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MEDICATION ADHERENCE AND ASSOCIATED FACTORS AMONG ADULT HEART FAILURE PATIENTS AT SELECTED PUBLIC TEACHING HOSPITALS OF ADDIS ABABA, ETHIOPIA, 2021

BY: ABEBAYEHU DAMTE (BSc.)

A THESIS SUBMITTED TO SCHOOL OF GRADUATE STUDIES OF ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCES, SCHOOL OF NURSING AND MIDWIFERY IN PARTIAL FULFILMENT OF THE REQUERMENTS FOR THE DEGREE OF MASTERS OF SCIENCES IN CARDIOVASCULAR NURSING

ADDIS ABABA

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ADDIS ABABA UNIVERSITY

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ABBREVIATIONS

CHF	Chronic Heart Failure
CVD	Cardiovascular disease
ESC	European society of cardiology
HF	Heart Failure
HHD	Hypertensive heart disease
IHD	Ischemic heart disease
MAQ	Medication Adherence Question
MMAS	Morisky Medication Adherence Scale
NYHA	New York Heart Association
RHD	Rheumatic Heart Disease
SPSS	Statistical package for social studies
SSA	Sub-Saharan Africa
SUD	Substance use disorder
TASH	Tikur Anbessa Specialized Hospital
U.S	United States
USA	United States of America
WHO	World Health Organization

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ABSTRACT

Background: Heart failure is a progressive and complex clinical syndrome that can occur due to impairment of cardiac structure or function that leads to the inability of the heart to fill with or pump sufficient amount of blood to meet the metabolic need of the body. Medication adherence is crucial to controlling symptoms, delaying disease progression, and preventing hospitalization in heart failure. However, poor medication adherence is associated with increased re-hospitalization, morbidity, mortality and increased health care cost.

Objective: This study aims to assess medication adherence and associated factors among adult heart failure patients at selected public health teaching hospitals in Addis Ababa, Ethiopia.

Methods: A hospital based cross-sectional study among adult heart failure patients was conducted at cardiac follow up clinic of Tikuranbessa specialized hospital, St. Paul's millennium medical college, Armed force specialized Hospital and Yekatit 12 Hospital from March 8-April 21,2021. A total of 385 patients were included and a systematic simple random sampling technique was used to select patients. Data collection was done through patient interview using pre tested structured questionnaire. The data was coded, edited, and entered in to Epi data version 4.4 then exported to SPSS version 25 for analysis. Variables having a p-value,0.25 in the bivariate analysis was a candidate for multivariable analysis. Variables having a p-value < 0.05 in the multivariable analysis were assumed as statistically significant factors.

Results: A total of 385 participants were included with a response rate of 100%. More than half (67.8%) of the participants were females and the mean age was 46.27±16. Of the study participants (48.6%) adhered to medication. Education about medication AOR (95% CI) =2.127 (1.038,4.357), educational level AOR (95% CI) =6.044 (1.952,18.708) were positively associated with medication, fewer HF symptom AOR (95% CI) =0.044 (0.006,0.304), patient forgetfulness AOR (95% CI) =0.064 (0.034,0.121), cost of the drugs AOR (95% CI=0.413 (0.208,0.820) were negatively associated with medication adherence.

Conclusion and recommendation: This study assessed the prevalence of medication adherence. The factors that affect medication adherence were education about medication, education level, fewer heart failure symptom, cost of medication and patient forgetfulness. health professionals should give education about medication to improve treatment adherence.

Keywords: Heart failure, medication adherence, Hospitals, Addis Ababa, Ethiopia

1.INTRODUCTION

1.1 Background

Cardiovascular disease (CVD) remain the biggest cause of death worldwide (1). According to the 2017 World Health Organization (WHO) global estimate, each year 17.9 million people die from CVD and >75% of these deaths occur in low and middle-income countries (2) and also death takes place in low and middle income countries and sub-Saharan Africa (SSA), contributing to 5.5% of the global CVD deaths (3).Studies conducted in Addis Ababa , Ethiopia also indicated that 75% of deaths were due to myocardial infarction ,stroke and hypertensive heart disease (1).

Heart failure is a rapidly growing cardiovascular disorder which affects more than 37.7 million individuals worldwide (4).Annual total cost of Patients among cardiovascular illness in the United states(US) were$30.7 billion in 2012 and are projected to be $69.7 billion by 2030 (5).CVD accounts 7%-10% of all adult medical admissions in African hospitals, of which HF constitutes approximately 3%-7% (1).The population burden and individual impact of chronic heart failure(CHF)has been well described in the western world, it has been less well described on the African continent(6).Ethiopia as one of African countries also share the burden of cardiac disease. Some studies conducted in the country indicated that the two major causes of cardiac disease are rheumatic heart disease(RHD)and hypertensive heart disease(HHD) further more ischemic heart disease(IHD)was on the rise(7). HF is a progressive and complex clinical syndrome that occur due to impairment of cardiac structure or function that leads to the inability of the heart to fill with or pump sufficient amount of blood to meet the metabolic need of the body (8).

The European society of cardiology(ESC) characterize the symptom as shortness of breath, persistent coughing, or wheezing, ankle swelling and fatigue, that may be accompanied by jugular venous pressure, pulmonary crackles, increased heart rate and peripheral edema, however, these signs may not be present in the early stages and in patients treated with diuretics(9). HF is caused by various etiologies, each requiring unique management. The most common underlying cause in high income countries is coronary artery disease.

In sub -Saharan Africa, the predominant causes have been described to RHD, HHD and cardiomyopathy. compared to other parts of the world, HF in sub- Sahara Africa tends to occur at much younger age. This finding could be due to the major contribution of RHD(10).

A widely classification of HF is the New York heart association (NYHA) functional classification(1994),which describes HF according to severity of its symptoms and impairment of physical activity (9).Management of heart failure requires multiple health behavior changes, including close attention to diet, physical activity and cardiovascular medications(11).WHO defines adherence "the extent to which the persons' behavior (including medication taking) corresponds with agreed recommendations from a health care provider". It includes the initiation of the treatment, implementation of the prescribed regime, and discontinuation of the pharmacotherapy(12).Medication non adherence is often defined as taking less than 80% of prescribed doses, although it has to be noted that non-adherence can also include taking to many doses, and it is associated with an increased risk of poor health, adverse clinical events, and mortality(13).WHO has identified medication non-adherence as a priority preventable health care problem, and a key barrier to improving clinical outcomes(14).

1.2 Statement of the problem

Chronic heart failure(CHF) remains a leading cause of disability and death in adults. Recurrent and persistent symptoms in HF such as fatigue and orthopnea are associated with poor adherence and premature or unnecessary discontinuation of medications(13).Medication adherence is crucial to controlling symptoms, delaying disease progression, and preventing hospitalization in HF(15). Poor adherence to medications is a common problem among HF patients that leads to increased exacerbations, reduced physical function and higher risk for hospital admission and death(16). Medication-non adherence is a major problem in CVD, contributes yearly to approximately 125,000 preventable deaths(17).In a review of literature 2008,it is estimated that 40-60% of adults with HF in particular are non-adherent with medications(18).

Re-hospitalization rates in patients with HF are high with 50% of patients readmitted within six months of discharge from a hospitalization for exacerbation of HF(19).Good medication adherence to evidence-based pharmacotherapy is associated with fewer hospitalizations and higher patient survival (20).It is essential that patients with HF receive pharmacological treatment to slow cardiac remodeling, decrease symptoms, hospitalizations and death(21).One potential contributing factor to the persistence of poor out comes is challenges with medication adherence, which is critical self-care behavior for patients with HF(22).Reduced treatment adherence is common in older adults with HF due to the complex treatment regimens (23).

Enhancing patient adherence to prescribed medications is essential to achieve better outcomes (24).On the previous studies, interventions such as coaching, education, and reminder strategies have been developed to improve adherence to medications. Most focus on educational content delivery and yield only short term success(13).Potential low cost novel strategy to reduce HF hospitalization rates is to target education for HF patients and their informal caregivers to increase adherence to medical recommendations ,including adherence to medications(25).

Therefore, medication non adherence is a major problem for heart failure patients with a consequence of reduce physical function, increase hospitalization, decrease the effect of treatment, increased morbidity and mortality, so that the need of this study is to identify the factors and the possible reasons that affect medication adherence.

1.3. Significance of the study

Medication adherence is a complex health behavior, influenced by a plenty of factors. Non-adherence can diminish treatment effects leading to increased morbidity and mortality plus wasted health care resources. Evidence suggests that a greater understanding of the barriers to adherence is needed to improve the effectiveness of adherence interventions. Therefore, this study was designed to assess and provide basic information on the level of medication adherence and its associated factors to the federal ministry of health (MOH), Regional health office, policy makers, academic community, health professionals, patients and help the respective institution to design strategies to improve medication adherence.

