

DEVELOPING AN ENHANCED CARDIAC OCCUPATIONAL THERAPY INTERVENTION PROTOCOL FOR ADULT PATIENTS DIAGNOSED WITH NON-COMPLICATED MYOCARDIAL INFARCTION

Menandro C. Mahinay

Author

University of Perpetual Help
System Laguna

Philippines

c19-3016-508@uphsl.edu.ph

Stephanie L. Piol

Co-Author

University of Perpetual Help
System Laguna

Philippines

stephanie.piol@uphsl.edu.ph

Susana C. Bautista

Co-Author

University of Perpetual Help
System Laguna

Philippines

bautista.susana@uphsl.edu.ph

ABSTRACT

This study was conducted to determine the development of an enhanced cardiac Occupational Therapy (OT) intervention protocol for adult patients diagnosed with non-complicated myocardial infarction (MI). The respondents were (5) Occupational Therapists in Qatar that were having extensive years of experience in managing cardiac conditions using OT intervention protocol for adult patients diagnosed with non-complicated MI. The study utilized the descriptive developmental research method. Researcher-made questionnaire was the main tool in gathering data. Weighted mean was used for treating the data collected. Analysis of data revealed the following findings: (1) The challenges encountered in the utilization of the cardiac OT protocol are evident from the analysis indicating a strong agreement to challenges (overall weighted mean = 3.33). (2) There is a strong agreement that an enhanced cardiac OT protocol is warranted (overall weighted mean = 3.69). (3) The level of acceptance was notably high (overall weighted mean = 3.50). (4) The level of effectiveness of the enhanced cardiac OT protocol in managing adults diagnosed with non-complicated MI is notably very high (overall weighted mean = 3.60). Based on the summary of findings, the following conclusions were drawn, (1) Fragmented care emerged as the most significant challenge (2) OT play a crucial role in cardiac rehabilitation (3) Patients who are well-informed and perceived tangible benefits showed the highest level of acceptance (4) The enhanced cardiac OT protocol significantly improves diverse patient outcomes, and overall quality of life. To develop an enhanced cardiac OT intervention protocol for adult patients diagnosed with non-complicated MI, there has to be commitment to collaboration among healthcare professionals and with patients, patient-centered care, and lifestyle risk factor education in order to ensure protocol's effectiveness. This study is believed to be a beneficial reference in developing an enhanced cardiac OT intervention protocol for adult patients diagnosed with non-complicated MI.

Keywords: Cardiac Occupational Therapy, Occupational Therapy Protocol, Myocardial Infarction

INTRODUCTION

Cardiovascular diseases (CVDs) are among the leading causes of death worldwide (WHO 2021). The widespread occurrence of these conditions emphasizes the continuous imperative for advancements in medical strategies. The global prevalence of this disease is nearing 3 million individuals, and there are over 1 million reported deaths in the United States each year Barberi and Hondel (cited in Mechanic and Gavin, 2023), Myocardial infarction, commonly referred to as a heart attack or "Atake sa Puso" in the Philippines, occurs when a coronary artery is completely blocked, leading to the interruption of blood flow to the heart. This blockage can result in injury, ischemia, or even the death of the heart muscle supplied by the affected artery. Approximately 45% of heart attacks are "silent," meaning individuals may

experience muted symptoms, no symptoms at all, or symptoms that are not given immediate attention (Harvard Health, 2020). Barberi and Hondel (cited in Mechanic and Gavin, 2023) concurred that navigating the intricacies of cardiovascular health management, particular attention is given to refining established cardiac OT intervention protocol as part of cardiac rehabilitation. Cardiac rehabilitation is a comprehensive, multidisciplinary intervention consisting of patient assessment and individualized risk profile management, dietary advice, exercise prescription and physical activity counselling and psychosocial support (Ambrosetti, Abreu et al. 2020). In addition to prevention and improvement in cardiovascular prognosis, a focus of modern cardiac rehabilitation has been the drive to improve patient wellbeing and health-related quality of life. Concomitantly, Key quality assurance elements include the involvement of an occupational therapist trained in the core competencies and effective delivery of the various core elements of a comprehensive cardiac rehabilitation programme (that is, exercise training and promotion, risk factor and self-management education, and psychological support) revealed by Richardson Franklin et al. 2019) Occupational therapies should consider evidence, guidelines and behaviour change theories, techniques, and tools when collaborating with patients, identifying their individual exercise and physical activity needs, values and preferences. Realistic short- and medium-term goal setting may be considered, and follow-up should be discussed and supported by the entire multidisciplinary team as they are central to the patient's rehabilitation journey (Verdicchio et al.2023).

According to Babu et al. (2020) the role of occupational therapists in cardiac rehabilitation is to help patients function independently in various life aspects. They assess the feasibility of returning to work, conduct work conditioning, and collaborate with the cardiologist for a clear return-to-work plan. Occupational therapists also evaluate daily activities, leisure, and social engagement, setting realistic goals and prescribing functional activities. In addressing the cardiac (OT) intervention protocol, Howden (2019) suggests that a graduated program of structured exercise and physical activity forms a core component of a comprehensive cardiac OT intervention protocol. The study described new exercise training techniques, which have improved the understanding of the physiological adaptations from exercise training across diverse patient groups. Data have also provided a greater understanding of technology and virtual delivery methods for the prescription of exercise and physical activity within cardiac rehabilitation programs. Moreover, Cook, Davidson (2019) concurred that early mobility interventions have been shown to reduce and prevent pain, pleural effusion, hospital-acquired infections, pressure injuries, blood sugar levels, surgical site infections and delirium, as well as eventually reduce the length of hospital and ICU stays and enhance patient satisfaction.

Unfortunately, despite the well-established benefits and strong endorsement from professional societies, CR remains underutilized by patients with CVD. Fewer than 20% of all eligible patients participate in CR, and of those who are referred, only 34% actually enroll (Moghei, Pesah 2019). This is attributed to several barriers including lack of strong physician recommendation, transportation issues, and high out of pocket costs (Abreu, Pesah et al. 2019). According to the investigation conducted by Chindhy, Taub et al. (2020), findings reveal that 50–70% of eligible patients for cardiac rehabilitation (CR) do not participate, and among those who do, 30–60% do not complete the program. Notably, CR exhibits a dose-response relationship, indicating that patients attending more CR sessions have a lower mortality rate compared to those attending fewer sessions. The mortality benefit can be substantial, with up to a 1% reduction per CR session attended. The study explained that participation rates in CR are higher after coronary artery bypass grafting (CABG) than after myocardial infarction (MI). On the other hand, the level of acceptance of Occupational Therapy (OT) and the enhanced Cardiac OT protocol in managing adults diagnosed with non-

complicated myocardial infarction (MI), Turk-Adawi, et al. (2020) found that it is essential to consider the global inequality in cardiac rehabilitation provision. The availability and accessibility of cardiac rehabilitation services may impact the acceptance and implementation of specialized protocols, highlighting the need to address regional variations in healthcare infrastructure and resources. However, despite these numerous studies that investigated about developing an enhanced cardiac OT intervention protocol for adult patients diagnosed with non-complicated myocardial infarction, no study yet has been conducted particularly talks about challenges encountered, acceptance and effectiveness of the enhanced Cardiac OT protocol in managing adults diagnosed with non-complicated MI.

