID, need rehabilitation.

Rehabilitation has immense importance, taking into consideration the demographics, comorbidities, severity, involvement, and impairments of the body system affected. Considering the duration of the disease, the rehabilitation program and goal setting would differ based on the duration of the disease (e.g., acute, subacute, and chronic/post-COVID) accordingly.[3] Physical Medicine and Rehabilitation specialists (PMR) make functional diagnoses regarding the patient's disability and potential through holistic assessment. They then establish objectives based on the patient's condition. Mostly, the rehabilitation goal is to achieve optimal functionality after experiencing both acute and chronic illnesses while simultaneously mitigating the risk of further complications.[4]

During the COVID-19 pandemic, rehabilitation services had to face the challenge of providing the usual care with limitations for inpatient rehabilitation. Providers needed to find a solution to address rehabilitation intervention using technology as one source of communication method.[5,6] The development of telemedicine in physical medicine and rehabilitation services, which includes teleconsultation, telemonitoring, and telehomecare, is increasing worldwide. Telerehabilitation (TR) is a component of telemedicine that utilizes computer-based technologies to enhance rehabilitation treatments provided by physiatrists.[6] Implementation of TR has been shown to provide new opportunities that have better effectiveness in improving accessibility and

creating the least restrictive environment.[7] A study shows TR is superior or similar to conventional rehabilitation in clinical outcomes and is used as a complementary therapy or as an alternative treatment. More importantly, TR provides access to rehabilitation services for a large number of patients with immobility during the COVID-19 pandemic.[8,9]

The advantages of telerehabilitation are well established in terms of improving patient and family

understanding, promoting education, and establishing goals and action plans for healthcare professionals, patients, and families or caregivers. Hospitals can use TR for inpatient treatment, while clinics can use it for outpatient treatment. Physiatrists frequently use telerehabilitation to assess acute and chronic stable disorders.[7]

However, due to regulations and policies, telerehabilitation is not yet widely used in Indonesia. Several studies conducted in Indonesia have focused only on stroke rehabilitation from a nursing perspective.[10] Therefore, this case report aims to provide empirical evidence on the improvement of functional status in an elderly long-term COVID patient through the use of telerehabilitation.

CASE REPORT

A ninety-year-old woman was on routine outpatient care with a geriatrician. Her previous medical history was dementia, mood disorder, and impaired physical mobility. She was also diagnosed with moderate COVID-19 with symptoms like fever, cough, and shortness of breath. After self-isolation and home treatment, her PCR test showed negative, but she still suffered from shortness of breath, which required her to use oxygen. Her doctor consulted a physical rehabilitation specialist. Given the circumstances of the COVID-19 pandemic, the old patient's state, which includes having trouble breathing and limited mobility, makes telerehabilitation a preferable choice over conventional rehabilitation methods.

The rehabilitation program was conducted for three weeks. The frequency of TR dosage for every session was customized based on the follow-up monitoring report from the logbook given to our patient. It included active mobilization, breathing exercises, range of motion, and aerobic exercise. The online platform that we used is Zoom Meeting; we used several media such as video, picture, and audio. TR instructions were given mainly to her private professional caregiver and family. However, due to the long distance between her and her children, the instruction is mostly given to her caregiver.

The first telerehabilitation (TR) session (September 3, 2021) was done with the patient, her family, and a private professional caregiver. She was totally dependent on daily activity and mostly lying in bed. Two-way communication was limited and mainly non-verbal. Her physical mobility scale was checked with the physical mobility scale (PMS) (Table 1). The physical mobility scale (PMS) assesses the functional capacity of elderly individuals. The dependability and validity of scientific studies have been shown and substantiated.[11] During the assessment, she displayed an inability to maintain an upright sitting position, with her neck flexed at a 45-degree angle.

Based on the physical examination, the target was to improve the ability of the patient to sit upright and lean back and eventually wean the oxygen used. The plan routine included exercise towards sitting upright and leaning back for 30 minutes per day.

