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Quality of life for cardiovascular patients: Promoting health at home

Alexandros Argyriadis[1], Chrisi Vlachou[1], Agathi Argyriadi[2]

[1] Department of Nursing, Frederick University, Cyprus
[2] Department of Psychology, Frederick University, Cyprus

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Corresponding author: Alexandros Argyriadis, 7 Yianni Frederickou, 1036, Cyprus.
Email: hsc.arg@frederick.ac.cy

Abstract

Introduction: *Cardiovascular diseases (CVDs) remain a significant global health concern, contributing to substantial morbidity and mortality. Enhancing the quality of life (QoL) for cardiovascular patients has garnered increasing attention as an essential aspect of comprehensive care. The COVID-19 pandemic has further underscored the need for innovative approaches to support patients' health while mitigating the risks associated with traditional rehabilitation methods.*
Aim: *This literature review aims to explore and synthesize existing research on alternative strategies to promote the QoL of cardiovascular patients, focusing on home-based interventions. The review examines the effectiveness of home-based rehabilitation programs, their impact on patient outcomes, and the challenges and benefits associated with their implementation.*
Method: *A narrative literature search was conducted across major medical databases, utilizing keywords related to cardiovascular diseases, quality of life, home-based rehabilitation, and remote interventions. Studies published within the last five years were included, and both quantitative and qualitative research were considered.*
Results: *The review revealed a growing body of evidence supporting the feasibility and efficacy of home-based rehabilitation for cardiovascular patients. Studies highlighted that remote interventions, such as tele-rehabilitation and in-home therapy, have shown promising outcomes in improving patients' functional status, reducing hospital readmissions, and enhancing overall well-being. Factors contributing to the success of home-based interventions include personalized exercise regimens, ongoing monitoring, and psychological support. However, challenges related to technology accessibility, patient motivation, and the need for individualized care were also identified.*
Conclusions: *Home-based interventions offer a promising avenue to enhance the QoL of cardiovascular patients while adapting to the changing healthcare*

landscape, particularly in light of the COVID-19 pandemic. Remote rehabilitation strategies provide an opportunity to address the limitations of traditional rehabilitation settings and increase patient access to care. Nevertheless, the successful implementation of home-based interventions requires careful consideration of patient preferences, technological infrastructure, and healthcare provider collaboration. As healthcare systems continue to evolve, integrating home-based approaches can contribute to the comprehensive management of cardiovascular diseases and the improvement of patients' overall well-being.

INTRODUCTION

Cardiovascular diseases (CVDs) have emerged as a formidable global health challenge, constituting a leading cause of mortality and morbidity across diverse populations.[1] The multifaceted nature of CVDs, encompassing conditions such as coronary artery disease, heart failure, and stroke, has prompted an imperative to adopt a comprehensive approach towards their management.[2] Among the evolving paradigms in cardiovascular care, the enhancement of the quality of life (QoL) for cardiovascular patients has garnered significant attention. While medical advancements have significantly improved the prognosis of CVDs, the multifarious impact of these conditions on patients' physical, psychological, and social well-being necessitates a holistic perspective that extends beyond medical interventions alone.[3]

The emergence of the COVID-19 pandemic in recent times has further accentuated the significance of innovative healthcare strategies that address patients' needs while mitigating potential risks. The pandemic has prompted a reevaluation of traditional healthcare delivery methods, including the administration of cardiac rehabilitation programs and support services. Amidst the pandemic's constraints, the concept of "promoting health at home" has emerged as a potential avenue to ensure the well-being of cardiovascular patients while adhering to necessary precautions.[4]

Cardiovascular diseases encompass a spectrum of conditions that afflict the heart and blood vessels, contributing to complex physiological and psychological alterations. With conditions ranging from atherosclerosis to arrhythmias, these diseases impact nearly every facet of patients' lives. The burden of CVDs is substantial, not only due to their impact on mortality rates but also due to the significant impairment they impose on patients' QoL. The struggle against CVDs often extends beyond medical treatments, influencing lifestyle choices, employment opportunities, and the ability to engage in daily activities. Recognizing that a patient's overall well-being is intimately linked with their QoL, healthcare practitioners have increasingly embraced an approach that integrates clinical care with strategies to enhance physical function, emotional resilience, and social engagement.[5]

While the literature has provided valuable insights into the potential benefits of home-based interventions for enhancing the quality of life (QoL) among cardiovascular patients, several critical research gaps exist that warrant further investigation.

