Original Study

Indian Journal of Physiotherapy and Occupational Therapy
Volume 16 No. 4, October-December 2022

Telerehabilitation as a Tool Given on Physical Fitness and Quality of Life in Overweight and Obese College Students Amidst Covid 19 Pandemic: Single Group Pre Post Design

Tamilalagan[1], M.Premkumar[2], K.Sangeetha[3], S. Kavitha[4]

[1]Assistant Professor, [2]Professor cum PhD Research Scholar, Institute of Physiotherapy, Srinivas University, City Campus, Pandeshwar Campus, Mangaluru, Karnataka – 575001, [3]Final Year Student, [4]Assistant Professor, Santosh College of Physiotherapy (Affiliated to the Tamilnadu Dr.MGR Medical University), 15B, GST Main Road, Tirunagar, Madurai, Tamilnadu – 625006.

How to cite this article: Tamilalagan, M.Premkumar, K.Sangeetha et al. Telerehabilitation as a Tool Given on Physical Fitness and Quality of Life in Overweight and Obese College Students Amidst Covid 19 Pandemic: Single Group Pre Post Design. Indian Journal of Physiotherapy and Occupational Therapy.

Abstract

Background: Remote rehabilitation via advanced communications through network, online etc given in this advanced digital era is collectively known as telerehabilitation. American telemedicine association initially explained the term of telerehabilitation based on the facilities in current advance digital world. Covid -19 pandemic enhanced the services of telerehabilitation as first line rehabilitation treatment method that need rehabilitations services in their domicile. Thus based on telerehabilitation has been warranted to administer in providing physical therapy services for subjects who have been diagnosed both positive and negative COVID.

Aim & objectives of the study: To analyze the uses of exercise training through telerehabilitation applied during COVID-19 isolation period on overweight and obese college students on physical fitness and quality of life.

Data Analysis and Results: Notable improvement in the variables of weight in kg and Body Mass Index (BMI) in obese and overweight as well as their quality of life which is measured by SF – 36 questionnaire in college students after rehabilitation through telerehabilitation method where the subjects were trained with aerobic exercises, breathing exercises along with core stability exercises on physical fitness and quality of life with significance equal or less than 0.05 and confidence interval at 95%.

Conclusion: statistically significant improvement in weight in kg and BMI which reflected in their physical fitness and quality of life (SF – 36) in overweight and obese college students after the intervention of telerehabilitation consists of aerobic exercises, breathing exercises and core stability exercises applied to them during this COVID 19 Pandemic.

Key words: Telerehabilitation, Quality of Life, Overweight, Obese Students, Covid 19 Pandemic.

Corresponding Author: Tamilalagan, Assistant Professor, Institute of Physiotherapy, Srinivas University, City Campus, Pandeshwar Campus, Mangaluru, Karnataka – 575001.

Email ID: tamilalagan.physio@gmail.com

Contact No: 8778352557

Introduction

Technological aspects have advanced in every area of medical rehabilitation in recent years, from providing cutting-edge assessments to actually delivering specialized therapies.[1] The administration of treatment programs to people of all ages via digitalization by a diverse group of professionals, as defined by the American Telemedicine Association, is changing the rehabilitation landscape and services.[2]

Therapeutic treatments, Remote progress and education monitoring, consulting, Practicing, and a method of handling persons with impairments are just a some of the management given.[3] Telerehabilitation's impact varies from clients simple approach to the professionals, continuity of care facilitation, and less expensive therapist-centered benefit.[4-6]

Many healthcare institutions at Wuhan, In December 2019, the Hubei province of China reported a number of cases of pneumonia with no obvious aetiology.[7,8] They shared the same clinical signs as the SARS pandemic of 2003.[9-12] Third wave of corona virus to trigger public health outbreaks, COVID-19 spreads more quickly and widely than SARS and Middle East Respiratory Syndrome put together. With millions of confirmed cases and tens of thousands of fatalities in 210 countries and territories, COVID-19 is presently an epidemic on a global scale.[13]