2.LITRATURE REVIEW

2.1Prevalence of non-adherence among HF patients

Adherence to medication regimen is a disease related behavior that predicts successful treatment outcomes and reduces the adverse effects and severity of the disease .Due to the importance of medication adherence to decrease hospitalization and mortality, it is vital that clinicians implement interventions to improve medication adherence (21). Reducing the rate of re-hospitalization among HF patients is a major public health challenge (25). Non- adherence is frequently a hidden problem, undisclosed by patients and un recognized by prescribers(26).

The prevalence of the study conducted in Philadelphia, Pennsylvania and Newark, Delaware US 62% of subjects were non adherent to their medication regimen(27).Non-adherence to their prescribed regimen was 71.7% and 54.2% in India and Yemen respectively(28, 29).The study conducted in California indicated that 78.3% of participants was non-adherent(30).In Saudi Arabia and Brazil non- adherence was 53.6% and 63.5% respectively(31, 32). The study in North Carolina university, US showed, 56% of HF patients were classified as adherent (33). In Pakistan overall 76.5% were adherent to the prescribed medication(34).Randomized prospective study conducted in USA, indicates that adherence to the medication was 73.9%and85% at12monthes for the controlled and intervention group respectively (35). 22.1% participants in Texas university USA were non-adherent to medication(36).

In south Africa, CHF regimen non adherence was 29%(6).In Tanzania(74.7%) had poor adherence (37). Few studies were conducted to medication non adherence among HF patients in Ethiopia, the prevalence of study conducted in west Ethiopia (Wollega) on medication adherence among CHF patients was 64.8%(26).

2.2 Factors that affect medication adherence

In 2011,the American college of preventive medicine documented five key factors that affect adherence and recommended research and monitoring efforts be focused on them, these are sociodemographic and economic factors, health care system related factors, medical conditions related factors, therapy related factors and patient related factors (17).

2.2.1 Socio-demographic and economic factors

Socioeconomic factors that adversely affect adherence include poverty, illiteracy, greater distance from treatment centers, higher cost of medications and lack of transportation. Gender and older age has been associated with lower rate of adherence. Systematic review of 2013 shows there is in consistency among the association of age and sex on medication adherence which is in some studies significant association were not found between medication adherence with age and gender while in some studies there was an association between medication adherence with age and sex (38).Studies evaluating relationships between social support and medication adherence have shown that weaker social support is associated with poorer adherence(17).

Patients with HF need effective social support to help them adhere to their prescribed medications, keep their health care provider appointments, refill prescriptions, and in some instances, administer the medications (39).Without the help of their family members, patients have difficulty adhering to their medication regimen, keeping their physician appointments, and following their medical plan: Married patients perceived more social support and received more reminders and help from their spouses or partners than unmarried patients.(33).It was demonstrated that patients who live with their family had higher adherence score(32).Substance use disorder(SUD)are also associated with economic and social problems such as un employment, lost productivity, and lower financial stability and this results non adherence to medication (40).

Low and middle income levels, high cost of drugs, are the top barriers for poor medication adherence in Khartoum(41).In Tanzania nearly 90% of non-adherent participants reported medication cost as the major barrier to their adherence (37). Medication adherence had relationship with education level, the study conducted in Iran showed, medication adherence was directly correlated with education level P=0.012 which is those participants with high education level adhere to their medication compared to lower education level(42).While in Khartoum state, Sudan: a cross sectional study showed respondents with a high level of education were more non adherent to medication(41).Ethnic minority population, including black and Hispanic of un married patients, were more likely to be non- adherent to common HF medications. The likelihood of HF hospitalization is estimated to be 1.5 times greater among Blacks and 1.2 times greater among Hispanics, in comparison to white patients, In US of the 63 Black participants,33.3%had low medication adherence, compared to 27.5%of the 149 white participants (18).

2.2.2 Health care system related factors

The organization of the health care delivery system is believed to play an important role with regard to medication adherence, but empirical data to support this view are scant. Within a given delivery system, physicians and caregiver skills are thought to be important in developing supportive patient relationships (17). Studies have shown that team based care, in which physician, pharmacists, and nursing team members are engaged in patient education and monitoring of adherence, can be effective in improving adherence and health outcomes(43).Observational studies conducted in Australia showed,47(71%) of the participants ,the major reason for medication non-adherence was inadequate and too complex medication instruction (44).

Provider level reasons include factors such as the manner in which clinicians communicate with their patients and the extent to which clinicians favor simpler dosing schedules, Lack of patient centered communication, in particular, has been associated with worse adherence (45)The study in Iran have shown a negative relationship between medication adherence and threat to human dignity. Based on the findings, an increase in patients' dignity can enhance medication adherence, which can theoretically improve patients' health and reduce frequent hospitalization (46).Among the reasons for poor medication adherence in Khartoum lack of pharmacist and physician communication with patients about their drug therapy and lack of physician's communication with them regarding their illness and the benefit that the medication will provide (41).

2.2.3 Medical conditions related factors

Comorbidities contribute to polypharmacy issues: for example, patients with HF are typically prescribed six to eight daily medications (17).The study in Sudan showed those taking five or more medications daily were found to be significantly more non adherent to medication than the those taking one to four medications daily (41).Patients with HF take many medications to manage their HF and comorbidities and 20-50% experience depression(47).At Kent state university in USA a sample of 299 patients ,the interaction of medication regimen complexity and depressive symptoms predicted medication adherence ,$P<0.05$.For individuals with higher levels of depressive symptoms ,more regimen complexity was associated with lower adherence(47).Studies have shown that cognitive function is an independent contributor to adherence in older adults with HF associated with other poor outcomes, including decreased functional independence, reduced

health related quality of life, and increased risk of mortality (48). The study in university of North Carolina in US showed 90 out of 219 patients were categorized as non-adherent to prescribed medications. A total of 46% of patients with HF Symptoms were non-adherent to medication compared with 32% of patients without HF symptoms (49)

2.2.4 Therapy related factors

Therapy related barriers to adherence appear to be substantial. Side effects, greater complexity of regimen, and longer duration of regimen are all associated with lower rate of adherence (43).High medication regimen complexity has been associated with medication non adherence, poor quality of life, and increased health resource utilization (50). Medication management in older adults is often more challenging because of multi morbidity, polypharmacy, and cognitive/function decline (51).Studies in Colorado university hospital in US showed from 145 young old HF patients 72% of patients were taking eleven or more total medication(50).Three in ten respondents in Khartoum indicated that the experienced side effects associated with their medications and irregular availability of the medication in their areas were barriers for adherence(41).

2.2.5 Patient related factors

Visual, hearing, cognitive, mobility and swallowing impairments are obvious barriers. Additional factors include lack of knowledge or understanding about the disease or need for the prescribed medication, expectation about and perceived benefits of treatment, ability and motivation to follow a medical regimen, frustration, anxiety, and substance or alcohol abuse (43). Increased CHF related knowledge is associated with better treatment adherence(6).

Adequate literacy is important for adherence to complicated medical recommendations, low health literacy is associated with a higher risk of hospitalization among patients with HF, and is prevalent (27-54%)(5).Study conducted in university of Texas US showed Patients with limited health literacy were to forget to take their medications and more likely to take less medication than instructed compared with adequate health literacy $p = .036$, respectively(52).

In Texas university USA the non-adherent group were more likely to be younger, men, African-American, and users of illicit drugs (53).Despite illness type ,population characteristics or adherence measures, studies are fairly consistent alcohol and substance misuse reduce patient

adherence with medical treatment(54).In India,58.33% and 45% of HF patients used to stop medicines when feeling better or used to stop medicines when feeling worse respectively.

The study conducted in California indicated that ceasing medication when feeling well 80.4%,forgetfulness (69.3%) and ceasing medication use when feeling worse 50.6% were the leading reasons for non-adherence, followed by unpleasant effects of medication and cost 53.3%(30).Patient forgetfulness is one of the patient factor that affect medication adherence. Studies in Colombia University medical center US indicated the most common factors associated with non-adherence included, forgetfulness (50%),having other medication to take (20%),and being symptom free (20%)(25).The study conducted in Netherland showed the factor for non-adherence was difficulties with medication use due to forgetting (OR, 3.72; CI, 1.39–9.94)(55).Study revealed in Saudi Arabia, 49% of patients forgot to take their medications,37.1% of the patients stopped medications when felt better,27.2% stopped when symptom felt worse and also patients who received pharmaceutical health education had lower adherence to medications and high education was inversely related to adherence (31).

2.3 Conceptual framework

Patient non-adherence to prescribed medications presents a multifactorial challenge for physician and other health care providers (45).The key factors affecting medication adherence includes socio-demographic and economic factors, health care system related factors, medical condition related factors, therapy related factors and patient related factors(18).