Objective of the Study

The overall objective of this study was to develop an enhanced cardiac OT intervention protocol for adult patients diagnosed with non-complicated MI. Specifically, the study had the following aims (1) investigate the challenges encountered by the respondents in the utilization of the current Cardiac OT protocol in managing adults diagnosed with non-complicated MI, (2) identify enhancement of cardiac OT protocol that can be developed in managing adults diagnosed with non-complicated MI (3) identify the level of acceptance of the enhanced Cardiac OT protocol in managing adults diagnosed with non-complicated MI and (4) determine the level of effectiveness of the enhanced Cardiac OT protocol in managing adults diagnosed with non-complicated MI.

LITERATURE REVIEW

Myocardial infarction

Myocardial infarction (MI) is a cardiovascular condition marked by the myocardial necrosis resulting from prolonged ischemia due to a sudden reduction or absence of coronary blood supply (González-Ramírez et al., 2022). This condition is a significant manifestation of ischemic heart disease (IHD), a leading cause of mortality, disability, and considerable strain on healthcare systems (Khan et al., 2020). Acute myocardial infarction (AMI) is one of the leading causes of death in the developed world (Nascimento, 2019). The global prevalence of this disease is nearing 3 million individuals, and there are over 1 million reported deaths in the United States each year. As per Barberi and Hondel (cited in Mechanic and Gavin, 2023), Myocardial Infarction (MI) can be categorized into two types: non-ST-segment elevation myocardial infarction (NSTEMI) and ST-segment elevation myocardial infarction (STEMI). Unstable angina is similar to NSTEMI but can be distinguished by normal cardiac markers.

Body weakness is a prevalent complication in cardiovascular diseases, particularly among the elderly, leading to symptoms like weight loss, fatigue, reduced physical function, slower walking speed, and decreased overall activity (Vähätalo, Huikur 2019). Obesity, sedentary lifestyle, hypertriglyceridemia, and inflammation markers, such as high-sensitivity C-reactive protein (hs-CRP), are recognized as independent cardiovascular risk factors associated with insulin. Numerous published articles highlight a rising prevalence of cardiovascular risk factors, including diabetes, high cholesterol, obesity, and smoking (Chooi, Ding, & Magkos, 2019). Notably, in myocardial infarction patients under 55 years, smoking was identified as a unique cardiovascular risk factor in 80% of cases. Traditional risk factors like hypertension, smoking, obesity, hyperlipidemia, and a family history of coronary artery disease (CAD) are prevalent in young adults with acute myocardial infarction (AMI). Additionally, nontraditional risk factors, including HIV, systemic lupus erythematosus, and obstructive sleep apnea, are relevant in this patient population (Krittanawong, 2020). The Veterans with

Premature Atherosclerosis (VITAL) registry found that recreational substances independently increased the likelihood of a first extremely premature atherosclerotic cardiovascular disease event (<40 years of age) (Mahtta, Rams et al. 2021). According to Ma, Genet et al. (2021) these nontraditional risk factors are believed to contribute to AMI risk by promoting systemic inflammation, heightened sympathetic activity, oxidative stress, and endothelial dysfunction, leading to early atherosclerosis. Autoimmune diseases, driven by chronic inflammation, are common causes of accelerated atherosclerosis and AMI in young adults, with secondary factors like autoimmune-mediated renal disease or immunosuppressant-induced metabolic issues playing a role.

According to Khera, Chaffin (2019), the genetic factors influencing acute myocardial infarction (AMI) are intricate but can be categorized into monogenic and polygenic patterns. Monogenic diseases linked to early AMI include familial hypercholesterolemia, homocystinuria, antiphospholipid syndrome, fibromuscular dysplasia, and other rare syndromes. More complex genes with variable expressivity and interactions with other genes and risk factors are less understood and not fully identified. Nevertheless, the introduction of polygenic risk scores has the potential to identify individuals at risk for early AMI. These scores are computed from independent risk variants associated with a specific disease, based on evidence from genome-wide association studies. Some studies have developed and examined polygenic risk scores for AMI, revealing a significant association between higher scores and early AMI.

Ojha, Dhamoon et al. (2023) discovered that Myocardial Infarction (MI), commonly referred to as a "heart attack," results from a reduction or complete halt in blood flow to a segment of the myocardium. MI may go unnoticed and be "silent," or it can manifest as a severe incident causing hemodynamic decline and abrupt fatality. The majority of myocardial infarctions stem from underlying coronary artery disease, which is the primary cause of death in the United States. Coronary artery occlusion deprives the myocardium of oxygen, leading to prolonged oxygen deprivation and subsequent myocardial cell death and necrosis. Patients may exhibit chest discomfort or pressure that can extend to the neck, jaw, shoulder, or arm. MI is the irreversible necrosis of heart muscle. A common cause for infarction is deprivation in myocardial oxygen supply because of interruption of blood flow in ≥ 1 coronary arteries as a result of plaque rupture, erosion, fissure, or coronary dissection. Furthermore, according to Gulati, Levy, Mukherjee et al. (2021), they agreed that myocardial infarction (MI) can arise from inflammatory, metabolic, or toxic harm to the heart muscle. The prompt and precise identification of MI is crucial for initiating and sustaining proper therapy.

Salari and Morddarvanjogh's (2023) systematic review and meta-analysis initially focused on investigating the worldwide prevalence of myocardial infarction (MI) in two age groups, specifically individuals aged 60 years and above. Upon gender stratification, the study revealed that the prevalence of MI in males was nearly five times higher than in females. Numerous other research studies also consistently indicated a notably elevated prevalence of MI in males, exceeding 60%, in contrast to females. However, some conflicting literature suggested higher MI prevalence in females, potentially attributed to factors like sedentary lifestyle, metabolic syndrome, and similar risk factors (Kastrati et al. ,2019). Furthermore, the prevalence of heart attacks (MI) varies in different places: 10.4% in Sudan, 0.1% in Senegal, 0.2% in Nigeria, and 2.5% in Kenya (Khan, Hashim 2020). These differences are likely due to lifestyle, prevention efforts, and access to medical resources in each region. Christensen et al. (2019) highlighted the uncertainty regarding the applicability of certain findings to stable patients who remain free of events one year after a myocardial infarction (MI). The study

encompassed individuals with a first-time MI between 2000 and 2017, surviving one year without bleeding or cardiovascular events (n = 82,108, median age 64 years, 68% male). Follow-up commenced one year post-MI, extending until January 2022. Over the study period, there was an increase in the use of guideline-recommended treatments, such as statins (69–92%) and PCI (24–68%). Crude 5-year risks for outcomes decreased (P-trend for all: mortality 18.6%; recurrent MI 7.5%; bleeding 3.9%). The crude 5-year mortality risk in 2015–2017 was as low as 2.6% for patients of a certain age group. Myocardial infarction, commonly referred to as a heart attack or "Atake sa Puso" in the Philippines, occurs when a coronary artery is completely blocked, leading to the interruption of blood flow to the heart. This blockage can result in injury, ischemia, or even the death of the heart muscle supplied by the affected artery. Approximately 45% of heart attacks are "silent," meaning individuals may experience muted symptoms, no symptoms at all, or symptoms that are not given immediate attention (Harvard Health, 2020). These silent heart attacks are often identified later, especially when compared to an old electrocardiogram (ECG). In the United States, a person succumbs to a heart attack every 36 seconds, with 805,000 Americans experiencing a heart attack annually. Among these, 605,000 are first heart attacks, and 200,000 are second heart attacks. In 2019, ischemic heart disease emerged as the leading cause of death in the Philippines, accounting for approximately 58,000 deaths in men and 39,000 deaths in women (Statista, 2021).