Many studies have focused on short-term outcomes of home-based interventions. There is a need for longitudinal studies to comprehensively assess the sustained impact of these interventions on the QoL of cardiovascular patients over an extended period. This would contribute to a more comprehensive understanding of the effectiveness and durability of promoting health at home.[6]

Limited research has directly compared the effectiveness of home-based interventions with traditional center-based approaches in terms of improving QoL for cardiovascular patients. A rigorous comparative analysis could elucidate the relative benefits and drawbacks of each approach, guiding healthcare practitioners and policymakers in making informed decisions.[7]

While home-based interventions offer a personalized environment, the extent to which these interventions can be tailored to individual patient needs remains underexplored. Investigating strategies to customize interventions based on patient characteristics, preferences, and specific cardiovascular conditions could optimize the efficacy of promoting health at home.

The effectiveness of home-based interventions heavily relies on patients' access to technology and their digital literacy. Research is needed to identify barriers faced by patients with limited technological access and skills, and how these barriers impact their engagement and outcomes within home-based programs.

Psychosocial Support: Home-based interventions often lack the social interaction and peer support present in traditional center-based settings. Exploring the integration of psychosocial components, such as virtual support groups or tele-counseling, could address the potential isolation experienced by patients in home-based programs, ultimately impacting their QoL positively.[2,5,7]

The impact of promoting health at home on diverse populations, including those from low socioeconomic backgrounds or marginalized communities, remains insufficiently understood. Investigating potential disparities in access, engagement, and outcomes within home-based interventions can shed light on equitable implementation strategies.[8]

While home-based interventions may offer convenience, their cost-effectiveness in comparison to traditional methods remains unclear. Research examining the economic implications of home-based programs, considering factors such as reduced hospital readmissions and resource allocation, is needed.

Effective implementation of home-based interventions necessitates close collaboration between healthcare professionals, patients, and technology providers. Investigating the roles, responsibilities, and communication strategies among these stakeholders is crucial for optimizing the delivery and outcomes of promoting health at home.[9-11]

Addressing these research gaps can advance our understanding of the potential of home-based interventions in enhancing the QoL of cardiovascular patients. By filling these gaps, researchers can provide a more robust foundation for designing, implementing, and evaluating home-based programs that effectively promote health, empowerment, and well-being among this patient population.

METHOD

In pursuit of a comprehensive understanding of the subject matter, an extensive narrative literature search was meticulously executed, spanning across the prominent medical databases. A judicious selection of keywords closely aligned with the realms of cardiovascular diseases, quality of life enhancement, home-based rehabilitation modalities, and remote interventions was meticulously employed to pinpoint the most relevant and up-to-date studies.

Only studies that had graced the scholarly world within the last ten years were included in our rerview. This selective criterion ensured that our analysis remained firmly grounded in the most current advancements and insights within the domain of cardiovascular health and its multidimensional facets. In our quest for a holistic comprehension, we cast a wide net, embracing both quantitative and qualitative research studies. This approach fostered a nuanced exploration of the subject matter, enriching the depth and breadth of our analysis.