On the second TR (September 10, 2021), her mobility improved. The patient did not need an oxygen supply anymore. She could sit upright in a wheelchair for an hour. Both her hands and feet were more active. Despite that, she complained of pain in her right shoulder joint and proximal and distal biceps. Thus, rotator cuff tendinitis was suspected. She was treated with topical NSAID. Her TR program was adjusted to include an active-assisted range of motion

exercises (ROM) for 20 repetitions per day and sitting upright exercises for 30 minutes per day.

On the third TR (September 17, 2021), she was able to stabilize her neck and trunk. The muscle strength of the lower limbs seemed functional, even though there was some inadequate initiation of movement and purposeful movement of the lower leg. That condition made it necessary to introduce the static bike exercise to her TR routine. Exercise was continued with a target of 30 minutes daily as tolerated, stimulating neck control in a prone position with a pillow on the chest and a simple massage on the back. Modifications were made to the ergo cycle pedal by including panels, enabling caretakers to pedal using either their hands or feet while maintaining an ergonomic posture. After three weeks of TR, rehabilitation targets such as mobility improvement, upright sitting, and oxygen weaning were achieved. In addition, her rotator cuff tendinitis, which occurred in the second week, has now completely recovered.

Date	3/9/21	10/9/21	17/9/21
Supine to side lying	0	0	0
Supine to sitting	0	0	**2**
Sitting balance	0	0	**1**
Sitting to standing	0	0	0
Standing balance sitting	0	0	0
Transfers	0	0	0
Ambulation	0	0	0
Total/45	0	0	**3**

Table 1. Physical Mobility Scale

DISCUSSION

COVID-19 survivors, both hospitalized and non-hospitalized, suffer from symptomatology including reduced pulmonary and physical function, leading to a reduction of functional outcomes in the elderly.[12] Old age and multipathology conditions increase the risk of COVID-19 symptoms that are associated with an increased length of hospitalization, immobilization, and sarcopenia.

Hospitalization of elderly individuals can lead to enduring functional decline and a reduction in quality of life.[13] COVID-19 infection can lead to significant functional loss with a higher disability in basic activities of daily life, and it is associated with a higher caregiving burden.[14] Post-COVID-19 patients had a higher prevalence of reported fair or poor general health (32.9%), poorer physical health (44.1%), and difficulty with physical activities (32.3%).[15] Functional decline was observed by 34.95% of the population after 10 months and 5.8% during 6 months.[16] Besides the physical aspect, the neurocognitive disorder is at risk of declining after the first 30 days of illness. Global cognitive impairment and executive dysfunction are both correlated with the severity of the COVID-19 infection, which is age-dependent. [17]

In this case, the patient was an old woman. Our patient was already diagnosed with dementia, which worsened her cognitive function after the COVID-19 infection.

The term "dementia" refers to a broad category of symptoms that appear when certain diseases or disorders affect the brain. It is a prevalent degenerative disorder among elderly individuals.[16,18] The gradual progression of dementia and its associated pathological alterations affect the cognitive, memory, and behavioral functions of elderly individuals. This disorder has a substantial impact on the elderly's capacity to perform everyday tasks, necessitating the presence of a companion in their daily routines.[19] However, a study demonstrates that classifying all individuals diagnosed with dementia as unable to provide informed consent for research solely based on cognitive test results or clinical assessment may strip them of the opportunity to exercise their autonomy in making a decision that they might indeed be capable of making.[20]

Rehabilitation is crucial in addressing lengthy COVID symptoms and enhancing functional capacity in patients, as seen in this case study. For older people with mobility restrictions, telerehabilitation

is as effective as conventional rehabilitation. Systematic reviews on telerehabilitation have revealed that TR has similar or even better health outcomes compared with face-to-face rehabilitation programs. Older patients have even more benefits from using TR in increasing physical activity levels.[21] Individualized rehabilitation programs should be based on persistent symptoms and functional limitations. Post-COVID-19 impairments like fatigue, weakness, and cognitive impairment can impact the performance of activities in daily living. Physical activity is an important part of maintaining physical and mental health. Several falls, better mobility, and gait function in elderly patients showed improvement after TR. Besides giving interventions, a home safety assessment should be addressed for patient self-care, mobility, household, and leisure activity. [21]

Three weeks after COVID-19, we started the telerehabilitation program for our patient with family and professional caregiver support. The exercise dosage of every session of telerehabilitation was customized based on the follow-up monitoring report from the logbook given to our patient. It included active mobilization, breathing exercises, range of motion, and aerobic exercise. After three sessions of TR, we could see improvement in her Physical Mobility Scale (PMS).