Santos, Jimeno,(2020) found out that the statistics for angina, arrhythmias, heart failure, and heart attacks in the Philippines are frequently underreported, primarily due to various socio-cultural factors. A significant contributing factor is that a considerable number of Filipinos pass away at home or outside of a healthcare facility, often due to limited access to medical care. Moreover, a substantial portion of the population may not have consulted a healthcare provider for several years. The adoptions of electronic medical records is a relatively recent development in many Philippine institutions, with numerous healthcare facilities still relying on traditional paper charts. Consequently, the accuracy of reporting deaths and their causes may be compromised. Healthcare providers often rely on information provided by family members regarding the symptoms experienced by the deceased prior to death, and their best estimations are recorded on death certificates.

Occupational Therapists role in Cardiac Rehabilitation

Occupational therapy practitioners address individuals with various types of heart failure, including right-sided and left-sided heart failure. With around 5.7 million Americans diagnosed with congestive heart failure annually (Dirette, 2021), the comprehensive treatment involves laboratory assessments, tracking heart function and body weight, and educating on disease management. The main objective for occupational therapy practitioners is to evaluate how heart failure affects an individual's life, providing support through education, disease management, and promoting physical function and engagement in activities of daily living (AOTA, 2021).

According to Tessler and Bordoni (2022), cardiac rehabilitation typically comprises three stages: the clinical phase, outpatient cardiac rehab phase, and post-cardiac rehab phase. Occupational therapy practitioners, integral members of the rehabilitation team, play a crucial role throughout these stages. The clinical phase, conducted in an inpatient setting, focuses on recovery following a cardiovascular event or intervention. The outpatient rehab phase involves developing a treatment plan to enhance independence and support lifestyle changes as individuals transition back to their home life. Finally, the post-cardiac phase centers

around monitoring and adjusting the treatment plan to prevent relapse. As highlighted by the American Occupational Therapy Association (AOTA, 2021), occupational therapy practitioners focus on education for both patients and caregivers in the management of heart failure. They teach self-management techniques, energy conservation, and work simplification, along with introducing assistive technology and environmental adaptations. Additionally, during occupational therapy sessions, individuals with heart failure learn stress management and coping strategies, including positive self-talk and stress-busting activities. Treatment also encompasses lifestyle modifications, medical management, engagement in daily activities, physical activity, diet adherence, and education on symptom recognition. Lastly, occupational therapy practitioners address social and community support, recognizing its positive impact on outcomes for individuals with heart failure.

In his 2019 study, Fathipour-Azar highlighted the pivotal role of occupational therapists (OT) in comprehensive cardiac rehabilitation, emphasizing their involvement since 1992. The study underscores the significance of OTs in addressing patients' residual functional capacity and daily life routines, contributing to the restoration of independence through functional activities. Fathipour-Azar (2019) emphasizes that occupational therapists play a crucial role in cardiac rehabilitation services and chronic disease management, promoting health and quality-of-life outcomes by facilitating occupational engagement. In the context of modern cardiac rehabilitation, OTs are expected to employ contemporary skills such as adapting services to various cardiac conditions, fostering risk factor modification, enhancing compliance, tailoring education to individual learning styles, assessing patients' risk levels and rehabilitation needs, and offering accelerated and alternative programs. Guidelines from the Australian Cardiac Rehabilitation Association delineate essential elements for ensuring the delivery of high-quality, evidence-based services. Core components of occupational therapy align with several key principles, primarily focusing on enhancing baseline everyday functioning and Instrumental Activities of Daily Living (IADL), including employment. The overarching goal is to sustain long-term functionality (Norris et al., 2020).

Occupational Therapy Interventions in Cardiac OT protocol

Cardiac rehabilitation (CR) serves as a secondary prevention program, enhancing health-related quality of life (HRQoL), survival rates, and exercise capacity, while reducing readmission rates for individuals with cardiovascular disease (CVD). Research by Dibben, Faulkner et al. (2021) indicates that CR, particularly following acute coronary syndrome (ACS), offers significant survival benefits, including a 26% decrease in cardiac mortality and an 18% reduction in recurrent hospitalization. This holds true even in the contemporary context of early revascularization and statin therapy. Occupational therapists (OT) and occupational therapy assistants (OTAs) are trained in prevention, lifestyle modification, and physical and psychosocial rehabilitation. Recognizing that various factors influence participation and performance, therapists value clients' unique attributes, experiences, and skills when establishing meaningful short and long-term goals. The approach involves empowering clients by including them and caregivers in decision-making, fostering collaboration and active participation in the therapeutic process (AOTA, 2019). Moreover, interprofessional collaborative practice is crucial for providing safe, quality, accessible, and client-centered care. Successful interprofessional practice encompasses understanding one's role and those of other professions, maintaining mutual respect, ensuring responsible and timely communication, and applying relationship-building values to facilitate effective client-centered healthcare. Commencing cardiac rehabilitation (CR) early is generally considered safe and effective, although patients with complex hospital cases may face delays. Moderate

exercise in the early post-stent implantation period does not appear to pose an increased risk (Graham et al., 2019). While prior studies encouraged daily walking soon after discharge, randomized control trials on the optimal timing of CR post-acute myocardial infarction (AMI) were limited. A retrospective study revealed that the CR group, with 58.5% having MI, exhibited lower all-cause mortality and reduced hospital readmissions compared to the non-CR group (83.2%). The study emphasized the long-term advantages of early CR initiation, supported by the early separation of survival curves for CR and non-CR groups.

Moreover, Cheng Chen et al. (2023) demonstrated, through a population-based surveillance study involving 2,991 patients with myocardial infarction (MI), that those who initiated a cardiac rehabilitation (CR) program post-hospital discharge experienced reduced risks of all-cause, cardiovascular, and non-cardiovascular readmissions, as well as mortality. The study observed an early separation of curves in both the estimated mean number of readmissions over time and the Kaplan-Meier curves representing time to death, affirming the safety and favorable outcomes associated with early entry into a CR program. In the study by Nakamura et al. (2021), a cohort of 31,603 adult patients diagnosed with acute myocardial infarction (AMI) and treated with percutaneous coronary intervention on the day of admission, subsequently admitted to the intensive care unit (ICU) for more than three consecutive days between July 2010 and March 2018, was examined. Those who initiated a rehabilitation program within three days of ICU admission were categorized into the early cardiac rehabilitation (CR) group, while the remaining participants were placed in the usual care group.

According to Babu et al. (2020) The role of occupational therapists in cardiac rehabilitation is to help patients function independently in various life aspects. They assess the feasibility of returning to work, conduct work conditioning, and collaborate with the cardiologist for a clear return-to-work plan. Occupational therapists also evaluate daily activities, leisure, and social engagement, setting realistic goals and prescribing functional activities. Their broad training allows them to contribute to stress management, patient education, counseling, and group dynamics in rehabilitation programs. While there may be overlap with physiotherapists, occupational therapists focus on functional recovery in the later stages of patient rehabilitation.

Filipino professionals in occupational therapy (OT) reflected on the evolution and strength of their field in the Philippines spanning from 2004 to 2020. They shared narratives detailing the influences that shaped the profession during this period and how these experiences played a crucial role in reshaping the trajectory of OT. The significance of this lies in capturing and articulating the local response and resilience demonstrated by OT practitioners in the early stages of the pandemic, as highlighted by Sy and Yao (2020). Additionally, Sy et al. (2020) put forward a range of strategies to sustain the advancement and resilience of OT in the Philippines amid the uncertainties introduced by the pandemic. These strategies encompass the incorporation of local health and social needs into OT curricula, establishment of mentorship programs for future OT practitioners, leveraging the strengths and capabilities of the younger generation, utilizing technology to broaden outreach, active participation in knowledge translation, and collaborative efforts in creating a distinctive Filipino OT model of practice.