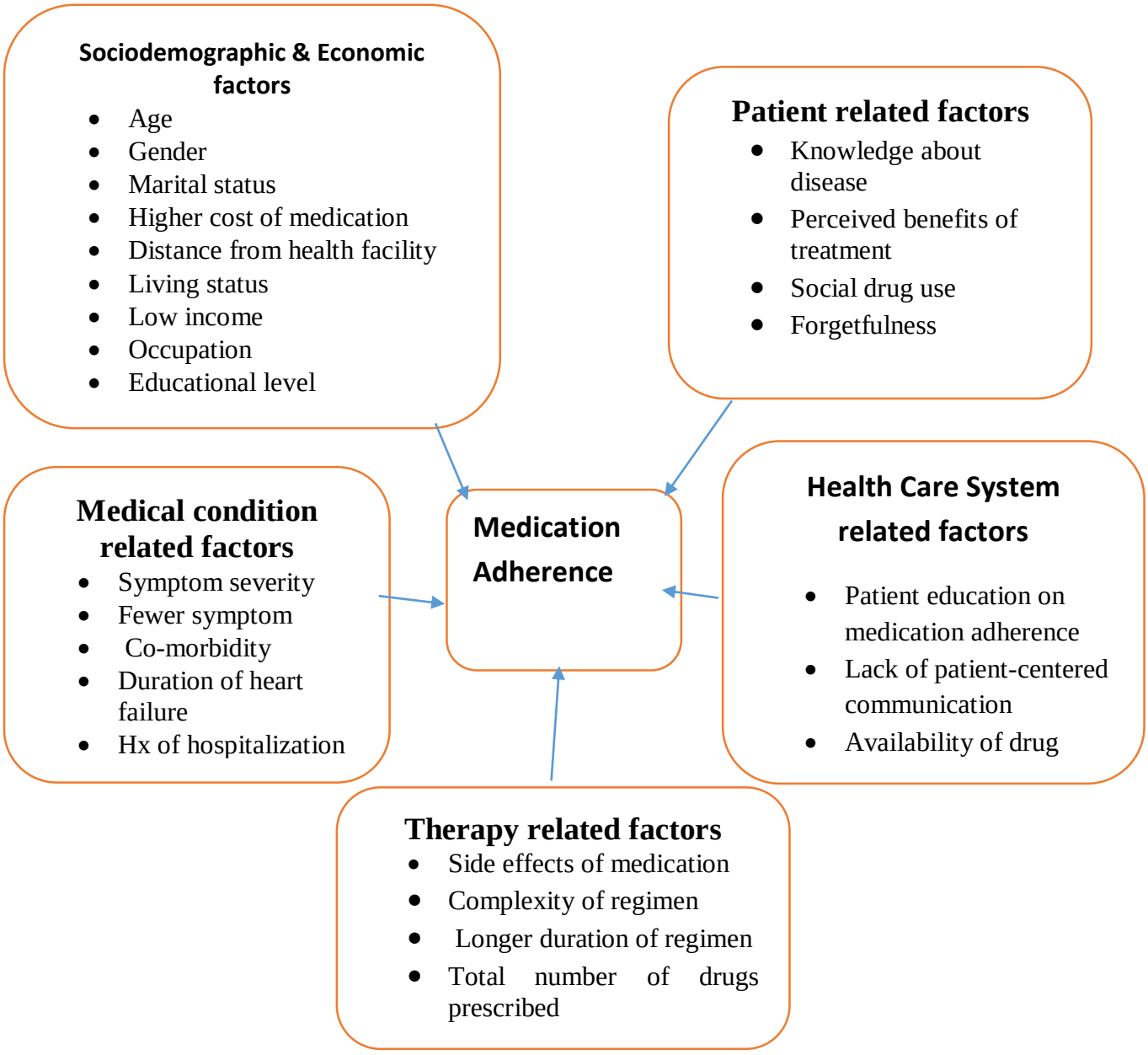

Figure 1: Conceptual framework for assessment of medication adherence and its associated factors among adult heart failure patients (18, 43)

3.OBJECTIVES

3.1 General objective

To assess medication adherence and its associated factors among adult heart failure patients at public teaching hospitals who have cardiac clinic follow up in Addis Ababa, Ethiopia, 2021

3.2 Specific objectives

- To determine the prevalence of medication adherence at public teaching hospitals who have cardiac clinic follow up in Addis Ababa, Ethiopia, 2021
- To identify factors contributing to non-adherence to heart failure treatment at public teaching hospitals who have cardiac clinic follow up in Addis Ababa, Ethiopia, 2021
- To assess the possible reasons of medication non-adherence to heart failure treatment at public teaching hospitals who have cardiac clinic follow up in Addis Ababa, Ethiopia, 2021

4.MATERIALS AND METHODS

4.1 Study area and period

The study areas were in Tikuranbessa specialized Hospital (TASH), St. Paul's Millennium medical college, Armed force teaching specialized Hospital and Yekatit 12 Hospital medical college. The study was conducted from March 8 –April 21, 2021 in Addis Ababa Ethiopia.

Addis Ababa is the political capital and the most important commercial and cultural center of Ethiopia. Its average altitude is 2,400 meter above sea level, with the highest elevations at Entoto Hill to the north reaching 3,200 meters. This makes Addis Ababa one of the high-altitude capital cities of the world. Addis Ababa occupies a total of 540 sq. km land area surrounded by mountainous landscape. The city is divided in to 10 sub-cities called kifle-ketemas (56).As of 2017 currently ,there are 96 health centers for 117 Woredas,11 public hospitals, 28 private hospitals and 882 clinics. (57). There are six teaching public hospitals, in Addis Ababa St Pitter hospital, Menelik II Hospital, Yekatit 12 hospital medical college, Tikuranbessa specialized hospital, St. Paul's Millennium medical college, and Armed force teaching specialized hospital.

TASH was inaugurated in 1972. It is an 850 bed with 130 specialists,50 non-teaching doctors. It is tertiary care teaching hospital of Addis Ababa University. This hospital offers diagnosis and treatment for approximately 370,000 - 400,000 patients a year. The emergency department sees around 80,000 patients a year On the other hand, as the largest teaching hospital of the country, it trains large number of undergraduate and graduate students. It is also an institution where specialized clinical services that are not available in other public or private institutions are rendered to the whole nation. Adult cardiac clinic is one of the outpatient services where cardiac patients are followed up. The clinic is staffed with cardiologists, cardiology fellows, residents and nurses.

St. Paul's millennium medical college in Addis Ababa is the second largest hospital in Ethiopia. The hospital was built by emperor Haile Selassie in 1969, a medical college was formed in2007.The hospital has 350 beds sees an annual average of 300,000 patients. It has a catchment population of more than five million and the hospital has 1200 clinical and non-clinical staff (58).Armed force hospital was the other study area which has 500 beds. This hospital offers services for approximately 100,000 patients. The hospital has 200 doctors and 500 nurses. Yekatit

12 Hospital: This hospital has 362 beds and annually offer the services to 100,000-200,000 patients.

4.2 Study design

Facility based cross-sectional study design with quantitative method among adult heart failure patients was conducted.

4.3: Population

4.3.1: Source population

- All heart failure patients who attended adult cardiac clinic at public teaching hospitals who had cardiac clinic follow up were the source population of this study.

4.3.2: Study population

- All randomly selected heart failure patients who had follow up with in the study period and who fulfilled the inclusion criteria were the study population.

4.4 Inclusion and exclusion criteria

4.4.1 Inclusion criteria

- Patients age ≥18 and diagnosed with heart failure, who were on active follow up and receiving treatment for at least 6 months were included.

4.4.2. Exclusion criteria

Those who were critically ill and cannot give a response were excluded.

4.5 Sample size determination and sampling technique

4.5.1 Sample size determination

The sample size in this study was determined using a single population proportion formula. where n=The required sample size.

Z=Confidence level at 95% (standard value=1.96) at $\alpha_{/2.}$

P=Prevalence of previous study on medication adherence with chronic heart failure in west Ethiopia, Oromia region was 65% (8).

D=The margin of error(precision) 5%(0.05).

$$n = \frac{\left(\frac{Z\alpha}{2}\right)^2 p(1-p)}{d^2} \quad n = \frac{(1.96)^2 \times 0.65(1-0.65)}{(0.05)^2}$$

n=350 Taking 10% non-response` rate, the total sample size was 385

4.5.2 Sampling techniques

Among public teaching hospitals in Addis Ababa, four teaching hospitals who had cardiac clinic follow up were included. The sample was assigned proportionally to the four teaching hospitals based on the number of patients they served and the systematic random sampling technique was used to select patients by considering patients with HF age ≥ 18 years to the chronic follow up unit. First sampling interval (K) was obtained by dividing the total population size of each hospital with the desired sample size of each hospital then a number was selected between one and' K 'of each hospital at randomly, finally participants selected every K^{th} after the first number.