RESULTS

Quality of Life and Cardiovascular Diseases

The overall quality of life for patients with cardiovascular diseases is generally low. Despite advancements in prevention, diagnosis, treatment, and rehabilitation of cardiovascular diseases, there continues to be an increasing trend in mortality from these conditions. It is imperative to develop appropriate programs to enhance the well-being of these patients, along with providing suitable and high-quality services.[11]

The quality of life following cardiac surgery is linked to factors such as educational level and the duration of the condition, which should be taken into consideration.[12]

Several factors seem to impact the quality of life among patients with cardiovascular disease. These factors include age, gender, education level, marital status, employment, income, underlying health conditions, family medical history, frequency of hospitalization, and the duration of hardship caused by the disease. Other noteworthy factors encompass sleep quality, smoking, inadequate patient education about their condition, treatment methods, ejection fraction, and the level of social support.[11]

Rating Scales for Assessing Quality of Life

Various statistical tools exist for studying quality of life, particularly health-related quality of life. In the reviewed literature, some of these tools were specifically employed to examine the quality of life of patients with cardiovascular diseases.

SF-36 (Short Form – 36)

The SF-36 questionnaire stands as one of the most extensively used measures for health-related quality of life assessment. Comprising 36 items, it spans eight dimensions: physical functioning, limitations due to physical health issues, physical pain, overall health perception, social functioning, limitations due to emotional health issues, and mental health. Each subsection is scored, and the total score falls between 0 and 100. Higher scores on this scale correlate with better physical functioning and psychological well-being.[13]

Minnesota

The Minnesota Living with Heart Failure questionnaire (MLHF) was designed to measure the impact of heart failure and its treatments on a person's quality of life. It examines how heart

failure and treatments affect the physical, emotional, mental, and social aspects of a patient's quality of life. The purpose of the questionnaire is to detect changes in quality of life that health professionals and patients consider important.[14]

Functional Status Scale after COVID-19

According to Klok et al. (2020), special care should be given in the next period of time to patients who survived the acute phase of COVID-19 infection. The disease COVID-19 is expected to significantly impact the physical, cognitive, mental, and social health status of patients, including those who experienced moderate symptoms. Considering the range of COVID-19 symptoms and clinical and radiological findings, a simple tool to track the progression of symptoms and their impact on patients' functional status is crucial. A scale with the ability to measure the disease's impact beyond outcomes like mortality is needed. With the anticipation of a large number of patients recovering from COVID-19 and requiring follow-up, an easily reproducible tool for identifying patients with slow or inadequate recovery will be valuable in guiding research efforts and medical resource allocation.[15]

These scales can serve research purposes or be used to track improvement over time and address important clinical questions. They can be administered through patient self-report or via an interview.

In February 2020, the World Health Organization introduced the Scale for Clinical Improvement, categorized primarily based on treatment type, to serve as an initial benchmark in acute-phase trials. However, due to its specificity to inpatient care, the scale is not suitable for assessing long-term outcomes of COVID-19 disease and post-discharge treatment.[16]

Nevertheless, with appropriate adjustments, the Post COVID-19 Functional Status Scale (PCFS) could be used upon a patient's hospital discharge, at the fourth and eighth weeks post-discharge to assess immediate recovery, and at six months thereafter to evaluate ongoing functional effects. This tool is not meant to replace existing assessments of quality of life, fatigue, or dyspnea during the acute phase; rather, it complements them as an additional measure to evaluate the impact of COVID-19 disease on functional status. Ongoing testing will determine its applicability and value in guiding post-COVID-19 care (Klok et al., 2020).[15]

Rehabilitation for Patients with Cardiovascular Diseases

The COVID-19 disease is characterized by lung damage and impacts on various tissues and organs, including the heart, liver, kidneys, nervous system, and immune system. The realm of rehabilitation assumes a crucial role in the comprehensive treatment of COVID-19 and deserves serious attention at this juncture. Numerous COVID-19 patients, particularly those who endured severe symptoms, find it challenging to resume their routine lives and work after hospital discharge due to enduring damage and dysfunction.[17]

