"Frequency of Comorbidities and Quality of Life in Patients with Coronary Heart Disease Visiting Tertiary Care Hospitals in Islamabad"

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Abstract

CHD is a significant public health burden in Pakistan, leading substantially to morbidity, mortality, and decreased quality of life among adult patients seeking care at tertiary hospitals in Islamabad Rawalpindi. Patients diagnosed with CHD commonly have several comorbidities coexisting that increase symptom load, render management difficult, and markedly deteriorate their QoL. Knowledge of the comorbidity profile and its impact on the overall health status of patients is important for optimizing care planning, and resource allocation.

Therefore, the purpose of this study was to investigate the comorbidity conditions in patients with CHD and their HRQoL. We used a descriptive cross sectional design and data collection was done through purposive sampling from tertiary care hospitals in Islamabad. A structured questionnaire sought information of general demographics, comorbidities, functional status, medication usage records and health utilization history and QoL. HRQoLwere assessed with the validated EQ-(EuroQol-) Dimensions instrument, measuring five distinct and independent factors of HRQoL: mobility; self-care; usual activities performance limitation due to health problem; pain discomfort; anxiety depression.

Ethical issues such as informed consent, voluntary participation, anonymity and right of confidentiality were fully observed throughout the research.

SPSS was used for data entering and analysis. Results The prevalence of multimorbidity was high, and hypertension (100%), dyslipidemia (100%), GIT disorders (49.1%) and osteoarthritis (31.2%) were the most common comorbidities identified in this study. Over 70% of the respondents had two or more comorbidities and 67.7% reported poor QoL according to EQ-5D classification. Also, 52.1% had two or more healthcare encounters int he past three months, indicating substantial healthcare utilization. The findings demonstrate a significant burden of illness, diminished functioning and unmet service needs in this group.

The significant multimorbidity and impaired QOL of CHD patients in Islamabad Rawalpindi evident in this study. These findings highlight the need for enhanced chronic disease management,

better patient surveillance and co-ordinated patient-centric care pathways embedded within tertiary cardiac services.

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ADL Activities of Daily Living

AF Atrial Fibrillation

CAD Coronary Artery Disease

CHD Coronary Heart Disease

CKD Chronic Kidney Disease

CNS Central Nervous System

COPD Chronic Obstructive Pulmonary Disease

DALYs Disability-Adjusted Life Years

EQ-5D EuroQol Five-Dimension Health-Related Quality of Life Measure

GIT Gastrointestinal Tract

HCV Hepatitis C Virus

HDL High-Density Lipoprotein

INR International Normalized Ratio

LDL Low-Density Lipoprotein

LMICs Low and Middle-Income Countries

MI Myocardial Infarction

PIMS Pakistan Institute of Medical Sciences

QoL Quality of Life

RIC Rawalpindi Institute of Cardiology

WHO World Health Organization

CHAPTER I

1) Introduction

Coronary Heart Disease (CHD) is a disease of vessels, which reduces the supply of blood to the heart muscle, popularly described as Coronary Artery Disease (CAD) and it remains one of the leading causes of mortality and morbidity worldwide. The disease accounts for a large proportion of the world's disease burden (The World Health Organization, 2019). Coronary heart disease may present as angina, myocardial infarction, and in advanced stage, heart failure (Fihn et al., 2012). However, the clinical course and prognosis of CHD are not solely governed by the comorbidities, which make treatment difficult and largely affect the patient's QoL (Bhatt et al., 2010). Comorbidities are defined as an additional disease or disorder present in the subject of study but which is not the object of study, it's mentioned because of its possible biological importance as a confounded; in this case, comorbidities are capable of influencing treatment decisions, about the outcome, and the quality of life (QoL) in patients with Coronary heart disease (Gijsen et al., 2013).

Hypertension, chronic kidney disease (CKD), dyslipidemia, and congenital heart disease (CHD) are often associated with other comorbidities, such as hypertension, CKD, dyslipidemia, obesity being the most frequent (Bohm et al., 2017). They interacted, not solely additively, but rather synergistically, enhancing the advancement of atherosclerosis, deranging vascular function, and augmenting the chances of recurrent ischemic episodes (Elliott et al., 2016). For example, uncontrolled dyslipidemia aggravates both endothelial dysfunction and lipid abnormalities, poorly controlled hypertension hastens arterial wall damage, and diabetes causes coronary artery disease. Moreover, it is very likely that the presence of comorbidities forces the modification of the treatment plan and complicates the management of pharmacotherapy, thereby predisposing a patient to a higher risk of adverse drug interactions (Bhatt et al., 2010).

In Islamabad, the incidence of Coronary Heart Disease (CHD) continues to rise, largely due to lifestyle-related risk factors such as physical inactivity, obesity, tobacco use, and shifting socioeconomic conditions (Jafar et al., 2008). Despite the presence of advanced tertiary care hospitals, many communities especially peri-urban areas experience poor access to preventive and continuous cardiac care. Among CHD patients, the burden of comorbidity is particularly high in

those above 35 years of age. National studies report a CAD prevalence of 34.9%, with urban regions such as Islamabad showing even higher rates of 37.2%. Within this population, a large proportion of CHD patients present with at least one comorbidity, most commonly hypertension, chronic kidney disease, osteoarthritis, and gastrointestinal or CNS-related conditions, all of which correspond directly with the variables included in the present study's questionnaire. Many of these comorbidities remain undiagnosed or inadequately treated, contributing to recurrent hospitalizations and poor overall clinical outcomes.

The lack of coordinated chronic-disease management services in Islamabad further intensifies the burden of CHD with comorbidities. Integration between cardiology, nephrology, endocrinology, and rehabilitation services is limited, and structured tools for monitoring functional status or quality of life such as the EQ-5D or Barthel Index, used in this study are rarely applied in routine care. This results in fragmented follow-up, delays in intervention, and repeated acute exacerbations that increase service utilization and financial strain on patients.

Furthermore, comorbidities have a substantial impact on the health-related quality of life (HRQoL) of CHD patients in Islamabad. Conditions such as hypertension, diabetes, CKD, osteoarthritis, and chronic GIT or CNS symptoms reduce mobility, increase pain, impair daily functioning, and cause psychological distress. Using the EQ-5D dimensions (mobility, self-care, usual activities, pain/discomfort, anxiety/depression) and the Barthel Index for functional dependence, the present study aims to examine how these specific comorbidities influence both QoL and functional status. These measures also help identify the extent to which patients require additional health-service utilization, including frequent outpatient visits, emergency care, readmissions, or reliance on caregivers.

1.1 Research Gap

Although several global studies have examined comorbidities among patients with Coronary Heart Disease (CHD), most research tends to focus on major cardiometabolic conditions such as hypertension, diabetes, and chronic kidney disease. Fewer studies have specifically evaluated the wider range of comorbidities included in the present study particularly osteoarthritis, chronic respiratory diseases (asthma/COPD), gastrointestinal disorders, and central nervous system

conditions within CHD populations. Evidence on how these non-cardiac comorbidities cluster within CHD patients in low and middle-income countries (LMICs) is especially limited. Likewise, there is a scarcity of quality-of-life research that uses standardized tools such as the EQ-5D to assess the impact of these comorbid conditions on physical functioning, psychological well-being, and daily activities among CHD patients in resource-constrained settings. This gap determines the importance of context-specific data, especially in regions like Pakistan, to get a better understanding of how broader spectrum of comorbidities influences health status and disease burden in individuals with CHD.

1.2. Problem statement

Coronary heart disease (CHD) remains the number one killer in Pakistan and disability is yet a persistent problem, especially for Islamabad city, where changes in lifestyle, low level of screen prevention and lack of immediate seeking road to recovery addiction have all been reported. For example, patients with CHD not only have a high prevalence of risk factors such as hypertension, chronic kidney disease, osteoarthritis, dyslipidemia and respiratory diseases (asthma/COPD), but also other comorbidities including chronic GIT/CNS conditions which make their care even more challenging. When these common comorbidities coexist, their presence may augment symptoms, promote higher health care use and adversely affect treatment response; however, they tend to be overlooked in everyday cardiology practice. While we would expect a high proportion of patients with CHD in Islamabad's tertiary hospitals to have two or more conditions, the local evidence about which conditions are most common is lacking, how they affect patient quality of life and the impact that comorbidity burden and severity has on prognosis. This lack of context-specific data limits the ability of healthcare providers to deliver integrated, patient-centered care for CHD populations in the region.