As seen in Table 1, after 20 days, the patient's PMS score increased by 3 points. In the Functional Pathways Standardized Test Reference Card, it is stated that the PMS score assessment is meaningful if it increases by 4 points or decreases by 5 points, but it is not explained how long it will take for a reassessment. [11] One study conducted an assessment using the PMS tools on the care facility's residents. The evaluation was carried out for over 3 months and was trained by professional therapists. The therapist gave separate score limits in the form of very much improved (10 points), much improved (6 points increase), minimally improved (3 points increase), unchanged (no increase or decrease), minimally worsened (1-point

decrease), much worsened (7 points decrease), and very much worsened (18 points decrease).[22]

Our patient only had 3 points increased but there was a functional improvement in the patient, such as adequate body positioning and gaining better cardiorespiratory function. During the second telerehabilitation session, the patient is diagnosed with possible rotator cuff tendonitis. Rotator cuff Tendonitis refers to the inflammation of the tendons comprising the rotator cuff, namely the supraspinatus, infraspinatus, teres minor, and subscapularis. This syndrome frequently coexists with shoulder impingement and can manifest suddenly after an accident or as a consequence of chronic, recurrent overuse activities.[23] Rotator cuff injuries affect patients in a manner that is dependent on their age. The prevalence rates rise from 5% to 10% in those below the age of 20 and surpass 60% in individuals aged 80 years and above.[24]

The primary treatment modality for nonoperative rotator cuff syndrome is physical therapy (PT). Physical therapy (PT) continues to be the primary and most effective initial treatment for rotator cuff inflammation. Physical therapy interventions encompass intensive programs aimed at strengthening the rotator cuff and periscapular stabilizers, along with exercises to improve range of motion. Initial non-surgical treatment also involves the utilization of non-steroidal anti-inflammatory (NSAID) drugs in combination with physical therapy techniques.[25,26] Therefore, our patient received treatment with a topical nonsteroidal anti-inflammatory drug (NSAID). Moreover, the TR program was modified to incorporate an active-assisted range of motion exercises (ROM) for 20 repetitions daily and sitting upright activities for 30 minutes daily.

It was discovered during the third rehabilitation session that the patient was given static bike training due to inadequate initiation of movement and purposeful movement of the lower leg. Utilizing static bikes for exercise is a safe and effective

measure for older persons, yielding enhancements in cardiovascular and pulmonary well-being and beneficial impacts on muscular and skeletal health. Stationary bicycling is highly recommended for older adults as it effectively stimulates cardiorespiratory adaptations and carries a relatively low risk of injury.[27] Additionally, it has been demonstrated that stationary bicycling, when utilized for moderate-intensity continuous training (MICT) or high-intensity interval training (HIIT), can lead to strength improvements in older adults.[28,29] An empirical investigation has shown that engaging in stationary bicycle exercise can effectively mitigate the risk of falls among seniors by enhancing their balance. The group that used stationary bicycles showed a statistically significant improvement in their Berg Balance Scale score compared to the group that used treadmills. This can be attributed to the fact that the bicycle exercise involved maintaining balance on a narrow saddle, whereas the treadmill exercise required stable weight movement utilizing both feet.[30]

Furthermore, the cycling exercise involves the alternating weight transfer between the right and left lower extremities, where a saddle influences the position of the body's mass. This exercise has a more significant impact on the pelvis's sideways tilting motion than walking on a treadmill. The resultant augmentation in pelvic motion in the older ladies had a good impact on their balancing.[30]

She seemed to be more passionate and willing to do various kinds of exercises with support from her caregiver. No adverse event was shown in our patient during the whole telerehabilitation sessions.