By using the formula for proportional allocation, i.e. (nj=(n/N) x Nj),

Total population size=17200

Total sample size=385

Population size of Tikuranbesa specialized hospital hospital=10000, St. Paul's Millennium medical college=5000, Yekatit 12 hospital=100, Armed force hospital=1200

Where, j=the number of strata,

n=Total sample size

nj=Number of a sample size of the strata

N= Total population size

Nj=Population size of the j^{th} stratum

385/17200*10000 = 224 from TASH

385/17200*5000=112 from St. Paul's Millennium medical college,

385/17200*1200= 27 from Armed Force Hospital

and 385/17200*1000=22 from yekatit 12 hospital medical college was allocated

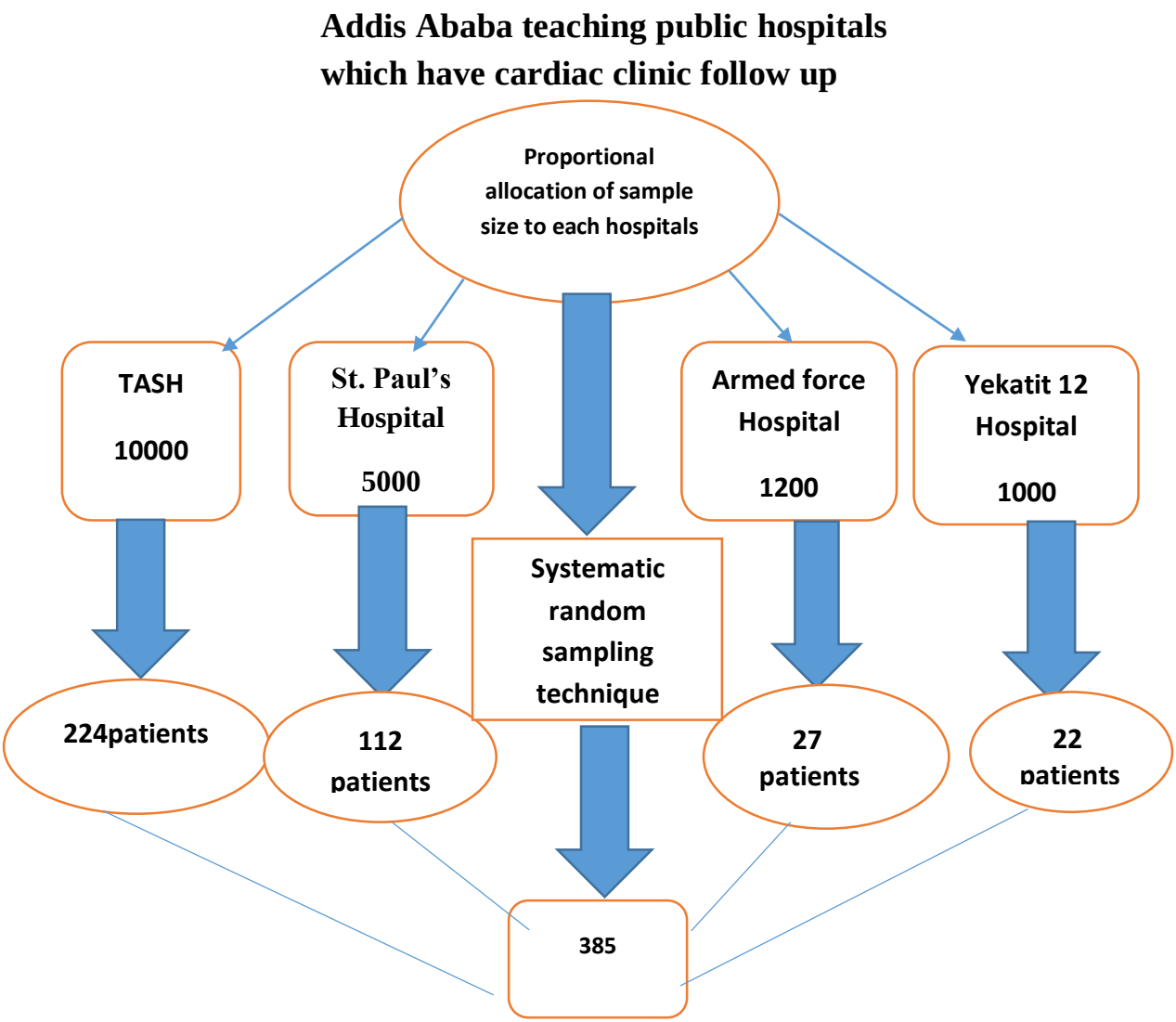

Figure 2: Schematic presentation of sampling procedure to select study participants from each Hospitals, in Addis Ababa, Ethiopia

4.6 Data collection and management

4.6.1 Data collection instruments

Data was collected by using a structured and modified English version of previous studies (8, 12, 59, 60).Information regarding patient demographic, clinical data, medication adherence, challenges of adherence and assessment of patient knowledge was collected by patient interview.

4.6.2 Data collection procedure

Patients were approached at the appointment office right after they visited their physician and at the waiting area. First inclusion criteria were checked, oral and written consent was obtained. Clinical, demographics, medication adherence and knowledge assessment data was obtained by patient interview. Eight-Item Morisky Medication Adherence Scale(MMAS-8) was used to assess adherence. Based on the MAQ ,Morisky et al. developed this 8-item (MMAS-8)in 2008 (12).Its Cronbach's alpha for internal consistency was 0.75. The tool consists of eight questions, and scoring was done according to an already developed method, in which the total score is eight. For questions one up to seven there was a score of zero for every "yes", response and one for every "no", responses except item number five in which the values are of "yes'' and "No" were reversed while the last item is a five point Likert response: "never/ rarely", "sometimes", "usually", and "always." a score of one was assigned to "never/rarely' response and zero for all other responses. The total MMAS-8 score was calculated by adding all of the eight individual question scores and patients with a score of eight was classified as good adherence, 6<8 medium adherence and a score below 6 indicates low adherence(34, 59).

The tool used to assess HF patients' knowledge is the Dutch knowledge assessment scale. Its Cronbach's alpha for internal consistency was 0.79. Fifteen questions, was used to assess patients HF knowledge with a choice of (yes, no, and I don't know). One point was given for each correct answer, no point given for incorrect and 'I don't know' responses. The overall level of knowledge was categorized as 'Good 'for HF patients who correctly answered $\geq$ 75% of knowledge questions and 'poor' for lower than 75%(4, 60).

4.7 Data quality assurance

The data collection format was pre-tested on 5%of the sample size at Cardiac Center of Ethiopia in Addis Ababa. The tool was modified after the result was obtained from the pretest. Two BSc nurses were trained to conduct patient interview. Regular supervision, immediate feedback, spot checking and reviewing each of completed questionnaires daily was carried out. Scale reliability test for this study tool was 0.5 and 0.6 for medication adherence and knowledge respectively.

4.8 Study variables

4.8.1 Dependent variable

- Medication Adherence

4.8.2 Independent variables

- Socio-Demographic and economic characteristics (Age, Gender, marital status, educational level, higher cost of medication, occupation, living status, distance from health facility, low income).
- Patient related variable (knowledge about disease, perceived benefits of treatment, social drug use, forgetfulness)
- Health care system related variables (lack of patient centered communication, availability of medication, education about medication)
- Medical condition related variables (symptom severity, Fewer symptom, comorbidity, duration of heart failure)
- Therapy related variables (side effects of medication, complexity of regimen, longer duration of regimen, total number of drugs prescribed)
- Clinical characteristics (History of hospitalization, duration of heart failure, frequency of follow up, source of medication).

4.9 Operational definition

- Medication adherence: The extent to which the persons' medication taking behavior measured with Morisky scale in which the patient is considered good adherence if he/she score eight ,a score between 6<8 had medium adherence and a score below 6 indicates low adherence (59).

- Knowledge about disease: The persons' knowledge about their own condition measured with Dutch heart failure knowledge scale in which 'Good' for HF patients who correctly answered ≥ 75% of knowledge questions and 'poor' for lower than 75%(60).

4.10 Data analysis and interpretation

Data was entered and cleaned using Epi Data (v 4.4.3.1) and analyzed using statistical package for social studies (SPSS version 25). Descriptive statistics was used for analysis of sociodemographic social and clinical variables. Binary logistic regression was used to assess the association between the dependent and all the independent variables and to identify the candidate for multivariate analysis. Variable having a p value less than 0.25 in bivariate analysis were introduced to multivariate analysis. Then multivariate analysis was performed to determine the associated independent factors of the dependent variables. Statistical significance was considered at p-values<0.05 and adjusted Odds ratio(AOR) at 95% confidence interval(95%CI).

4.11 Ethical consideration

Ethical clearance was obtained from the ethical review committee school of nursing and midwifery Addis Ababa university, from respective institution(IRB). Written and verbal consent was obtained from all participants. All study participants were informed about the purpose of the study and their participation was voluntary and they have the right to withdraw at any time. All information obtained from the participants were kept confidential.

4.12 Dissemination of the result

The study result will be submitted to the school of nursing and midwifery, college of health science, Addis Ababa university, Black lion specialized hospital and other stakeholders. Effort will be made to make presentations on appropriate forums and get published.