1.3. Research objectives

a) To categorize and determine the prevalence of comorbidities in patients suffering from Coronary Heart Disease visiting tertiary care hospitals in Islamabad.

b) To measure the health-related quality of life and health status of Coronary Heart Disease patients with comorbidities, including their comorbidity burden, functional status and utilization in the health sector.

1.4. Research Questions

a) What are the most common comorbidities among Coronary Heart Disease patients presenting to tertiary care hospitals of Islamabad?

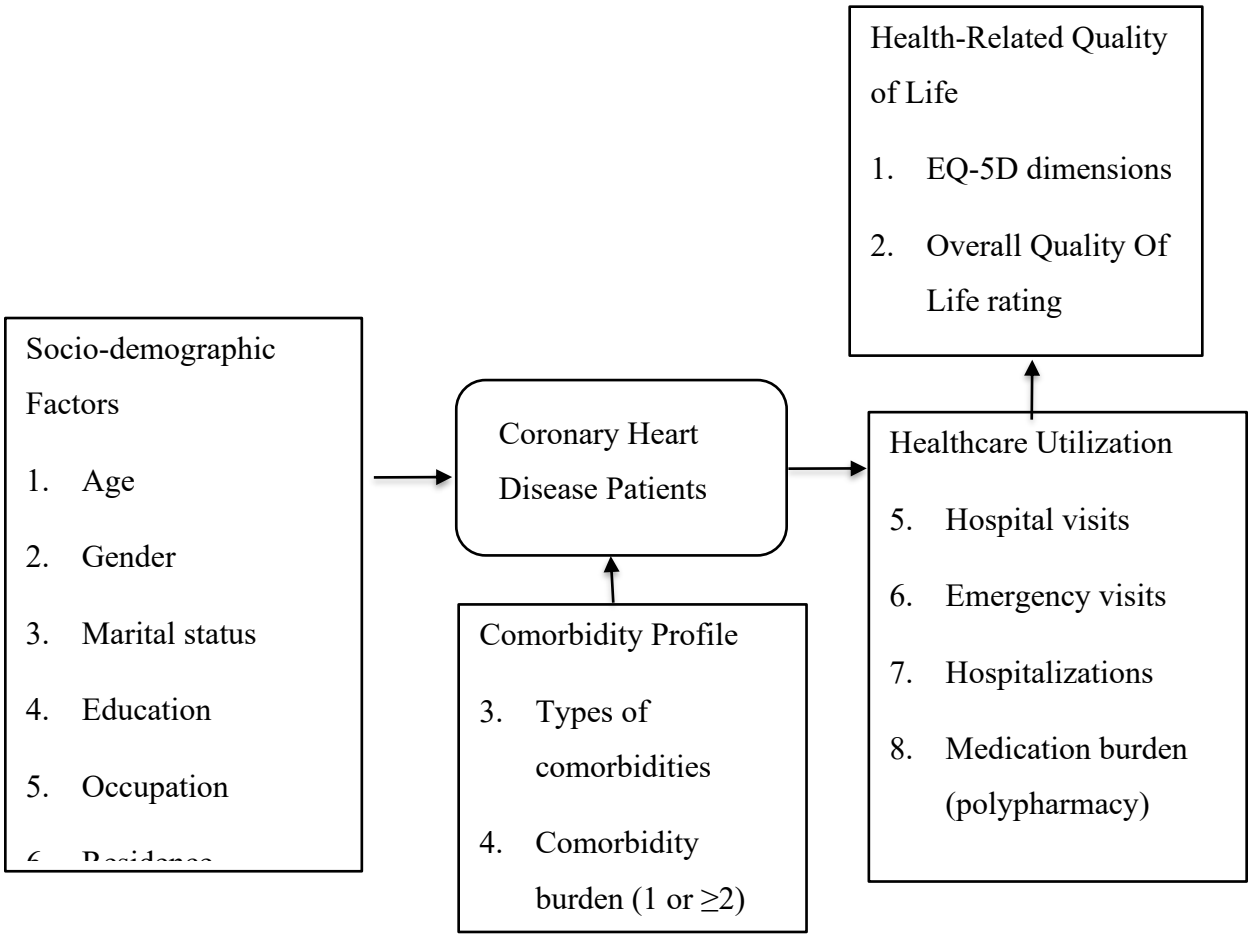
b) What are the health-related quality of life characteristics and general health status of CHD patients with comorbid conditions in relation to their burden of comorbidity, functional well-being, and healthcare usage?

1.5. Significance of the study

This study is important because it will fill gap of burden of CHD among residents in Islamabad and provide context-specific evidence for the prevalence as well as effect of comorbidities on health status, functioning, and quality of life among patients. Although multimorbidity was frequent in CHD patients from Pakistan, the research to date has been fragmented and much of what is available investigates single conditions, rather than addressing the overall burden of disease as we have done for hypertension, dyslipidaemia, osteoarthritis, gastrointestinal disorders and chronic central nervous system disorders or other chronic diseases assessed in this study. By rigorously assessing patterns of comorbidity in addition to quality of life using standardized instruments such as EQ-5D, functional status indicators including the Barthel Index we may gain a complete picture of how physical disability, pain, emotional upset and deterrents to regular activities determine the experience of living with CHD among tertiary care patients. Furthermore, the results of medication burden, polypharmacy, hospital use, as well as ADL dependence are important for understanding complexity of care and service needs in an already stressed urban healthcare system. Course implications are the importance of integrated management of chronic diseases, early detection of at-risk multimorbid patients and target interventions that will lead to improved functional independence and general HRQOL. At a policy level, the evidence generated supports the development of coordinated, patient-centered care pathways and resource allocation strategies that respond to the realities of multimorbidity in CHD an area where Pakistan currently

lacks robust empirical data. Academically, the study enriches the literature on cardiovascular multimorbidity in low- and middle-income countries, laying a strong foundation for future research, comparative studies, and health system reforms aimed at improving outcomes for CHD patients.

1.6. Conceptual Framework



CHAPTER II

2) Literature review

Coronary heart disease (CHD) is still the leading cause of death and disability-adjusted life years (DALYs) globally. Globally, CHD is burdening more than 9 million deaths annually which is on the rise in low-and middle-income countries (LMICs) such as Pakistan among others. CHD contributes to the 16. 19% of all the deaths in Pakistan, and this figure will further increase due to urbanization, change in lifestyles, and low health system capacity (WHO, 2022). CHD is associated to multiple interconnected comorbidities that further complicate the course and management. These are hypertension, CKD, COPD, dyslipidemia, and osteoarthritis. Comorbidities are not only associated with an elevated risk of CHD but also influence intervention success, drug adherence, hospitalization rates and mortality (Bhatt et al., 2010).

2.1. Comorbidities in CHD, Their Impact on QoL, and Prognosis

Hypertension is a common comorbidity of coronary heart disease (CHD), it leads to vascular injury, raised cardiac work and swift advancement of atherosclerosis in patients with CHD (Jahangir et al., 2020). The studies demonstrate that there is a coexistence of more than 60–70% hypertension cardiac outpatients' populations (Szlagor & Głowińska, 2023; Gijsen et al., 2013). Hypertension is frequently comorbid with CHD as a result of multifaceted mechanisms, such as the arteriosclerosis, less vessel elasticity resulting from plaque formation by arteriosclerosis, ineffective endothelial function and nitric oxide production, resulting in impaired vasodilation, sympathetic overactivity due to chronic ischemia and activation of the renin-angiotensin - aldosterone system (RAAS) causing fluid retention and vasoconstriction. Furthermore, systemic inflammation, oxidative stress and common lifestyle risk factors (smoking, obesity, physical inactivity) also contribute to high blood pressure in these subjects. Over time, chronic elevation of pressure is a potentiate insult that increases endothelial injury and plaque formation while elevating left-ventricular wall stress including ischaemia eventually cumulating in overall Cardiac Disease Burden (Jahangir et al., 2020). Hypertensive CHD patients often require multiple antihypertensive medications, increasing the risks of polypharmacy, drug–drug interactions, and treatment fatigue (Bhatt et al., 2010). In addition, hypertension has a significant negative impact

on quality of life (QoL) with chronic fatigue, dizziness, headaches, sleep difficulties and drug-related side effects adversely affecting both physical and emotional functioning (Gijsen et al., 2013; WHO, 2022). The risk for recurrent MI, stroke, heart failure and hospitalization is much higher with uncontrolled hypertension leading to poorer long-term prognosis. (Bhatt et al., 2010; Szlagor & Głowińska, 2023).

