

**St. Paul's Hospital
Millennium Medical College**
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**Health Related Quality of Life and Its Determinants in Heart
Failure with Reduced Ejection Fraction Patients after Optimal
Guideline Directed Medical Therapy at St. Paul's Hospital,
Ethiopia, 2025 G.C.**

By: Abdu Bedru (Bsc, MD, MPHE)

Advisor: Abdi Bekele (MD, Consultant Internist and Adult Cardiologist)

**A Research Thesis to be Submitted to St. Paul's Millennium Medical College in
the Partial Fulfillments of Requirements of Specialty in Internal Medicine.**

April, 2026 G.C

Addis Ababa, Ethiopia

St. Paul's Hospital Millennium Medical College School of Medicine

Department of Internal Medicine

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SAINT PAUL'S HOSPITAL MILLENNIUM MEDICAL COLLEGE

Department of Internal Medicine

Advisor's Approval Sheet.

This is to certify that the thesis entitled “**Health Related Quality of Life and Its Determinants in Heart Failure with Reduced Ejection Fraction Patients after optimal Guide line Directed Medical Therapy at St. Paul’s Hospital, Ethiopia, 2025 G.C.**” is submitted in partial fulfilment of the requirements for the specialization certificate in Internal Medicine to Saint Paul's Hospital Millennium Medical College, the department of Internal Medicine, and has been carried out by **Dr. Abdu Bedru** under our supervision. Therefore, we recommend that the student fulfil the requirements and, hence, submit the thesis to the department.

Name of Advisors

Dr. Abdi Bekele (MD, Consultant Internist and Adult Cardiologist)

Signature: _____

Date: _____

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LIST OF ACRONYMS

ACC: American College of Cardiology

ACEI/ARB: Angiotensin converting enzyme inhibitors/Angiotensin Receptor Blockers;

AF: Atrial Fibrillation

AHA: American Heart Association

AOR: Adjusted Odd Ratio ANOVA Analysis of Covariance

CI: Confidence Interval

CMP: Cardiomyopathy

COR: Crude Odd ratio

CVD: Cardiovascular Disease

CRVHD: Chronic Rheumatic Valvular heart disease

DCMP: Dilated Cardiomyopathy

DM: Diabetes Mellitus

DVHD: Degenerative Valvular Heart Disease

ESC: European Society of Cardiology

GDMT: Guideline Directed Medical Therapy

GFR: Glomerular Filtration Rate

HF: Heart Failure

Hg: Hemoglobin

HHD: Hypertensive Heart Disease

HFmEF: Heart Failure with moderately Ejection Fraction

HFpEF: Heart Failure with preserved Ejection Fraction

HFrEF: Heart Failure with reduced Ejection Fraction

HRQOL: Health Related Quality of Life

IHD: Ischemic Heart Disease

KCCQ: Kansas City Cardiomyopathy Questionnaire

LVEF: Left Ventricular Ejection Fraction

MLHFQ: Minnesota Living with Heart Failure Questionnaire

MOH: Ministry of Health

NGO: Non-Governmental Organization

QOL: Quality of Life

RCT: Randomized Clinical Trial

SCD: Sudden Cardiac Death

SGLT2i: Sodium-glucose cotransporter-2 inhibitors

SPHMMC: St. Paul's Millennium Medical College

WHO: World Health Organization

ABSTRACT

Introduction: Heart failure is a pandemic disease with an estimated 64.3 million people suffering worldwide. It is associated with frequent hospitalization and significant mortality. Living with heart failure is not only having a weak heart rather living with a life time fear of hospital admission and loosing life. Many Randomized clinical trial treat Health related quality of life as a secondary or exploratory endpoint. Real-world data on Health related quality of life outcomes in cardiac-clinic populations receiving Guideline directed medical therapy in low income countries Ethiopia in particular are scarce.

Objective: This study aims to assess health related quality of life and its determinants in HFrEF after optimal GDMT at St. Paul's Hospital, Ethiopia, 2025.GC

Methods: Institutional based cross-sectional study was conducted at St. Paul's Millennium Medical College. To detect the best determinants of health related poor quality of life, the sample size of **188** patients were selected using a random sampling technique and data was collected using structured questionnaire. The collected data was entered and analyzed using SPSS version 28. In order to determine the association between dependent variable and the independent variables, a binary logistic regression model was conducted. The significant variables from the bivariate tests will be included in multivariable logistic regression to identify the determinants of poor health related quality of life. All variables with p-value of less than 0.05 are considered to be significant.

Results: A total of 188 patients with HFrEF on optimal GDMT were included. Poor HRQoL was observed in 95 (50.5%) participants, while 38 (20.2%) had good HRQoL. In multivariable analysis, age, NYHA functional class, comorbidity, duration of GDMT, social support, and medication adherence were significantly associated with poor HRQoL. Patients in NYHA class III and IV and those with comorbidities had significantly higher odds of poor HRQoL. Poor and moderate medication adherence were also associated with increased odds, while moderate social support and shorter GDMT duration were associated with reduced odds.

Conclusion: Poor HRQoL remains highly prevalent among patients with HFrEF despite optimal GDMT. Clinical severity, comorbidity, medication adherence, and social support were key factors

Keywords: Heart failure, Health-related quality of life, Guideline-directed medical therapy

INTRODUCTION

Background

Heart failure (HF) is structural or functional impairment of ventricular filling or ejection resulting in inadequate cardiac output to meet the body's metabolic requirements. It remains a leading global cause of mortality, morbidity and poor quality of life (QoL) with high use of resources and healthcare costs. Although the incidence of HF slightly declined over time, its prevalence is increasing due to improved HF treatments and longer life expectancy. The primary driver of Heart failure in developed country is CAD while developing countries like Ethiopia are HHD and RHD. Heart failure is classified by Left Ventricular Ejection Fraction (LVEF) into four main types: HFrEF ($\leq 40\%$), HFmrEF (41-49%), HFpEF ($\geq 50\%$), and HFimpEF (previously

$\leq 40\%$, now $>40\%$ with improvement). Medical therapy has changed the prognosis of patients with HFrEF (3, 4). The four pillars for HFrEF treatment include beta-blockers, angiotensin-converting enzyme inhibitors (ACEis)/angiotensin receptor-neprilysin inhibitor (ARNI) sacubitril/valsartan or angiotensin receptor blockers (ARBs), MRAs and SGLT2 inhibitors.⁴ Early benefits of GDMT support its early initiation.^{195,196} Despite several strategies proposed to implement GDMT,^{197,198} rates of prescription and titration remain suboptimal. Despite the availability of medications proven to extend survival, prevent hospitalizations, and improve quality of life, the use of these evidence-based therapies is often significantly delayed or never started among many eligible patients resulting high risk for 30-day mortality and hospitalization (1, 6, 9, 14, 16).

World Health Organizations defines Quality of Life as an “individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns”. It is a broad ranging concept incorporating in a complex way the persons' physical health, psychological state, level of independence, social relationships, personal beliefs and their relationships to salient features of the environment (9). Health-related quality of life' (HRQoL) narrows QoL to aspects relevant to health. It is an individual's perception of their physical, social, emotional, psychological, and mental functioning (7,8). However, HRQoL is a comprehensive and complex concept for which no universally accepted definition is available (9)

Health related quality of life (HRQOL) is an important outcome indicator in chronic diseases because the conventional indicators (such as physical, physiological, and biochemical indicators) cannot comprehensively assess the effect of disease or treatment on patients. Health-related quality of life in patients with HF is an important patient-reported health status measure that evaluates the impact of HF and its medical interventions on various domains of life. It is an outcome measurement tool that has recently received attention for assessing the impact of Heart failure with reduced heart failure (HFrEF) and its treatment and is one of the primary goals of HFrEF treatment guidelines. The assessment of symptoms and functional status, using the New York Heart Association Classification is a standard practice in the care of heart failure patients. It is recommended in guidelines as a measure of heart failure severity and is integrated into treatment decision algorithms, despite its shortcomings in reproducibility. The use of validated instruments to assess HRQoL, however, remains largely limited to clinical trials, with minimal guidance on the practical assessment of HRQoL. The Minnesota Living with Heart Failure Questionnaire (MLQHFQ) is used historically and in many clinical settings to assess HRQoL. The Kansas City Cardiomyopathy Questionnaire is very sensitive to clinical changes after medication, devices and interventions. It is used widely in contemporary clinical trials and prognostic research. (9, 13.15.22.13).

Statement of the Problem

Heart failure is a pandemic disease with an estimated 64.3 million people suffering worldwide. It is associated with frequent hospitalization and significant mortality. Living with heart failure is not only having a weak heart rather living with a life time fear of hospital admission and loosing life. For many adults, these conditions reshape daily life, limit functional status and impair emotional fitness. Living with Heart failure is challenging as it results in multiple adverse outcomes. Patients often face functional impairment, frequent hospitalization visit, emotional struggles such as anxiety and depression, alongside costing life (13. 14.15, 22).

Guide line directed medical therapy has transformed the treatment of HFrEF by helping patients live longer and reducing hospitalization rate. The absence of GDMT increased the risk of mortality by 29%. Although GDMT can result in improvement in symptoms, functional capacity, LVEF, and reverse remodeling in patients with HFrEF, in most patients, LV function and structural

abnormalities do not fully normalize (1, 2, 9).

Health-related quality of life is an assessment of how an individual's well-being may be affected over time by a disease, disability, or disorder. Various studies have shown that QoL is generally poor in patients with HF and particularly in HFrEF patients. Despite limited and conflicting data comparing HRQoL among HF patients across the left ventricle ejection fraction (LVEF) spectrum, most evidence supports that HFrEF patients have a significantly affected QoL compared to other subgroups of heart failure patients. Different studies have identified determinant factors of HRQoL among patients with HF, most of which differ across the LVEF spectra. Being a younger woman, having low income, longer disease duration and higher NYHA functional class are associated with poor HRQoL in HF patients in general. Being an older woman, higher NYHA functional class, recent hospitalizations, having lower LVEF, lower systolic blood pressure and comorbidities are associated with poor HRQoL in HFrEF in particular (6, 9, 11, 20, 21).

While randomized controlled trials establish efficacy, they often involve selected populations and controlled environments. Observational studies in routine clinical practice provide insight into the association between GDMT use and patient-perceived QoL, helping to identify disparities and implementation barriers (23). Hence it is crucial to assess determinants of HRQoL among adults with HFrEF after optimal GDMT uptake in order to provide holistic care and ameliorate the challenges heart failure patients shoulder.