Obesity is described by the World Health Organization (WHO) as abnormal or excessive fat buildup that poses a health concern.[13] There are several aspects to take into account, including excessive and unhealthy eating patterns, age, a lack of exercise, gender, educational attainment, and sociocultural features, hormonal and metabolic factors, social standing, and inherited factors. Obesity is caused by a combination of variables, including regular intervals, extremely low-energy diets, smoking, alcohol consumption, childbirth, and medication use. Regular physical activity in a safe home setting is required to maintain a healthy lifestyle during the COVID-19 epidemic.[15,16]

For patients receiving care at home, telerehabilitation need to be the first option for therapy., according to the most recent edition of a comprehensive assessment assessing rehabilitation procedures published in COVID-19.[17] The usefulness of Telerehabilitation-based many additional studies that were published during this time period emphasized strategies in the physiotherapy and rehabilitation practices of patients with COVID-19 positive and negative, as well as another condition.[18,19]

Furthermore, in eligible patients, Telerehabilitation procedures should be used throughout the in-hospital time to physiotherapists may operate safely and effectively while reducing the danger of transmission.[18-24]

The main aim of the study to investigate the impact of exercise training via Telerehabilitation on overweight and obese students' physical fitness and quality of life during their COVID-19 isolation period.

The goal is to assess how Telerehabilitation used during the COVID-19 outbreak affects students who seem to be overweight or obese in accordance with the level of physical fitness and quality of life.

By doing this study with the level of significance of application of telerehabilitation during the COVID-19 epidemic on physical health and quality of life will be more useful particularly in treating obese students.

Methodology

Study Design:

Single Group Pre Post Design.

Study Setting:

Abhinav Pain and Physiotherapy Clinic, Madurai.

Study Duration:

6 Months

Study Sampling:

Convenient Sampling.

Study Population:

In and around Madurai District.

Study Sample:

10 Subjects

Criteria of Selection:

Inclusion Criteria:

Age: 20 to 25 years

Sex: Both

BMI: 26 to 30

Exclusion criteria:

Noncooperative Patients

Psychological Disorders

Serious Co - morbidities Conditions

Systemic Disorders

Variables:

Weight in kg

BMI – Body Mass Index

Interventions:

Aerobic Exercises

Breathing Exercises

Flexibility Exercises

Core Stabilization Exercises

Material and Tools:

Pen

Paper

Laptop

Weight Machine

Procedure:

This study used a convenient sampling strategy to recruit 10 subjects who matched the selection criteria. The subjects' permission to participate in this study was obtained. Their demographic information, BMI, and weight in kilograms were obtained and documented before to the intervention. The Telerehabilitation programme, which was used on overweight and obese people, lasted 16 weeks and consisted of three 60-minute sessions per week. Our fitness routine included a 30-minute brisk walking programme, as well including breathing exercises and mat exercises focused on bodily stability. Before and after our exercise training, we performed warm-up and cooling-down exercises for the chest, arms, and legs that lasted five minutes each. Each core stabilization exercise was repeated 10 times. Our Telerehabilitation Program's final 10 minutes included five breathing exercises, including diaphragmatic, segmental breathing, and chest wall mobility exercises.

Post intervention data of BMI and weight in kg were recorded and documented.

Data was analyzed with suitable statistical method for windows.

Data Analysis and Results

The mean and standard deviation of weight in kg. BMI and SF -36 values were shown in the table 1. That results show there was statistically significant improvement in the pre and post mean values of weight, BMI and SF-36 values after the intervention telerehabilitation program which comprises of aerobic exercise program, breathing exercises with diaphragmatic and segmental expansion exercises, flexibility exercises and core stability exercises.

Notable improvement in the variables of weight in kg and Body Mass Index (BMI) in obese and overweight as well as their quality of life is measured by SF – 36 questionnaire in college students after rehabilitation through telerehabilitation method where the subjects were trained with aerobic exercises, breathing exercises along with core stability exercises on physical fitness and quality of life with significance equal or less than 0.05 and confidence interval at 95%.