Chronic kidney disease (CKD) is a common systemic comorbidity in patients with coronary heart disease (CHD), partially driven by shared risk factors such as hypertension, vascular inflammation, and metabolic disarray (Naik et al., 2016; Parikh et al., 2006). Patients with CHD often progress to CKD due to the fact that lower cardiac output and impaired coronary circulation results in a decrease in renal blood flow, causing chronic hypoperfusion, ischemic damage of nephrons, loss of kidney function over time. Furthermore, chronic hypertension, endothelial dysfunction and atherosclerotic-affected renal arteriescan additionally hasten the deterioration of renal function. Thus, CKD is a prevalent downstream effect of CHD. CAD impairs renal perfusion and filtrating capability, causing fluid overload and excessive water as well as metabolism waste retention. Patients with CHD and CKD encounter additional clinical features, as many of these standard cardiac medications are either contraindicated or need dose adjustments (e.g., for specific ACE inhibitors), which make these patients at higher risk for HF and death (Maqbool et al., 2020).Mild impairment of renal function exacerbates cardiovascular physiology through volume overload, anemia, disbalance in calcium–phosphate and vascular calcification by mismanaging sufficient clearance to CHD severity (Wagner et al., 2017). Subclinical CKD is commonly overlooked in CHD patients as it is asymptomatic and overshadowed by cardiac disease (Naik et al., 2016). The collective burden of CHD and CKD has a profound impact on quality of life (QoL), especially in terms of fatigue, cognitive slowing, muscle cramping, dietary restrictions and more frequent hospital visits impact the physical, emotional and social health (Shah et al., 2020). Post-coronary interventions, patients with CKD have worse recovery, a greater level of procedural complications and less functional status (Parikh et al., 2006). From a prognostic standpoint, CKD is one of the most robust predictors for mortality and rehospitalization in populations with CHD, where it has been shown to increase the relative risk of adverse cardiovascular events by 40–50% in comparative cohort studies (Wagner et al., 2017).

Asthma and chronic obstructive pulmonary disease (COPD) often coexist with CHD, sharing common etiologies including smoking, systemic inflammation and age associated loss of pulmonary and vascular function (Giezeman et al., 2023). COPD is frequently a complication in CHD patients due to chronic myocardial ischemia decreasing oxygen supply to respiratory muscles resulting in weakened ventilatory function, and long exposure to smoking and induced systemic inflammation common in CHD active progressive airway remodeling and destruction of alveoli. CHD also causes pulmonary congestion, due to the decreased cardiac output,

Damaged lung mechanics also contribute to the sustained significant chronic airflow obstruction in their patients with COPD. COPD increases cardiac load, as chronic hypoxaemia with pulmonary hypertension and exercise intolerance all exacerbate ischaemic symptoms. In addition, in large epidemiological series the frequency of cardiovascular hospitalization and mortality in patients with COPD is markedly elevated (Díaz-González et al., 2020). The respiratory comorbidity have a large effect on decreased QoL in CHD patients due to breathlessness and limitation of physical activities, sleep disorders, frequent exacerbations and anxiety about dyspnea (Giezeman et al., 2023). The Atrial Fibrillation (AF) literature also demonstrates that combined AF and COPD subjects suffer from worse QoL as palpitations and shortness of breath add to one another's symptom misery (Díaz-González et al., 2020). From a prognostic point of view, for CHD patients COPD has been associated with arrhythmias, hospitalization, functional deterioration and all-cause mortality (Giezeman et al., 2023).

Dyslipidemia is a major metabolic comorbidity in CHD patients and also one of the most effective drivers for the progression of atherosclerotic plaque (Huang et al., 2024). Patients with CHD often have dyslipidemia as a result of the fact that chronic inflammation, oxidative stress, and endothelial dysfunction predispose to thrombosis characteristic of coronary artery disease, interfere with lipid clearance (via LDL) and function (in HDL). Also, modifiable risk factors such as unhealthy dietary habits, physical inactivity, obesity and insulin resistance and hypertension lead to abnormality of lipid profile that makes dyslipidemia a common secondary effect of CHD. Increased LDL-cholesterol levels culminate in lipid accumulation, vessel inflammation and endothelial dysfunction, whereas HDL deficiency results in diminishment of vascular protective effects. Many CHDs patients with dyslipidemia receive long-term statin treatment, even if it is cardioprotective, they may cause adherence issues such as muscle pain and side effects (Bhatt et

al., 2010). QoL Quality of Life Hypercholesterolemia has secondary impact on QoL through its natural history; the accelerated development of atherosclerosis may lead to: Repeated angina Fatigue Psychological disturbance associated with fear of future cardiac events (Huang et al., 2024). Although dyslipidemia is often asymptomatic, its individual and collective adverse effect on prognosis is significant (116), contributing to recurrent ischemia, need for revascularization, and cardiovascular morbidity.

Osteoarthritis is one of the most prevalent non-cardiac comorbidities in patients with CHD from both primary care based and multisite hospital-based multimorbidity studies (Lim & van der Horst, 2019). Osteoarthritis and CHD often occur together in patients, as they have common risk factors including ageing, obesity, lack of exercise, systemic low-grade inflammation and metabolic disorder.

That accelerate breakdown of cartilage as well as wear and tear on the joint. Furthermore, diminished mobility postcardiac events may result in muscle deconditioning and excessive mechanical loading of the weight-bearing joints, additionally promoting osteoarthritis among patients suffering from CHD. Joints that are constantly inflamed can be stiff and painful and make it hard to exercise key to cardiac rehabilitation. As a consequence, the sedentary routines of many CHD patients with osteoarthritis lead to deterioration in cardiac symptoms. QoL impairment is substantial

Osteoarthritis deprives the individual of independence, makes the person increasingly dependent on care givers, limits movement and causes incessant pain which can result in decline of physical capacity to execute daily activities loose of challenge for mobility, performance in normal daily activity and discomfort/pain (Lim & van der Horst, 2019). Prognostically, lower activity levels as a result of OA are linked to greater cardiovascular deconditioning, higher probability of becoming obese, elevated blood pressure and poorer survival rates post heart-related incidents (Bahall et al., 2020).

Atrial Fibrillation (AF) is commonly associated with CHD and is one of the most clinically relevant cardiac comorbidities (Shantsila et al., 2024). AF is frequently observed in patients with CHD, as chronic myocardial ischemia and atherosclerotic stenosis of the coronary arteries result

in reduced blood supply to the atrial myocardium, which causes atrial ischemia, fibrosis and structural remodeling. High left-ventricular (LV) filling pressure, diastolic dysfunction and hypertension are common sequelae of CHD and further stretch the atria and disturb electrical pathways resulting in a substrate for AF.

Furthermore, the systemic inflammation and oxidative stress in CHD contribute to electrophysiological instability, leading to greater likelihood of arrhythmogenesis. There is a mutually reinforcing relationship: CHD facilitates atrial ischemia and structural remodeling, and AF also elevates myocardial oxygen demand and decreases coronary perfusion (Stempfel et al., 2020). Patients with CHD and AF are at much greater risk of thromboembolism, congestive heart failure, and recurrent hospitalization. AF is commonly recogni zed as a leading cause of decreased QoL secondary to symptoms of palpitations, fatigue, anxiety and psycho-social disturbances. social isolation, and being afraid of stroke (Stempfel et al., 2020). In the presence of other comorbidities such as COPD or CKD, the symptom burden of AF iterates resulting in marked impairments in mobility and emotional-health (Shantsila et al., 2024). Prognosis Paroxysmal or chronic AF in patients with CHD significantly increases mortality risk and adversely affects long-term cardiac outcomes.

GIT disorders (e.g., GERD, chronic gastritis) and CNS diseases (e.g., migraines, neurological deficits) are commonly found in multimorbidity clusters with CVD patients (Bahall et al. 2020). These non-cardiac comorbidities stem from a number of mechanisms: decreased cardiac output and chronic ischemia reduce blood flow to the gastrointestinal (GIT) tract and brain, leading to mucosal injury as well as changes in motility and neurological function; polypharmacy, including antiplatelets, anticoagulants, NSAIDs, and beta-blockers also predispose patients to gastritis, reflux disease, dizziness or cognitive slowing; concomitant risk factors such as stress, autonomic imbalance, smoking habits poor diet and systemic inflammation further increase the probability of both GIT and CNS disorders.

Although such predisposing conditions are not directly related to cardiac physiology, they amplify treatment complexity (and burden), polypharmacy, symptom complexity and health-care utilization. GIT dysfunction can have an impact on drug tolerance, limit diet and cause chronic pain, as well as CNS disorders which may affect cognitive function or mood or mobility thus

impacting independency. These problems result in low QoL, owing to ongoing pain and fatigue, anxiety and impaired ability to perform daily activities (Bahall et al., 2020). A will establish the patient's prognosis multiple non-cardiac comorbidities often leads to overall health decline, predicts poorer functional recovery, and increases hospital readmissions.

