

# Global perspective of cardiac rehabilitation in Post COVID patients

Ambreen Fatima<sup>1</sup>, Jyoti Batra<sup>2</sup>, Aarushi Batra<sup>3</sup>, Ritvija Dixit<sup>4</sup>, Rahul Saxena<sup>5</sup>, Suyash Saxena<sup>6</sup>, Ajit Pal Singh<sup>7</sup>

<sup>1</sup>Department of Physiotherapy, SSAHS, Sharda University, Greater Noida, U.P, India

<sup>2</sup>Department of Biochemistry, Santosh Medical College & Hospital, Santosh Deemed to be University, Ghaziabad, UP, India

<sup>3</sup>LLRM Medical college, Meerut, UP, India.

<sup>4</sup>Department of Physiology, Saraswati Institute of Medical Sciences Hapur, U.P, India

<sup>5</sup>Department of Biochemistry, SSAHS, Sharda University, Greater Noida, U.P, India.

<sup>6</sup>Department of Biochemistry, SSAHS, Sharda University, Greater Noida, U.P, India.

<sup>7</sup>Department of Medical Laboratory Technology, SSAHS, Sharda University, Greater Noida, U.P, India.

## Abstract

The long-standing style of care known as cardiac rehabilitation (CR) may have been created to lessen the significant burden of cardiovascular diseases (CVD) on people all over the world. In Post COVID era, maintenance of cardiac health in COVID affected patients has been received much attention. Cardiac rehabilitation (CR) may be a sophisticated intervention with multiple components which can provide support in developing health cardiovascular system. The calibre of CR services can vary greatly and have an impact on the extent of patient benefit. The research has demonstrated that cardiac rehabilitation improves quality of life and reduces clinical psychological distress (DSM sadness and anxiety) (QoL). Subclinical discomfort and psychological well-being also demonstrated pertinent clinical implications in cardiac situations. Cardiac rehabilitation could also be an economical. According to studies, the benefits of CR are effective for patients with a variety of cardiac conditions, such as those who have undergone myocardial infarction (MI), coronary artery bypass surgery, stable angina, stable chronic heart failure, heart valve replacement, percutaneous coronary treatments, heart transplantation, cardiac arrhythmias, or severe arterial hypertension. As CR, and in several contexts "pre-habilitation," are in increased demand, a chronic disability management programme is being given more commonly in home and community settings. As a result of the

COVID-19 pandemic's new requirements, the employment of distant, personalised solutions within this delivery paradigm is currently changing.

## Keywords

Cardiac rehabilitation, Cardiac mortality, COVID 19, Myocardial infarction

## Imprint

Ambreen Fatima, Jyoti Batra, Aarushi Batra, Ritvija Dixit, Rahul Saxena, Suyash Saxena, Ajit Pal Singh. Global perspective of cardiac rehabilitation in Post COVID patients. *Cardiometry*; Special issue No. 25; December 2022; p. 1419-1422; DOI: 10.18137/cardiometry.2022.25.14191422; Available from: <http://www.cardiometry.net/issues/no25-december-2022/global-perspective-cardiac>

## INTRODUCTION

Cardiac rehabilitation (CR), a well-known type of care, may have been developed to alleviate the tremendous burden that cardiovascular diseases (CVD) place on individuals all over the world. The nature and quality of cardiac rehabilitation (CR) services can differ substantially and have an impact on the degree of patient benefit because CR may be a complex intervention with numerous components. The research has demonstrated that cardiac rehabilitation (CR) improves quality of life (QoL) and reduces clinical psychological distress (DSM sadness and anxiety) (Cohen et al., 1999). Subclinical discomfort and psychological well-being also demonstrated pertinent clinical implications in cardiac situations. Cardiac rehabilitation (CR) could also be an economical. Patients who have undergone myocardial infarction (MI), coronary artery bypass surgery, severe arterial hypertension, heart valve restoration, stable angina, stable chronic cardiac arrest, heart transplantation, ventricular arrhythmias, or percutaneous coronary interventions, have all been shown to benefit from CR. One of the goals of CR is to increase exercise tolerance and reduce cardiovascular risk factors.