Significance of the Study

It remains a key challenge in the long-term controlling of heart failure. This study will reveal determinants of poor quality of life among adult patient with HFrEF after optimal GDMT uptake. It will evaluate a patient's physical, psychological, and social well-being beyond the traditional hospitalization rate. It will shed a light on future research, policy adoption and clinical practice development to improve the outcome of patient with heart failure. Although current studies have begun to illuminate our understanding of some of the determinants of poor quality care, we currently lack an in-depth understanding of level and associated factors of quality of care among heart failure patient with reduced ejection fraction. There are limited research findings especially in sub Saharan Africa Ethiopia in particular. Despite the clinical importance of evaluating quality

of life in heart failure patients, little is known about its determinants. It will assist health care professionals to understand factors related to poor quality of life and optimize the care they are giving. It also will help policy makers, program planning bodies and service providers to evaluate quality of existing policies, treatment strategies, programs and treatment guidelines and to improve or change them to attain optimum level of functioning. It will provide information for other researcher who wants to conduct further study on this area.

LITRATURE REVIEW

Global, Regional and Local Burden of Heart Failure

Heart failure (HF) is a global public health problem with an estimated 64.3 million people suffering worldwide and approximately 50% of cases are Heart Failure with reduced Ejection Fraction (HFrEF). Heart failure with reduced ejection fraction remains a major global health problem. (1, 2). In European countries, the median incidence of HF was 3.20 cases per 1000 person-years, and the median HF prevalence was 17.20 cases per 1000 people.

Impacts of Heart Failure

Heart Failure is the leading cause of hospitalization, disability, and mortality. Its impact extends beyond physical symptoms, affecting psychological well-being, social functioning, and overall quality of life. Consequently, improvement of health-related quality of life has become a core treatment objective alongside survival and reduction of hospitalizations. The 2022 American Heart Association (AHA), American College of Cardiology (ACC) and Heart Failure Society of America (HFSA) guideline emphasizes that patient-centered outcomes, including QoL, are crucial when evaluating the success of heart failure therapies (1). According to the data analysis of 40 studies, the total QOL score in American individuals was notably higher at 48.0 compared to Europe at 45.5 and Asia at 35.1. Moreover, the HealthRelated Quality of Life (HRQOL) in Asian patients with heart failure appeared to be superior to that of American patients, suggesting a lesser impact of the disease on Asian individuals (16). In a nationwide cohort study of Chinese, Malay and Indian ethnicities. The Chinese participants exhibited a notably lower aggregate score & better HRQOL (29.1 ± 21.6) in contrast to their Malay (38.5 ± 23.9) and Indian (41.7 ± 24.5) counterparts. Additionally, Chinese individuals demonstrated lower levels of both physical and emotional well-being when compared to Malay and Indian patients (17). In Ethiopia, 54% of individuals with heart failure had poor HRQoL with a mean total score of 48.03 ± 19.73 (6,9).

Treatment of Heart failure

Over the past two decades, guideline-directed medical therapy for HFrEF has evolved dramatically. The current “four-pillar” approach includes an angiotensin receptor–neprilysin inhibitor (ARNI) or ACE inhibitor/ARB, a beta-blocker, a mineralocorticoid receptor antagonist (MRA), and a sodium-glucose cotransporter-2 inhibitor (SGLT2i) These agents target multiple

neuro-hormonal pathways, collectively improving survival, reducing hospitalization rates, and enhancing symptom control (2).

The PARADIGM-HF trial demonstrated that sacubitril/valsartan significantly reduced mortality and heart failure hospitalization compared with enalapril, and participants also reported greater improvements in HRQoL measures (3). Subsequent studies confirmed consistent improvements in physical and emotional well-being as measured by validated tools such as the Kansas City Cardiomyopathy Questionnaire (KCCQ) and the Minnesota Living with Heart Failure Questionnaire (MLHFQ) (4, 5).

Recent landmark trials such as DAPA-HF and EMPEROR-Reduced demonstrated that SGLT2 inhibitors not only improved survival but also significantly enhanced patient-reported outcomes. Improvements were observed in symptom burden and daily functioning irrespective of diabetic status, suggesting a class effect on QoL((7,8).

Earlier pivotal trials for beta-blockers and MRAs, including the MERIT-HF and RALES studies, showed substantial survival benefits and symptomatic improvement in patients with HFrEF. Although QoL data were limited, subsequent observational studies found improved exercise tolerance and emotional stability among patients optimally treated with these drugs((10,11).

Factors affecting Health related quality in patient with Heart failure

Despite strong evidence and clear guidelines, uptake of GDMT in real-world settings remains suboptimal. Barriers include drug cost, hypotension, renal dysfunction, and clinician inertia. Studies show that comprehensive use of GDMT is associated with markedly improved QoL, yet many patients receive only partial therapy. Real-world data are essential to understand how the completeness of GDMT correlates with HRQoL in routine practice ((20, 21, 22).

Most evidence supports that HFrEF patients have a significantly affected QoL compared to other subgroups of heart failure patients. Poor HRQoL correlates with increased hospitalization and mortality rates, as well as higher costs imposed on health systems, families, and patients. Different studies have identified determinant factors of HRQoL among patients with HF, most of which differ across the LVEF spectra. Being a younger woman, having low income, longer disease duration and higher NYHA functional class are associated with poor HRQoL in HF patients in general((6,9,11, 20,). Being an older woman, higher NYHA functional class, recent

hospitalizations, having lower LVEF, lower systolic blood pressure and comorbidities are associated with poor HRQoL in HFrEF in particular (13, 14, 16).

Factors such as age, gender, New York Heart Association functional class, depressive symptoms, symptom status, residence, marital status, monthly income, number of hospitalizations, LVEF, disease duration, social support, family size, occupation, recent admission within the past six months, department of treatment, salt intake, and health perception have been identified as important influences on Health-Related Quality of Life (HRQOL) (19–21). Among the recommended approaches, the use of implantable devices and behavioral interventions enhanced QoL. Additionally, exercise training and participation in cardiac rehabilitation programs have proven to be beneficial in enhancing HF self-care and ultimately improving QoL (14).

Age , Sex and Employment Status

Sex Based on Wolaita's zone findings, in the context of a gender-based comparison, women exhibited worst quality of life & an increase in total Health-Related Quality of Life (HRQoL) score of 4.3 (95% CI = 0.96, 7.7) when compared to men. For every year of age rise, the physical component of HRQoL increased by 0.04 scores (95% CI = 0.01, 0.08) and the overall HRQoL score increased by 0.1 (95% CI = 0.01, 0.14) which shows low quality of life. Those without employment had an average MLHFQ score that was 2.73 points higher than that of employed individuals ($\beta = 2.73$, CI (0.22, 5.24) & it is negatively associated with HRQoL (14).

Marital status, Income and Family size

Marital Status According to a study published by the Kingdom of Bahrain, all divorced and widowed patients having a significantly poor quality of life ($p < 0.001$). There is also a positive relationship was found between the monthly income and the quality of life; patients at higher income had better quality of life in all dimensions ($p < 0.001$). There was a negative correlation between the number of children and quality of life among heart failure patients (24). In a similar vein, a Wollita study reports that for every additional family member, the overall HRQoL score fell by 0.7 (95% CI = -1.21, -0.19) (14).

Residency

According to a study reported in Gondar, Ethiopia poor HRQOL was independently predicted by place of residence. Rural HF patients' quality of life was 2.4 times lower than that of urban HF

patients (OR = 2.41, 95% CI, 1.23–4.71) (6,9).

Lifestyle/Behavioral Characteristics (Cigarette Smoking, Salt Intake, Alcohol)

Based on a study in Sub Saharan Africa, Cameroon, the risk factors of poor life quality was exposure to tobacco ($p = 0.005$). A study as indicated by Wollita zone, Participants who used food containing salt had increased total HRQoL scores; which is poor HRQoL by 4.5 (95% CI=1.5, 7.4). A recent study conducted in Korea revealed, those who exceeded moderate drinking levels exhibited a 4.90 times greater likelihood of possessing a superior QOL compared to those who adhered strictly to moderate alcohol consumption guidelines (OR $\frac{1}{4}$ 4.90, 95% CI: 1.77-13.57, $P \frac{1}{4}$.002) & concluded that the role of alcohol consumption in QOL among HF patients in Korea needs further exploration(14, 24, 25, 26)

Clinical characteristics (drugs, Medication Adherence)

According to Jordan's study, not using loop diuretics was found to be significantly associated with an improved health-Related Quality of Life (HRQOL) ($P < 0.05$). A study done in Ethiopia states that people with diabetes had poor quality of life & scored an average 4.47-point higher MLHFQ score than those without diabetes ($\beta = 4.47$, CI (1.41, 7.54), $p = 0.004$). In a study conducted in Thailand, it was revealed that patients exhibiting poor medication adherence displayed a lesser quality of life in comparison to individuals with moderate or high adherence levels. Notably, medication adherence emerged as the most influential factor in relation to quality of life when compared to other variables examined in the study (27, 28, 31).

Social support

A study conducted in Ethiopia has revealed a significant association between social support scores and the overall Health-Related Quality of Life (HRQoL) of individuals with heart failure at a significance level of $p \leq 0.05$. The findings indicate that for every 1-unit increase in Oslo social support score, there is a corresponding 1.48-unit decrease in the Minnesota Living with Heart Failure Questionnaire (MLHFQ) score ($\beta = -1.48$, CI = (-1.93, -1.03), $p = 0.001$). This suggests that a strong social support system is positively linked with a higher HRQoL in individuals dealing with heart failure (18). The findings of a study conducted in the Tigray region reveal critical insights into the impact of social support on individuals' well-being. Health- Related Quality of Life (HRQoL) bore a marked correlation with the absence of social support.

Impressively, those lacking social backing were 2.52 times more likely to exhibit a diminished HRQoL, compared to their counterparts who received support from their social circles (Adjusted Odds Ratio; 2.52, 95% Confidence Interval; 1.33-4.79, P-value; 0.005)(14, 30)

Health perception

Health Perception The findings from a study conducted in Wollita indicate that individuals who rated their health as poor or fair showed poor quality of life & higher total Health-Related Quality of Life (HRQoL) scores by 5.2 (95% CI=1.22, 9.1) and 10.71 (95% CI=1.05, 20.38) points, respectively, compared to those who rated their health as excellent (14).

The influence of critical factors such as medication taking adherence and heart failure (HF) knowledge on the health-related quality of life among heart failure patients has not been thoroughly studied in previous research conducted in Ethiopia. Studies done previously did not specifically address the impact of these factors on the overall well-being of heart failure patients. This gap in the literature highlights the need for further investigation into the relationship between medication taking adherence, HF knowledge, and health-related quality of life in this population

Validation of the Minnesota Living with Heart Failure Questionnaire

The MLHFQ is a globally recognized, 21-item disease-specific measure, translated into many languages, known for good psychometric properties. The MLHFQ is one of the most widely used tools to assess HRQoL in patients with heart failure. It consists of 21 items covering physical, emotional, and social dimensions of the disease. The total score ranges from 0 (best) to 105 (worst), and a change of approximately 5 points is generally considered clinically significant (15–17). The instrument has been validated across diverse populations, demonstrating high internal consistency and sensitivity to clinical change (18, 19).

Researchers in Ethiopia use the standard English version or translated versions, finding it valid for understanding local HF impact, with studies conducted in places like Wolaita , Gondarand Nekemte(6,9,14).