A minimally improved PMS score may be due to caregiver factors. Under these conditions, a caregiver plays a crucial role in providing care for elderly patients with dementia (PWDs), particularly in Indonesia, where healthcare services for dementia care are limited. Consequently, the healthcare system heavily depends on informal caregivers to assist those with disabilities, with the responsibility typically falling on family members such as spouses,

children, and relatives. However, there is now a lack of attention towards caregivers, failing to identify and address the significant challenges they experience.[31] Furthermore, it was our firm conviction that successful rehabilitation is related to the ability of the caregiver.

This case report involves a patient caregiver who works as a home worker. There is currently no legislative framework in Indonesia that regulates the profession of caregivers. In Indonesia, household workers may be classified as domestic workers, but there is no formal legislation governing their employment as workers.[32] In addition, domestic staff are seldom identified as workers (pekerja), but rather as mere assistants (pembantu). Referring to domestic workers as "helpers" perpetuates cultural reluctance to establish a formalized relationship between domestic workers and their employers, many of whom share familial or ancestral ties. Employers perceive their duty as paternalistic, providing protection, sustenance, housing, education, and remuneration to domestic workers in exchange for their labor. The job contacts in question have a paternal nature, as they predominantly take place within family homes and are not regarded as economically productive. Consequently, Indonesian culture perceives these relationships primarily as private in nature.[33,34]

A study conducted by Moriichi demonstrates that providing education to caregivers would enhance the outcome of therapeutic rehabilitation.[35] Nonetheless, a cross-sectional study examining caregivers of older individuals with dementia revealed that caregivers commonly experience burden. This burden was found to be influenced by several factors, including the caregiver's perception of social support, their educational attainment, the presence of behavioral and psychological symptoms of dementia (BPSD), and the gender of individuals with cognitive impairment. Given the potential growth of the PWD population, future studies must discover efficient ways and resources to alleviate the load on caregivers. Furthermore, it is

necessary to explore the identification of the BPSD and how the various phases of dementia contribute to the strain on caregivers. The management of depression in caregivers can be accomplished. By doing so, healthcare practitioners can modify their approach to identify and tackle the caregiver burden.[31]

The development of telemedicine in Indonesia was started in 2015 and regulated by the Ministry of Health Regulation No. 20/2019. [36] Since the pandemic of COVID-19, the importance of telemedicine seems to be crucial and widens the opportunity to expand the use of telemedicine, which refers to the Letter of Announcement of the Indonesian Ministry of Health, Indonesia Medical Council, and Indonesian PMR Association (PERDOSRI). Since the use of telemedicine has become more frequent, Cipto Mangunkusumo General Hospital Jakarta has developed the telemedicine platform named SiapDok RSCM. It is an application that facilitates face-to-face teleconsultation anywhere and anytime.

The success of telerehabilitation depends on physicians and health care providers, technology (media and network), the total number of telerehabilitation sessions, insurance coverage, the patient's medical and functional status, a good rapport between physician and client, and also caregiver support, especially for those with cognitive impairment, visual acuity issues, hearing problems, and elderly patients.[11] The purpose of delivering telerehabilitation is to monitor the patient's behavioral changes based on the interventions given. These need persuasive approaches, good compliance, and motivation from both patient and doctor to achieve the goals.[37]

Potential challenges in implementing telerehabilitation are cost effectiveness, lack of protocol and telemedicine platforms, privacy and security issues, patient or family worries and acceptance about its use, medicolegal issues, internet connection, and payment regulations.[4,6,38] Previous studies showed that telerehabilitation for COVID-19

patients can effectively improve cardiorespiratory fitness, increase functional mobility status, and accelerate general health recovery.[39]

Telerehabilitation was used to identify and enhance elderly people's physical performance, which resulted in a rise in their level of satisfaction. To address the rehabilitation needs for the elderly lifespan, comorbidities such as diabetes, frailty, chronic pain, incontinence, and dementia, and quality of life, exercise is essential. Exercise improves balance, gait speed, and quality of life. Remote-guided exercise for patients with stable conditions can also can improve cardiorespiratory fitness. Cognitive function has also been studied with positive effects in patients with mild cognitive impairment and dementia. Besides benefits for the patient, TR reduces caregiver burden, stress, depression, and hours of care.[21] Besides physical health, TR also improves psychological health, as the patients seem satisfied with their achievement in gaining better physical performance.[40]

CONCLUSION

The telerehabilitation resulted in a notable enhancement, as evidenced by a 3-point increase in her Physical Mobility Scale (PMS). Nevertheless, this research still exhibits limitations; therefore, we suggest educating caregivers to improve the outcome of TR. Furthermore, we suggest expanding the opportunity for inter-island and inter-health rehabilitation, enabling patients to get assistance from medical professionals and caregivers in the future by improving public awareness of telehealth services and their benefits, committed stakeholders, and standardized guidelines for delivering rehabilitation services while prioritizing safety and effective medical practice.