5. RESULTS

5.1 Socio-demographic characteristics of study participants

A total of 385 adult heart failure patients participated in the study with a response rate of 100%. The mean age of participants was 46.27(±16) years with the range of 18 to 80 and 36.6% were 18-39 years. Out of 385 patients 261(67.8%) were women, more than half 215(55.8%) of the study participants were married and only 88(22.9%) of participants were single. Of the respondents 115(29.9%)were on primary education category. Regarding occupation 131(34%) of patients were housewife and 67(17.4%) of patients were government employed. Regarding to residency 344(89.4%) of respondents, living in urban area and 312(81%) of participants, their level of knowledge was poor. (Table 1)

Table 1: Socio demographic characteristics of heart failure patients attending public teaching hospitals of Addis Ababa Ethiopia, March-April 2021(n=385)

Variable	Frequency	Percentage	Mean ± SD
Age(in years)			
18-39	141	36.6	
40-49	70	18.2	46.27±16
50-59	75	19.5	
≥60	99	25.7	
Gender			
Male	124	32.2	
Female	261	67.8	
Marital status			
Single	88	22.9	
Married	215	55.8	
Divorced	29	7.5	
Widowed	53	13.8	
Educational status			
No formal education	71	18.4	
Primary	115	29.9	
Secondary	50	13.0	
Preparatory	64	16.6	

Diploma and above	85	22.1	
Income per month in ETB			
Up to 1650	169	43.9	
1651-3200	102	26.5	
3201-5250	77	20.0	
>5250	37	9.6	
Distance to health facility (in km)			
<100	281	73	
100-300	43	11.2	
>300km	61	15.8	
Occupational status			
Government employee	67	17.4	
Merchant	35	9.1	
Housewife	131	34.0	
Retired	28	7.3	
Farmer	20	5.2	
Student	9	2.3	
Private organization	26	6.8	
Others(Daily laborer &Unemployment)	69	17.9	
Place of residence			
Urban	344	89.4	
Rural	41	10.6	
Level of heart failure Knowledge			
Good	73	19.0	
Poor	312	81.0	

5.2 Clinical characteristics of study participants

Of 385 participants,154(40%) had chronic comorbidity, of these hypertension 125(32.5%), Diabetes 57 (14.8%), Diabetes&Hypertension38(9.9%), were the most common. Half of the patients195 (50.6%) were on treatment for more than five years. More than half of the patient 225(58.4%) had been hospitalized for their heart problems,203(52.7%) of patients paid for the drugs. Most of the patients 362(94%),365(94.8%),318(82.5%) reported that their physician communicates about their illness, they didn't experience drug allergy and they have got education about medication respectively. More than half of the participants reported drug availability problem 213 (55. 3%).Most of participants 367(95.3%),375(97.4%) were not discontinued the drug when symptoms of heart failure worsen or when the symptoms become free respectively. (Table 2)

Table 2: Clinical, medication and health care related characteristics associated with ambulatory heart failure patients in Addis Ababa teaching Hospitals 2021(n=385)

Category	Frequency	percentage
Source of medication		
Paid	203	52.7
Free	182	47.3
History of hospitalization		
Never	160	41.6
One or more time	225	58.4
Duration of medication use		
Up to one year	45	11.7
1-5 years	145	37.7
>5 years	195	50.6
Comorbidities		
None	231	60.0
Diabetes	57	14.8
Hypertension	125	32.5
Diabetes and hypertension	38	9.9
Dyslipidemia	34	8.8
Others	14	3.6

No of medication prescribed		
1 up to 5	269	69.9
5 and above	116	30.1
Frequency of follow up		
≤ 3 months	334	86.8
≥ 4 months	51	13.2
Education about medication		
Yes	318	82.6
No	67	17.4
Known drug allergy		
Yes	20	5.2
No	365	94.8
Medication availability problem		
Yes	213	55.3
No	172	44.7
Symptom severity		
Yes	18	4.7
No	367	95.3
Fewer symptom		
Yes	10	2.6
No	375	97.4

5.3 Social and behavioral factors

The result of this study indicates that 341(88.6%) of the respondents were living with their family, followed by 39 (10.1%) living alone and most of the participants do not practice any of the social drugs.362(94%) do have the practice of communication with their physician about their illness (Table 3)

Table 3: Social and behavioral factors of adult clients with heart failure attending public teaching hospitals of Addis Ababa, Ethiopia.

Category	Frequency	Percentage
Social drug use		
Smokers currently	8	2.1
Khat chewers currently	2	0.5
Alcohol consumers currently	15	3.9
Living status		
Living with family	341	88.6
Living alone	39	10.1
Living with relatives	2	0.5
Living with friends	3	0.8
Physician communication about the illness		
Yes	362	94.0
No	23	6.0

5.4 Adherence status

According to the result of this study 48.6% were adhered to prescribed medications. Overall adherence of medication was measured using MMAS-8 scale. Of the respondents 187 score eight (48.6%,) participants had good adherence, while163 participants score six and seven (42.3%) and 35 participants score less than six (9.1%) had medium and poor adherence, respectively.

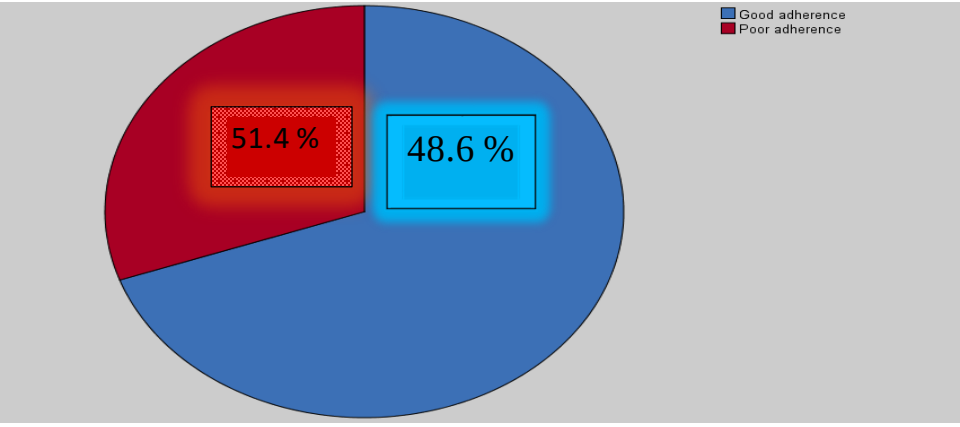

Figure 3 Medication adherence based on eight item Morisky scale of adult clients with chronic heart failure attending public teaching hospitals of Addis Ababa, Ethiopia 2021

5.5 Level of heart failure knowledge

The persons' knowledge about their own condition measured with Dutch heart failure knowledge scale in which 'Good' for HF patients who correctly answered ≥75% of knowledge questions and 'poor' for lower than 75%. Of the respondents73(19%) and 312(81%)were correctly and incorrectly answered knowledge questions respectively.

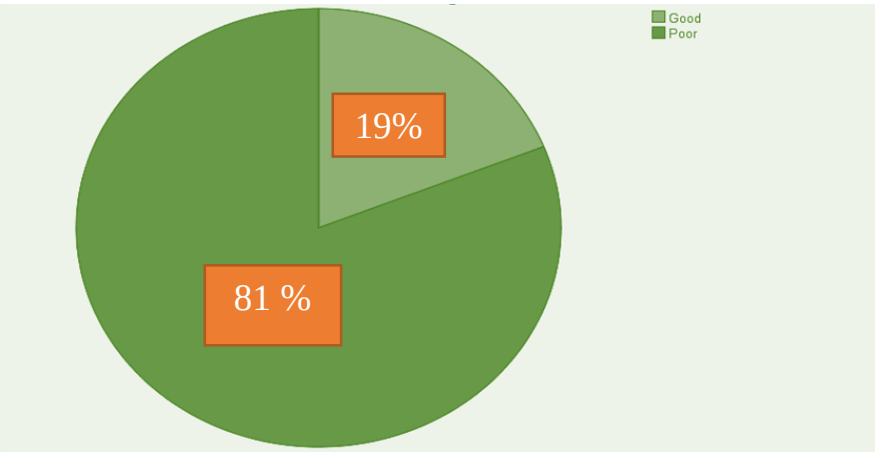

Figure 4 Level of heart failure knowledge among adult clients with chronic heart failure attending public teaching hospitals of Addis Ababa, Ethiopia 2021.

5.6 Factors associated with medication adherence

Binary logistic regression conducted to identify association of independent variable with the dependent variable. Nine variables had a significance level of less than 0.25 with medication adherence. The variables were educational status, education about medication, fewer HF symptom, Patient forgetfulness, cost of drugs, cigarette smoking, drug unavailability, symptom severity and regimen complexity. All nine variables were entered in to multivariate logistic regression analysis for checking the effect of confounding and identifying significant variables, of which five variables educational status, education about medication, fewer HF symptom, Patient forgetfulness, cost of drugs, had an association with medication adherence with a significance value of P-less than 0.05.