Less is known specifically about **Hepatitis C Virus** in CHD populations; however, the data that exist suggest chronic HCV infection promotes systemic inflammation, metabolic dysfunction, and endothelial impairment each of which are likely to be harmful for cardio-metabolic health (Petta et al., 2016; Adinolfi et al., 2018). In CHD patients, HCV may develop as a comorbidity for a variety of reasons: advanced age, diabetes and lower socioeconomic status - often present in populations with CHD are known to be risk factors for HCV exposure;

Frequent admissions and procedures including angiography, cardiac catheterization, and transfusions may lead to greater exposure to blood products; chronic immune dysregulation19 as well as lifestyle behaviors including tobacco use or substance abuse that are more common among cardiovascular cohorts can also increase the risk of HCV infection. Fatigue, weakness and malaise symptoms can reduce energy levels and QoL with chronic HCV infection also causing damage to the liver function (Petta et al., 2016). A study of patients with both CHD and HCV in a multicommorbidity setting have reported an increase in symptom intensity, decreased physical function, and increased psychological distress, especially due to fears around progression to cirrhosis or liver failure (Bahall et al., 2020). Although limited, it is likely that HCV further impairs the CHD patient's prognosis through exacerbation of inflammatory pathways and complicates medical therapy. The paucity of HCV-specific CHD investigations highlights the value for adding HCV testing to analyses of comorbid profiles among cardiovascular cohorts.

2.2. Measurement Tools for Assessing Comorbidity and Quality of Life in CHD Patients

Valid measurement of comorbidity and HRQoL is essential in current research on CHD, especially when several chronic conditions are present together. It has been shown in high-income and LMIC countries that multimorbidity greatly affects clinical outcomes, functional status and patient-

reported health status with CHD, emphasising the importance of standardis ed tools for measurement that are feasible and reliable in community-based care.

EQ-5D has become one of the most used instruments for measuring HRQoL in cardiovascular patients. Its five dimensions namely mobility, self-care, usual activities, pain/discomfort and anxiety/depression reflect the patterns of symptoms experienced by CHD patients presenting with comorbid hypertension, diabetes; Chronic Kidney Disease (CKD), COPD and other chronic conditions.

Prior literature shows that in CHD patients, those at high comorbidities score lower on these domains, indicating reduced mobility and more discomfort, greater distress as wellhed into the psychological domains. The EQ-5D index value also facilitates quantification of global health-related quality of life (HRQoL), and is appropriate for comparing disease burden between demographic subgroups and clinical circumstances. Its short format and minimal literacy needs have also allowed for more extensive use in hospital-based studies of South Asia, where both time restrictions and patient tiredness are frequent.

Functional dependence is a further aspect with high relevance in terms of morbidity burden in multimorbid CAD patients, and the Barthel Index is still frequently used for assessing independence regarding ADLs. The Barthel Index measures mobility-related and self-care activities, which are commonly impaired in patients with CHD already suffering from osteoarthritis, COPD, CKD, stroke or frailty. Whereas the relationship between lower BA scores and increased risk for hospitalization, poorer recovery patterns or lesser long-term survival has been noted in cardiovascular and geriatric research. In contexts characterized by routine deprivation and high levels of multimorbidity, the Barthel Index offers a feasible means of identifying functional decline, which in turn may impact adherence to treatment, rates of physical activity and ability for self-management.

Contemporary models of chronic disease and multimorbidity research promote the integration of objective (ie, clinical) measures with subjective (ie, patient-reported) indicators in estimating overall burden of ill health. Consistent with these outlooks, both EQ-5D and Barthel Index can be employed together to provide a more comprehensive profiling in CHD patients as it not only

endorses subjective HRQoL but also incorporates objective functional status. For research in tertiary care Pakistani hospitals are characterized by a prevalent of multimorbidity and limited health resources, these tools offer a methodologically robust and context-appropriate approach for characterizing the impact of coexisting chronic conditions on patients' daily lives.

2.3. Use of Health Services, Quality of Life, and Complexity of Treatment in CHD Patients with Comorbidities

Patients with CHD and multimorbidity have significantly increased use of healthcare services, diminished functional status, and higher treatment burden than those with CHD alone. Comorbidities including hypertension, CKD, COPD, osteoporosis and (AF) make symptoms more severe and prolong treatment requirements for patients with chronic disease, placing a burden on the healthcare system.

It is a consistent findings that individuals with multimorbidities tend to have more outpatient visits, longer hospital stays and higher rate of readmissions among cardiovascular patients (Lehnert et al., 2011). Most patients with COPD or CKD are admitted to the hospital through emergency departments for acute exacerbations, fluid homeostasis imbalance, dyspnoea or arrhythmias and they are frequent users of tertiary care services (Kansagara et al., 2011; Rothnie et al., 2016).

Functional disabilities are also much more prevalent among the CHD patients with co-morbidity. For example, fatigue, exercise intolerance and muscle wasting are directly caused by CKD resulting in a direct decrease in daily activity capacity and independence (Painter & Marcus 2013). Likewise, mobility restriction and reduced participation in cardiac rehabilitation, which is important for optimizing functional recovery following cardiac events (Piva et al., 2015), are affected by osteoarthritis. Breathlessness due to COPD and limited physical functioning is associated with the impaired exercise capacity of these patients with CHD (Smith et al.,2013) These limitations explain why CHD patients with multiple chronic conditions often have lower Barthel Index and ADL/IADL performance scores, reflecting dependency in daily tasks.

Treatment burden, or workload of managing several conditions and how this impacts patient wellbeing, is often exorbitant for patients with both CHD and comorbidities. Polypharmacy is

frequent in patients with mutlimorbidity, frequently higher than 5–7 per day medications in multimorbid cardiovascular patients and is associated with a high risk for side effects, drug–drug interactions and low adherence (Wallace et al.,2015). Medication complexity and the need of regular monitoring (e.g., blood pressure measurement, assessment of renal function, INR monitoring for AF)ACL tears are highly stress inducing, limiting of self-management ability, and ultimately lead to worse long-term outcomes (Gallacher et al., 2011). Treatment burden is a driver of preventable hospital admissions, as it can result in poor adherence and reduced comprehension of how to manage their condition.

CHAPTER III

3) Research Methodology

3.1 Research design

My research employed cross sectional and quantitative design to evaluate and compare the quality of life, and frequency comorbid conditions among coronary heart disease (CHD) patients having comorbid conditions in tertiary care hospital in Islamabad.

3.2 Sampling and data collection method

The study used purposive sampling to gather data. In this case, the participants were purposely chosen according to characteristics that were clearly relevant for research purposes. CHD patients referred to tertiary care hospitals in Islamabad were recruited if they had one or more comorbidities e.g hypertension, osteoarthritis or other chronic conditions. This sample approach enabled to concentrate only on the patients that satisfy in them for observing the association between comorbidities and patient prognosis. In order to ensure the sample is applicable, meaningful and relevant to the aims of the research only CHD patients with comorbidities were purposively sampled.

3.3 Universe

This data was collected from patients of tertiary care hospitals in Islamabad and Rawalpindi who were labeled with Coronary Heart Disease with additional comorbidities. Data was collected from the patients visiting (Pakistan Institute of Medical Sciences PIMS Islamabad, Federal Government Services Hospital PolyClinic Islamabad and Rawalpindi Institute of Cardiology and other clinics in Islamabad and Rawalpindi.

3.4 Population Frame

Patients with known diagnosis of coronary heart disease and comorbidities were studied who visited tertiary care hospitals situated in Islamabad and Rawalpindi.Total of 336 patients data was collected.

3.4.1. Inclusion Criteria

Eligible participants were the patients who had been officially diagnosed with CHD and had at least one comorbid condition, such as hypertension, chronic kidney etc disease. The respondents of the survey were men and women 35 years old and older who had agreed to participate in a written informed consent process, have clear understanding of the questionnaire items.

3.4.2. Exclusion Criteria

Patients without any comorbidities except for CHD, were younger than 35 years of age, critically ill or uncommunicative at the time of data collection (due to vegetative function damage) or suffered from any mental illness/condition that interferes with their ability to participate. Participants who refuse to participate, or withdraw their consent during the study were not enrolled.

3.5 Instrument for data collection

The structured questionnaire that supplied the background about the comorbidities, its type or convenient for surveillance and quality of life of patients with CHD was used. The questionnaire included various aspects of data such as demographic (age, gender, and course of disease) and clinical comorbidities of the patient. Quality of life was recorded with the validated questionnaieEQ-5D (EuroQol-5 Dimensions).