Conceptual Framework

Conceptual framework for this study is established after reviewing and adapted from different literatures (6,9,13, 14)

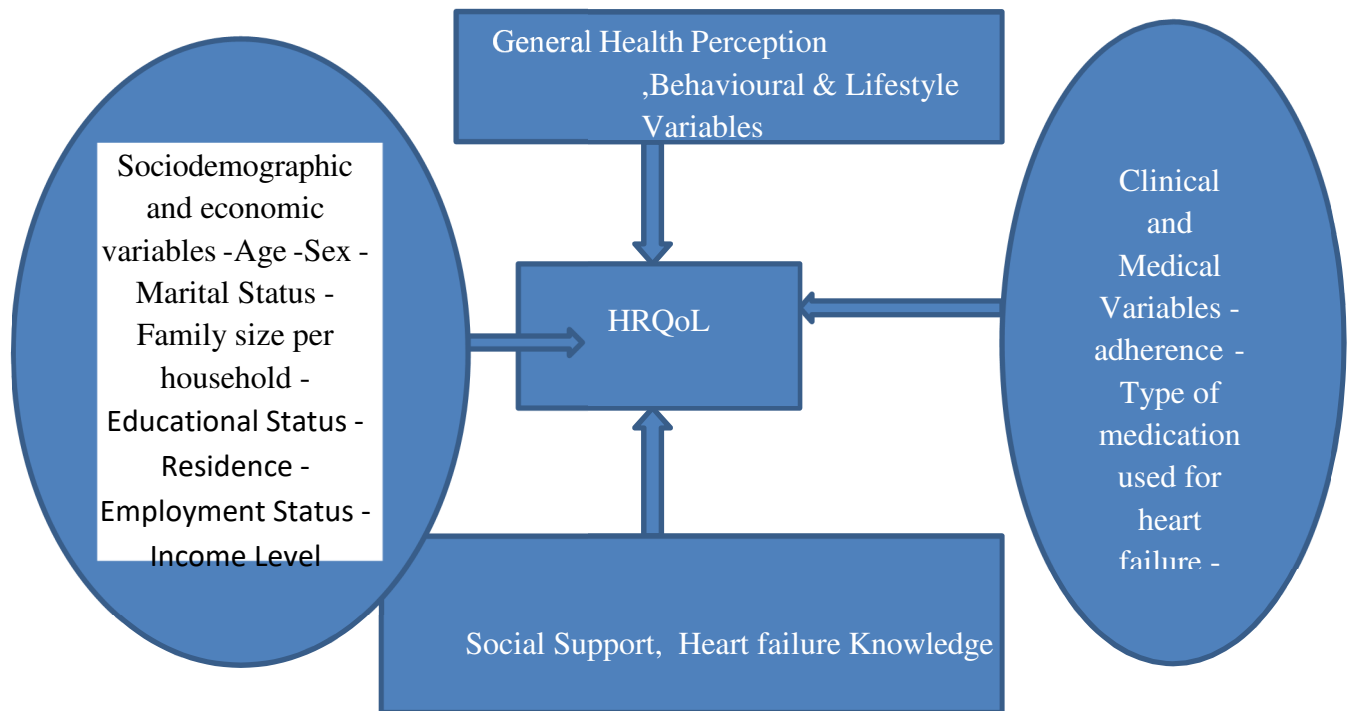


Figure 1. Conceptual Framework of determinants of health-related quality of adult heart failure patient with reduced ejection fraction after optimal GDMT uptake.

OBJECTIVES

General objective

Health related quality of life and its determinants among adult heart failure patients with reduced ejection fraction after optimal GDMT uptake at St. Paul's Hospital, Ethiopia, 2025.GC, Phase 1 study.

Specific objective

- To describe the socio-demographic characteristics of Adults with HFrEF
- To assess the clinic characteristics of Adults with HFrEF
- To determine the level of health-related quality of life HRQoL after optimal GDMT uptake among adults with HFrEF
- To identify determinants of poor HRQoL after optimal GDMT uptake among adults with HFrEF

METHODS AND MATERIALS

Study area and period

St. Paul's Hospital Millennium Medical College is one of the biggest referral hospitals in Ethiopia; located in Gullele, Addis Ababa. St. Paul's Hospital Millennium Medical College as it is established through a decree of the council of MOH in 2010, although the medical school opened in 2007 and the hospital was established in 1947 by the late Emperor Haile Selassie. It is governed under a board federal minister of health. The college-initiated Ethiopia's first integrated modular and hybrid problem-based curriculum for its undergraduate medical education, and is currently expanding to postgraduate programs and diversifying its undergraduate program offerings. The college has more than 4000 permanent clinical, academic and administrative and support staffs that provide medical specialty services to patients who are referred from all over the country, teaching medicine and nursing students and doing basic and applied researches. The college has more than 750 beds and an average of 30,000 patients visit the emergency annually. It has a catchment population of more than 5 million. The study was conducted at adult cardiac OPD of St. Paul's millennium medical college hospital. The study period was from December 30, 2025 to February, 30, 2026.

Study Design

Institutional based cross sectional study design

Source and study Population

All Heart failure patients with reduced heart failure on cardiac OPD follow up was the source population and the sample population was those visiting the cardiac OPD during the study period.

Inclusion and Exclusion criteria

Inclusion Criteria

- Adults aged over 18 years of age, diagnosed with heart failure with reduced ejection fraction diagnosed clinically and Echocardiography, and receiving GDMT and follow-up care at the outpatient cardiac clinic for at least three months.

Exclusion Criteria

- Patients who are lost to follow up, drop out, transfer out or with incomplete such as LVEF or key GDMT components were excluded.
- Patients who were not willing to participate were excluded.
- Patients with cognitive impairment, such as dementia or psychosis, concomitant acute illnesses, such as Acute HF exacerbation, severe chest infections, or other infections that could acutely influence their QoL, and coexisting diagnosis of other chronic illnesses (end-stage renal disease, decompensated chronic liver disease, chronic obstructive pulmonary disease, cerebrovascular accident, and diabetes mellitus) were excluded from the study.

Sample Size Determination and Sampling Technique

Sample Size Determination

Sample size was calculated using a formula used for estimating the population proportion. The mean was from previous research conducted in Gondor Ethiopia (6). Epi-Info version 7.2 for windows was used. Calculation is based on the assumption of a 95% confidence interval, marginal error (d) of 5 % and the mean estimate of 46.12 ± 26.06

$$n = \left(\frac{(Z_{\alpha/2})(\sigma)}{E} \right)^2$$

- n=initial sample size
- Z=Z score for the desired 95% confidence level
- (σ) is the population standard deviation

- $N = (1.96)^2(20.06)(20.06)/(3)^2 = 171.169$
- Adding 10% non-response rate = $171.169 + 17.1169 = \underline{\underline{188.338}}$

Sampling Technique

Patient's records were reviewed consecutively. Different documents for the same patients were triangulated in case of odd values, non-logical data or missed data. First the clinical profiles of all patients were evaluated. Loss to follow up, drop out, and transfer out or patients started cardiac follow with in 3months or with incomplete data were excluded. Finally, samples were selected

consecutively based on the Hospital unique identification numbers. If the selected sample was excluded, the next consecutive number was included. Patient selected by the Hospital unique identification numbers was interviewed to collect the health-related quality of life data.

Study Variables

Independents variables

- Socio-demographic characteristics as age, residency, sex, educational level, ethnicity, marital status, dependent children at home, occupation, monthly income, health insurance, family hx of HF, family history of sudden cardiac arrest,
- General health perception,
- Behavioral and life style factors (smoking, salt intake, Alcohol use),
- Clinical characteristics as Heart rate, BP, duration of Heart failure, NYHA functional class, etiology of heart failure, hospitalization within 6 months, Co-morbidities (atrial fibrillation, hypertension, anemia, obesity, dyslipidemia, others), HF related medications (Diuretics, B-blockers, ACEI/ ARBs, Spironolactone, Digoxin, Antiplatelet, Anticoagulants, Statin, others).
- Biochemical: Hemoglobin, Serum creatinine, Glomerular filtration rate, Serum sodium (mean of results obtained within the past 3 months).
- Echocardiographic: Etiology of HF, LVEF, and severity of pulmonary hypertension on baseline echocardiography (echo)
- ECOG Performed at the time of HFrEF diagnosis.
- Social support,
- Heart failure knowledge Dependent variable
- Health related Quality of life is scored using Minnesota Living with Heart Failure scoring

Operational definition

- **Cardiac disease:** includes VHD, cardiomyopathies, ischemic heart disease, hypertensive

heart disease, adult congenital heart disease, cardiac arrhythmias, pulmonary hypertension, pericardial disease (6).

- **Heart failure with reduced ejection fraction:** patients Heart failure patients who have echocardiographic measurement of left ventricular ejection fraction $\leq 40\%$ labeled as HFrEF patients.
- **Optimal GDMT:** uptake:4 of the following fulfilled 1) quadruple therapy 2) maximum tolerable dose ($>50\%$ of the maximum target) 3) for at least 3month 4) good adherence (lost pill count $<20\%$)
- **Health-Related Quality of Life:** serves as an outcome variable assessed through the MLHFQ instrument. This tool comprises 21 items specifically designed to evaluate HRQoL in relation to a particular disease, prompting participants to reflect on the impact of their condition over the past month. Each item is rated on a six-point Likert scale, ranging from 0 (indicating no effect) to 5 (indicating a significant effect). The individual responses are aggregated to form a composite score that reflects the overall HRQoL of the participants. Scores can vary from 0 to 105, with higher scores indicating a lower quality of life. Those scoring below 24 classified as having “Good” HRQoL, scores between 24 and 45 as “Moderate,” and scores exceeding 45 as “Poor” HRQoL
- **Social support:** The numerical outcome derived from the assessment of the Oslo Social Support Scale (OSSS-3) signifies the extent of social support received. This scale yields scores between 3 and 14, wherein higher scores indicate robust levels of social support, while lower scores denote comparatively weaker levels of social support (32).

Questionnaire, Data Collection and Quality control

Data was collected using structural interview-based questionnaire and clinical data was gathered from patients’ medical record. The questionnaire for the HRQoL was adopted from Minnesota Living with Heart Failure questionnaire. It comprised 21 questions encompassing three dimensions: socioeconomic, physical, and emotional. Responses were recorded on a six-point Likert scale (ranging from 0 to 5), with total scores varying from 0 to 105. The level of social support was assessed utilizing the Oslo Social Support Scale (OSSS-3). The OSSS-3 scale comprises three items that assess the level of social support based on the number of close

confidants, perception of concern from others, and relationships with neighbors, particularly focusing on the availability of practical help. Heart failure knowledge was measured using the Japanese Heart Failure Knowledge Scale 15 items. Medication adherence was evaluated through the Morisky Medication-Taking Adherence Scale 8 items, MMAS (8-item). Moving on to the MMAS-8, it is a structured self-report measure designed to assess medication-taking behavior. This scale consists of eight questions, with the first seven items requiring a dichotomous answer (yes/no) to indicate adherence or non-adherence. The eighth item allows patients to choose from a 5-point Likert scale to express how frequently they miss taking their medications. the JHFKS comprises 15 items was used to evaluate patients' knowledge of HF symptoms, HF-related treatments, and self-care practices

Pre-testing was under taken at St peter hospital (located in Addis Ababa which is also giving advanced cardiac service) before the actual data collection took place and some miner modification was done accordingly. The data then was collected by reviewing EMR at cardiac OPD and direct patient interview.