Respondents who were received education about medications was 2 times more likely to adhere to medications when compared to those who were not received education about medication at (AOR=2.127, 95% CI= 1.038,4.357, P=0.039). With regard to educational level, no formally educated {AOR=6.044, 95% CI= 1.952,18.708) and primary education level (AOR=3.865,95%

CI=1.374,10.872, P=0.039) were found more likely to be adherent than preparatory, college diploma and university degree. Participants who stopped medication when heart failure symptoms controlled (AOR=0.044, 95% CI=0.006,0.304, P=0.002) were 96% less likely to adhere to medication when compared with those who did not stopped drugs when the symptoms were controlled. In addition, respondents who were sometimes forgot to take medications (AOR=0.064,95% CI= 0.034,0.121, P=0.000) was 94% less likely to be adherent than those who did not sometimes forgot to take prescribed medications. For those participants the cost of drugs expensive AOR=0.413,95% CI= 0.208,0.820 P=0.012) were 59% less likely to adhere to medications compared with those the cost of drugs was not expensive. (Table 4)

Table 4: Binary logistic analysis of factors associated with medication adherence among adult heart failure clients on follow up at public teaching hospitals in Addis, Ethiopia 2021 n=385

		Medication Adherence				
		Poor Adherence	Good Adherence	(COR 95%CI)	(AOR 95%CI)	P-value
Education about medication	Yes	81(69.2)	237(88.4)	4.056(2.206,7.456)	2.127(1.038,4.357)	0.039*
	No	36(30.7)	31(11.5)	1	1	
Educational status	No formal education	13(11.1)	58(21.6)	4.015(1.672,9.641)	6.044(1.952,18.708)	0.039*
	Primary	28((23.9)	87(32.5)	2.796(1.300,6.016)	3.865(1.374,10.872)	
	Secondary	16(13.7)	31(11.6)	1.747(0.736,4.148)	2.004(0.636,6.314)	
	Preparatory	17(14.5)	33(12.3)	1.604(0.709,3.629)	2.555(0.862,7.579)	
	College diploma	18(15.4)	29(10.8)	1.45(0.609,3.450)	3.00190.929,9.697)	
	University degree& above	18(15.4)	20(7.5)	1	1	
Fewer HF symptom	Yes	8(6.8)	2(0.7)	0.102(0.021,0.490)	0.044(0.006,0.304)	0.002*
	No	109(93.1)	266(99.3)	1	1	
Patient forgetfulness	Yes	98(83.7)	68(25.4)	0.060(0.034,0.105)	0.064(0.034,0.121)	<0.001**
	No	19(16.2)	205(76.5)	1	1	
Cost of drugs	Yes	40(34.1)	47(17.5)	0.409(0.250,0.672)	0.413(0.208,0.820)	0.012*

	No	77(65.8)	221(82.5)	1	1	
Regimen complexity	Yes	8(6.8)	5(1.8)	0.259(0.083,0.809)	0.408(0.084,1.974)	0.265
	No	109(93.2)	263(98.1)	1	1	
Cigarette smoking	Yes	4(3.4)	4(1.5)	0.428(0.105,1.742)	0.301(0.031,2.903)	0.299
	No	113(96.5)	264(98.5)	1	1	
Symptom severity	Yes	13(11.1)	5(1.7)	0.152(0.053,0.437)	0.298(0.078,1.140)	0.077
	No	104(88.9)	263(98.1)	1	1	
Drug unavailability	Yes	78(66.7)	135(50.4)	0.508(0.323,0.798)	0.845(0.456,1.568)	0.594
	No	39(25.6)	133(49.6)	1	1	

P-value significant at P<0.05

5.7. Reasons for medication non-adherence

Possible reasons for medication non adherence reported by adult heart failure patients were forgetfulness 161(41.8%), patient feel worse18 (4.7%), unavailability of the medications 213 (55.3%), complexity of regimen13(3.4%), cost of medication87 (22.6%), drug caused side effect20 (5.2%), disbelief on drug &hopelessness 5 (1.3). (Table 5)

Table 5. Possible reasons for non-adherence reported by adult heart failure patients attending at public teaching hospitals in Addis Ababa, Ethiopia March-April

Category	Frequency	Percent
Forgetfulness	161	41.8
Patient feel worse	18	4.7
Unavailability of the medication	213	55.3
Complexity of regimen	13	3.4
Cost of medication	86	22.6
Drug caused side effect	20	5.2
Others (Disbelief on drug, hopelessness)	5	1.3

6. DISCUSION

The result of this study indicates that 48.6% of the participants were adherent to prescribed medications. This result is much better than with the study conducted in Tanzania ,India and California, that shows adherence to their medication as 25.3% ,28.3%, 21.7% respectively (30, 37, 61). The result of the study is consistent with the study conducted in Yemen and Saudi Arabia which is adherence to medication was 45.8% ,46.4% respectively(29, 31). Our result is lower than the study result conducted in Oromia region, Ethiopia ,South Africa and Pakistan 64.8%,71% ,76.5% were adherent to prescribed medications respectively(6, 26, 62).

In our study, education about medication, educational status, fewer HF symptom, cost of drugs, and patient forgetfulness were found to be significant to medication adherence. Age and gender were not associated with medication adherence consistent with the result from a systematic review of 2013.Due to conflicting results the evidence for the relationship was found inconsistent(38).

Respondents who were received education about medications was more likely to adhere to medications compared to those who were not received education about medications, which is consistent with interventional study conducted in USA which stated participants educated by the pharmacists were more adhered to the prescribed medication than non-educated (35).In Khartoum the reasons for poor medication adherence among the study participants were found to be lack of pharmacist education regarding the instructions and importance of taking the drugs regularly (41).There is a contradiction, study in Saudi Arabia those who received health education about medications was non adherent to the prescribed medication(31).

This study showed that participants not formally educated and primary education level were more likely to adhere to medication compared to those high educational level , which is consistent with the study conducted in Los Angeles which is those below primary education levels were adherent to the prescribed medications (30).The reason may be those no formally educated had greater trust in medical recommendation and those who are highly educated mostly employed with many life burdens made them not to remember regularly (31).Our result was not consistent with the study conducted in Iran in which patients with high education level had higher medication adherence than low education level (42).The reason may be patients with higher education level have greater health related knowledge and therefore adhere to their treatments more strictly.

In this study respondents who stopped medication when heart failure symptoms free were less likely to adherent to medication compared with those who did not stopped drugs when the symptoms were free ,our finding is in line with the study conducted in US which is the reason for medication non-adherence among the study participants was being symptom free (25).Similarly in California participants ceasing medication use when feeling well (30) .In addition in India participants stopped medicines when feeling better(61) and in Saudi Arabia patients stopped medications when felt better(31). The reason for non-adherence during symptom free might be due to inadequate knowledge about the disease and medications.

In our study forgetfulness was the other factor for non-adherence. respondents who were sometimes forgot to take medications were less likely to adherent to medications compared with those who did not sometimes forgot to take prescribed medications. It is consistent with the study conducted in US (18, 25) and Netherlands which is the factor for non-adherence was difficulties with medication use due to forgetting (55),also it is in line with the study conducted in New York ,California and Saudi Arabia respectively(25, 30, 31) which is the most common factor for non-adherence was forgetting to took the prescribed drugs. The situations that made it difficult for patients to remember taking their medications as prescribed might be when they are busy at home and when they are in public place.

The study revealed that, for those participants the cost of drugs expensive were less likely to adhere to medications compared with those the cost of drugs was not expensive. Our study is consistent with the study conducted in California, Khartoum and Tanzania which is the reason for non-adherence among the study participants were found to be the high cost of drugs respectively (30, 37, 41).This finding may be due to irregular availability of the drugs in the hospitals they were bought the drugs out of the hospitals with high cost, more than half of the patients have got the drugs by paying out of pocket rather than free charge , and the other possible reason may be the prescribing of expensive brand/trade name medications instead of generics name.

7.CONCLUSION

Almost half of the study respondents have good medication adherence and the factors affecting adherence were educational status, education about medication, fewer symptom, high cost of drug and forgetfulness.

8.LIMITATION OF THE STUDY

Adherence was assessed by self-report which can be affected by recall bias. Since the study was conducted for some participants in the waiting area of the cardiac clinic a social desirability biases might have occurred.

9.STRENGTHS

All study participants were included in the study with a hundred percent response rate and the study was assessed the prevalence and the associated factors of medication adherence.

10.RECOMMENDATION

Ministry of health / Health bureau

Ministry of health or Health bureau should ensure medication availability in the hospitals so that patients can buy the drugs with a low cost from the hospitals rather than buying with a higher cost out of the hospitals.

Hospital decision makers

Hospital managers should consider institutional factors to increase medication adherence. The number of physicians and patient load should be proportional so that physicians could have more time to spend with each patient.

Health professionals

Health professionals at different levels should give education on medication adherence specially pharmacists can be essential resources for counseling patients about their medication. Providing a disease information pamphlet may be enhancing medication adherence of patients with HF.

Cardiac units

Nurses in the cardiac unit needs to consider medication adherence and the factors that affects adherence when developing care plans and patient education program to enhance medication adherence among patients with heart failure.