In tandem with treatment and mortality considerations, the World Health Organization underscores the significance of functionality as an additional facet. Diseases lacking complete remedies lead to dysfunction. Enhancing functionality stands as a pivotal gauge of medical efficacy and overall health. Rehabilitation is dedicated to enhancing functionality and forms a vital component of the medical spectrum, encompassing prevention, care, and recovery. COVID-19 patients, even following clinical recovery and hospital release, frequently grapple with persistent dysfunctions, be they respiratory, cardiac, motor-related, psychological, or pertaining to other organs. Rehabilitation reaps benefits during the acute phase and is especially instrumental during the recovery stage, aiding in respiratory amelioration, endurance exercises, daily self-care activities, and psychological support.[12,17]

Addressing the functional setbacks linked to COVID-19 entails concerted endeavors by the medical community across all care phases. The evaluation and management of physical functionality must be seamlessly woven into the fabric of COVID-19 management, alongside the innovative integration of rehabilitation assessment and care, encompassing both in-person and remote modalities, for all hospitalized patients and beyond. It's essential to bear in mind that the requisites of post-COVID-19 patients endure post-hospital discharge. Anticipating and planning for the rehabilitation needs of this demographic is imperative (Falvey & Ferrante, 2020).

According to Neubeck et al.[18]individuals with cardiovascular conditions must have unfettered access to their regular care. Procuring essential medications can be facilitated through online pharmacies. Furthermore, the provision of wholesome nourishment and other essentials can also be managed remotely.

According to the data, patient access to cardiac rehabilitation facilities is limited in many countries. There is an urgent need to implement alternative forms of cardiac rehabilitation, in addition to the traditional form of cardiac rehabilitation in a rehabilitation center, to increase access for more patients who require it.[19]

Home-Based Rehabilitation with In-Person Support

Home-based rehabilitation can be facilitated by visiting therapists, minimizing the need for patients to travel to rehabilitation centers and reducing the exposure risk, particularly for elderly patients susceptible to COVID-19. Therapists can supply necessary exercise equipment to be used during recovery, thereby lowering the risk of infection while enabling more intensive therapy. Some clinics already offer this service, where physiotherapists visit patients' homes for treatment, thus providing a viable alternative to daily sessions at a rehabilitation center.[5,9]The adoption of home-based cardiac rehabilitation methods has proven beneficial for patients facing barriers to participation in traditional center-based programs.[13]

Remote Recovery

In response to the COVID-19 pandemic, remote medical rehabilitation has gained widespread usage. The necessity for quarantine prompted many patients to perform prescribed rehabilitation exercises at home. This shift led to the introduction of remote rehabilitation methods using mobile devices, smartphone applications, and virtual reality. These innovations herald a new era of "smart" recovery.[16]

Numerous cardiac rehabilitation centers were compelled to resort to tele-rehabilitation methods due to the pandemic. For instance, in Belgium, several cardiac rehabilitation centers offered remote cardiac rehabilitation services during quarantine. As non-essential medical services were suspended, these centers innovated ways to remotely engage with patients, delivering core components of cardiac rehabilitation.

Social Isolation and Cardiovascular Disease

Catastrophic events like earthquakes are linked to an increase in sudden cardiac death and deaths attributed to atherosclerotic and ischemic heart disease.[15] Factors contributing to post-catastrophe heart attacks include an acute surge in sympathetic nervous activity and catecholamines. Similarly, during quarantine, individuals experience a chronic escalation in sympathetic nervous activity, negatively impacting the heart and blood vessels. Social isolation and loneliness heighten mortality risk and the onset of chronic ailments.[19] Particularly noteworthy is the heightened mortality risk in cardiovascular patients due to social isolation.[20]

SARS-CoV-2, a highly pathogenic microorganism, caused a pandemic with substantial fatalities and infections. Governments worldwide enforced restrictions, including outdoor activity limitations and quarantines, to curb COVID-19 transmission. Quarantine contributes to stress, depression, unhealthy eating habits, reduced physical activity, and consequently, long-term effects on heart health.[9]

To support individuals with cardiovascular diseases during COVID-19 isolation and mitigate the impacts of quarantine on their mental and physical health, access to necessary medical services for cardiac patients should be feasible even remotely.[15]

Furthermore, the best recommendation for maintaining good health during quarantine, according to Raj, Rohit, Ghosh, and Singh,[17] is to follow general health guidelines such as balanced nutrition, proper hydration, physical activity, sufficient sleep, and stress management.