3.6 Sample size calculation

The sample size was calculated using openepi.com to be 359 with a 37.2% prevalence rate of Comorbidities (Nasir,J.A,etal.(2021)) in patients of Coronary Heart Disease Visiting Tertiary Care Hospitals in Islamabad with a 95% confidence interval with a margin of 5% error.

3.7 Data analysis type and technique

This is a quantitative cross-sectional study and the data analysis aims at reporting on the prevalence of comorbidities in patients with diagnosis of CHD, and to describe their quality of life. Descriptive analyses were performed for all variables collected, which included demographic

parameters, CVD conditions and other comorbidities, EQ-5D health state dimensions, medication history and patterns of hospital services utilized. The categorical variables including gender, age and comorbidities .

Responses, with averages for common statistical measures wherever they were relevant. While the objective of this analysis is not to systematically and thoroughly describe the prevalence, trends, burden and/or implications of any comorbid condition (e.g., hypertension, dyslipidemia, chronic kidney disease), we hope to provide a clearer perspective for how prevalent such associate diseases are in CHD patients; as well as their functional loss and health related quality of life. Data analysis was conducted with the Statistical Package for the Social Sciences (SPSS) that allows to organize, manage and interpret data according tables, charts and summary statistics.

This analytic methodology afforded an organized appreciation of the clinical and demographic factors in CHD patients with comorbidities, consistent with the study aim to appraise the multidimensional nature of comorbidity after evaluation for its relationship with patterns of QoL in this patient cohort.

3.8 Ethical considerations

In the study ethical standards and research protocols were and guidelines rigorously at all times. This maximizing respect for participants' autonomy (consent), privacy, and dignity was protected from the beginning to end of their involvement in the study.

CHAPTER IV

4) Results And Discussions

4.1.Results

Table 1. Demographic Information Of Statistics Study Population

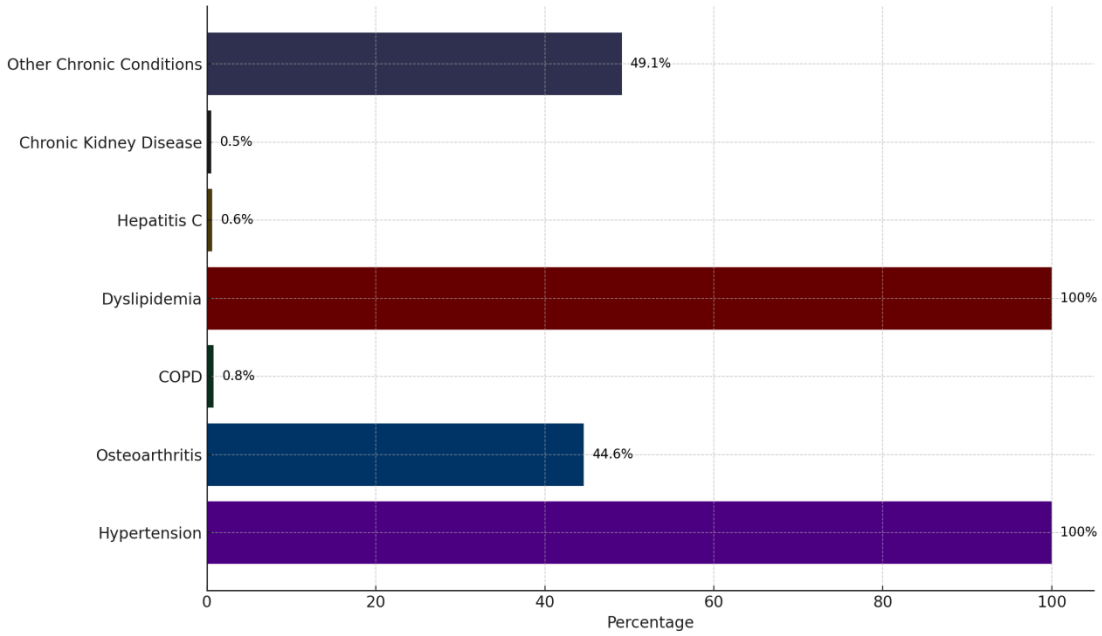
Variable	Category	n	%
Gender	Male	171	50.9
	Female	165	49.1
Age group	35–55 years	157	46.7
	56–75 years	148	44.0
	Above 75 years	31	9.2
Marital status	Single	33	9.8
	Married	232	69.0
	Divorced	14	4.2
	Widowed	57	17.0
Highest level of education	None	24	7.1
	Primary	101	30.1
	Secondary	121	36.0
	Tertiary	90	26.8
Employment status	Unemployed	160	47.6
	Employed	176	52.4

Place of residence	Rural	52	15.5
	Urban	284	84.5

There were 336 participants included in the study with an almost equal ratio between men and women: 50.9% of the sample was male and 49.1%, female, that did not show any significant differences between gender percentages. Gender ($p>0.05$). The most of the respondents were middle-aged (46.7%, 35-55 years) and elderly (44.0%, 56-75 years), with a small proportion over 75 years old. Consequently, it can be inferred that most CHD patients in this sample belonged to the economically active and early elderly population.

Marital status distributions were 69.0% married, smaller proportions were single (9.8%), divorced (4.2%), or widowed (17.0%), such that the sample predominantly comprised partnered individuals. The majority had secondary (36.0%) or primary (30.1%) schooling, followed by tertiary education (26.8%), and 7.1% reported no formal education, suggesting a range of educational backgrounds among the patients. Employment status indicated that slightly more than one half of the participants were employed (52.4%), with 47.6% being unemployed, suggesting variety in socioeconomic backgrounds across the sample. A significant predominance of the study group members lived in urban areas (84.5%) in comparison to rural districts (15.5%), indicating that the largest number of participants enjoyed a relative proximity to tertiary care centers at which the research was performed. Collectively, the demographics skewed towards urban residents aged in their forties or fifties, who were married and engaged in a diverse range of educational and occupational experiences.

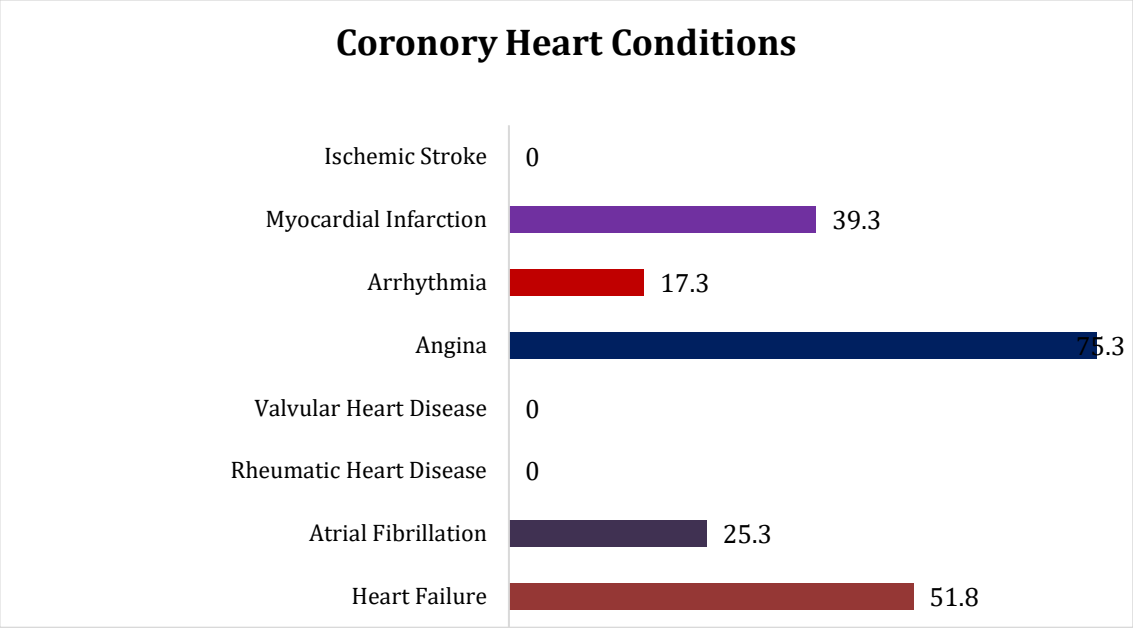
Fig1.Distribution of reported comorbidities among participants



From the comorbidities distribution, hypertension and dyslipidemia ranked top most common morbidities among participants, which were present in all (100%) of these sample and thus almost all coronary heart disease patients studied so far had those two main risk. Conversely, 44.6% of the participants had osteoarthritis which means that almost half of the respondents also suffered from musculoskeletal problems in addition to their cardiac condition.