Data quality was assured using a validated and pretested questionnaire, training and supervising data collectors, manual and computer-based data cleaning and matching

The most recent laboratory results before starting GDMT was used as a base line values. If there was no pre-treatment laboratory test, however, results obtained within one month of GDMT initiation was used. If two results were obtained within a month, the mean was used. Three General practitioner and 3 Nurses collected the clinical data and administer patient interview. Two senior's physicians supervised the data collectors. A total of two-day intensive training was given for all supervisors and data collectors. The overall activity was controlled by the principal investigator of the study. Data quality was controlled by designing the proper data collection materials and pre testing, continues supervision. All completed data collection form was examined for completeness and consistency during data management, storage, cleaning and analysis. The data was entered and cleaned by trained data clerk and principal investigator respectively before analysis.

Data consideration, Processing and Analysis Plan

EpiData version 7.2 for windows and SPSS version 28 for windows was used for analysis. A

reliability test (Cronbach's alpha) was conducted to assess the reliability of the items in the MLHFQ tool. Data was cleaned and edited before analysis. Data exploration was undertaken to see if there are odd codes or items that are not logical and then subsequent editing was made. The findings of the patient cohort characteristics in terms of mean/median value for continuous data and percentage for categorical data. Bivariate analysis for categorical variables will be performed using binary logistic regression model examine associations of independent variables to that of the patient category based on the MLHFQ score..

Multiple linear regression analysis was used to measure the degree of association between independent variables and health related quality of life. P-value less than or equal to 5% was considered as significant. Multicollinearity was checked before the final model assumption

Ethical Consideration

Permission to undertake the study was obtained from the Office of Institutional Review Board Committee of St. Paul's Millennium Medical College. An official letter of cooperation from the Institutional Ethical Review Committee was given to Internal medicine department and Adult cardiology unit in particular. The objective of the study was explained to study participants. Informed consent was obtained from each participant before interview started and participant's anonymity and confidentiality was ascertained.

Dissemination plan

The result of the study will be presented to SPMMC and will be disseminated to other concerned governmental and non-governmental organizations including MOH as well as well as the Cardiac OPD and Internal Medicine Department. It will be presented in different professional association and will be submitted to reputable scientific journal for possible and publication

Results

SOCIO-DEMOGRAPHIC CHARACTERISTICS

This study included a total of 188 participants with a mean age of 53.99 ± 15.00 years. The sample population was predominantly middle-aged, with nearly half of participants 92 (48.9%) in the 40-60 years age group, and a substantial proportion 61 (32.4%) aged above 60 years. Males and females were equally represented, each accounting for 94 (50.0%). Most participants were urban residents 122 (64.9%) and married 165 (87.8%). Educational status was generally moderate, with the majority having elementary 57 (30.3%) or secondary education 59 (31.4%), while only 19 (10.1%) had diploma or higher education level.

Economically, a large proportion 116 (61.7%) had a monthly income below 5000, and occupationally, housewives constituted the largest group 78 (41.5%). Health insurance coverage was relatively low, with only 98 (52.1%) having health insurance. Behavioral risk factors were relatively uncommon, with most participants reporting no alcohol use 167 (88.8%) and no smoking 177 (94.1%), and nearly one-third 58 (30.9%) reported salt intake. Most participants (60.6%) had four or more children.

Table 1: Socio-demographic characteristics of HFrEF patients on optimal GDMT (N=188)

Variable	Category	Frequency (N)	Percent (%)
Age	<40	35	18.6
	40–60	92	48.9
	>60	61	32.4
Sex	male	94	50.0
	female	94	50.0
Residence	urban	122	64.9
	rural	66	35.1
Marital status	Married	165	87.8
	Divorced	4	2.1
	Widowed	7	3.7
	Single	12	6.4
Educational status	Unable to read and write	17	9.0
	Able to read and write	36	19.1
	Elementary (grade1-8)	57	30.3
	Secondary (grade9-12)	59	31.4
	Diploma and above	19	10.1
Employment Status	Employee	25	13.3
	Merchant	11	5.9

	Farmer	23	12.2
	Jobless	41	21.8
	Housewife	78	41.5
	Student	1	0.5
	Other	9	4.8
Monthly income	< 5000	116	61.7
	5000-10000	54	28.7
	>10000	18	9.6
Health insurance	No	90	47.9
	Yes	98	52.1
Family history of HF	No	182	96.8
	Yes	6	3.2
Family history of sudden cardiac death	No	180	95.7
	Yes	8	4.3
Do you take Salt?	No	130	69.1
	Yes	58	30.9
Do you take Alcohol?	No	167	88.8
	Yes	21	11.2
Do you Smoke Cigarette?	No	177	94.1
	Yes	11	5.9
Number of children	None	17	9.0
	1–3	57	30.3
	≥4	114	60.6

Clinical characteristics

Dilated cardiomyopathy was the most common etiology and identified in 136 (72.3%) patients, followed by ischemic heart disease in 49 (26.1%). Most participants, 153 (81.4%), had a duration of heart failure between 3 to 5 years. Regarding functional status, 74 (39.4%) were in NYHA class II, 64 (34.0%) in class III, and 33 (17.6%) in class IV. Most patients (87.8%) had no history of hospitalization due to heart failure within the past 3 months. Comorbidity was present in 123 (65.4%) participants, with hypertension being the most common reported in 89 (47.3%) patients. All participants, 188 (100%), are on GDMT. Regarding duration of GDMT, 99 (52.7%) had been on therapy for 7–24 months, 66 (35.1%) for ≥24 months. Additional medications were used by 168 (89.4%), with diuretics used in 109 (58.0%) and statins in 100 (53.2%).

Baseline ejection fraction was between 30–40% in 98 (52.1%) of patients and 20–30% in 76 (40.4%). 74 (39.4%) patients had a reported moderate pulmonary hypertension and 36 (19.1%) had a reported severe pulmonary hypertension. Baseline laboratory findings showed that 28

(14.9%) patients were anemic, 24 (12.8%) had elevated creatinine, and 27 (14.4%) had hyponatremia.

Table 2: Clinical and treatment-related characteristics of HFrEF patients (n=188)

Variable	Category	Frequency (N)	Percent (%)
Etiology of HFrEF *	DCMP	136	72.3
	IHD	49	26.1
	RVHD	4	2.1
	HHD	4	2.1
Duration of HF rEF	< 12 months	28	14.9
	12–60 months	153	81.4
	> 60 months	7	3.7
Current NYHA class	I	17	9.0
	II	74	39.4
	III	64	34.0
	IV	33	17.6
Hospitalization due to HF with in 3months	No	165	87.8
	Yes	23	12.2
Comorbidity	Yes	123	65.4
	No	65	34.6
Comorbidities *	HTN	89	47.3
	DM	25	13.3
	Stroke	6	3.2
	Arrhythmia	6	3.2
	Asthma/COPD	7	3.7
	Anemia	3	1.6
	CKD	14	7.4
	Cancer	7	3.7
	HIV	13	6.9
	Other	33	17.6
Was the patient on GDMT medications?	No	0	0
	Yes	188	100.0
GDMT medications	ACEI/ARB	188	100.0
	Metoprolol/Bisoprolol	188	100.0
	Spironolactone/Eplerenone	188	100.0
	Dapagliflozin	188	100.0
Duration of GDMT	≤ 6 months	23	12.2
	7 - 24 months	99	52.7
	≥ 24 months	66	35.1
Was the patient taking any other medications other	No	20	10.6
	Yes	168	89.4

that GDMT medications?			
Other medications *	Lasix	109	58.0
	Digoxin	12	6.4
	Amiodarone	2	1.1
	Statin	100	53.2
	Antiplatelet	45	23.9
	CCB(Amlodipine/Nifedipine)	56	29.8
	Anticoagulants	35	18.6
	Hypoglycemic agent	18	9.6
	Other	31	16.5
Baseline Ejection fraction in %	< 20	14	7.4
	20 – 30	76	40.4
	30-40	98	52.1
Baseline Pulmonary HTN (N=125)	Mild	15	8.0
	Moderate	74	39.4
	Severe	36	19.1
Baseline Hemoglobin (g/dl)	Normal	160	85.1
	Anemic	28	14.9
Baseline Creatinine (mg/dl)	Normal	164	87.2
	Elevated	24	12.8
Baseline Sodium (mEq/L)	normal	161	85.6
	hyponatremia	27	14.4

*N.B; * questions with choices set as select multiple answer if it applies*

Health perception and social support

Regarding perceived health status, 47 (25.0%) rated their health as excellent, 42 (22.3%) as fair, and 39 (20.7%) as very bad.

Table 3: Health perception among HFrEF patients (n=188)

Variable	Category	Frequency (N)	Percent (%)
What do you perceive about your overall health?	very bad	39	20.7
	bad	37	19.7
	fair	42	22.3
	good	23	12.2
	excellent	47	25.0

In terms of social support, 103 (54.8%) reported having 1 to 2 close individuals they could rely on, while 58 (30.9%) reported 3 to 5 individuals, 15 (8.0%) reported more than 5, while 12 patients

(6.4%) reported none. Regarding concern from others, 52 (27.7%) reported receiving some concern, 51 (27.1%) were uncertain, 49 (26.1%) reported little concern, 26 (13.8%) reported a lot of concern, but 10 (5.3%) reported none. For access to practical help from neighbors, 42.6% reported it was possible, 32.4% reported it was difficult, 12.2% reported very difficult, while smaller proportions reported it was easy or very easy. The cumulative social support score indicated that 110 (58.5%) had poor social support, 61 (32.4%) had moderate support, and 17 (9.0%) had strong support.

Table 4: social support among HFrEF patients (n=188)

Variable	Category	Frequency (N)	Percent (%)
How many people are so close to you that you can count on them if you have great personal problems?	None	12	6.4
	1-2	103	54.8
	3-5	58	30.9
	Above 5	15	8.0
How much interest and concern do people show in what you do?	None	10	5.3
	Little	49	26.1
	Uncertain	51	27.1
	Some	52	27.7
	A lot	26	13.8
How easy is it to get practical help from neighbors if you should need it?	Very difficult	23	12.2
	Difficult	61	32.4
	Possible	80	42.6
	Easy	14	7.4
	Very Easy	10	5.3
Cumulative social support score (OSSS-3)	poor	110	58.5
	moderate	61	32.4
	strong	17	9.0

Medication Adherence (MMAS-8)

Regarding medication-taking behavior, 48 (25.5%) of participants reported sometimes forgetting to take their medications, and 26 (13.8%) reported missing medications in the past two weeks for reasons other than forgetting. A total of 10.6% reported stopping or reducing medication without consulting a physician, and 60 (31.9%) reported forgetting to bring medications when traveling. Most participants 171 (91%) reported taking all medications on the previous day before the data collection interview. However, 123 (65.4%) reported feeling hassled about adhering to their treatment plan. In terms of difficulty remembering medications, 38.3% reported never or rarely

having difficulty, 24.5% reported occasional difficulty, and 36.7% reported sometimes having difficulty. Based on the cumulative MMAS-8 scores, 46.3% had poor adherence, 39.9% had moderate adherence, and 13.8% had high adherence.