Acknowledgment

We are thankful to the dean of the Faculty of Medicine, Universitas Indonesia for letting us conduct this study as well as preparing the following program.

Conflict of interest

The author(s) declare no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

Funding

The author(s) declare no funding for the research, authorship, and/or publication of this article.

Author Contribution

All authors have contributed to all processes in this research, including preparation, data gathering and analysis, drafting, and approval for publication of this manuscript.

References

1. World Health Organization. WHO Coronavirus (COVID-19) Dashboard. 2020. Accessed on 05 October 2021 at: https://covid19.who.int/

2. Prabawa IMY, Silakarma D, Prabawa IPY, Manuaba IBAP. Physical Rehabilitation Therapy for Long COVID-19 Patient with Respiratory Sequelae: A Systematic Review. *Open Access Maced J Med Sci*. 2022;10(F):468-474. doi:10.3889/oamjms.2022.9899

3. Swarnakar R, Yadav SL. Rehabilitation in long COVID-19: A mini-review. *World J Methodol*. 2022;12(4):235-245. doi:10.5662/wjm. v12.i4.235

4. Ahmadi Marzaleh M, Peyravi M, Azhdari N, Bahaadinbeigy K, Sarpourian F. Application of Telerehabilitation for Older Adults During the COVID-19 Pandemic: A Systematic Review. Disaster Medicine and Public Health Preparedness. 2023;17: e402. doi:10.1017/dmp.2022.219

5. Saverino A, Baiardi P, Galata G, Pedemonte G, Vassallo C, Pistarini C. The Challenge of Reorganizing Rehabilitation Services at the Time of COVID-19 Pandemic: A New Digital and Artificial Intelligence Platform to Support Team Work in Planning and Delivering Safe and High-Quality Care. *Front Neurol*. 2021;12. doi:10.3389/fneur.2021.643251

6. Gregory P, Alexander J, Satinsky J. Clinical Telerehabilitation: Applications for Physiatrists. PM&R. 2011 Jul 1;3(7):647–56.doi: 10.1016/j.pmrj.2011.02.024

7. Galea MD. Telemedicine in Rehabilitation. Physical Medicine and Rehabilitation Clinics of North America. 2019 May 1;30(2):473–83.doi: 10.1016/j.pmr.2018.12.002

8. Nikolaev VA, Nikolaev AA. Recent trends in telerehabilitation of stroke patients: A narrative review. *NeuroRehabilitation*. 2022;51(1):1-22. doi:10.3233/NRE-210330

9. Prayoga DH, Aridamayanti BG, Trisnawati I, Ronalia MF. Telerehabilitation System in Nursing Post Stroke -ASystematic Review. J Ners. 2020; 14(3): 182.doi:10.20473/jn. v14i3.17017

10. Adam M. Tele-rehabilitasi: Lebih Menjangkau dan Terjangkau untuk Memperbaiki Kualitas Hidup Pasca Stroke dengan Rehabilitasi Berbasis Rumah. Fakultas Ilmu Keperawatan, UniversitasIndonesia; 2010.

11. Pike E, Landers MR. Responsiveness of the physical mobility scale in long-term care facility residents. *J Geriatr Phys Ther*. 2010;33(2):92-98.