Third world nations where cardiac care therapies have experienced fast expansion, are now implementing these guidelines and standards with the crucial goal of making rehabilitation a neighbourhood of the quality care package rather than an optional component. Cardiovascular rehabilitation (CR) is

another potential name for a paradigm of care that is provided in both clinical and nonclinical settings and is intended to increase the need for individualized home-based care. Cardiac rehabilitation (CR) is a care plan that can be used to optimize secondary prevention and is provided in both clinical and nonclinical settings. It is based on internationally recognized, validated original assessments, threat factor operation (e.g., diet, smoking, hypertension, dyslipidemia, and hyperglycemia/diabetes mellitus), structured exercise program, health education, and social and psychological counseling (Chaves et al., 2020). Through its internationally recognized, validated original assessment, threat factor operation (such as diet, smoking, hypertension, dyslipidemia, and hyperglycemia/diabetes mellitus), systematic exercise training, patient education, and psychological counseling, CR influences these advantages (Chaves et al., 2020). Exercise training (Et) is that the mainstay and thus the foremost studied component of cardiac rehabilitation (CR) programs with varying recommendations in specific guidelines across countries. Before prescribing an appropriate CR program, functioning assessment is the primary step that can be done using the brief international Classification of Functioning. The clinical benefits of ET in patients with chronic heart failure (CHF) are mentioned in previous literatures and include positive changes in cardiovascular, respiratory and skeletal muscle capabilities, endurance, quality of life (QoL), inflammation, depressive symptoms, stress, and cognitive functions (Padeletti et al., 2008).

Worldwide, ischemic heart disease (IHD) continues to be one of the leading contributors of morbidity and mortality. In fact, it ranks among the top global causes of years lived with a disability (Supervia et al., 2019). Secondary prevention, such as that provided in cardiac rehabilitation (CR), is essential to treatment for cardiac patients since they are at a high risk of experiencing recurring episodes and having their quality of life impaired. Dietary counselling, health risk reduction, psychological and social management, patient engagement, and exercise instruction are the five fundamental components of CR. (EACPR Committee for Science Guidelines, 2010). The primary cause of morbidity and mortality is still cardiovascular disease. However, over the past three decades, and particularly in developed economies, the mortality rates for atherosclerosis have decreased dramatically.

Cardiac rehabilitation could also be a secure and effective intervention within the management of cardiovascular diseases (CVD), which improves fitness, recovery and psychological well-being. Exercise-based CR significantly decreases cardiovascular mortality, the danger of re-hospitalizations and as a result, the cost (Kachru et al., 2019). An active lifestyle helps reduce risk of cardiovascular disease and improve overall health. Particularly CHD patients have some degree of aerobic capacity limits, which are most noticeable in individuals with complicated heart defects (Larsson et al., 2019). Therefore, this study was conducted to see the pattern and implementation of Cardiac rehabilitation globally. Also, to see what guidelines are being followed for Cardiac rehabilitation in various countries, especially in developed countries & in developing countries is very different the basic differences is in CR program structure among them.

A study was conducted to characterize the structure of CR programs globally in accordance to recommended instructions and to juxtapose this by World Health Organization (WHO) region. The majority of nations in the globe (54.7%), according to data from 93 surveys, provide cardiac rehabilitation. The most frequent causes of cardiac rehabilitation were myocardial infarction, PCI, and coronary artery bypass surgery (Supervia et al., 2019). The majority of programs were run by doctors. The nursing staff and physiotherapists were the most prevalent CR providers. For the first time, CR programs were characterized globally, and the findings indicated that the quality of CR programs is excellent. A more regular delivery of counseling for quitting smoking and returning to the workforce must be encouraged. However, gaps and inadequacies in the provision of CR services have been identified.

A study was carried out to examine these psychological aspects, how they changed with time, and how CR patients' hearts developed. Patients overall indicated high distress in 25.9% of cases with a DSM diagnosis, high anguish in 31.5% of cases without a DSM diagnosis, and low distress in 42.6% of cases. After CR was finished, a significant drop in DSM diagnoses was seen. The study's findings show that there is a considerable decrease in clinical distress following CR completion. Sub-clinical discomfort, however, is still present and predicts negative cardiac outcomes (Gostoli et al., 2017).

This study was conducted by Bellmann and his colleagues to gain insight into the most recent developments in CR and to demonstrate its drawbacks. By

minimizing risk factors like exercise, nicotine cessation, weight management, and cholesterol reduction, CR can undoubtedly enhance the quality of life and lower mortality. CR programs must be tailored to the unique requirements of female and male patients (Bellmann et al., 2020).