Table 5: Medication adherence among HFrEF patients using MMAS-8 (n=188)

Variable	Category	Frequency (N)	Percent (%)
Do you sometimes forget to take your heart failure medication?	No	140	74.5
	Yes	48	25.5
People sometimes miss taking their medications for reasons other than forgetting. Over the past 2 weeks, were there any days when you did not take your heart failure medication?	No	162	86.2
	Yes	26	13.8
Have you ever cut back or stopped taking your heart failure medication without telling your doctor because you felt worse when you took it?	No	168	89.4
	Yes	20	10.6
When you travel or leave home, do you sometimes forget to bring your heart failure medication?	No	128	68.1
	Yes	60	31.9
Did you take all your heart failure medication yesterday?	Yes	171	91.0
	No	17	9.0
When you feel like your symptoms are under control, do you sometimes stop taking your medication?	No	177	94.1
	Yes	11	5.9
Taking medication every day is a real in convenience for some people. Do you ever feel hassled about sticking to your heart failure treatment plan?	No	65	34.6
	Yes	123	65.4
How often do you have difficulty remembering to take all your heart failure medication?	Never/Rarely	72	38.3
	Once in a while	46	24.5
	Sometimes	69	36.7
	Usually	1	.5
MMAS-8 score	High adherence (0 score)	26	13.8
	Moderate adherence (1-2 score)	75	39.9
	Poor adherence (≥ 3)	87	46.3

Heart Failure Knowledge

At the cumulative knowledge level, 80.9% of participants were categorized as having good knowledge, while 19.1% had poor knowledge.

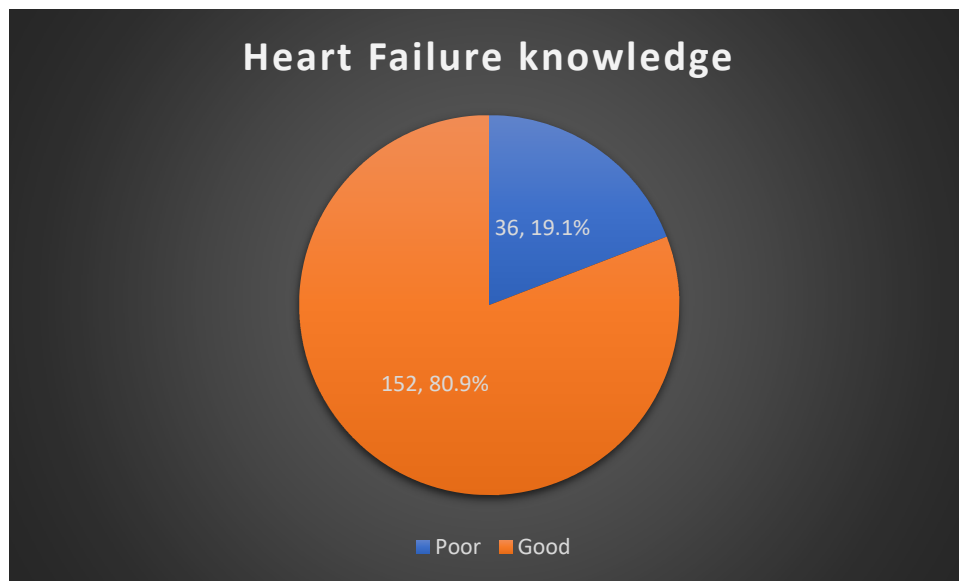


Figure 2: Heart failure knowledge among HFrEF patients (n=188)

The majority of participants correctly identified key aspects of heart failure. All participants (100%) correctly recognized shortness of breath as a symptom of heart failure. Additionally, 154 (81.9%) correctly identified heart failure as a condition in which the heart is unable to pump sufficient blood. A total of 139 (73.9%) correctly identified shortness of breath as a symptom of pulmonary congestion, and 169 (89.9%) correctly identified orthopnea as a feature of severe heart failure. Regarding disease management, 147 (78.2%) correctly identified short-term weight gain as a sign of worsening heart failure, and 176 (93.6%) recognized that overwork and stress could worsen the condition.

Knowledge regarding sodium intake was lower, with 88 (46.8%) correctly identifying its role in water retention. Similarly, 132 (70.2%) correctly identified the function of diuretics. 60 (31.9%) correctly identified that heart failure medications should not necessarily be taken without food, while 103 (54.8%) correctly responded to fluid intake-related questions. A large majority correctly identified that high salt intake is not recommended 181 (96.3%) and that smoking is harmful 184 (97.9%). For activity and lifestyle-related knowledge, 124 (66.0%) correctly identified that patients should not avoid exercise entirely.

Table 6: Heart failure knowledge among HFrEF patients (n=188)

Variable	Category			
	Yes	No	I don't know	Correct answer
Exchange of oxygen and carbon dioxide occurs in heart	64 (34.0%)	74 (39.4%)	50 (26.6%)	74 (39.4%)
HF is a condition in which the heart is not able to pump blood through the body in sufficient amounts	154 (81.9 %)	6 (3.2%)	28 (14.9%)	154 (81.9 %)
Difficulty in breathing and shortness of breath are symptoms of HF	188 (100%)	0 (0%)	0 (0%)	188 (100%)
One of the symptoms when the lungs become congested with fluid is shortness of breath	139 (73.9 %)	9 (4.8%)	40 (21.3%)	139 (73.9 %)
Some patients with severe HF become breathless when they lie flat and feel much better when they sit up	169 (89.9 %)	1 (0.5%)	18 (9.6 %)	169 (89.9 %)
Short-term weight gain is one of the signs of worsening HF	147 (78.2 %)	15 (8.0 %)	26 (13.8 %)	147 (78.2 %)
Overwork and stress sometimes cause HF to get worse	176 (93.6 %)	2 (1.1 %)	10 (5.3 %)	176 (93.6 %)
Sodium causes water retention	88 (46.8 %)	20 (10.6 %)	80 (42.6 %)	88 (46.8 %)
Diuretics remove fluids from the body	132 (70.2 %)	6 (3.2 %)	50 (26.6 %)	132 (70.2 %)
HF patients are discouraged from taking medications without food	89 (47.3 %)	60 (31.9 %)	39 (20.7 %)	60 (31.9 %)
HF patients had better drink more water than healthy people	42 (22.3 %)	103 (54.8 %)	43 (22.9 %)	103 (54.8 %)
HF patients had better take a high-salt diet	2 (1.1 %)	181 (96.3 %)	5 (2.7 %)	181 (96.3 %)
Smoking is good for patients with HF because it promotes the circulation of blood	4 (2.1 %)	184 (97.9 %)	0 (0%)	184 (97.9 %)

HF patients should not perform exercise regardless of their severity of HF	35 (18.6 %)	124 (66.0 %)	29 (15.4 %)	124 (66.0 %)
HF patients had better take a hot bath to promote blood	56 (29.8 %)	89 (47.3 %)	43 (22.9 %)	89 (47.3 %)

Health-Related quality of life of patients

Half of the participants (95 patients, 50.5%) were classified as having poor health-related quality of life. Moderate HRQoL was observed in 29.3% of participants, while 20.2% were classified as having good HRQoL.

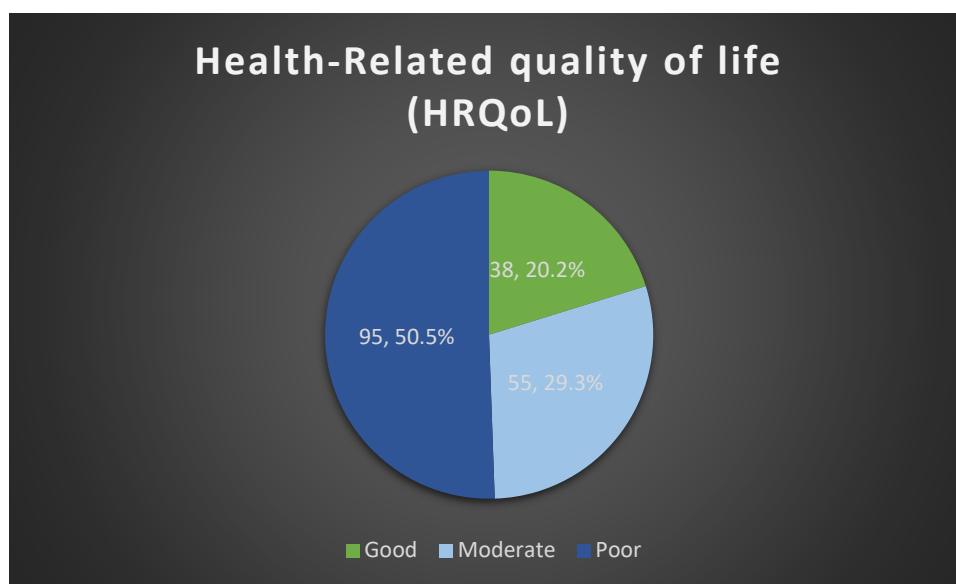


Figure 3: Distribution of health-related quality of life among HFrEF patients (n=188)

Associated factors with poor Health-Related quality of life (HRQoL)

In the bivariable logistic regression analysis, age, residence, NYHA functional class, comorbidity, duration of GDMT, social support, and medication adherence showed potential association with poor HRQoL at a p-value of less than 0.2 and were included in the multivariable analysis. Prior to multivariable analysis, multicollinearity was assessed and no significant multicollinearity was detected ($VIF < 3$).

After adjustment for potential confounders, in the multivariable logistic regression analysis, age, NYHA functional class, comorbidity, duration of GDMT, social support, and medication adherence remained significantly associated with poor HRQoL. Participants aged 40–60 years had significantly lower odds of poor HRQoL compared to those under 40 years (AOR = 0.1, 95% CI: 0.03–0.39, $p < 0.001$), and those older than 60 years also had significantly reduced odds (AOR = 0.2, 95% CI: 0.04 - 0.69, $p = 0.013$). Patients in NYHA class III had significantly higher odds of nearly 7 times of poor HRQoL compared to those in class I (AOR = 6.9, 95% CI: 1.46–32.98, $p = 0.015$), and those in class IV had 6.3 times higher odds of poor HRQoL compared to those in class I (AOR = 6.3, 95% CI: 1.10–36.41, $p = 0.039$).