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ANNEXES

Annex I ENGLISH VERSION OF INFORMATION SHEET

Dear participant, Good Morning/Afternoon

Introduction

My name is _____ I am a member of the study that is carried out to assess medication adherence and associated factors among adult Heart Failure patients in Addis Ababa hospitals at cardiac clinic. The study is being conducted by Abebayehu Dame from Addis Ababa University, school of nursing and midwifery post graduate program.

Objective

The main purpose of this study is to assess medication adherence and its associated factors at adult cardiac clinic of public teaching hospitals in Addis Ababa, Ethiopia. Your input will be extremely valuable as the information will be used to evaluate medication non adherence Significance. The result of the study will provide valuable insights for the healthcare professionals and policy makers about the incidence of patient adherence and can also be used as base line information for further similar studies.

Expected Outcomes and/or Benefits at the end of the study, patient adherence will be evaluated. Therefore, the study will identify and investigate the main gaps and challenges associated with drug use adherence and will propose possible recommendations that may benefit you directly or indirectly by improving heart failure treatment. If you have any questions concerning the study, please call Abebayehu 0913074623.

ANNEX II: ENGLISH VERSION OF INFORMED CONSENT FORM

The study is being conducted by Abebayehu from Addis Ababa University, College of Health Sciences, School of nursing and midwifery post graduate program. The study will be conducted by interviewing. Therefore, I am kindly requesting you to take part in this study by allowing your time for the interview. The interview will take 10-15 minutes. Your name will not be written in the data collection form and will never be used in connection with any information you tell us. There is no risk associated with participating in this study. All information regarding your medical condition will be kept strictly confidential. Your participation is voluntary and you are not obligated to participate in the study. If you feel discomfort with study, it is your right to drop it anytime you want. If you have questions regarding this study, please feel free to contact at any time Abebayehu Damte 0913074623.

Signature of respondent_____

Signature of interviewer _____

ANNEX III: DATA ABSTRACTION FORMAT FROM PATIENT INTERVIEWS

Part I. Patients socio-demographic characteristics (use x in the boxes)

1 .Age		
2. Gender	□ Male	□ Female
3 .Marital Status	□ Single □ Married	□ Divorced □ Widowed
4 .Educational status	□ No formal edu. □ Grade 1-8 □ Grade 9-10	□ Grade 11-12 □ College Diploma □ university degree and above
5 .Place of residence	Urban	Rural
6 .Social drug use	Cigarette smoking Chat Chewing Alcohol use	□ Yes □ No □ Yes □ No □ Yes □ No
7 .Living status	□ Family □ Alone	□ Relatives □ Friends
8 .Occupation	□ Government employee □ Merchant □ House wife □ Retired	□ Farmer □ Student □ Private □ other

9 .Income/monthly in ETB	□ 0- 600 □ 601-1650	□ 1651-3200 □ 32001-5250 □>5250
10 .Distance to health facility	_____KM	
11 .Physician communication /Explanation about the illness	□ yes □ No	

Part II Clinical characteristics

No		
1	Duration of heart failure treatment	□ 6 Months-1 year □ 1 up to 5 year □ > 5 year
2	Duration of heart failure	□ 6 Months-1 year □ 1 up to 5 year □ > 5 year
3	No of hospitalization since last year	No □ One □ above one-------
4	Frequency of follow up	
5	Comorbidity	□ No □ Yes (list out)
6	Total number of drug you are taking	
7	How do you get your medications	□ Free □ payment
8	Have you learned about medication adherence	Yes □ □ No

Part III: Assessment of adherence(MMAS-8)

No	Items	No	yes
1	Do you sometimes forget to take your pills?	□ 1	□ 0
2	People sometimes miss taking their medications for reasons other than forgetting. Thinking over the past two weeks, were there any days when you did not take your medicine?	□ 1	□ 0
3	Have you ever cut back or stopped taking your medicine without telling your doctor because you felt worse when you took it?	□ 1	□ 0
4	When you travel or leave home, do you sometimes forget to bring along your medicine?	□ 1	□ 0
5	Did you take all your medicine yesterday?	□ 1	□ 0
6	When you feel like your symptoms are under control, do you sometimes stop taking your medicine?	□ 1	□ 0
7	Taking medicine every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your treatment plan?	□ 1	□ 0
8	How often do you have difficulty remembering to take all your medicine?	□Never/rarely {1} □sometimes {0} □usually {0} □ all the time {0}	
	Total score		

Part IV Any problems that challenges your medication adherence, (Use "X "in the boxes)

1	Patient forgets to take	□ yes No □
2	Patient felt worse	□ Yes □ No
3	Drug product not available	□ Yes □ No
4	Regimen complexity	□ Yes □ No
5	Drug product too expensive	□ Yes □ No
6	Drug adverse effect	□ Yes □ No
7	Disbelief in drug effectiveness	□ Yes □ No
8	Other	

ANNEX IV HEART FAILURE KNOWLEDGE ASSESSEMENT SCALE

1	Exchange of oxygen and carbon dioxide occurs in heart	Yes	No	I don't know
2	HF is a condition in which the heart is not able to pump blood through the body in sufficient amount			
3	Difficulty in breathing and shortness of breath are symptoms of HF			
4	One of the symptoms when the lungs become congested with fluid is shortness of breath			
5	Some patients with severe HF become breathless when they lie flat and feel much better when they sit up			
6	Short term -weight gain is one of the signs of worsening HF			
7	Over work and stress sometimes cause HF to get worse			
8	Sodium cause water retention			
9	Diuretics remove fluid from the body			
10	HF patients are discouraged from taking medications without food			
11	HF patients had better drink more water than healthy people			
12	HF patients had better take a high-salt diet			
13	Smoking is good for patients with HF because it promotes the circulation of blood			
14	HF patients should not perform exercise regardless of their severity of HF			
15	HF patients had better take a hot bath to promote blood circulation			

ANNEX V. AMHARIC VERSION QUESTIONNAIRE (የአማርኛ መጠይቅ)

አዲስ አበባ ዩኒቨርሲቲ፣ ጤና ሳይንስ ኮሌጅ፤ ነርሲንግ ና ሚድዋይፈሪ ት/ቤት

ቅጽ 1: የጥናቱ መረጃ ቅጽ

ውድ የቃለመጠይቅ ተሳታፊ፤ እንደምን አደሩ/ ዋሉ?

ስሜ_____ይባላል። በልብ በሽታ ታካሚዎች ላይ መድሀኒትን ባግባቡ በመዉሰድ ዙሪያ" በተሰኘ የድህረ ምረቃ ጥናት አባልነኝ። ጥናቱ የሚካሄውም በ ጥናቱ ተመራማሪ አበባየሁ ዳምጤ እና በጥናቱ ዋና አማካሪ ረዳት ፕሮፌሰር ዮሃንስ አያሌዉ ከአዲስ አበባ ዩኒቨርሲቲ፣ ጤና ሳይንስ ኮሌጅ ነርሲንግ ናሚድዋይፈሬ ት/ቤት የድህረ ምረቃ ፕሮግራም ነው።

የጥናቱ አላማ

የዚህ ጥናት ዋና አላማው በታዘዘው መሰረት በአግባቡ እንዴት መድኃኒትዎን እንደሚወሰዱት፣ መድኃኒትዎን ሁል ጊዜ እንዳይወሰዱ የሚያደርጉ ዋና ዋና ክፍተቶችን በመለየትና የመፍትሄ ሀሳቦችን ማቅረብ ነው።

ከጥናቱ የሚጠበቁ ውጤቶች/ ጥቅሞች

በታዘዘው መሰረት በአግባቡ የአወሳሰድና የአጠቃቀም ክህሎትን ያጠናል። በተጨማሪም ከጥናቱ በሚገኙ ግኝቶች የልብ ህክምና ዉጤትን በተወሰነ መልኩ ለማሻሻል እንደሚቻል በመገመት፤ እርስዎ የጥቅሙ ተቋዳሽ ይሆናሉ ብለን እናምናለን። ጥናቱ የሚካሄደው በቃለ መጠይቅ ነው። ስለዚህ የእርስዎ ቅንና ሓቀኛ መረጃ ለጥናቱ እጅግ በጣም ወሳኝ ነው።

የተከበረ ጊዜዎን ስለሰጡን እጅግ በጣም እናመሰግንዎታለን።

ቅጽ2፡ በቃለ መጠይቅ ለመሳተፍ የፈቃደኝነት ቃል መቀቢያ ቅጽ

በዚህ ጥናት የእርስዎ መረጃ ሙሉ በሙሉ በምስጥር የተጠበቀና ለምርምሩ አላማ ብቻ የሚዉል ነው። በተጨማሪም የእርስዎ ተሳታፊነት በፈቃደኝነት ላይ የተመሠረተ ነው። የጥናቱ አላማውን ተረድተውና ጊዜዎን ሰውተው፤ ከ 10-15 ደቂቃ ለሚፈጅ ቃለመጠይቅ መረጃ ለመስጠት ፍቃደኛ በመሆንዎ በቅድሚያ አመሰግናለሁ። በየትኛውም ጊዜ ጥያቄ ካለዎት አበባየሁ ዳምጤ በ ስ.ቁ +251913074623