A cross-sectional study was conducted, in which they gave an online survey to CR programs located in India. The study was cross-sectional, and it summarized the provision and availability of CR in India specifically (Babu et al., 2020). Regarding the former, estimates for the yearly prevalence of IHD from the Global Burden of Disease research were used to calculate CR density. India, especially the North, has the biggest need for CR out of all the nations included in the ICCPR's worldwide audit. Government funding and training of health-care professionals to deliver the programs are required to boost capacity. Where CR was available, it was often provided in accordance with suggestions from guidelines. Interventions for quitting smoking should be made available to everyone.

Chavez et al. conducted this work to characterize the dose provided in alternate models and supervised CR programmes around the world, as well as any potential correlations. Global CR programmes were given access to a web survey as part of this cross-sectional investigation. Program identification was made easier by cardiac groups and local champions. Countries were categorized using criteria for income and region. The study's findings show that CR dose varies greatly by nation, location, and socio – economic status; if feasible, a global average of 22 hours each monitored programme is feasible. Many CR regimens may also have to alter their dose, which may have the backing of medical professionals (Chavez et al., 2020).

Turk-Adawi et al. conducted a study to determine the density, quantities, and drivers of CR. An international survey of CR programmed was given out as part of this study. Program identification was facilitated through cardiac groups and local champions. Generalized linear mixed models were used to evaluate factors linked to volumes and compare them by World Health Organization area. Only half of the world's countries have CR. Where available, there is a severe lack of capacity, therefore the majority of patients won't benefit from the benefits of participation (Turk-Adawi et al., 2019).

Piffle et.al conducted a systematic evaluation of the literature relating to national and worldwide cardiac rehabilitation registries. In July 2016, four databases were

checked, and two reviewers separately screened complete texts and titles/abstracts for inclusion. The study's sample contained a total of 265,608 patients, eleven publications from seven national registries, and one international registry (of 12 European states). The use of domestic and international registries to define cardiac rehabilitation and provide a benchmark for improving quality, though still in its infancy, shows promise for both national and global benchmarking. For patients with cardiac problems, clinical registers are crucial for assessing and promoting the quality of medical care (Piffle et al., 2017).

Suvero et al indicated that a thorough plan must be established in order to prevent, manage, and support patients who are enduring delayed morbidity and impairment as a result of post-COVID-19 problems. We anticipate that with enough time, research, and health education, we will eventually be able to better understand and recognize the post-COVID problems in a variety of people and contexts (Suvero et al., 2021).

According to Pal et al., if the pandemic in India is not controlled, there could be grave repercussions, including extensive instances and thousands of casualties that will also quickly overburden the hospital system. The World Health Organization recently stated that India's response to the pandemic will influence how the disease evolves in the future due to the broad scope of the pandemic and the potential that India will turn into the next COVID-19 epicenter. Here, we've outlined the current situation of the pandemic in India and the numerous difficulties the nation is currently facing in its fight against COVID-19 (Pal and Yadav, 2020).

Over the course of three centuries, cardiac rehabilitation has developed into a multifaceted, multi-morbidity chronic disease management approach. The primary clinical outcomes have changed over time, ranging from attaining unnecessarily long periods of bed rest and a quicker return to work to a reduction in mortality and, more recently, a reduction in healthcare costs. It is crucial to stay aware of what this entails in relation to each patient's quality of mental and social life because both individual and medical care technology are advancing and helping to preserve life.

A prolonged disability management program that is frequently provided in residential and community settings is a growing focus for CR, and in some cases "pre-rehabilitation." Nowadays, this delivery approach makes advantage of virtual customized systems, particularly when the COVID-19 pandemic accelerates the development of new needs.

## Conclusion

The enhancement of exercise capacity and management of coronary risk factors are the goals of CR. By reducing risk factors including exercise, quitting smoking, weight loss, and cholesterol lowering, CR can enhance the quality of life and minimize mortality. The varied demands of male and female patients should be taken into consideration while designing CR regimens. Clinical psychological discomfort (DSM depression and anxiety) and well being have been positively impacted by cardiac rehabilitation, according to prior research (QoL). Also, CR programs were characterized globally for the primary time, and results suggested that CR programs quality is high. However, gaps & flaws within the delivery of CR services were noticed.