Presence of comorbidity was also significantly associated, with patients having comorbid conditions showing sevenfold higher odds of poor HRQoL compared to those without comorbidities (AOR = 7.0, 95% CI: 2.52–19.66, $p < 0.001$). Duration of GDMT between 7–24 months was associated with significantly lower odds of poor HRQoL compared to ≥ 24 months since starting GDMT (AOR = 0.1, 95% CI: 0.02–0.74, $p = 0.022$).

Moderate social support was significantly associated with reduced odds of poor HRQoL when compared with those with higher social support score (AOR = 0.1, 95% CI: 0.01–0.32, $p = 0.001$). Medication adherence was significantly associated with HRQoL. Participants with moderate adherence had 6.1 times higher odds of poor HRQoL compared to those with high adherence (AOR = 6.1, 95% CI: 1.61–22.98, $p = 0.008$), while those with poor adherence had 6.5 times higher odds (AOR = 6.5, 95% CI: 1.67–24.93, $p = 0.007$). Model fitness was evaluated using the Hosmer–Lemeshow goodness-of-fit test, and the model was found to be adequate ($p\text{-value} > 0.05$).

Table 7: Factors associated with poor health-related quality of life among HFrEF patients

Variable		Poor HRQoL		p-value	COR with 95% CI	p-value	AOR with 95% CI
	Category	No	Yes				
Age	<40	11	24		1		1
	40–60	53	39	0.010	0.3 (0.15 - 0.77)	< 0.001	0.1 (0.03 - 0.39)
	>60	29	32	0.126	0.5 (0.21 - 1.21)	0.013	0.2 (0.04 - 0.69)
Sex	male	49	45		1		1
	female	44	50	0.466	1.2 (0.70 - 2.19)	0.497	1.4 (0.57 - 3.22)
Residence	urban	51	71		1		1
	rural	42	24	0.005	0.4 (0.22 - 0.76)	0.183	0.5 (0.20 - 1.36)
Current NYHA class	I	14	3		1		1
	II	51	23	0.277	2.1 (0.55 - 8.04)	0.981	0.9 (0.20 - 4.82)
	III	19	45	0.001	11.1 (2.84 - 42.95)	0.015	6.9 (1.46 - 32.98)
	IV	9	24	0.001	12.4 (2.88 - 53.77)	0.039	6.3 (1.10 - 36.41)
Comorbidity	No	49	16		1		1
	Yes	44	79	< 0.001	5.5 (2.80 - 10.79)	< 0.001	7.0 (2.52 - 19.66)
Duration of GDMT	≥ 24 months	34	32		1		1
	7 - 24 months	39	60	0.006	0.2 (0.04 - 0.59)	0.022	0.1 (0.02 - 0.74)
	≤ 6 months	20	3	0.126	1.6 (0.87 - 3.07)	0.837	1.1 (0.41 - 3.03)
OSSS3	strong	5	12		1		1
	moderate	17	44	0.009	0.2 (0.08 - 0.69)	0.001	0.1 (0.01 - 0.32)
	poor	71	39	0.901	1.1 (0.33 - 3.52)	0.125	0.2 (0.04 - 1.49)
MMAS	High adherence	19	7		1		1
	Moderate adherence	34	41	0.018	3.3 (1.23 - 8.71)	0.008	6.1 (1.61 - 22.98)
	Poor adherence	40	47	0.018	3.2 (1.22 - 8.36)	0.007	6.5 (1.67 - 24.93)

DISCUSSION

This study assessed the level of health-related quality of life (HRQoL) and its associated factors among adult patients with heart failure with reduced ejection fraction (HFrEF) after optimal guideline-directed medical therapy (GDMT) uptake.

The findings showed that **95 (50.5%)** of participants had poor HRQoL, while only **38 (20.2%)** had good HRQoL. This indicates that a substantial proportion of patients continue to experience impaired quality of life despite receiving optimal GDMT. This finding is comparable with previous studies conducted in Ethiopia, where approximately **54% of heart failure patients had poor HRQoL** (6,9). Similarly, global evidence indicates that heart failure significantly affects patients' daily functioning and well-being, reinforcing HRQoL as a key outcome measure (9).

The socio-demographic profile of participants showed that the majority were middle-aged, with **92 (48.9%)** in the 40–60 years age group, and a considerable proportion **61 (32.4%)** above 60 years. In the current study, age showed a significant association with HRQoL, where participants aged 40–60 and above 60 years had lower odds of poor HRQoL compared to younger patients. This finding differs from some previous studies, which reported that increasing age was associated with poorer HRQoL (6,9,11,20,21). However, other studies have shown mixed findings, suggesting that age-related differences in HRQoL may vary depending on disease perception and adaptation mechanisms.

Regarding sex distribution, males and females were equally represented. However, sex was not significantly associated with HRQoL in this study. This contrasts with findings from studies conducted in Wolaita Zone, where females had poorer HRQoL compared to males (14). The difference may be attributed to variations in population characteristics or sociocultural factors. In terms of socioeconomic status, the majority of participants **116 (61.7%)** had low monthly income. Although income was not included in the final multivariable model, previous studies have demonstrated that lower income is associated with poorer HRQoL (24). Similarly, occupational status showed that **78 (41.5%)** were housewives, which may reflect limited economic independence, as also suggested in previous literature (14).

Clinically, the majority of patients had **dilated cardiomyopathy (72.3%)**, followed by ischemic heart disease (26.1%), which aligns with patterns observed in developing countries where non-

ischemic causes are more prevalent (3,4). Most participants had a disease duration of 12–60 months, indicating a predominantly chronic patient population. Functional status, as measured by NYHA classification, showed a strong association with HRQoL. Patients in NYHA class III and IV had significantly higher odds of poor HRQoL compared to those in class I. This finding is consistent with multiple studies that identified higher NYHA class as a major determinant of poor HRQoL (6,9,11,20,21). The relationship between worsening functional status and declining quality of life has been well established in heart failure populations.

Comorbidity was present in **123 (65.4%)** of participants and showed a strong association with poor HRQoL, with a sevenfold increase in odds. This is consistent with findings from previous studies, which reported that comorbid conditions significantly worsen HRQoL (13,14,16). The presence of additional chronic conditions increases disease burden and complicates management, contributing to reduced well-being. All participants in this study were on GDMT, reflecting adherence to current treatment guidelines. However, duration of GDMT showed a significant association with HRQoL. Patients on GDMT for 7–24 months had lower odds of poor HRQoL compared to those on treatment for longer durations. This finding may reflect differences in disease progression or treatment response over time. Previous studies have emphasized that GDMT improves symptoms and quality of life, although full recovery is rarely achieved (1,2,9).

Medication adherence was another important factor identified in this study. Nearly half of participants **87 (46.3%)** had poor adherence. Patients with moderate and poor adherence had significantly higher odds of poor HRQoL compared to those with high adherence. This finding is consistent with studies conducted in Thailand and other settings, where poor adherence was associated with reduced quality of life (31). Medication adherence is considered a key determinant of treatment effectiveness and patient outcomes.

In terms of health perception, participants reported varied perceptions of their health status, with a notable proportion rating their health as very bad or fair. Previous studies have shown that poor self-rated health is associated with worse HRQoL outcomes (14). Social support was also significantly associated with HRQoL. The majority of participants **110 (58.5%)** had poor social support. Participants with moderate social support had lower odds of poor HRQoL. This finding is consistent with studies conducted in Ethiopia, which showed that better social support is associated with improved HRQoL (18,30). Social support plays an important role in coping with

chronic illness and adherence to treatment.

Knowledge assessment showed that **152 (80.9%)** of participants had good knowledge of heart failure. While general knowledge was high, gaps were identified in areas such as sodium intake and medication-related practices. Previous literature has highlighted the importance of patient knowledge in improving self-care and outcomes, although its direct relationship with HRQoL remains underexplored in Ethiopia. Behavioral factors such as smoking and alcohol use were low in this study, with most participants reporting no use. This differs from studies in other regions where such behaviors were associated with poor HRQoL (25,26), suggesting possible contextual differences.

Overall, the findings of this study are largely consistent with existing literature regarding the role of clinical and behavioral factors in influencing HRQoL among patients with HFrEF, while also highlighting context-specific variations.

CONCLUSION

This study found that poor health-related quality of life was highly prevalent among patients with HFrEF despite optimal GDMT uptake. Clinical factors, particularly higher NYHA functional class and presence of comorbidity, showed strong associations with poor HRQoL. Medication adherence and social support were also significantly associated, with lower adherence and weaker support linked to worse outcomes. Age and duration of GDMT were additional factors associated with HRQoL. Although most participants demonstrated good knowledge of heart failure, gaps remained in specific areas of disease management. These findings highlight the multifactorial nature of HRQoL among patients with HFrEF.

RECOMMENDATIONS

- **For clinicians:** Strengthen routine assessment of HRQoL and integrate it into clinical decision-making.
- **For healthcare providers:** Enhance patient education focusing on specific gaps such as sodium restriction, medication practices, and self-care.
- **For hospital administration:** Develop structured follow-up and counseling programs to improve medication adherence and long-term patient support.
- **For future researchers:**
Conduct longitudinal studies to assess causal relationships and explore the role of knowledge and behavioral factors in HRQoL.

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Annexes

Annex I: Consent Form

Greetings! My name is Dr. Abdu bedru, a final year Internal Medicine resident doing research on health-related quality of life and its determinants among adult heart failure patients with reduced ejection fraction at St. Paul's Hospital, which is important to provide holistic care. You are one of the candidates for the study. I would like to assure that your name will not be mentioned in the questionnaire and the information that you will give will be kept confidential and only used for research purpose. You have the full right to refuse to take part or interrupt the interview at any time. But the information you will give is quite useful to achieve the objective of the study.

It will take around 20 minutes and you will not be provided any incentives or payment to take part in this project.

This research will be reviewed and approved by Institutional Ethical Review Committee of the college. If you have any question, you can contact the principal investigator by the address provided below.