Challenges Encountered in the Utilization of the Current Cardiac OT Protocol

According to the investigation conducted by Chindhy, Taub et al. (2020), findings reveal that 50–70% of eligible patients for cardiac rehabilitation (CR) do not participate, and among those who do, 30–60% do not complete the program. Notably, CR exhibits a dose-response relationship, indicating that patients attending more CR sessions have a lower mortality rate compared to those attending fewer sessions. The mortality benefit can be substantial, with up to a 1% reduction per CR session attended. The study explained that participation rates in CR are higher after coronary artery bypass grafting (CABG) than after myocardial infarction (MI). This difference might be attributed to the higher rates of CR referral following cardiac surgery compared to percutaneous coronary intervention (PCI), highlighting disparities in referral practices in the management of post-MI patients.

Elsakr et al. (2019) observed that the absence of physician endorsement is, in part, linked to physicians' insufficient understanding of cardiac rehabilitation (CR), including its components, advantages, and which patients are suitable for referral. This deficiency is attributed to inadequate exposure to CR programs during medical education and training. Additionally, poor physician endorsement may stem from professional doubt regarding the effectiveness of CR or doubts about individual patients' ability or motivation to adopt significant lifestyle modifications. As a result of this skepticism and knowledge gap, patients often receive insufficient information about CR and may struggle to implement meaningful lifestyle changes. This finding underscores the critical need for enhanced education and awareness among physicians regarding the benefits and appropriateness of CR. Addressing the knowledge gap and dispelling skepticism among healthcare providers can potentially increase CR referrals and participation rates, leading to improved patient outcomes and quality of life.

Multiple studies indicate a gender disparity in cardiac rehabilitation (CR) referrals, with women representing only 20% of participants despite comprising 47% of cardiovascular disease (CVD) patients (Cossette, Cadotte 2019). This imbalance can be attributed to factors such as atypical myocardial infarction presentation in women, older age at MI onset, lower socioeconomic status, inadequate health insurance, and the perception that women with comorbidities are less likely to complete CR programs compared to men. In regards with gender disparities, there are notable racial and ethnic factors influencing lower rates of cardiac rehabilitation (CR) referral and completion. Research, such as that conducted by Castellanos and Viramontes in 2019, reveals lower CR referral rates for non-white individuals compared to their white counterparts. In a study by Aragam et al. in 2019, hospitals with high CR referral rates (over 90%) showed no disparity in CR referrals between white and non-white patients. However, in hospitals with low overall CR referral rates (below 10%), there was a statistically significant difference in referral rates for non-white individuals compared to white individuals. This suggests that elevated overall CR referral rates can help mitigate racial biases in the referral process.

An examination of a comprehensive US-based registry revealed that, following a myocardial infarction (MI), minorities, specifically Black, Hispanic, and Asian patients, were 20%, 36%, and 50% less likely to be referred to cardiac rehabilitation (CR) compared to their white counterparts. A probable factor contributing to this disparity, as indicated by Al-Sharifi and Frederiksen in 2019, is the existence of communication barriers. The inability to communicate effectively in English, as a non-native language, may make minority patients feel marginalized, excluded, and anxious. Consequently, this contributes to lower enrollment

and higher dropout rates among minority populations in CR programs. The presence of multiple medical comorbidities, such as stroke, diabetes, heart failure, chronic kidney disease, or chronic pulmonary disease, is a significant factor linked to reduced referral, participation, and adherence to cardiac rehabilitation (CR) according to Chindhy, Taub et al. (2023), citing Thombs, Bass. Physicians may perceive these populations as too debilitated to actively engage in CR. Additionally, these individuals with high comorbidity burdens may be more prone to setbacks and rehospitalizations, limiting their ability to complete CR programs. Borg et al. (2019) observed that a substantial burden of comorbidities is associated with non-attendance in CR. Paradoxically, although these individuals could benefit greatly from CR, they are more likely to drop out due to the challenges of meeting its physical demands. It's worth noting that women with cardiovascular disease often have more comorbidities than men, contributing to the previously discussed gender disparities.

Research indicates that approximately 20% of patients meet diagnostic criteria for depression during hospitalization for a cardiac event, and severe anxiety is experienced by up to one in three individuals (Murphy, 2019). Patients diagnosed with depression are three times more likely to be noncompliant with physician recommendations. Moreover, individuals with depression exhibit reduced engagement in self-care, lower adherence to medications, and an elevated likelihood of increased healthcare utilization, emergency room visits, and hospital readmissions. According to the study by Rao and Zecchin (2020) patients experiencing moderate levels of depression, anxiety, or stress were notably less likely to adhere to cardiac rehabilitation compared to those with normal to mild symptoms. Paradoxically, although cardiac rehabilitation programs are intended to enhance participants' psychological well-being, those who could potentially benefit the most—individuals with depression and anxiety—are also less likely to participate. In the Philippines Rehabilitation practitioners, including OT, find themselves in the same healthcare ecosystem that is constantly changing and evolving due to advances in medicine and technology, as well as natural disasters, global conflicts, and previous pandemics of a lesser degree.(Kamenov , Mills 2019) they previously alluded to the changing and evolving landscape of rehabilitation and OT practice, and the pandemic of 2019 made the changes imminent and hastened its natural evolution due to paradigm shifts and environmental constraints.(Bettger, Thoumi 2020) Globally, healthcare professionals from several countries responded by outlining recommendations for maintaining essential rehabilitation services across the care continuum to highlight.

In line with the Philippine e-Health Systems and Services Act, (2019) feasibility and cost-effectiveness studies should be done prior to implementation of telehealth-related rehabilitation programs in healthcare facilities. In addition, awareness campaigns, workforce training, capacity-building, and policy-updating are also important measures to ensure sustainable programs. When planning a telerehabilitation program, it should be emphasized that guidelines vary from one healthcare setting to another, depending on human, organizational, and technical factors. First, human (internal) factors include telerehabilitation awareness, acceptance, readiness, knowledge, and skills (Laron et al., 2019). Local studies on these interrelated human factors among different stakeholders (i.e., patients, family or caregivers, healthcare providers, policymakers, third-party payers) are recommended. Second, to address organizational (external) factors, the following are recommended: lobbying for administrative support and funding, formulation of best practice guidelines, work reorganization, agreement on payment schemes and reimbursements, and measures to protect data privacy and safety of stakeholders (Gavino, Tolentino et al., 2020). Lastly, technical factors should be addressed by improving the quantity and quality of tangible (i.e., telerehabilitation equipment and technical support) and intangible e-health resources (i.e.,

technical skills, information and communications framework or “infostructure”) (Ho, Al-Shorjabji as cited in Leochico, Espiritu et al., 2020). Understanding and addressing such factors are key to successful telerehabilitation initiatives.

Enhanced Cardiac OT Intervention Protocol in managing adults diagnosed with non-complicated myocardial infarction

A growing body of research suggests that home-based models for delivering cardiac rehabilitation achieve comparable benefits in patient efficacy and safety as traditional center-based programs, and they may even result in higher levels of patient adherence, as indicated by Imran (2019). While previous trials often focused on low to moderate-risk populations, there is now a shift towards hybrid approaches in cardiac rehabilitation programs. An example of this approach involves initially providing patients with center-based cardiac rehabilitation, followed by transitioning to longer-term maintenance through technology-supported home-based sessions, as highlighted by Thomas (2019). The success of these innovative models is likely contingent on active and ongoing communication between patients and healthcare professionals. This communication can take various forms, including traditional methods like home visits and telephone consultations, as well as technology-based solutions such as web-based video calls and social networking platforms.