Gastrointestinal and central nervous system, among other chronic diseases, were reported in 49.1% of the sample, indicating a high burden of associated co-morbid conditions among these patients. However, all the other chronic diseases were completely absent in our sample: none of the participants declared they suffered from COPD, hepatitis C or CKD. The general results emphasize that CHD patients generally present with a number of co-existing conditions (e.g., hypertension, dyslipidemia which are nearly universal) but also musculoskeletal and other chronic systemic issues also contribute significantly to their health status.

Fig 2.Distribution of Coronary Heart Conditions among study participants

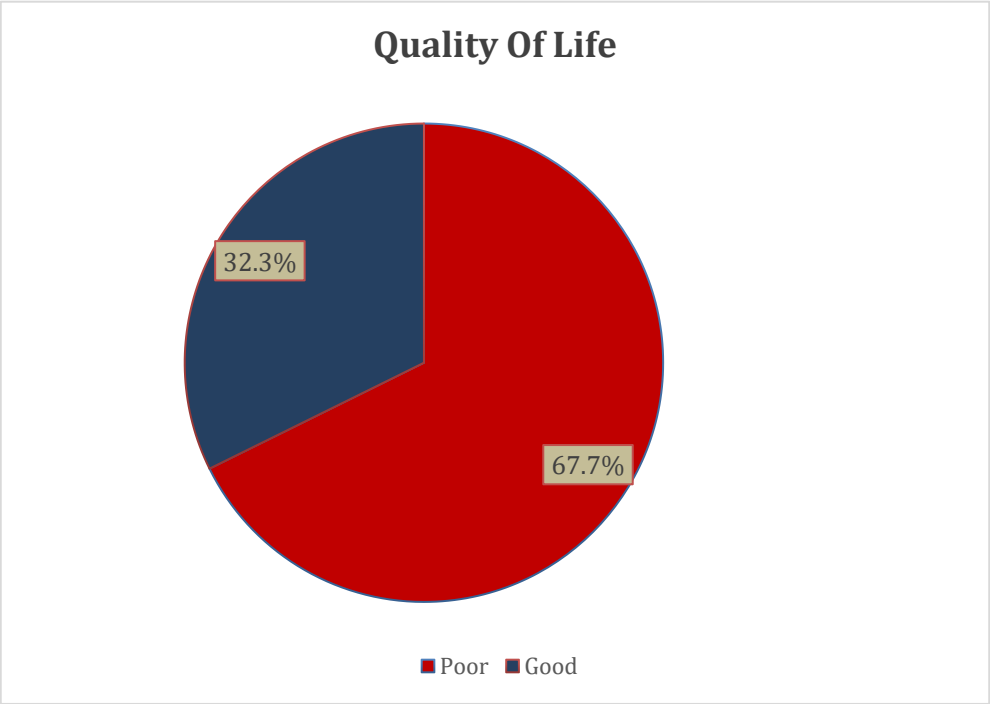


The prevalence of coronary heart-related conditions among patients, and angina is found to be prevalent among 75.3% of them. This is followed by heart failure in 51.8% of study population suggesting a significant burden of advanced cardiac dysfunction among participants. A history of myocardial infarction (MI) was found in 39.3% of subjects, indicating a marked prevalence of past acute coronary syndrome events.

Furthermore, other rhythm disorders were identified as atrial fibrillation in 25.3% patient and arrhythmia in 17.3%, indicating that cardiac electrical complication is not rare in patients with CHD.

There were also conditions not found at all in this sample. Prevalences of ischemic stroke, valvular and rheumatic heart disease were all 0%, suggesting that no cases were documented in the study.

Fig 3. Quality Of Life Of the Study Participants



Quality of life in patients with CHD was scored using a two-category system, with 0 representing poor quality of life and 1 representing good quality of life. The outcome displayed in the pie chart represents an impressive inequity between the spread of those scores.

Overall, 67.7% of the participants had a good quality of life. This fact indicates that the physical, emotional and social functioning of most Cardio Vascular patients suffers severe restrictions. These limitations potentially represent the chronic and progressive nature of the disease, as well as symptom burden, treatment needs, and psychological stressors.

On the other hand, 32.3% of participants have good quality of life. 34 This constitutes almost 1 of 3 subjects in the study, but is still much smaller than the proportion that reports poor quality of life. This incongruence suggests that fewer people experience adequate satisfaction with their daily life, symptoms and overall well-being who are living with CHD.

In general, the findings show a significant impairment of QOL among persons with CHD.

The high proportion of poor QoL scores emphasizes the need for multidisciplinary clinical management, patient education, lifestyle support and psychosocial interventions which target overall well-being in this population.

Table 2. Frequency Distribution of Health Status and Clinical Characteristics

Variable	Category	Frequency (n)	Percentage (%)
Overall Health	Poor	79	23.5
	Moderate	194	57.7
	Good	63	18.8
Hospital Visits (Past 3 Months)	Less than two	161	47.9
	Two or more	175	52.1
Falls (Past Month)	None	267	79.5
	One or more	69	20.5
Activities of Daily Living	Independent	234	69.6
	Dependent	102	30.4
Number of Medications	One to four	135	40.2
	Five to nine	133	39.6
	Ten or more	68	20.2
Presence of Comorbidities	Comorbidities present	336	100.0
Number of Comorbidities	One	143	42.6

	Two or more	192	57.1
Hospital Usually Visited	PIMS	86	25.6
	Polyclinic	73	21.7
	Rawalpindi Institute of Cardiology	89	26.5
	Other	88	26.2

Descriptive analysis investigated health status, use of healthcare, functional ability, comorbid conditions and hospital consumption in subjects with coronary heart disease. Findings suggest that there is much variation among the indicators of general health and daily functioning.

For self-rated general health, most of the subjects claimed to have moderate health (57.7%), followed by poor ones (23.5%). Only 18.8% rated their health as good. The results of these studies suggest that people tend to assess themselves as short of health or at best moderately well.

Healthcare usage at the 3-month timepoint showed that 52.1% of participants had two or more hospital attendances compared with 47.9% who had less than two visits. This pattern suggests that the utilization of healthcare is rather high.

Regarding physical safety, 79.5% did not fall in the previous month and 20.5% fell one or more times. While the majority of girls did not fall, falls are nonetheless a clinically relevant experience.

Functional status assessed by independence in activities of daily living revealed that 69.6% were independent and 30.4% were dependent. These results indicate three individuals out of 10 who have difficulty with regular, daily tasks.

Medication use was also assessed. For forty percent of the patients, one to four drugs were being taken, thirty-nine percent had five to nine medications and for twenty percent of the patients 10 or more. These findings demonstrate a high rate of medication use for chronic cardiovascular disease.

All subjects (100%) had at least one comorbid other disease in addition to CHD. Of these 57.1% had two or more comorbidities, whereas 42.6% had one comorbidity.

Finally, hospitalization trends demonstrated that 26.5% of the patients visited RIC, 25.6% PIMS, 21.7% Polyclinic and others (26.2%). This distribution indicates that the participants used different health care organizations, none being dominant.

4.2. Discussion

The results of study provide strong data on the health-care, and clinical and quality-of-life burden experienced by CHD patients at Islamabad tertiary-care hospitals and illustrate a uniquely complex and medically compromised patient population. The results suggest that those patients are not battling solely CHD, but rather they have a number of comorbid conditions and medications, low functional capacity, multiple hospitalizations and poor self-perceived health status. This stacked burden is evident both at the patient and health system levels and provides a compelling case for integrated chronic disease management interventions targeting this high-risk population.

Demographically, that over 90% patients are within the age range between 35 and 75 years indicates middle-to-older-aged adults as being the most affected group by CHD in this population (and hence, it likely mirrors global health scenario with respect to risk for cardiovascular disease) (World Health Organization, 2023). Its age distribution represents the overall cumulative lifetime exposure to risk factors for ischemic heart disease, such as hypertension, dyslipidemia and metabolic disorder throughout decades. The even gender balance in this study is of interest; although CHD has traditionally been considered a male-dominated disease, it is now increasingly evident that the burden of CHD in women is increasing especially with regard to urbanizing populations, suggesting change patterns in lifestyle, stress and health behaviors (Maas &

Appelman, 2010). Furthermore, the over-representation of urban recruits raises the prospect of access disparities: that tertiary-level cardiac care is more available in cities, and rural groups at risk of high cardiovascular burdens could be incompletely represented.