Name of principal investigator: Dr. Abdu Bedru

Mobile no-: +251911-35-0822, E-mail addresses: abdubedru@gmail.com Are you willing to participate in the interview? A. Yes B. No

If yes, signature_____

Name and signature of the data collector ____/____ Date _

Thank you

ANNEX II-Questionnaire

Part I. Socio-demographic and behavioral characteristics

1.1.Sex	A. Male	B. Female
1.2.Age		
1.3.Residence	A. Urban	B. Rural
1.4.Marital status	A. Married C. widowed	B. Divorced D. Single
1.5.Occupation	A. Employee C. Farmer E. Others specify	B. Merchant D. Jobless
1.6.Educational status	A. No formal education C.9-12	B.1-8 D.12+
1.7.Monthly income in birr		
1.8. Health insurance	A. Yes	B. No
1.9.Family Hx of HF	A. Yes	B. No
1.10.Family Hx of sudden cardiac death	A. Yes	B. No
1.11.Smoking	A. Yes	B. No
1.12.Salt intake	A. Yes	B. No
1.13. Alcohol	A. Yes	B. No

Part II. Clinical characteristics

2.1.HR and BP	HR=	BP=
2.3. Duration of HF rEF		
2.4.NYHA class	A.I B.II C.III D.IV	
2.5. Etiology of HFrEF	A.IHD C.RVHD E. Others specify	B.DCMP D.DVHD
2.6.Hospitalization with in 6months	A. Yes	B .No
2.7.Comorbiditis (>1 response)	A. Yes If yes specify A.HTN C. Dyslipidemia E. Obesity G.AF I. Other specify	B. No B.DM D. Stroke F. Anemia H. Thyrotoxicosis
2.8.Medications(>1response)	A.ACEI/ARB C.MRA E. Lasix G. statin I. Other specify	B.BB D.DAPA F. Digoxin H. Asprin

2.9.Hgb	
2.10.Creatinine	
2.11.GFR	
2.12.serum sodium	
2.13. Baseline EF	
2.14.Baseline pulmonary HTN	

Health perception

What do you perceive about your overall health	Very good Fair poor
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Social support

4.1.How many people are so close to you that you can count on them if you have great personal problems?	none 1–2 3–5 5+
4.2. How much interest and concern do people show in what you do?	none little uncertain some a lot
4.3. How easy is it to get practical help from neighbors if you should need it?	very difficult difficult possible easy very easy

Medication-Taking Adherence variables

5.1.Do you sometimes forget to take your heart failure medication?	Yes No
5.2.People sometimes miss taking their medications for reasons other than forgetting. Over the past 2 weeks, were there any days when you did not take your heart failure medication?	yes No

5.3. Have you ever cut back or stopped taking your heart failure medication without telling your doctor because you felt worse when you took it?	Yes No
5.4. When you travel or leave home, do you sometimes forget to bring your heart failure medication?	Yes No
5.5. Did you take all your heart failure medication yesterday?	Yes No
5.6. When you feel like your symptoms are under control, do you sometimes stop taking your medication?	Yes No
5.7. Taking medication every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your heart failure treatment plan?	Yes No
5.8. How often do you have difficulty remembering to take all your heart failure medication?	Never/Rarely Once in a while..... Sometimes..... Usually All the time.....

Part VI. Heart Failure Knowledge Variables

1.	Exchange of oxygen and carbon dioxide occurs in heart	1. yes 2. no 3. I don't know
2.	HF is a condition in which the heart is not able to pump blood through the body in sufficient amounts	1. yes 2. no 3. I don't know
3.	Difficulty in breathing and shortness of breath are symptoms of HF	1. yes 2. no 3. I don't know
4.	One of the symptoms when the lungs become congested with fluid is shortness of breath	1. yes 2. no

		3. I don't know
5.	Some patients with severe HF become breathless when they lie flat and feel much better when they sit up	1. yes 2. no 3. I don't know
6.	Short-term weight gain is one of the signs of worsening HF	1. yes 2. no 3. I don't know
7.	Overwork and stress sometimes cause HF to get worse	1. yes 2. no 3. I don't know
8.	Sodium causes water retention	1. yes 2. no 3. I don't know
9.	Diuretics remove fluids from the body	1. yes 2. no 3. I don't know
10.	HF patients are discouraged from taking medications without food	1. yes 2. no 3. I don't know
11.	HF patients had better drink more water than healthy people	1. yes 2. no 3. I don't know
12.	HF patients had better take a high-salt diet	1. yes 2. no 3. I don't know
13.	Smoking is good for patients with HF because it promotes the circulation of blood	1. yes 2. no 3. I don't know
14.	HF patients should not perform exercise regardless of their severity of HF	1. yes 2. no 3. I don't know
15.	HF patients had better take a hot bath to promote blood	1. yes 2. no 3. I don't know

Part VII. Health-Related quality of life of patients with heart failure with reduced ejection fraction

3.1. Minnesota Living with Heart Failure Questionnaire

Each question asks how much your heart failure affected your life in the past 1 month. Responses are rated on a 6-point from 0 (“No impact”) to 5 (“Very much”).

Did your heart failure prevent you from living as you want during the past 1 month by ?	0	1	2	3	4	5
1. Caused swelling in your ankles, legs or abdomen?						
2. Made you sit or lie down to rest during the day?						
3. Made walking about or climbing stairs difficult?						
4. Made working around the house or yard difficult?						
5. Made going places away from home difficult?						
6. Made sleeping well at night difficult?						
7. Made relating to or doing things with your friends or family difficult?						
8. Made working to earn a living difficult?						
9. Made recreational pastimes, sports, or hobbies difficult?						
10. Made sexual activities difficult or of reduced interest?						
11. Made you eat less of the foods you like?						
12. Made you short of breath?						
13. Made you tired, fatigued, or low on energy?						
14. Made you stay in a hospital?						
15. Cost you money for medical care?						
16. Given you side effects from treatments?						
17. Made you feel you are a burden to your family or friends?						
18. Made you feel a loss of self-control in your life?						
19. Made you worry?						
20. Made it difficult for you to concentrate or remember things?						
21. Made you feel depressed?						
Total Score						

Annex III. Information Sheet, Amharic version

አባሪ አንድ፡ የመረጃ ቅጽ

እነሆ እኔ ዶ/ር አብይ በድሩ በጳውሊስ ሚሊኒየም ሜዲካል ኮሌጅ በውስጥ ቀዌ ትምህርት ክፍሌ ከጤና ጋር የተገናኘ የህይወት ጥራት እና ተያያዥ ጉዳዮች በሚሌ ርዕስ የሌብ ድካም ችግር ባሳየብኩ አዋቂ ታማሚዎች ሊይ ጥናት በማድረግ ሊይ ነኝ። ሆዚህ ጥናት እርስዎ እንደ ተሳታፊ ሆነው ይመረጣሉ እና የእርስዎን ፈቃድ ወይም ተሳትፎዎን ከመቀበል በፊት ከጥናቱ ጋር የተያያዙ ሁሉንም አስፈላጊ መረጃዎች ማወቅ አሁብዎት። ስሆዚህ ይህ መረጃ እንደሚከተለው በዝርዝር ይገሆጻል።

ዓላማ፡- ጥናቱ በ 2025 አ.ም የሌብ ድካም ችግር ያሳየብኩ አዋቂ ታማሚዎች ከጤና ጋር የተገናኘ የህይወት ጥራትን እና ተያያዥ ጉዳዮችን ለመገምገም ያሆመ ነው ።

የጥናቱ አስፈላጊነት፡- የጥናቱ ግኝት በአዋቂ የሌብ ድካም ታማሚዎች ሊይ በጤና ነክ ዙርያ የህይወት ጥራት ቀረጃ እና ተያያዥነት ያላቸውን ነገሮች መረጃ በማቅረብ በውሳኔ አሰጣጥ ሂደት ለሚመሰረቱ የበላይ አካላት ጠቃሚ መመሪያ እና መረጃ ይሰጣል፤ በተጨማሪም ጥናቱ ከአዋቂ ሌብ ድካም በሽተኞች እና ከጤና ጋር የተያያዘ የህይወት ጥራትን ለማጥናት ለሚፈለጉ ተመራማሪዎች የመነሻ መረጃን ያቀርባል።

በተጨማሪም የሕክምና ባህሪዎች በታካሚዎች የዕህት ተዕህት ሕይወት ሊይ ተጽእኖ የሚያሳድሩ የሌብ ድካም ምክንያቶችን በመሆዩት ተገቢውን አያያዝ እና እንክብካቤን እንዲከተሉ ይረዳቸዋል ስሆዚህ ታካሚዎች ጤንነታቸውን በተሻሻሉ ሁኔታ ለመንከባከብ እና ከህይወት ጋር ያላቸውን እርካታ ለመጨመር በተጨማሪም, በህይወታቸው ጥራት ሊይ አዎንታዊ እና አላታዊ ተፅእኖ ያላቸውን ነገሮች ለመሆዩት እንዲችሉ ይረዳል፤

፤እንዲሁም ሆጤና ተቋሙ የህይወት ጥራት ሳያሻሽል ህይወትን ለያራዝሙ የሚችል ውድ መድሃኒቶችንና ህክምናዎችን ከአማራጭ መድሃኒቶች እና ሕክምናዎች ጋር በማመዛዘን ወጪ ቆጣቢ በሆነ መንገድ ለመምረጥ ያስችላል።

በጥናቱ ውስጥ ያሳያችሁ ተሳትፎ ሙሉ በሙሉ በእርስዎ ፍላጎት ሊይ የተመሰረተ ይሆናል፤ ከመጀመሪያው ጀምሮ ለሆመሳተፍ ወይም መሳተፍ ከጀመሩ በኋላ በማንኛውም ጊዜ ለማቆም መብት አለዎት፤ ለማያውቁት ጥያቄ ምላሽ ለመስጠት አይገባዎትም እና የሚወደትን ማንኛውንም ጥያቄ መጠየቅ ይችላሉ።

የዋና ተመራማሪ ስም፡-ዶ/ር አብይ በድሩ ፡ ፊርማ፡ ____ አድራሻ፡ ሞባይል፡ +251911350822.ኢ- ሜይል፡ abdubedru@gmail.com

የመረጃ ጥናቱ ሰብሳቢ ስም፡- ____ ቀን ____ ፊርማ . የተቆጣጠሪ

ስም፡ ____ ቀን ____ ፊርማ _

ሠንጠረዥ 1. የማህበራዊ ሁኔታን የሚዳስሱ ጥያቄዎች

1	ጾታ	1. ወንድ 2. ሴት
2	ዕድሜ	
3	የመኖሪያ ቦታ	1. ከተማ 2. ገጠር
4	የጋብቻ ሁኔታ	1. ያገባ/ች 2. ያላገባ/ች 3. የፈታ/ች 4. የሞተበት/ባት 5. ሌላ ካለ ይገለጽ-----
5	የቅጥር ሁኔታ	1. የግል ድርጅት ተቀጣሪ 2. የመንግስት ሰራተኛ 3. የግል ስራ 4. የቤት እመቤት 5. ተማሪ 6. ሌላ ካለ ይገለጽ-----
6	የትምህርት ደረጃ	1. ማንበብ መጻፍ የማይችል/ የማትችል 2. ማንበብና መጻፍ የሚችል/ የምትችል 3. የመጀመሪያ ደረጃ (ከ1ኛ-8ኛ ክፍል) 4. ሁለተኛ ደረጃ (ከ9ኛ-10ኛ ክፍል) 5. መሰናዶ (ከ11ኛ-12ኛ ክፍል) 6. ዲፕሎማና ከዛ በላይ
7	ወርሃዊ ገቢ	
8	ጤና መድን ይጠቀማሉ	1. አዎ 2. አይ
9	ተመሳሳይ የልብ ችግር በቤተሰብ	1. አለ 2. የለም
10	ደንገተኛ የልብ ጋር የተያያዘ የቤተሰብ ሞት	1. አለ 2. የለም
11	ጨው ይጠቀማሉ?	1. አለ 2. የለም