ቃለ መጠይቅ የሚደረግለት ሰዉ ፊርማ_____

ቃለ መጠይቅ የሚያደርገዉ ሰዉ ፊርማ_____

ሀ. የታካሚ ማህበረሰባዊ ባህርያቶች መረጃ በተመለከተ (መመርያ፡ ለመረጡት ምላሽ የx ምልክትን ያድርጉ)

ክፍል 1. ማህበረሰባዊ ባህርያቶች:			
ቁጥር			
1.እድሜ፤			
2.ፆታ፤	ወንድ □	ሴት □	
3.የጋብቻ ሁኔታ፤	ያላገባ/ች □	ያገባ/ች □	አግብቶ/ታ የፈታ/ች □ ሚስቱ/በሏየሞተችበት/ባት □
4.የትምህርት ሁኔታ፤	ያልተማረ/ች □ ከ1ኛ-8ኛ ክፍል □	ከ9ኛ-10ኛ ክፍል □ ከ11ኛ-12ኛ ክፍል □	ኮሌጅ ዲፕሎማ □ ዩኒቨርስቲ ዲግሪ እና ከዚያ በላይ □
5 .የወር ገቢ በኢትዮጵያ ብር	0-600 □ 601-1650□	1651-3200 □ 3201-5250 □	>5250 □
6 .ከጤና ተቃሙ ያለወት ርቀት በ ኪ.ሜ			
7 .የስራ ሁኔታ	የመንግስት ሰራተኛ □	ነጋዴ □ የቤት እመቤት □	ተማሪ □ ሌላ □ ገበሬ □
8. አሁን የሚኖሩበት	ከተማ □	ገጠር □	
9 . የማህበራዊ ሂወትዎ ሁኔታ	ሲጋራ ያጨሳሉ	አዎ □	አላጨስም □
	ጫት ይቅማሉ	አዎ □	አልቅምም □
	መጠጥ (አልኮል) ይጠጣሉ	አዎ □	አልጠጣም □
10 .የኑሮ ሁኔታ	ከቤተሰብ ጋር ብቻየን	ከአስታማሚ ጋር ከጓደኛ ጋር	
11 .ሃኪሙ ስለ በሽታዎ በደንብ ያስረዳል	□ አወ	□ አይደለም	

ክፍል 2 የታካሚዎች በሽታ ባህርያት በተመለከተ		
1. የልብ በሽታ እንዳለበዎት ተመርምረዉ ካወቁ ስንት ዓመት ሆኖቷል □ከ 6 ወር አስከ 1 አመት ከ1-5 □ ከ5አመት በላይ □		
2.የልብ መድኃኒት መውሰድ ከጀመሩ ስንት ዓመት ሆኖቷል □ከ 6 ወር አስከ 1 አመት ከ1-5 □ ከ5 አመት በላይ		
3 በልብ በሽታዎ ምክንያት ካለፈዉ አመት ጀመሮ ስንት ጊዜ ሆስፒታል ተኝተዋል	ተኝቶ አላውቅም □	አንድና ከዚያ በላይ □
4 ተጨማሪ በሽታ አለበዎት	የለብኝም □	አዎ □ (ይግለጹ)
5.በአሁኑ ጊዜ የሚወስዱት የልብ መድሀኒት ብዛት		
6 መድሃኒት የሚያገኙት በምን መልኩ ነዉ;	በግዢ □ በነጻ □	
7 .በየስንት ጊዜ ክትትል ያደርጋሉ		
8.መድሃኒት በአግባቡ እንዲወስዱ ትምህርት ተሰጥቶዎታል	አ አዎ ዎ አይደለም	

ክፍል 3:	ሞሪስኪ” መድኃኒትን በታዘዘው መሰረት በአግባቡ ስለመውሰድ” መለኪያ- 8		
ጥያቄዎች		አዎ 0	አይደለም 1
1	አንዳንድ ጊዜ መድኃኒትዎን ረስተው ሳይወሰዱ ቀርተዉ ያዉቃሉ?	□	□
2	ሰዎች አንዳንድ ጊዜ ከመርሳት በተጨማሪ ባሉት የተለያዩ ምክንያቶች መድኃኒታቸውን ሳይወስዱ ይቀራሉ። ባለፉት ሁለት ሳምንታት፣መድኃኒትዎን ሳይወስዱ የቀሩበት ቀናቶች ነበሩ	□	□
3	መድኃኒትዎን እየወሰዱ ህመምዎ ሲባባስ ሐኪምዎን ሳያማክሩ መድኃኒትዎን አቋርጠው ያዉቃሉ	□	□
4	በጉዞ ወይም በሌላ ምክንያት ከቤትዎ እርቀው ሲጓዙ አንዳንድ ጊዜ መድኃኒትዎን ረስተውት ሳይወስዱት ያውቃሉ	□	□
5	በትላንትናው ዕለት ሁሉንም መድኃኒትዎን ወስደዋል	□	□
6	ህመምዎ ሲሻልዎት(የህመም ስሜቶች ሲጠፉ) አንዳንድ ጊዜ መድኃኒትዎን አቋርጠው ያውቃሉ	□	□
7	መድሀኒቶችን በየቀኑ መውሰድ ለአንዳንድ ሰዎች ምቾት ይነሳቸዋል። እርስዎ በህክምና ክትትልዎ ወቅት በየቀኑ ወይም አንድም ጊዜ ሳያዛንፉ መድሐኒት በትክክል ለመዉሰድ ተሰላችተዉ ያዉቃሉ	□	□
8	ሁሉንም መድሐኒቶች መውሰድ አለመዉሰድዎን ማስታወስ የከበድዎት ጊዜ አለ	□በፍፁም/አልፎአልፎ{1} □አንዳንድ ጊዜ{0} □ አብዛኛዉ ጊዜ{0} □ ሁልጊዜ{0}	
	አጠቃላይድምር		

መድሃኒቱን በአግበቡ ካልወሰዱ እባክዎ ምክንያቱን ይግለጹ (ከአንድ በላይ መምረጥ ይቻላል)

መድሃኒቱን ስወስድ ህመሜ ስለሚባባስብኝ
መድሃኒቱን ማግኘት ስላልቻልኩ
ስለምረሳው
የምወስዳቸው መድሃኒቶች ብዙና ግራ የሚያጋቡ ስለሆኑ
መድሃኒቱ ውድ ስለሆነ
በመድሀኒቱ የጎንዮሽ ጉዳት ምክንያት
የመዱኒቱን ፈዋሽነተ ስለማላምንበት

ሌላ ምክንያት…

ክፈል 4 .የልብ ታካሚዎች ሰለበሽታቸዉ ያላቸዉን እዉቀት መለኪያ

ተራ ቁጥር	ጥያቄዎች	አዎ	አይደለም	አላዉቅም
1	ወደ ዉስጥ የምንተነፍሰዉ አየርና የምናስወጣዉ አየር የሚቀያየሩት ልብ ዉስጥ ነዉ			
2	የልብ በሽታ ማለት ልብ በበቂ ሁኔታ ደም ለሰዉነት መርጨት ሳትችል ስትቀር ማለት ነዉ			
3	የመተንፈስ ችግርና ትንፋሽ ማጠር የልብ በሽታ ምልክቶች ናቸዉ			
4	ሳንባ በፈሳሽ ሲሞላ ከሚያሳያቸዉ ምልክቶች አንዱ የትንፋሽ ማጠር ነዉ			
5	አንዳንድ የልብ ታካሚዎች በሽታዉ ሲባባስባቸዉ በጀረባቸዉ መተኛት አይችሉም ነገር ግን ሲቀመጡ ሻል ይላቸዋል			
6	በአጭር ጊዜ ዉስጥ ክብደት መጨመር የልብ በሽታ መባባስ ምልክት ነዉ			
7	ከባድ ስራና ጭንቀት የልብ በሽታን ያባብሳል			
8	ጨዉ መመገብ ሰዉነት ዉስጥ ዉሃ እንዲጠራቀም ያደርጋል			
9	ሽንት የሚያሸኑ መድሃኒቶች ከሰዉነት ዉስጥ ዉሃ እንዲወገድ ያደርጋሉ			
10	የልብ ታካሚዎች መድሃኒት በባዶ ሆዳቸዉ እንዲወስዱ አይመከርም			
11	የልብ ታካሚዎች ከጤነኛ ሰዎች በተሻለ ብዙ ዉሃ መጠጣት አለበቸዉ			
12	የልብ ታካሚዎች ጨዉ የበዛበት ምግብ መመገብ አለበቸዉ			
13	ሲጋራ ማጨስ ለልብ ታካሚዎች ጥሩ ነዉ ምክንያቱም የደም ዝዉዉርን ያፋጥናል			
14	የልብ ታካሚዎች በሽታቸዉ ሳይባባስም እንቅስቃሴ ማድረግ የለባቸዉም			
15	የልብ ታካሚዎች የደም ዝዉዉራቸዉ እንዲፋጠን በሙቅ ዉሃ ገላቸዉን መታጠብ አለባቸዉ			