Every patient had at least one condition; 100 percent and 57.1 percent, two or more is especially worrying. This level of multimorbidity is consistent with reports in other CVD populations where the presence of multiple chronic conditions predicts poorer outcomes, more such as hospital readmissions and higher mortality rates (Söderlund et al., 2022). In patients with RA, hypertension and dyslipidemia are the 2 most common comorbidities and have been shown to be a major contributor of both CHD development and evolution in our population (Piepoli et al., 2016). The presence of non-cardiac comorbidities such as musculo-skeletal and GIT disorders but also, albeit rarely in the practice of running and triathlons, neurological/CNS conditions further complicate care by impairing exercise tolerance, increasing pain or limiting adherence to complicated interventions. This comorbidity clustering accords with evidence that fact (as opposed to mere belief) that multiple chronic diseases not only... complicate clinical issue but may increase pharmacological risk (ADRs), and functional disability and healthcare costs (Nobili, Pasina, Tettamanti et al., 2011).

The sample in this study has a high cardiac morbidity profile (with many patients with angina, over half of them suffering from heart failure, and a significant number having had infarctions in the past, as well as atrial fibrillation or arrhythmias). These results underscore that many of these patients are struggling not merely with stable CHD, but severe and advanced disease involving structural and electrical defects. This clinical load is in keeping with worldwide statistics showing that CHD patients' outcomes are characterized by high likelihood of proceeding to heart failure and recurrence of ischemic events throughout the years (Savarese & Lund, 2017). This advanced burden of disease is likely to lead into the other outcomes presented in this study—high hospitalization, poly pharmacy and functional impotence.

The level of QoL is significantly impacted in this group as evidenced by the majority (67.7 %) participants who obtained a “poor” score according to the study tool [38]. This is consistent with reported studies from Pakistan 13 as well as other similar countries 14,15 where IHD and CHD are known to be linked with a profound lowering of health-related quality-of-life scores notably in the face of comorbid conditions and functional limitation (Khan, Masih, Sial, et al., 2024; Khan,

Masih, Sial, Aziz, & Jaseem, 2024). QoL is frequently poor in CHD and, for many patients, it has more than one cause, including both continued angina, dyspnea and fatigue as well as psychological distress and the burden of complex polypharmacy (Spertus, Jones, McDonell, & Fihn, 2005). Due to the complexity of their condition, it is likely that many of these patients are not afforded access to formalised cardiac rehabilitation, psychological support for partners and tailored disease education, all contributing to their self-perceived poor health.

One other essential dimension of need is functional capacity: 69.6 percent are living independently in ADLs; the remaining 30.4 per cent in dependence. This degree of reliance is clinically relevant, because it implies that a large proportion of CHD patients in this context are incapable of taking care of themselves completely—a marker for frailty and disease severity in the cardiovascular populations (Afilalo et al., 2014). Functional dependence might be due to musculoskeletal comorbidities, deconditioning, fatigue or effects of polypharmacy. In addition, 20.5 % of the subjects reported at least one fall during the last month. Falls by cardiovascular patients are of particular concern, as such falls could be a sign of orthostatic hypotension due to medications, balance deficit, weakness or an interplay among these and confounders leading to increased morbidity, risk for hospitalization and death.

The level of health care services use is quite high among this sample; over half (52.1%) had two or more hospital visits in the past year. This high usage rate may indicate persistent worsening of symptoms, decompensations, acute stabilization need for or close supervision of intricate treatment schedules. Frequent hospital readmissions in multimorbid and polypharmalic patients are well reported; older acute coronary syndrome patients with multiple comorbidities have more than two-fold increased risks of readmission compared with those who have few comordibities (Söderlund et al., 2022). This trend highlights the importance of care delivery interventions that decrease fragmentation, increase follow-up in outpatient settings and feature proactive management to mitigate preventable hospitalizations.

Polypharmacy is a prominent concern in this population: almost 60% of the participants were using more than 5 drugs each day and 20.2% reported taking ten or more. This observation mirrors the therapeutic requirements of CHD (angina, heart failure, antiplatelet therapy) and also the need to manage coexistent non-cardiovascular diseases. Polypharmacy is also the case in cardiovascular disease populations, and there are a larger number of individuals who suffer five or more drugs in

heart failure patients alone (with considerable numbers taking ten or over)(Beezer, Al Hatrushi, Husband, Kurdi, & Forsyth, 2021; O'Connor et al)

Although some degree of polypharmacy might be clinically justifiable particularly when prescriptions confer prognostic benefit it also has its hazards, including drug–drug interactions, adverse events, poor adherence and higher hospital readmission rates (Beezer et al., 2021; impact of polypharmacy on hospital readmission, Journal of Heart Valve Disease, 2023). In elderly pluripathologic patients with cardiovascular diseases, a multidisciplinary approach (including medication review provided by clinical pharmacists, deprescription when possible, and regular follow-up) should be considered to optimize treatment and avoid overharmfulness (Rodriguez & Smith, 2022; Beezer et al., 2021).

High medication burden in this population is likely to result in functional deterioration, falls and poor quality of life. Such medications either increasing risk of falls, such as those causing orthostatic hypotension, sedation or electrolyte imbalance. Adherence may also be compromised by polypharmacy, particularly in patients who are ADL dependent or with cognitive or physical disabilities (O'Connor et al., 2022). Although certain drugs are obviously essential to continue, particularly those that have established prognostic benefit, others might be open to review where the drug risk outweighs the benefit in the context of frailty or multimorbidity.

Self rated health of this study was (23.5% "poor," 57.7% "moderate," and 18.8% "good"), which illuminates the subjective burden of disease . Self-rated health has proven to be the best predictor of morbidity and mortality in cardiovascular populations(DeSalvo, Bloser, Reynolds, Jung, & Munoz, 2006), and it may in this context represents the combination of physical constraints and distress. Patients with worse perceived health could be less adherent to self-care, rehabilitation, or preventive modalities and therefore have a more worrisome long-term prognosis.

The entrenched hospital utilization of a number of tertiary care centers (PIMS, RIC, Polyclinic and others) also demonstrates that CHD patients are not dependent on a single facility in Islamabad; major cardiac centers compete for the patient load. This is both a strength and limitation on one hand, the patient sample looks representative of several care settings; on the other, this suggests potential variability in the care coordination process, referring patterns and follow-up

between institutions. The resulting fragmentation may affect the continuity of care for patients with complex needs, especially while dealing with polypharmacy, frequent admissions, and comorbidities.

Collectively, these results depict a very troubling picture: CHD as more than just a heart disease diagnosis but rather, as the beginning of syndromic complexity in this setting existing amidst (in addition to) myriad comorbidities, high medication load, frequent acute care visits, functional impairment and poor perceived health. The implications are profound.

4.2.1 Research Limitations

This study has certain limitations that should be considered when interpreting the findings. Although the calculated sample size was 359, data could only be collected from 336 participants due to time and accessibility constraints, which may slightly reduce the statistical power of the results. The use of purposive sampling from tertiary care hospitals in Islamabad limits the generalizability of the findings to broader CHD populations in other regions or healthcare levels. Additionally, several key variables such as comorbidities, functional status, and healthcare utilization were self-reported, introducing potential recall bias.

4.2.2 Future Recommendations

Cooperation among cardiologists, general practitioners, pharmacists, physiotherapists or rehabilitators, nurses and social /community care professionals should be required .Care teams that deliver care should also be responsible for performing medication review, prescribing and patient education, as well as preventive interventions (e.g., fall risk screening) that may lowest avoidable hospitalization and encourage greater quality of life

Second, routine medication review and prescribing should become a standard component of care for CHD patients in tertiary settings, particularly for those on very high medication counts. Pharmacist-led medication reconciliation at discharge and follow-up may reduce inappropriate prescriptions, lower the risk of adverse drug events, and improve adherence (Beezer et al., 2021; Journal of Heart Valve Disease, 2023). Given that guidelines for heart failure and CHD often mandate multiple therapies, the goal should not necessarily be to minimize the number of

medications, but to ensure that each one is appropriate, safe, and aligned with the patient's functional status, goals of care, and life expectancy.

Third, patient education and self-management support and rehabilitation. should be enhanced.Although both groups had low self-rated health and high dependency, structured cardiac rehabilitation programs already adapted to available resources could enhance physical capacity and decrease re hospitalizations and improve e quality of life. Furthermore, counseling around medication, symptom recognition, and fall prevention could help empower patients to take care of themselves.