12	አልኮል ይወስዳሉ?	1. አዎ 2. አይ
13	ትምባሆ ያጨሳሉ?	1. አዎ 2. አይ

ሠንጠረዥ 2. የሕክምና ሁኔታን የሚዳስሱ ጥያቄዎች(ከኮሙኒቲቲ የሚወሰድ) ሠንጠረዥ 3. የጤና ግንዛቤን የሚዳስስ ጥያቄ

ሠንጠረዥ 4. የማህበራዊ ድጋፍን የሚዳስሱ ጥያቄዎች

ጠቅለል አድርገው ሲመለከቱት የጤንነት ሁኔታ ምን ይመስላል?	1. ጣም ጥሩ 2. ለከፋ አይሰጥም 3. መጥፎ ነው
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4.1	ከባድ የግል ችግሮች ቢያጋጥምዎት በቁጥር ምን ያህል ቅርብ ሰዎች በዙሪያዎ አሉ?	1. የሉም 2. 1-2 3. 3-5 4. ከ 5 በላይ
4.2	ምን ያክል ሰዎች እርስዎ በሚያደርጉት ነገር ፍላጎት እና ትኩረት ያሳያሉ?	1. የላቸውም 2. ትንሽ 3. እርግጠኛ አይደለውም 5. ብዙ
4.3	ከጎረቤቶች እርዳታ ሲያስፈልግዎ በቀላሉ ለማግኘት ምን ያህል ነው?	1. በጣም አስቸጋሪ 2. አስቸጋሪ 3. መጠነኛ 4. ቀላል 5. በጣም ቀላል

ሠንጠረዥ 5. መድሃኒትን በትክክል አወሳሰድ የሚዳስሱ ጥያቄዎች

1.	አንዳንድ ጊዜ የልብ ድካም መድሃኒት መውሰድን ይረሳሉ?	1. አዎ 2. አይ 3. አላቀውም
2.	አንዳንድ ጊዜ መድሃኒቶችን ሳይረሱ ግን በሌሎች ምክንያቶች ሳይወስዱ ይቀራሉ ፤ እርሶ ባለፉት 2 ሳምንታት የልብ ድካም መድሃኒት ሳይወስዱ የቀሩበት ቀናት ነበሩ?	1. አዎ 2. አይ 3. አላቀውም
3.	የልብ ድካም መድሃኒቶችን ሲወስዱ የሚብስቦ ከሆነ ለሀኪምዎ ሳይናገሩ አቋርጠው ያውቃሉ?	1. አዎ 2. አይ 3. አላቀውም
4.	አንዳንድ ጊዜ ከቤት ወጥተው ሲጓዙ የልብ ድካም መድሃኒቶችን ይዘው መውጣት ይረሳሉ?	1. አዎ 2. አይ 3. አላቀውም
5.	ትላንትና ሁሉንም የልብ ድካም መድሃኒቶችን ወስደዋል?	1. አዎ 2. አይ 3. አላቀውም
6.	አንዳንድ ጊዜ ከሀመሞ ሲያገግሙ መድሃኒቶችን መውሰድ ያቆማሉ?	1. አዎ 2. አይ 3. አላቀውም
7.	በየቀኑ መድሃኒት መውሰድ ለአንዳንድ ሰዎች አይመችም። እርሶ የልብ ድካም ህክምና በአግባቡ መከታተል ላይ ተቸግረው ያውቃሉ?	1. አዎ 2. አይ 3. አላቀውም
8.	ሁሉንም የልብ ድካም መድሃኒቶችን ለመውሰድ ምን ያህል ጊዜ ለማስታወስ ይቸገራሉ?	1. በጽራሽ አለልቸገረም 2. አልፎ አልፎ 3. አንዳንድ 4. አብዛኛውን ጊዜ 5. ሁልጊዜ

ሠንጠረዥ 6. ስለ ልብ ድካም እውቀት የሚዳስሱ ጥያቄዎች

1.	የኦክስጅን እና የካርቦን ዳይኦክሳይድ አየር ልውውጥ በልብ ውስጥ ይካሄዳል	1. አይ 2. አይ 3. አላውቀውም
2.	የልብ ድካም ማለት ልብ ደምን በሰውነት ውስጥ በበቂ መጠን ማፍሰስ የማትችልበት ሁኔታ ነው	1. አይ 2. አይ 3. አላውቀውም
3.	የመተንፈስ ችግር እና የትንፋሽ ማጠር የልብ ድካም ምልክቶች ናቸው	1. አይ 2. አይ 3. አላውቀውም
4.	ሳምባ በፈሳሽ ስትጨናነት ከሚታዩ ምልክቶች አንዱ የትንፋሽ እጥረት ነው	1. አይ 2. አይ 3. አላውቀውም
5.	አንዳንድ ከባድ የልብ ድካም ያለባቸው ታካሚዎች በጀርባቸው በሚተኙበት ጊዜ የትንፋሽ ጸጥ ማለት ስለሚያጋጥማቸው ቢቀመጡ ይሻላቸዋል	1. አይ 2. አይ 3. አላውቀውም
6.	የአጭር ጊዜ ክብደት መጨመር የልብ ድካም መባባስ አንዱ ምልክት ነው	1. አይ 2. አይ 3. አላውቀውም
7.	ከመጠን በላይ ስራ እና ጭንቀት ለልብ ድካም መባባስ ምክንያት ናቸው	1. አይ 2. አይ 3. አላውቀውም

8.	ሶዲየም የሚባለው ንጥረ ነገር የውሃ መጠራቀምን ያስከትላል	1. አይ 2. አይ 3. አላውቀውም
9.	የሚያሸኑ መድሃኒቶች ፈሳሾችን ከሰውነት ያስወግዳሉ	1. አይ 2. አይ 3. አላውቀውም
10.	የልብ ድካም ህመምተኞች ያለ ምግብ መድሃኒቶችን እንዲወስዱ አይመከርም	1. አይ 2. አይ 3. አላውቀውም
11.	የልብ ድካም ህመምተኞች ከጤናማ ሰዎች የበለጠ ውሃ ቢጠጡ ጥሩ ነው	1. አይ 2. አይ 3. አላውቀውም
12.	የልብ ድካም ህመምተኞች ከፍተኛ የጨው ምግብ ቢወስዱ የሻላል	1. አይ 2. አይ 3. አላውቀውም
13.	ማጨስ የልብ ድካም ላለባቸው ታካሚዎች የደም ዝውውርን ስለሚጨምር ጥሩ ነው	1. አይ 2. አይ 3. አላውቀውም
14.	የልብ ድካም ህመምተኞች የልብ ድካማቸው ምንም ይሁን ምን የአካል ብቃት እንቅስቃሴ ማድረግ የለባቸውም	1. አይ 2. አይ 3. አላውቀውም
15.	የልብ ድካም ህመምተኞች ደማቸው በጥሩ ሁኔታ እንዲዘጋጅ ጥቅ ባለ ውሃ ገላቸውን ቢታጠቡ ይሻላል	1. አይ 2. አይ 3. አላውቀውም

ሠንጠረዥ 7. የልብ ድካም ታካሚዎች የህይወት ጥራትን በተመለከተ የተሳታፊዎች መጠይቅ -

የአማርኛ ቅፅ

የሚከተሉት ጥያቄዎች ባለፈው ወር (4 ሳምንታት) ውስጥ የልብ ድካም (የልብ ህመም) ህይወትዎን ምን ያህል እንደነካ ይጠይቃሉ። ከእያንዳንዱ ጥያቄ በኋላ ህይወትዎ ምን ያህል እንደተጎዳ ለማሳየት 0, 1, 2, 3, 4 ወይም 5 ን ያክቡ። አንድ ጥያቄ እርስዎን የማይመለከት ከሆነ፣ ከጥያቄው በኋላ 0 ን ክብ ያድርጉት።

ባለፈው ወር (4 ሳምንታት) ውስጥ የልብ ድካም በሚከተሉት ሁኔታዎች እንደፈለጉት ከመኖር ምን ያክል ከልክለዎታል?	በፍጹም	በጣም ትንሽ				እጅግ በጣም
1 በቁርጭምጭሚት ወይም በእግርዎ ላይ እብጠት በማስከተል	0	1	2	3	4	5
2 በቀን ውስጥ ለማረፍ እንዲቀመጡ ወይም እንዲተኛ በማድረግ	0	1	2	3	4	5
3 መራመድዎን ወይም ደረጃዎችን መውጣት አስቸጋሪ በማድረግ	0	1	2	3	4	5
4 በቤትዎ ወይም በግቢዎ ዙሪያ መሥራትዎን አስቸጋሪ በማድረግ	0	1	2	3	4	5
5 ከቤትዎ ርቀው ለመውታት አስቸጋሪ በማድረግ	0	1	2	3	4	5
6 በምሽት ጥሩ እንቅልፍ መተኛትን አስቸጋሪ በማድረግ	0	1	2	3	4	5
7 ከጓደኞችዎ ወይም ከቤተሰብዎ ጋር ያለዎትን ግንኙነት አስቸጋሪ በማድረግ	0	1	2	3	4	5
8 ኑሮዎን ለማሸነፍ መስራትዎን አስቸጋሪ በማድረግ	0	1	2	3	4	5
9 የእርስዎን የመዝናኛ ጊዜ ማሳለፊያ፣ ስፖርት ወይም የትርፍ ጊዜ ማሳለፊያዎች አስቸጋሪ በማድረግ	0	1	2	3	4	5
10 የግብረ-ሥጋ ግንኙነትዎን አስቸጋሪ በማድረግ	0	1	2	3	4	5
11 ከሚወዷቸው ምግቦች ያነሰ እንዲበሉ በማድረግ	0	1	2	3	4	5
12 ትንፋሽ እንዲያጥርዎ በማድረግ	0	1	2	3	4	5

13	እንዲደክሙኝ፣ እንዲዝሉ ወይም ጉልበት እንዲቀንስ በማድረግ	0	1	2	3	4	5		
14	በሆስፒታል ውስጥ እንዲቆዩ በማድረግ	0	1	2	3	4	5		
15	ለህክምና ገንዘብ በማስወጣት	0	1	2	3	4	5		
16	ከህክምናዎች የጎንዮሽ ጉዳቶች ምክንያት	0	1	2	3	4	5		
17	ለቤተሰብዎ ወይም ለዳደሾችዎ ሽክም እንደሆኑ እንዲሰማዎት በማድረግ	0	1	2	3	4	5		
18	በህይወትዎ ውስጥ ራስን የመግዛት ማጣት ስሜት እንዲሰማዎት በማድረግ	0	1			2	3	4	5
19	ሐሳብ እንዲገባዎት በማድረግ	0	1			2	3	4	5
20	ነገሮችን ለማተኮር ወይም ለማስታወስ አስቸጋሪ በማድረግ	0	1			2	3	4	5
21	የመንፈስ ጭንቀት እንዲሰማዎት በማድረግ	0	1			2	3	4	5

MLHFQ scores

- Physical dimension (summation of items 2, 3, 4, 5, 6, 7, 12 and 13)
- Emotional dimension (summation of items 17, 18, 19, 20 and 21)
- Total (summation of all 21 questions)