Hartley and Reisinger (2020). have endorsed the remote delivery of cardiac rehabilitation during the COVID-19 era. The European Association of Preventive Cardiology (EAPC) has strongly advocated for cardiac tele-rehabilitation to ensure the continued delivery of essential cardiac rehabilitation components. They have also provided a practical guide for establishing a comprehensive cardiac tele-rehabilitation intervention during the COVID-19 pandemic, as outlined by Scherrenberg et al. (2021). However, concerns have been raised regarding the equitable use of technology to maintain access to outpatient care. There is evidence of lower rates of technology and internet use among elderly individuals, those with lower socioeconomic status, and ethnic minorities. This pattern mirrors the groups that are already associated with limited enrollment and low levels of participation in traditional cardiac rehabilitation programs. Addressing these disparities is crucial to ensuring that remote cardiac rehabilitation is accessible to all individuals, regardless of age, socioeconomic status, or ethnicity.

Since 2010, ICHRI has implemented a cardiac rehabilitation program for post-cardiac surgery patients, combining group exercise and educational components. A trial by Uddin et al. (2022) showed its feasibility and potential benefits in managing coronary heart disease risk factors and improving quality of life. Following a 2015 clinical fellowship, ICHRI expanded the program to include a group exercise regimen, risk-factor management class, dietary advice, and a manual for home-based rehabilitation. The manual covers upper and lower limb exercises, breathing exercises, and an aerobic walking program. ICHRI also provides a 1-year follow-up with cardiac fitness tests and exercise instructions. Cardiac rehabilitation centered on exercise has proven effective in lowering hospitalizations and myocardial infarction rates, enhancing risk profiles, exercise capacity, and quality of life among individuals with coronary disease (Salzwedel et al., 2020). The cardiometabolic advantages encompass improved insulin sensitivity and glycemic control, decreased inflammatory markers, visceral fat reduction, enhanced vascular function and blood pressure regulation, improved lipid metabolism, better skeletal muscle structure and function, and modest enhancements in left ventricular function. In the diverse and aging cardiac rehabilitation population, incorporating resistance training into an exercise program holds significance, providing unique advantages

not offered by aerobic exercise alone. Resistance training plays a crucial role in preventing or reversing the loss of muscle mass (sarcopenia) following coronary artery bypass grafting and with advancing age. Additionally, it brings benefits to various comorbid conditions, including metabolic, vascular, cognitive, frailty, and mental health issues (Sato et al., 2020). Furthermore, the integration of resistance training into aerobic exercise programs has been shown to improve both muscular strength and aerobic capacity adaptations in individuals with coronary disease. Despite historical safety concerns, resistance exercise is generally well-tolerated by patients with cardiovascular conditions, with minimal reported adverse cardiovascular events and acute hemodynamic changes comparable to those observed with aerobic exercise.

Physical activity is defined as any movement involving skeletal muscles that expends energy, such as walking for transport, dancing, housework, or gardening, with exercise as a subset (Gonzales, 2022). Sedentary behavior encompasses any waking activity with low energy expenditure while sitting, reclining, or lying down. In individuals with coronary disease, physical inactivity and sedentary behavior are risk factors for cardiovascular and all-cause mortality. Active individuals with coronary disease experience a 50% lower risk of mortality compared to their inactive counterparts.

In 2020, NICE recommended a personalized, exercise-focused cardiac rehabilitation program for individuals with heart failure, emphasizing tailored care and improved accessibility. The program, unless conditions are unstable, should offer venue choices, a comprehensive approach, and address individual needs. A pre-assessment ensures suitability, and the program can be conducted at home, in the community, or in the hospital. It includes psychological and educational components and may integrate with existing rehabilitation programs, with information on support from healthcare professionals.

The Healthy and Active Rehabilitation Programme (HARP) was established in Ayrshire, Scotland, in 2019, focusing on deprived and rural communities with high unscheduled care demand. Developed from cardiac and pulmonary rehabilitation models, HARP involves a comprehensive patient assessment followed by a 10-week exercise and education program. Patient interviews showed positive reception, with perceived improvements in confidence and motivation for physical activity and healthy behaviors. Patients with ACS, post-coronary artery bypass surgery, or post-PCI are recommended for outpatient cardiovascular rehabilitation before discharge or at the first follow-up. Low-risk patients can opt for a home-based program. Additionally, all eligible outpatients diagnosed with ACS, coronary artery bypass surgery, PCI, or peripheral artery disease in the past year, including those with chronic angina, should be referred to outpatient cardiovascular rehabilitation.

Acceptance of the enhanced Cardiac OT intervention protocol in managing adults diagnosed with non-complicated Myocardial infarction.

While systematic reviews and meta-analyses of randomized controlled trials (RCTs) are considered the gold standard for evaluating interventions like cardiac rehabilitation (Higgins, 2021). Cochrane reviews have consistently identified limitations such as potential bias and inconsistent outcome reporting. To enhance the certainty of the evidence base, future efforts should focus on conducting and reporting high-quality RCTs with consistent outcome measures, including health-related quality of life. It's important to recognize the limitations of meta-regression analyses, as they can be susceptible to ecological fallacy. For instance, while Cochrane reviews suggest the dose of exercise in cardiac rehabilitation may not impact

benefits at the study level, patient-level data indicate the significance of exercise intensity and duration Abraham et al.(2021). Further exploration of this topic is available in a previously published comprehensive review. When considering the acceptance of the enhanced Cardiac Occupational Therapy protocol in managing non-complicated myocardial infarction, integrating insights from high-quality RCTs is crucial, addressing potential limitations highlighted in Cochrane reviews. The International Council of Cardiovascular Prevention and Rehabilitation (ICCPR) conducted an audit in 2019 to quantify global inequality in the provision of cardiac rehabilitation. According to the findings of Turk-Adawi, et al.(2020) cardiac rehabilitation is accessible in only half of the world's countries. The geographical distribution of cardiac rehabilitation was found to have a negative correlation with the incidence of ischemic heart disease, as indicated by the Global Burden of Disease study. In connection to the level of acceptance of Occupational Therapy (OT) and the enhanced Cardiac OT protocol in managing adults diagnosed with non-complicated myocardial infarction (MI), it becomes essential to consider the global inequality in cardiac rehabilitation provision. The availability and accessibility of cardiac rehabilitation services may impact the acceptance and implementation of specialized protocols, highlighting the need to address regional variations in healthcare infrastructure and resources.

In a systematic review of Taylor et al. (2020) focusing on economic evaluations of cardiac rehabilitation in low- and middle-income countries (LMICs), it was noted that there were no studies specifically from low-income countries. However, among the middle-income settings in Latin America, five studies suggested that cardiac rehabilitation could prove to be a cost-effective intervention. For instance, findings from Brazil indicated a mean cost of US\$503 per patient for a 3-month cardiac rehabilitation program. In comparison with a control group receiving no cardiac rehabilitation, there was a mean monthly saving of US\$190 in healthcare costs for the cardiac rehabilitation group, while the control group experienced an increase of US\$48. This study, it underscores the importance of developing affordable cardiac rehabilitation models. As many LMICs operate within limited healthcare budgets, emphasizing cost-effective interventions becomes crucial for wider acceptance and implementation of specialized protocols such as the enhanced Cardiac OT protocol.