Fourth, health systems planning should address the complexity of this population. A relatively evenly distributed patient flow at the PIMS, RIC, Polyclinic and other hospitals indicate possibly not all high risk patients are being serviced in a single facility; however practice may not be standardized. Multi partnered CHD clinics, coordinated care pathways, and case management should be considered by policymakers and hospital administrators to minimize fragmentation of care and to improve continuity of care provision.

Finally, Longitudinal work is required in Pakistan to determine the impact interventions on integrated care, rehabilitation and patient education have on clinical outcomes including readmission rates, mortality, quality of life and functional independence. There is an opportunity for tools such as the comorbidity poly-pharmacy score (CPS), which captures number of comorbidities and number of medications, to risk-stratify patients and direct them toward more advanced disease management (the CPS has been applied as an outcome predictor in other contexts) (Ngo Khanh et al., 2020).

4.3. Conclusion

This research examined the demographic, clinical and health related characteristics of adults with CHD in tertiary level hospitals of Islamabad. The results provide a clear picture of significant clinical complexity in the population and describe the multidimensional burden borne by patients with CHD in Pakistan. Demographic characteristics Table 1 displays the demographic information,

showing middle-aged to old adults who were married, the majority of whom resided in urban areas with a nearly equal ratio between male and female respondents.Contrasts in level of education and occupation status also proved the diversity of the patient population and socioeconomic background which is being reflected in tertiary cardiology services.

The high degree of multimorbidity recorded in this analysis was a key finding. Comorbidities All the participants (100%) had comorbid conditions, with more than half of them having two or more comorbidities; which shows a significant health burden in this population. Hypertension and dyslipidemia were the most common comorbidities (100%, respectively). demonstrating unresolved difficulties in controlling CVRFs at both the community and clinical levels. Other systemic diseases such as osteoarthritis (44.6%) and gastro-intestinal disorders, central nervous system pathologies imposed additional levels of complexity. This higher comorbidity load not only exacerbated symptoms, but also led to mobility problems, impairment in functions of daily living and poor quality of life.

Clinical appearances for cardiac were also the most common. Anginapectorise, heart failure, myocardial infarction and atrial fibrillations and other arrhythmias were also common complaints,suggesting the presence of advanced disease among those attending a tertiary care facility. These clinical features are in line with the high use of medications that was noted; there is a large subgroup of patients who were already in polypharmacy, which mirrors the requirement for multi-drug therapy to treat their cardiovascular and other chronic conditions. The high number of drugs that these patients take to reduce cardiovascular risk can additionally result in drug interactions and adverse events, exacerbating the susceptibility to these events in this population.

Functional impairment was high, with nearly a third of the sample needing help with essential Activities of Daily Living (ADLs). Given the high burden of systemic and cardiac disease, this level of dependency was anticipated, but clearly it raises important issues when considering services and rehabilitation needs for such patients. This can be seen also for HRQoL-results with respect to the impact of multimorbidity. At EQ-5D scoring, 67% of patients had a self-described quality of lifetime that eflecting the combined physical, emotional and social impact of living with CHD and multimorbidity. The results reveal the extent to which QoL is impacted on people juggling disease demands and long-term treatment courses.

Healthcare-seeking behaviour emerged as another indicator for destabilization and ongoing care requirement among the CHD patients in Islamabad. A total of 52% or more of participants had visited two or more hospital in the past three months referring frequent contact with the health care system secondary to recurrent complications, or medication adjustments. High rates of hospital presentations, re admissions and follow up represent a considerable burden on patients and the health system.

Cumulatively, these data demonstrate that CHD patients in Islamabad are a medically complex and high-risk population with considerable multimorbidity, impaired functional status with low HRQoL and significant dependence on healthcare resources. The clinical, psychosocial and functional problems identified in this study demonstrate the importance of a more joined-up approach to care which is patient-centered as well as involving other professionals.

Enhancing the management of risk factors, facilitating the early recognition of comorbidities and ensuring complete patient education and follow-up can contribute to alleviating this long-term burden.

In addition, comprehensive management programs for chronic disease and increased post dispensation access to heart rehabilitation, psychological support and community follow up might improve patient outcomes and diminish avoidable morbidity. These findings offer essential evidence for policy makers, clinicians and people planning services to develop integrated, scalable and context specific care tailored to the needs of CHD patients living with multimorbidity in Pakistan.

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Questionnaire

Assessment of Comorbidities and Quality of Life in Coronary Heart Disease Patients

Study Title: Frequency of Comorbidities and the Quality of Life in Patients with Coronary Heart Disease (CHD) visiting Tertiary Care Hospitals in Islamabad.
Researcher: Marva Zubair, BS Public Health, Bahria University Islamabad.
Email: marvah.z13@gmail.com

Purpose:

The purpose of this study is to assess the frequency of comorbidities in patients with coronary heart disease (CHD) and to evaluate how these comorbidities affect their quality of life.

Participation:

Your participation in this study is completely voluntary. If you agree, you will be asked to complete a questionnaire that will take approximately (time, e.g., 15–20 minutes).

Confidentiality:

All information collected during this study will be kept strictly confidential. No personal identifiers (such as your name, contact information, or medical record number) will be disclosed in any report or publication.

Risks/Benefits:

There are no anticipated physical risks in participating. However, some questions about your health may cause mild discomfort. You may choose not to answer any question you feel uncomfortable with.

Consent

By selecting Next below, you confirm that you:

- Have read and understood the form
- Agree to participate voluntarily

Section A: Demographic Information

Gender

☐ Female

☐ Male

Age Group

☐ 35–55 years

☐ 56–75 years

☐ Above 75 years

Marital Status

☐ Single

☐ Widowed

☐ Divorced

☐ Married

Highest Level of Education

☐ None

☐ Primary

☐ Secondary

☐ Tertiary

Current Employment Status

☐ Employed

☐ Unemployed

Place of Residence

☐ Urban

☐ Rural

Section B: Cardiovascular Disorders

Have you been diagnosed with the following conditions?

Coronary Artery Disease (CAD)

☐ Yes ☐ No

Heart Failure

☐ Yes ☐ No

Atrial Fibrillation

☐ Yes ☐ No

Rheumatic Heart Disease

☐ Yes ☐ No

Valvular Heart Disease

☐ Yes ☐ No

Angina

☐ Yes ☐ No

Arrhythmia

☐ Yes ☐ No

Myocardial Infarction (MI)

☐ Yes ☐ No

Dilated Cardiomyopathy

☐ Yes ☐ No

Ischemic Stroke

☐ Yes ☐ No

Section C: Other Co-morbid Conditions

Do you have the following conditions?

Hypertension

☐ Yes ☐ No

Osteoarthritis

☐ Yes ☐ No

Asthma / COPD

☐ Yes ☐ No

Dyslipidemia

☐ Yes ☐ No

Hepatitis C Virus (HCV)

☐ Yes ☐ No

Chronic Kidney Disease (CKD)

☐ Yes ☐ No

Any other chronic conditions (e.g., GIT, CNS disorders)?

☐ Yes ☐ No

Section D: Quality of Life (EQ-5D Domains)

Do you have any of the following difficulties?

Difficulty walking or moving around

☐ Yes ☐ No

Difficulty washing or dressing yourself

☐ Yes ☐ No

Difficulty performing usual daily activities (e.g., work, study, housework, family/leisure activities)

☐ Yes ☐ No

Pain or discomfort

☐ Yes ☐ No

Feelings of depression or anxiety

☐ Yes ☐ No

Section E: Health & Hospital Utilization

Number of hospital visits in the past 3 months

☐ Less than 2

☐ 2 or more

Falls experienced in the past month

☐ None

☐ 1 or more times

Activities of Daily Living (Barthel Index)

☐ Independent

☐ Dependent

Number of medications currently taking

☐ 1–4

☐ 5–9 (Polypharmacy)

☐ 10 or more (Excessive polypharmacy)

Do you have any comorbidities along with CHD?

☐ Absent

☐ Present

If present, how many comorbidities do you have?

☐ One

☐ Two or more

Which hospital do you visit?

☐ PIMS

☐ Polyclinic

☐ Rawalpindi Institute of Cardiology (RIC)

☐ Other

Plagiarism Certificate

This is to certify that the research work "Frequency of Comorbidities and Quality of Life in Patients with Coronary Heart Disease Visiting Tertiary Care Hospitals in Islamabad" submitted by Marvah Zubair, in partial fulfillment of the requirements for the degree of Bachelor of Science in Public Health, is an original piece of work carried out by the student.

I further declare that this research has not been submitted previously to any other university or institution for the award of any degree or diploma. All sources of information used in this research have been properly acknowledged and cited. The similar index of this research work is within the acceptable limit as per university policies

Sidra Shahid

Marvah Zubair 22nd nov thesis

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