Table 1: Comparison of Mean, SD, T, and P values of weight in kg and BMI between Pre- and Post-Test Duration in Overweight and Obese Subjects

No of Subjects	Variables	Mean		SD		T Value	P Value
		Pre	Post	Pre	Post		
10	Weight in kg	72.7	68.9	22.68	24.32	1.75281	0.048325
	BMI	27.03	25.62	2.11	2.19	2.14794	0.022710
	SF – 36	78.86	95.36	7.34	8.24	8.3476	0.00001

$p<0.05$

Discussion

The results of this study show that after telerehabilitation, which consists of aerobic exercises, breathing exercises, and core stability exercises, in obese and overweight students, the variables of weight in kg and Body Mass Index (BMI) have statistically improved in terms of their level of physical fitness and quality of life with $p \leq 0.05$.

This change in the variables illustrates how subjects' active engagement in telerehabilitation during the Covid 19 epidemic improves overweight and obese pupils' physical standards. The Covid 19 epidemic forced students to adopt a more sedentary physical lifestyle, which resulted in weight gain and inactivity. However, science is continuously expanding to meet new, unexpected, or unanticipated requirements. It brings up the possibility of telerehabilitation procedures to meet our demands in this regard. This project is well-designed to combat the threat of overweight and obese student problems caused by the pandemic.

The findings of this study corroborate those of Beste Ozturk et. al. 2021, who drew the conclusion that providing fitness training via Telerehabilitation during the COVID-19 epidemic was an efficient, secure, and useful therapy option for overweight and obese persons. Future research is required to determine the effectiveness of Telerehabilitation in this population.[28]

The results of this study support the claim made by **Jaini Patel et. al. in 2020**, that a brief, supervised virtual Telerehabilitation programme enhances walk test performance, regular mobility, and wellness quality of life in patients with cardiac, pulmonary, and cancer. By promoting regular physical activity even during strict house lockdowns and lowering the danger of new viral mutations, the use of a step counter in conjunction with frequent instruction during home-based treatments may enhance health.[29]

Ethical Clearance: Taken from Institutional Ethical Review Board, Santosh College of Physiotherapy, Madurai.

Conflict of Interest: Nil

Source of Funding: Self

References

1. Brennan DM, Mawson S, Brownsell S. Telerehabilitation: enabling the remote delivery of healthcare, rehabilitation, and self management. InAdvanced technologies in rehabilitation 2009 (pp. 231-248). IOS Press.
2. CE M, TA B, CT S, Fatoye C, Maikudi L, Fatoye F. Awareness, attitude and expectations of physiotherapy students on telerehabilitation. Medical Science Educator. 2021 Apr;31(2):627-36.
3. Mikołajewska E, Mikołajewski D. Neurological telerehabilitation–current and potential future applications. J. Health Sci. 2011;1:7-14.
4. Cason J. Telerehabilitation: An adjunct service delivery model for early intervention services. International Journal of Telerehabilitation. 2011;3(1):19.
5. Jafni TI, Bahari M, Ismail W, Radman A. Understanding the implementation of telerehabilitation at pre-implementation stage: a systematic literature review. Procedia Computer Science. 2017 Jan 1;124:452-60.
6. Shamsuddin S, Yussof H, Mohamed S, Hanapiah FA, Ainudin HA. Telerehabilitation service with a robot for autism intervention. Procedia Computer Science. 2015 Jan 1;76:349-54.
7. Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, Zhao X, Huang B, Shi W, Lu R, Niu P. A novel coronavirus from patients with pneumonia in China, 2019. New England journal of medicine. 2020 Jan 24.