Effectiveness of the enhanced Cardiac OT protocol in managing adults diagnosed with non-complicated MI

Su and Yu (2019) employed a hybrid approach, guided by an empowerment model, to study the impact of eHealth cardiac rehabilitation (eHealth CR). This intervention integrates behavior change strategies, focusing not only on exercise but also on diet, stress, and smoking. The content and web design adhere to international guidelines and culturally appropriate national recommendations, enhancing credibility and implementation for the target population. Individual assessments and collaborative goal setting foster participant understanding of the web and tele-platform's purpose, encouraging engagement in self-care decision-making. This approach supports patients in utilizing the e-platform as a resource for self-management after discharge. Continuous care needs are addressed through individual consultations, OT guidance, and peer interaction, using various communication channels as social motivators for achieving behavioral goals. Commencing cardiac rehabilitation (CR) early is generally considered safe and effective, although patients with complex hospital cases may face delays. Moderate exercise in the early post-stent implantation period does not appear to pose an increased risk (Graham et al., 2019). While prior studies encouraged daily walking soon after discharge, randomized control trials on the optimal timing of CR post-acute myocardial infarction (AMI) were limited. A retrospective study revealed that the CR

group, with 58.5% having MI, exhibited lower all-cause mortality and reduced hospital readmissions compared to the non-CR group (83.2%). The study emphasized the long-term advantages of early CR initiation, supported by the early separation of survival curves for CR and non-CR groups.

Synthesis of the Reviewed Literature

A number of literature and studies were given attention to in the study that facilitated a deeper understanding of the topic. Primarily the related literature focused on the development of an enhanced cardiac OT intervention protocol for adult patients diagnosed with non-complicated myocardial infarction.

Studies of Khan et al., (2020), Nascimento (2019). Barberi and Hondel (cited in Mechanic and Gavin, 2023), Vähätalo (2019), Chooi, Ding, and Magkos (2019), Krittanawong (2020). Ma, Genet et al. (2021) Khera (2019) Ojha et al. (2023) discovered that Myocardial Infarction (MI), commonly referred to as a "heart attack," results from a reduction or complete halt in blood flow to a segment of the myocardium. MI may go unnoticed and be "silent," or it can manifest as a severe incident causing hemodynamic decline and abrupt fatality. Salari and Morddarvanjogh's (2023) systematic review and meta-analysis initially focused on investigating the worldwide prevalence of myocardial infarction (MI) in two age groups, specifically individuals aged 60 years and above. Christensen et al. (2019) highlighted the uncertainty regarding the applicability of certain findings to stable patients who remain free of events one year after a myocardial infarction Santos (2020) found out that the statistics for angina, arrhythmias, heart failure, and heart attacks in the Philippines are frequently underreported

Cardiac rehabilitation (CR) serves as a secondary prevention program, enhancing health-related quality of life (HRQoL), survival rates, and exercise capacity, while reducing readmission rates for individuals with cardiovascular disease (CVD). Research by Dibben et al. (2021) indicates that CR, particularly following acute coronary syndrome (ACS), offers significant survival. Graham et al., (2019). Cheng Chen et al. (2023) Nakamura et al. (2021), Babu et al. (2020) Sy et al.(2020) stated that cardiac rehabilitation (CR) considered safe and effective, although patients with complex hospital cases may face delays. Moderate exercise in the early post-stent implantation period does not appear to pose an increased risk. Borg et al. (2019) observed that a substantial burden of comorbidities is associated with non-attendance in CR. Rao and Zecchin (2020) posted those patients experiencing moderate levels of depression, anxiety, or stress were notably less likely to adhere to cardiac rehabilitation compared to those with normal to mild symptoms. Sato et al., (2020) Gonzales (2022). Hartley and Reisinger (2020) Salzwedel et al., (2020). have endorsed the remote delivery of cardiac rehabilitation during the COVID-19 era.

Considering the acceptance of the enhanced Cardiac Occupational Therapy protocol in managing non-complicated myocardial infarction, integrating insights from high-quality RCTs is crucial, addressing potential limitations highlighted in Cochrane review as cited by Abraham, et al.(2021). Higgins (2021). Turk-Adawi, et al. (2020). Taylor et al. (2020) suggested that cardiac rehabilitation could prove to be a cost-effective intervention. Su and Yu (2019) employed a hybrid approach, guided by an empowerment model, to study the impact of eHealth cardiac rehabilitation (eHealth CR). Graham et al., (2019) considered safe and effective, cardiac rehabilitation (CR) although patients with complex hospital cases may face delays.

Gap/s Bridged by the Present Study

From the above review of related literature and studies, the following gaps were determined: (1) There were no studies yet conducted to develop an enhanced cardiac OT intervention protocol for adult patients diagnosed with non-complicated myocardial infarction. (2) There were no studies yet conducted develop an enhanced cardiac OT intervention protocol for adult patients diagnosed with non-complicated myocardial infarction. among Occupational therapists and patients as respondents of the study. (3) There were no studies that focused on the interplay of the said variables in the Philippine Context. In view of the identified gaps identified, the study endeavored to develop an enhanced cardiac OT intervention protocol for adult patients diagnosed with non-complicated myocardial infarction.

METHODOLOGY

This study on determining the development of an enhanced cardiac occupational therapy intervention protocol for adult patients diagnosed with non-complicated myocardial infarction, utilized a descriptive-developmental design specifically a cross-sectional survey design (Creswell & Creswell, 2019).

The respondents were (5) occupational Therapists in Qatar that were having atleast 5 years of extensive experience in managing cardiac OT intervention protocol for adult patients diagnosed with non-complicated myocardial infarction and patients. The study's respondents were subjected to the following inclusion criteria. Respondents were required to be licensed practicing Occupational Therapists with five or more years of clinical experience in managing adult patients diagnosed with non-complicated myocardial infarction. The sampling technique that was employed in this study was purposive sampling since criteria was set to choose the respondents that were included in this study. The study was conducted during academic year of 2022 – 2023.

The study used a self-made questionnaire and was utilized for collecting data pertaining to the challenges, enhanced cardiac OT protocol, level of acceptance and effectiveness of the enhanced Cardiac OT protocol in managing adults diagnosed with non-complicated MI. The questionnaire consists of Part I - challenges encountered by the respondents in the utilization of the current Cardiac OT protocol Part - 2 enhanced cardiac OT protocol Part - 3 level of acceptance and Part - 4 level of effectiveness.

Since the questionnaire was a researcher-made, it was subjected to validation through presentation to the panel of experts in research: a researcher, statistician, and professor who are an expert in the field. Their comments and suggestions were essential for its validity. After some modification, it was shown to the adviser for final approval. The statistical tool, weighted mean was used for the analysis of data and interpretation of results.

RESULTS

Results of the conducted survey answered all the statement of the problem derived from the objective of the study.

What are the challenges encountered by the respondents in the utilization of the current Cardiac OT protocol in managing adults diagnosed with non-complicated MI?

Table 2 Challenges Encountered in the Utilization of the Cardiac OT Protocol

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Inadequate Physician Endorsement	3.60	Strongly Agree	2
2. Low CR Referral Rates	3.00	Agree	6.5
3. Fragmented Care	3.80	Strongly Agree	1
4. Gender Disparity	3.20	Agree	5
5. Racial or Ethnic Disparities	3.00	Agree	6.5
6. Poor Physical Health	3.40	Agree	3.5
7. Language Barriers	3.40	Agree	3.5
8. Travel Distance to CR Facility	3.20	Agree	5
Overall Weighted Mean	3.33	Agree	

As shown in Table 1, the challenges faced in the implementation of the Cardiac OT Protocol, the table reveals an overall weighted mean of 3.33, indicating agreement to the overall challenges. The results underscore two primary areas of concern: Fragmented Care, ranking first with a very high weighted mean of 3.80, and Inadequate Physician Endorsement, securing the second position at 3.60. Further, challenges falling within the high category encompass Poor Physical Health with a weighted mean of (3.40), (Rank 3.5) Language Barriers with a weighted mean of (3.40) Rank (3.5), Gender Disparity with a weighted mean of (3.20) Rank (5) Travel Distance to CR Facility with a weighted mean of (3.20) Rank (5), Low CR Referral Rates with a weighted mean of (3.00) Rank (6.5), and Racial or Ethnic Disparities with a weighted mean of (3.00) Rank 6.5.