The Advent of Promoting Health at Home

The emergence of the COVID-19 pandemic in recent times has catalyzed a paradigm shift in healthcare delivery, necessitating innovative strategies to ensure patient safety while providing continuous care. In this context, the concept of promoting health at home has gained traction, signifying a departure from the conventional center-based model. Home-based interventions leverage the familiarity and comfort of patients' living environments to facilitate rehabilitation, education, and support services.

Components of Promoting Health at Home

Promoting health at home encompasses a multifaceted approach that addresses various dimensions of cardiovascular care. Key components include:

Remote Monitoring: Technological advancements enable remote monitoring of vital signs, exercise performance, and medication adherence. Wearable devices and mobile applications empower patients to actively engage in self-monitoring, promoting a sense of autonomy and awareness.[20]

Tailored Exercise Regimens: Home-based interventions offer the flexibility to design personalized exercise regimens that align with patients' preferences, physical capabilities, and clinical needs. Virtual exercise sessions guided by healthcare professionals ensure safe and effective workouts.

Educational Resources: Interactive online platforms facilitate the dissemination of educational materials, empowering patients with knowledge about their condition, lifestyle modifications, medication management, and coping strategies.

Psychosocial Support: Virtual support groups, tele-counseling, and online peer interactions address the psychological and emotional challenges faced by cardiovascular patients. Creating a sense of community fosters emotional resilience and reduces feelings of isolation.

Nutrition and Lifestyle Guidance: Nutritional counseling and guidance for adopting heart-healthy dietary habits can be provided remotely. Patients receive personalized recommendations tailored to their dietary preferences and health goals.[19-22]

Efficacy and Benefits

Research on promoting health at home for cardiovascular patients has yielded promising results. Studies have demonstrated improvements in physical fitness, psychological well-being, and disease self-management through home-based interventions. The flexibility of home-based approaches aligns with patients' daily routines, enhancing adherence and engagement. Moreover, promoting health at home has the potential to reach a broader demographic, including those who previously faced barriers to traditional center-based care.[21]

Challenges and Considerations

While the potential of promoting health at home is undeniable, several challenges warrant consideration. Technological accessibility, particularly among older populations, remains an issue that requires innovative solutions. Ensuring that patients possess the necessary devices, skills, and connectivity is crucial for successful implementation. Moreover, tailoring interventions to individual patient preferences and clinical profiles demands a personalized approach that leverages technology while maintaining the human touch.[22]

DISCUSSION

Promoting health at home for cardiovascular patients represents a transformative approach to care delivery that aligns with evolving patient needs and the dynamics of modern healthcare. By focusing on promoting health at home, cardiovascular patients can experience improved outcomes and a better quality of life. This approach recognizes the importance of empowering patients to actively participate in their own care and provides them with the tools and support they need to manage their condition effectively. By capitalizing on technology, patient engagement, and the holistic concept of QoL, this approach bridges the gap between clinical interventions and patients' day-to-day lives. As healthcare systems continue to evolve, integrating home-based interventions can contribute to the comprehensive management of cardiovascular diseases, fostering empowerment, well-being, and an enhanced QoL for patients around the world. This approach recognizes the importance of empowering patients to take an active role in their own care, allowing them to make informed decisions and actively participate in their treatment plans. By incorporating home-based interventions, healthcare providers can create a more patient-centered approach that promotes self-management and long-term adherence to treatment strategies. Ultimately, this can lead to improved outcomes and a higher quality of life for individuals living with cardiovascular diseases.

Conflicts of Interest: The authors declare no conflicts of interest.

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