8. Chan JF, Yuan S, Kok KH, To KK, Chu H, Yang J, Xing F, Liu J, Yip CC, Poon RW, Tsoi HW. A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. The lancet. 2020 Feb 15;395(10223):514-23.
9. Chan-Yeung M, Xu RH. SARS: epidemiology. Respirology. 2003 Nov;8:S9-14.
10. Sampathkumar P, Temesgen Z, Smith TF, Thompson RL. SARS: epidemiology, clinical presentation, management, and infection control measures. InMayo Clinic Proceedings 2003 Jul 1 (Vol. 78, No. 7, pp. 882-890). Elsevier.
11. Lee N, Hui D, Wu A, Chan P, Cameron P, Joynt GM, Ahuja A, Yung MY, Leung CB, To KF, Lui SF. A major outbreak of severe acute respiratory syndrome in Hong Kong. New England Journal of Medicine. 2003 May 15;348(20):1986-94.
12. Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, Liu L, Shan H, Lei CL, Hui DS, Du B. Clinical characteristics of coronavirus disease 2019 in China. New England journal of medicine. 2020 Apr 30;382(18):1708-20.
13. Gärds N, Paulsson J, Pavlov K, Westerholm L. Web-Application for Tracking Exercise and Dietary Habits and Their Effect on Biometrics, with Integrated Coaching.
14. Rehberi Dİ, El Kitabı AY. TC Sağlık Bakanlığı Halk Sağlığı Genel Müdürlüğü.
15. Owen N, Sparling PB, Healy GN, Dunstan DW, Matthews CE. Sedentary behavior: emerging evidence for a new health risk. InMayo Clinic Proceedings 2010 Dec 1 (Vol. 85, No. 12, pp. 1138-1141). Elsevier.
16. Chen P, Mao L, Nassis GP, Harmer P, Ainsworth BE, Li F. Returning Chinese school-aged children and adolescents to physical activity in the wake of COVID-19: Actions and precautions. Journal of sport and health science. 2020 Jul;9(4):322.
17. KAHRAMAN T. Koronavirüs hastalığı (COVID-19) pandemisi ve telerehabilitasyon. İzmir Katip Çelebi Üniversitesi Sağlık Bilimleri Fakültesi Dergisi. 2020;5(2):87-92.
18. Ozturk B, Duruturk N. Effect of telerehabilitation applied during COVID-19 isolation period on physical fitness and quality of life in overweight and obese individuals. International Journal of Obesity. 2022 Jan;46(1):95-9.
19. Ozturk B, Duruturk N. Effect of telerehabilitation applied during COVID-19 isolation period on physical fitness and quality of life in overweight and obese individuals. International Journal of Obesity. 2022 Jan;46(1):95-9.
20. Martin CK, Church TS, Thompson AM, Earnest CP, Blair SN. Exercise dose and quality of life: a randomized controlled trial. Archives of internal medicine. 2009 Feb 9;169(3):269-78.
21. Ross R, Bradshaw AJ. The future of obesity reduction: beyond weight loss. Nature Reviews Endocrinology. 2009 Jun;5(6):319-25.
22. Ume A, Salatian A. An Approach to the implementation of an integrated computerized medical system in Nigeria. Journal of Educational and Social Research. 2012 Jan 1;2(4):99-.
23. Zhao D, Zheng FY, Guo YG, Gao HZ. comparative study on the clinical features of COVID-19 pneumonia to other pneumonias; Clinical Infectious Diseases; Oxford Academic. Clinical Infectious Diseases.
24. Dalle Grave R. Nutrition and fitness: mental health. Nutrients. 2020 Jun 17;12(6):1804.
25. Fu PC, Zhang YZ, Geng HM, Chen SL. The complete chloroplast genome sequence of Gentiana lawrencei var. farreri (Gentianaceae) and comparative analysis with its congeneric species. PeerJ. 2016 Sep 29;4:e2540.
26. Mbada CE, Ibidunmoye DO, Yusuff JO, Idowu OA, Oke KI, Oyewole IA, Fatoye C, Olatoye F, Olatoye O, Fatoye F. Disability Profile and Accessibility Limitations among Persons with Physical Disability in Nigeria. IJDS: Indonesian Journal of Disability Studies. 2021 Dec 5;8(2):305-16.
27. McArthur L, Sakthivel D, Ataide R, Chan F, Richards JS, Narh CA. Review of burden, clinical definitions, and management of COVID-19 cases. The American journal of tropical medicine and hygiene. 2020 Aug;103(2):625.
28. Ozturk B, Duruturk N. Effect of telerehabilitation applied during COVID-19 isolation period on physical fitness and quality of life in overweight and obese individuals. International Journal of Obesity. 2022 Jan;46(1):95-9.
29. Patel DI, Gamez Y, Shah L, Patel J. Decline of psychological health following the designation of COVID-19 as a pandemic: descriptive study. Journal of Medical Internet Research. 2021 Apr 22;23(4):e24964.