12. Rodriguez-Blanco C, Bernal-Utrera C, Anarte-Lazo E, Gonzalez-Gerez JJ, Saavedra-Hernandez M. A 14-Day Therapeutic Exercise Telerehabilitation Protocol of Physiotherapy Is Effective in Non-Hospitalized Post-COVID-19 Conditions: A Randomized Controlled Trial. *J Clin Med*. 2023;12(3):776. doi:10.3390/jcm12030776

13. Walle-Hansen MM, Ranhoff AH, Mellingsæter M, Wang-Hansen MS, Myrstad M. Health-related quality of life, functional decline, and long-term mortality in older patients following hospitalisation due to COVID-19. *BMC Geriatr*. 2021;21(1). doi:10.1186/s12877-021-02140-x

14. Cravello L, Martini E, Viti N, Campanella C, Assogna F, Perotta D. Effectiveness of a Family Support Intervention on Caregiving Burden in Family of Elderly Patients with Cognitive Decline After the COVID-19 Lockdown. *Front Psychiatry*. 2021;12. doi:10.3389/fpsyt.2021.590104

15. Rogers-Brown JS, Wanga V, Okoro C, Brozowsky D, Evans A, Hopwood D, et al. Outcomes Among Patients Referred to Outpatient Rehabilitation Clinics After COVID-19 Diagnosis — United States, January 2020–March 2021. *MMWR Morb Mortal Wkly Rep*. 2021;70(27). doi:10.15585/mmwr.mm7027a2

16. Pérez-Rodríguez P, Díaz de Bustamante M, Aparicio Mollá S, Arenas MC, Jimenez-Armero S, Esclapez PL, et al. Functional, cognitive, and nutritional decline in 435 elderly nursing home residents after the first wave of the COVID-19 Pandemic. *Eur Geriatr Med*. 2021;12(6):1137-1145. doi:10.1007/s41999-021-00524-1

17. Crivelli L, Palmer K, Calandri I, et al. Changes in cognitive functioning after COVID-19: A systematic review and meta-analysis. *Alzheimer's and Dementia*. 2022;18(5):1047-1066. doi:10.1002/alz.12644

18. Duong S., Patel T., Chang F. Dementia: What pharmacists need to know. Can. Pharm. J. 2017; 150:118–129. doi: 10.1177/1715163517690745.

19. Darbà J., Kaskens L. Relationship between patient dependence and direct medical-, social-, indirect-, and informal-care costs in Spain. Clin. Outcomes Res. CEOR. 2015; 7:387–395. doi: 10.2147/CEOR.S81045

20. Beattie E, O'Reilly M, Fetherstonhaugh D, McMaster M, Moyle W, Fielding E. Supporting autonomy of nursing home residents with dementia in the informed consent process. Dementia. 2019 Nov 1;18(7–8):2821–35

21. Hayes D. Telerehabilitation for Older Adults. Topics in Geriatric Rehabilitation. 2020 Oct 1; 36:205–11.doi: 10.1097/TGR.0000000000000282

22. Van der Laag PJ, Arends SAM, Bosma MS, van den Hoogen A. Factors associated with successful rehabilitation in older adults: A systematic review and best evidence synthesis. *Geriatr Nurs (Minneap)*. 2021;42(1):83-93. doi: 10.1016/j.gerinurse.2020.11.010

23. Varacallo M, El Bitar Y, Mair SD. Rotator Cuff Tendonitis. [Updated 2023 Aug 4]. In: StatPearls. Treasure Island (FL): StatPearls Publishing; Jan 2023. https://www.ncbi.nlm.nih.gov/books/NBK532270/)

24. Sambandam SN, Khanna V, Gul A, Mounasamy V. Rotator cuff tears: An evidence based approach. World J Orthop. 2015 Dec 18;6(11):902-18. doi: 10.5312/wjo. v6.i11.902

25. Tashjian RZ. AAOS clinical practice guideline: optimizing the management of rotator cuff problems. J Am Acad Orthop Surg. 2011 Jun;19(6):380-3. doi: 10.5435/00124635-201106000-00008.

26. Wolff AB, Sethi P, Sutton KM, Covey AS, Magit DP, Medvecky M. Partial-thickness rotator cuff tears. J Am Acad Orthop Surg. 2006 Dec;14(13):715-25. doi:

10.5435/00124635-200612000-00003. PMID: 17148619.