What enhanced cardiac OT protocol can be developed in managing adults diagnosed with non-complicated MI?

Table 2 Enhanced Cardiac OT Protocol in Managing Adults Diagnosed with Non-Complicated MI

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Conduct a thorough occupational therapy assessment, considering the individual's physical abilities, cognitive function, emotional well-being, and lifestyle factors.	3.80	Strongly Agree	2.5
2. Provide education on heart health, risk factors, and lifestyle modifications.	3.80	Strongly Agree	2.5
3. Collaborate with individuals to develop a personalized plan for a heart-healthy lifestyle, including smoking cessation.	3.80	Strongly Agree	2.5
4. Introduce work simplification strategies to enhance efficiency in daily tasks.	3.40	Agree	7.5
5. Collaborate with individuals to modify activities based on their cardiac status and physical abilities.	3.60	Strongly Agree	5.5
6. Implement stress management techniques, such as relaxation exercises, mindfulness, and coping strategies.	3.80	Strongly Agree	2.5

7. Offer emotional support and counseling to address anxiety, depression, or adjustment issues post-MI.	3.60	Strongly Agree	5.5
8. Collaborate with the healthcare team to ensure coordinated care and address any emerging Issues.	3.40	Agree	7.5
9. Establish a follow-up plan to monitor progress and make adjustments to the OT protocol as needed.	4.00	Strongly Agree	9
Overall Weighted Mean	3.69	Strongly Agree	

Table 2 shed light on the efficacy of the Enhanced Cardiac Occupational Therapy (OT) Protocol for managing adults diagnosed with non-complicated myocardial infarction (MI), reflecting an overall weighted mean of 3.69, indicative of a very high level of agreement. When examining individual indicators, three key components emerged as particularly impactful, sharing the top rank at 2.5: conducting a thorough occupational therapy assessment, providing education on heart health, risk factors, and lifestyle modifications, and collaborating with individuals to develop a personalized heart-healthy lifestyle plan, including smoking cessation. Each of these garnered a very high weighted mean of 3.80. Following closely, two components, collaborating to modify activities based on cardiac status and physical abilities, and implementing stress management techniques, secured the next rank at 5.5 with a weighted mean of 3.60. While offering emotional support and counseling and introducing work simplification strategies both received a high ranking at 7.5 with a weighted mean of 3.40, the establishment of a follow-up plan for progress monitoring claimed the highest individual rank at 9 with a very high weighted mean of 4.00.

What is the level of acceptance of the enhanced Cardiac OT protocol in managing adults diagnosed with non-complicated MI?

Table 3 Level of Acceptance of Enhanced Cardiac OT Protocol in Managing Adults Diagnosed with Non-Complicated MI

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Accept a particular protocol if they are well-informed about the procedure, its purpose, potential benefits, and associated risks.	3.60	Very High	2
2. Involved in decision-making, and have their questions answered	3.40	High	5
3. Trust in their healthcare providers and the healthcare system	3.40	High	5
4. Perceive tangible benefits in terms of improved outcomes, reduced complications, or a better overall experience.	3.60	Very High	2
5. Feel more empowered to make informed decisions and be more accepting of medical protocols.	3.60	Very High	2
6. Engage in open and empathetic communication	3.40	High	5
Overall Weighted Mean	3.50	High	

Table 3 shows the level of acceptance of the enhanced cardiac Occupational Therapy (OT) Protocol in managing adults diagnosed with non-complicated myocardial infarction (MI) reveals insightful findings. The overall acceptance, reflected in the weighted mean of 3.50,

falls within the "High" category. Examining individual indicators, it becomes apparent that well-informed patients who understand the procedure, its purpose, benefits, and risks, demonstrated the highest level of acceptance, ranking at 2 with a very high weighted mean of 3.60. Similarly, perceiving tangible benefits and feeling empowered to make informed decisions both earned a very high weighted mean of 3.60, securing the second rank. In contrast, involvement in decision-making, having questions answered, and engaging in open and empathetic communication each obtained a high weighted mean of 3.40, placing them jointly at the fifth rank.

What is the level of effectiveness of the enhanced Cardiac OT protocol in managing adults diagnosed with non-complicated MI?

Table 4 Level of Effectiveness of Enhanced Cardiac OT Protocol in Managing Adults Diagnosed with Non-Complicated MI

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Improvement in the ability to perform activities of daily living (ADLs) independently.	3.80	Very High	2
2. Improvement in mobility and coordination	3.20	High	6
3. Improvement in overall quality of life, considering physical, mental, and social well-being.	3.80	Very High	2
4. Regular attendance and participation in cardiac rehabilitation sessions.	3.40	High	5
5. Positive feedback from patients regarding the perceived effectiveness of the cardiac rehabilitation program.	3.80	Very High	2
6. Reduction in the frequency of hospital readmissions	3.60	Very High	4
Overall Weighted Mean	3.60	Very High	

Table 4 shows the level of effectiveness of the enhanced cardiac Occupational Therapy (OT) Protocol for managing adults diagnosed with non-complicated myocardial infarction (MI) indicates a robust overall effectiveness with an impressive weighted mean of 3.60, categorizing it as "Very High." Examining individual indicators, certain key outcomes contribute significantly to the protocol's success. Notably, improvements in the ability to perform activities of daily living (ADLs) independently, enhancements in overall quality of life, and positive feedback from patients on the perceived effectiveness of the cardiac rehabilitation program share the top rank at 2 with a very high weighted mean of 3.80. These results highlight the program's substantial impact on both functional independence and the holistic well-being of patients. Additionally, a reduction in the frequency of hospital readmissions achieved a very high weighted mean of 3.60, securing the fourth rank, indicating a positive impact on healthcare utilization. Meanwhile, improvements in mobility and coordination, although achieving a high weighted mean of 3.20, ranked sixth, suggesting an area for potential focus in further refining the protocol.

DISCUSSION

Based on the results of the data gathered, analysis, inferences and interpretations were discussed.

What are the challenges encountered by the respondents in the utilization of the current Cardiac OT protocol in managing adults diagnosed with non-complicated MI?

Fragmented care emerged as the most significant challenge, highlighting the need for a more cohesive healthcare approach. Inadequate physician endorsement also stood out, emphasizing the crucial role of healthcare professionals in protocol implementation. Addressing these challenges requires targeted interventions and a comprehensive healthcare strategy to enhance the utilization of the Cardiac OT Protocol. This means that the utilization of the Cardiac OT Protocol faces significant challenges. Fragmented care emerges as the most critical issue, emphasizing the need for a more integrated and cohesive approach. Inadequate physician endorsement follows closely, underscoring the pivotal role of healthcare professionals in promoting the protocol. Challenges related to poor physical health, language barriers, gender disparity, travel distance, low referral rates, and racial or ethnic disparities contribute to the complexity. A strategic, collaborative effort is essential to address these challenges and improve the overall effectiveness of the Cardiac OT Protocol, ensuring a more inclusive and accessible cardiac rehabilitation process.