The last ten years' worth of English-language CR recommendations were carefully examined. These principles emerged from a worldwide group, also as Europe and therefore the America's, most considered equity. Three excellent, thorough, multi-disciplinary, and internationally applicable guidelines were chosen from this collection to meet the WHO's recommendation extraction criteria.

## References

1. Babu AS, Turk-Adawi K, Supervia M, Jimenez FL, Contractor A, Grace SL. Cardiac rehabilitation in India: Results from the international council of cardiovascular prevention and rehabilitation's global audit of cardiac rehabilitation. *Global heart*. 2020, 15(1): 28-31.
2. Bellmann B, Lin T, Greissing K, Rottner L, Rillig A, Zimmerling S. The beneficial effects of cardiac rehabilitation. *Cardiology and therapy*. 2020, 9(1):35-44.
3. Chaves G, Turk-Adawi K, Supervia M, Santiago de Araújo Pio C, Abu-Jeish AH, Mamataz T, Tarima S, Lopez Jimenez F, Grace SL. Cardiac rehabilitation dose around the world: variation and correlates. *Circulation: Cardiovascular Quality and Outcomes*. 2020, 13(1):e005453.
4. Chindhy S, Taub PR, Lavie CJ, Shen J. Current challenges in cardiac rehabilitation: strategies to overcome social factors and attendance barriers. *Expert review of cardiovascular therapy*. 2020,18(11):777-89.
5. Cohen RA, Moser DJ, Clark MM, Aloia MS, Cargill BR, Stefanik S, Albrecht A, Tilkemeier P, Forman DE. Neurocognitive functioning and improvement in quality of life Chaves following participation in cardi-

ac rehabilitation. *The American journal of cardiology*. 1999, 83(9):1374-8.

6. EACPR Committee for Science Guidelines, Corrà U, Piepoli MF, Carré F, Heuschmann P, Hoffmann U, Verschuren M, Halcox J, Document Reviewers, Giannuzzi P, Saner H. Secondary prevention through cardiac rehabilitation: physical activity counselling and exercise training: key components of the position paper from the Cardiac Rehabilitation Section of the European Association of Cardiovascular Prevention and Rehabilitation. *European heart journal*. 2010, 31(16):1967-74.
7. Gostoli S, Roncuzzi R, Urbinati S, Rafanelli C. Clinical and subclinical distress, quality of life, and psychological well-being after cardiac rehabilitation. *Applied Psychology: Health and Well-Being*. 2017, 9(3):349-69.
8. Larsson L, Johansson B, Sandberg C, Apers S, Kovacs AH, Luyckx K, Thomet C, Budts W, Enomoto J, Sluman MA, Wang JK. Geographical variation and predictors of physical activity level in adults with congenital heart disease. *IJC Heart & Vasculature*. 2019, 22:20-25.
9. Padeletti M, Jelic S, LeJemtel TH. Coexistent chronic obstructive pulmonary disease and heart failure in the elderly. *International Journal of Cardiology*. 2008, 125(2):209-15.
10. Pal R, Yadav U. COVID-19 pandemic in India: present scenario and a steep climb ahead. *Journal of primary care & community health*. 2020 Jul;11:2150132720939402.
11. Poffley A, Thomas E, Grace SL, Neubeck L, Gallagher R, Niebauer J, O'Neil A. A systematic review of cardiac rehabilitation registries. *European journal of preventive cardiology*. 2017, 24(15):1596-609.
12. Supervia, M., Turk-Adawi, K., Lopez-Jimenez, F., Pesah, E., Ding, R., Britto, R.R., Bjarnason-Wehrens, B., Derman, W., Abreu, A., Babu, A.S. and Santos, C.A.,2019. Nature of cardiac rehabilitation around the globe. *EClinical Medicine*, 13: 46-56.
13. Suvvari TK, Kutikuppala LS, Tsagkaris C, Corriero AC, Kandi V. Post-COVID-19 complications: Multi-systemic approach. *Journal of Medical Virology*. 2021, 93(12): 6451-6455.
14. Turk-Adawi K, Supervia M, Lopez-Jimenez F, Pesah E, Ding R, Britto RR, Bjarnason-Wehrens B, Derman W, Abreu A, Babu AS, Santos CA. Cardiac rehabilitation availability and density around the globe. *EClinical Medicine*. 2019, 13:31-45.