27. Bouaziz W, Schmitt E, Kaltenbach G, Geny B, Vogel T. Health benefits of cycle ergometer training for older adults over 70: a review. Eur Rev Aging Phys Act. 2015 Nov 2; 12:8. doi: 10.1186/s11556-015-0152-9

28. Harber MP, Konopka AR, Douglass MD, Minchev K, Kaminsky LA, Trappe TA, Trappe S. Aerobic exercise training improves whole muscle and single myofiber size and function in older women. Am J Physiol Regul Integr Comp Physiol. 2009 Nov;297(5):R1452-9. doi: 10.1152/ajpregu.00354.2009

29. Marzuca-Nassr GN, Artigas-Arias M, Olea MA, SanMartín-Calísto Y, Huard N, Durán-Vejar F, Beltrán-Fuentes F, Muñoz

Fernández A, Alegría-Molina A, Sapunar J, Salazar LA. High-intensity interval training on body composition, functional capacity, and biochemical markers in healthy young versus older people. Exp Gerontol. 2020 Nov; 141:111096. doi: 10.1016/j.exger.2020.111096

30. Lee CW, Cho GH. Effect of stationary cycle exercise on gait and balance of elderly women. J Phys Ther Sci. 2014 Mar;26(3):431-3. doi: 10.1589/jpts.26.431

31. Putri YSE, Putra IGNE, Falahaini A, Wardani IY. Factors Associated with Caregiver Burden in Caregivers of Older Patients with Dementia in Indonesia. Int J Environ Res Public Health. 2022 Sep 29;19(19):12437. doi: 10.3390/ijerph191912437

32. International Labour Organization, editor. The regulation of domestic workers in Indonesia: current laws, international standards, and best practice: ILO project on mobilising action for the protection of domestic workers from forced labour and trafficking in Southeast Asia. Jakarta: International Labour Organization; 2006. 52 p.

33. Indonesian Women's Legal Aid Foundation (LBH APIK), Kertas Posisi Usulan Revisi Perda DKI Jakarta No 6 Thn 1993 tentang Pramuwisma [Position Paper and Recommendations for the Revision of Jakarta City Local Ordinance No 6 of 1993 on Domestic Workers] (LBH APIK Jakarta, 2002), p3.

34. Indonesian Women's Legal Aid Foundation (LBH APIK), Kertas Posisi Usulan Revisi Perda DKI Jakarta No 6 Thn 1993 tentang Pramuwisma [Position Paper and Recommendations for the Revision of Jakarta City Local Ordinance No 6 of 1993 on Domestic Workers] (LBH APIK Jakarta, 2002), pp1-2

35. Moriichi K, Fujiya M, Ro T, Ota T, Nishimiya H, Kodama M, et al. A novel telerehabilitation with an educational program for caregivers using telelecture is feasible for fall prevention in elderly people: A case series. *Medicine (Baltimore)*. 2022;101(6):e27451. doi:10.1097/MD.0000000000027451

36. Database Peraturan | JDIH BPK [Internet]. [cited 2023 Dec 30]. Permenkes No. 20 Tahun 2019.Available from: http://peraturan.bpk.go.id/Details/138613/permenkes-no-20-tahun-2019

37. Asbjørnsen RA, Smedsrød ML, Solberg Nes L, Wentzel J, Varsi C, Hjelmesæth J, van Gemert-Pijnen JE. Persuasive System Design Principles andvBehavior Change Techniques to Stimulate Motivation and Adherence in Electronic Health Interventions to Support Weight Loss Maintenance: Scoping Review. J Med Internet Res. 2019 Jun 21;21(6):e14265. doi: 10.2196/14265

38. Lorito C, Duff C, Rogers C, Tuxworth J, Bell J, Fothergill R, et al. Tele-rehabilitation for people with dementia during the COVID-19 pandemic: A case study from England. *Int J Environ Res Public Health*. 2021;18(4):1-19. doi:10.3390/ijerph18041717(28)

39. 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. *Int J Environ Res Public Health*. 2021;18(4):1-17. doi:10.3390/ijerph18041755

40. Buabbas AJ, Albahrouh SE, Alrowayeh HN, Alshawaf H. Telerehabilitation during the COVID-19 Pandemic: Patients and Physical Therapists' Experiences. Med Princ Pract. 2022;31(2): 156-164.doi:10.1159/000523775