The study findings resonate with the observations made by Elsagr et al. (2019), who highlighted the critical role of physician endorsement in the utilization of cardiac rehabilitation (CR). The study notes that the absence of such endorsement can be attributed, in part, to physicians' insufficient understanding of CR, encompassing its components, advantages, and criteria for patient referral. This knowledge gap is further linked to inadequate exposure to CR programs during physicians' medical education and training. The study's insights align with the observations by Al-Sharifi and Frederiksen in 2019, who emphasized the presence of communication barriers as a contributing factor to the disparities in physician endorsement. Additionally, Borg et al. (2019) found that a significant burden of comorbidities is associated with non-attendance in CR, underscoring the importance of addressing health-related challenges that may impede patient participation in rehabilitation programs. These collective findings emphasize the need for targeted interventions to enhance physician education, communication, and awareness of the benefits of CR, ultimately contributing to improved patient engagement and outcomes in cardiac rehabilitation.

What are the gaps identified by the respondents on the comprehensive sensory integration program for parents who are having children diagnosed with autism spectrum disorder?

Occupational Therapists play a crucial role in cardiac care by conducting comprehensive assessments, addressing physical, cognitive, and emotional aspects, and providing personalized education on heart health, risk factors, and lifestyle modifications. The collaborative development of tailored heart-healthy lifestyle plans, including smoking cessation strategies, underscores the holistic approach of Occupational Therapy in promoting overall well-being for individuals with cardiac concerns. This means that Occupational Therapist conduct a thorough occupational therapy assessment, considering the individual's physical abilities, cognitive function, emotional well-being, and lifestyle factors. Provide education on heart health, risk factors, and lifestyle modifications and Collaborate with individuals to develop a personalized plan for a heart-healthy lifestyle, including smoking cessation. The respondents' positive perception of the Enhanced Cardiac Occupational Therapy (OT) Protocol aligns with Uddin et al.'s (2022) findings, affirming its feasibility and benefits in managing coronary heart disease risk factors. Evidence from studies by Salzwedel, Jensen et al. (2020) and Sato, Akiyama et al. (2020) further supports the efficacy of cardiac

rehabilitation, particularly exercise-focused programs, in reducing hospitalizations, improving risk profiles, enhancing exercise capacity, and positively impacting the quality of life in individuals with coronary disease. This collective evidence strengthens the credibility of the Enhanced Cardiac OT Protocol, indicating its potential to deliver positive outcomes and address various comorbid conditions among those diagnosed with non-complicated myocardial infarction.

What are the recommendations to the respondents regarding the gaps on the comprehensive sensory integration program for parents who are having children diagnosed with autism spectrum disorder?

Patients who are well-informed and perceive tangible benefits show the highest acceptance of the Enhanced Cardiac OT Protocol. Patient acceptance is closely linked to comprehensive understanding, recognition of tangible benefits, and empowerment in making informed decisions about medical protocols. This underscores the importance of effective communication and education in fostering patient acceptance of the protocol. These results suggest that patients who are well-informed and perceive tangible benefits exhibit the highest acceptance of the enhanced cardiac OT Protocol. The patient accepts a particular protocol if they are well-informed about the procedure, its purpose, potential benefits, and associated risks, perceive tangible benefits in terms of improved outcomes, reduced complications, or a better overall and feel more empowered to make informed decisions and be more accepting of medical protocols. The positive reception of the Enhanced Cardiac Occupational Therapy (OT) Protocol in managing non-complicated myocardial infarction aligns with insights from a systematic review by Taylor, Zwisler et al. (2020). The review, focused on economic evaluations of cardiac rehabilitation in low- and middle-income countries (LMICs), revealed a significant research gap in low-income countries. This concurs with Turk-Adawi et al.'s (2020) findings, highlighting limited accessibility to cardiac rehabilitation in only half of the world's countries, indicating potential healthcare disparities. Additionally, the Global Burden of Disease study noted a negative correlation between the geographical distribution of cardiac rehabilitation and the incidence of ischemic heart disease. These combined findings underscore the acceptance of the Enhanced Cardiac OT Protocol while emphasizing broader global challenges and discrepancies in cardiac rehabilitation access, crucial considerations for managing non-complicated MI.

What is the general acceptability of the respondents on the comprehensive sensory integration program for parents who are having children diagnosed with autism spectrum disorder?

The Enhanced Cardiac OT Protocol significantly improves diverse patient outcomes, enhancing functional autonomy in activities of daily living (ADLs) and positively impacting overall quality of life. The protocol's success underscores its holistic approach, effectively addressing both physical and mental well-being, resulting in a well-rounded enhancement of patient health and functioning. This means that the level of effectiveness of the Enhanced Cardiac Occupational Therapy (OT) Protocol is significant across various dimensions of patient outcomes. Specifically, the improvement in the ability to perform activities of daily living (ADLs) independently underscores the protocol's success in enhancing patients' functional autonomy and daily life skills. Similarly, the focus on improvement in mobility and coordination highlights the program's positive impact on physical functioning and motor skills. The protocol's effectiveness extends to the overall quality of life, addressing not only physical aspects but also mental and social well-being, emphasizing a holistic approach to

patient care. The study's findings on the effectiveness of the Enhanced Cardiac Occupational Therapy (OT) Protocol for managing non-complicated myocardial infarction (MI) align with the work of Su and Yu (2019), who employed an empowerment model to assess the impact of eHealth cardiac rehabilitation (eHealth CR). This hybrid approach integrates behavior change strategies, extending beyond exercise to address diet, stress, and smoking. The emphasis on early commencement of cardiac rehabilitation (CR) resonates with the understanding that early initiation is generally deemed safe and effective. While acknowledging potential delays for patients with complex hospital cases, the study supports the notion that moderate exercise in the early post-stent implantation period does not pose an increased risk, as indicated by Graham, Lac et al. (2019). These collective insights reinforce the effectiveness of comprehensive rehabilitation approaches, emphasizing the relevance of the Enhanced Cardiac OT Protocol in managing non-complicated MI and aligning with contemporary models that prioritize holistic patient care and empowerment.

CONCLUSIONS

Based on the summary of findings, the following conclusions were drawn:

(1) Fragmented care emerged as the most significant challenge, highlighting the need for a more cohesive healthcare approach. (2) Occupational Therapists play a crucial role in cardiac care by conducting comprehensive assessments, addressing physical, cognitive, and emotional aspects, and providing personalized education on heart health, risk factors, and lifestyle modifications. (3) Patients who are well-informed and perceive tangible benefits show the highest acceptance of the Enhanced Cardiac OT Protocol. (3) The Enhanced Cardiac OT Protocol significantly improves diverse patient outcomes, enhancing functional autonomy in activities of daily living (ADLs) and positively impacting overall quality of life.

The following recommendations for possible action are made in light of the salient findings and conclusions:

(1) The researcher recommends for occupational therapists, to foster collaboration with healthcare professionals, emphasizing a unified approach in treatment planning and execution, in order to avoid patient care fragmentation. (2) The researcher recommends for hospital management, to actively invest in ongoing training initiatives of cardiac occupational therapists, so as to enhance knowledge and preparedness in providing exceptional care. (3) The researcher recommends for occupational therapists, to always give high importance in the provision of educational activities, in order to attain high level of acceptance of the enhanced cardiac occupational therapy protocol. (4) The researcher recommends for occupational therapists, to always focus on functional and holistic outcome measures, so as to quantify level of effectiveness of the intervention protocol. (5) The researcher recommends for future researchers, to do qualitative research of using the same intervention protocol investigating patient experiences and perspectives, in order to support cardiac occupational therapy service.

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