FACTORS ASSOCIATED WITH TREATMENT NON-ADHERENCE AMONG ADULT CARDIOVASCULAR PATIENTS ATTENDING OUTPATIENT CARDIAC CLINIC AT JIMMA UNIVERSITY TEACHING HOSPITAL SOUTHWEST ETHIOPIA, JIMMA 2014.

By: Dinkinesh Begna (Bsc Nurse, ICCMH year II)

A THESIS SUBMITTED TO DEPARTMENT OF PSYCHIATRY, COLLEGE OF PUBLIC HEALTH AND MEDICAL SCIENCES, JIMMA UNIVERSITY IN PARTIAL FULFILLMENT FOR THE REQUIREMENT OF MSC IN INTEGRATED CLINICAL AND COMMUNITY MENTAL HEALTH

May/2015

Jimma Ethiopia

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ABSTRACT

Background Information

Treatment non- adherence is affected by a number of factors; among them psychiatric conditions especially depression is major. Treatment non-adherence among cardiovascular patients are a public health issue which results in hospitalization, poor quality of life, morbidity, increase in health cost and mortality. Even if this psychiatric condition were not addressed there were study conducted in Gondar and Debate woreda on treatment non compliance on chronic NCD. So this area is not addressed irrespective of its huge negative impact as there is scarcity of information in Ethiopia and particularly at Jimma.

Objective – *The general objective of this study was to assess factors associated with treatment non adherence with special emphasis on depression among adult cardiovascular patients attending service at outpatient cardiac clinic of JUTH from October – November, 2014*

Methods- *The study was conducted in Jimma University Teaching Hospital cardiac unit from October to November 2014 with a total sample of 353 patients which was cross-sectional. Depression status of cardiovascular patients were measured by using Patient Health questionnaire-9(PHQ 9) where the cutoff point were five from the total 27 scores. Score of less than five was taken as non depressed and greater than or equal to five as depressed. Treatment adherence status was measured by Morisky medication adherence scale 8 (MMAS 8) where scores less than six were taken as treatment adherent where as scores greater than or equal to six as non adherent. Oslow Social Support (OSS) 3 item scales was also used to assess the strength of social support of respondents. 95% confidence interval and variables with p value of less than 0.05 were taken as significant on the final model.*

Result- *A total of 339 patients were interviewed making a response rate of 96%. Age group in the range of 36 to 44 with [AOR (95%CI)=4.4 (1.12-18.2)] and age group of 54 to 62 with [AOR (95%CI)=3.6 (1.02-14.1)], being divorced with [AOR (95%CI)=0.21 (0.05-0.8)],* having moderate social support [A*OR (95%CI)=(0.17-0.9)] and unavailability of medications in the hospital pharmacy with [AOR (95%CI) =0.2 (05-0.9)] were significantly associated with treatment non--adherence of respondents.*

Conclusion*: Age, being divorced, having moderate social support and unavailability of medication in the hospital pharmacy are factors which contribute for treatment non adherence*. *Depression was not statistically significant on the final model but its prevalence was high (63.1%) among the non adherent groups*. So *treatment adherence is a multi-factorial problem consideration should be given to alleviate this problem.*

Keywords; Treatment non-adherence, cardiovascular disease, Associated Factors

Acknowledgement

I would like to extend my deepest gratitude for Jimma University student's research project and psychiatry department for giving me this opportunity to do this thesis.

My special gratitude goes to my advisors Dr. Alemayehu Negash and Mr. Hailay Abrha for giving me valuable comments and suggestions while preparing this thesis.

I also want to say thank a lot for Mr Nagasa Eshete for his heart full guidance like my advisors starting from title preparation throughout the whole work.

Finally the last but not the least appreciation is for all staffs of cardiac clinic for their collaboration on data collection and cardiac patients who are voluntary to be interviewed.

List of Abbreviation and Acronyms

CBT	Cognitive behavioral therapy
CHD	Cardiac heart disease
CAD	Coronary artery disease
DM	Diabetes mellitus
ECG	Electrocardiography
HIV	Human immunodeficiency virus
ICCMH	Integrated clinical and community mental health
JUTH	Jimma university teaching hospital
MI	Myocardial infraction
MMAS	Morisky medication adherence scale
NCDs	Non-communicable diseases
OPD	Outpatient department
PHQ 9	Patient health questionnaire 9
SPSS	Statistical package for the social science
WHO	World health organization
OSS-3	Oslo social support scale

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Introduction

Among the top listed causes of GBD more than 60% are caused by Non-communicable diseases. Out of this, cardiovascular diseases account for 30% (1). According to surveillance done in Addis Ababa it was 51% and 42% for NCD and infectious disease respectively (2). Globally neuropsychiatric disorders account for 14% of the total burden of disease and 37% of all years lived with disability (3). This is because of the chronically disabling nature of depression and other mental health disorders (2, 3). CVD and mental health conditions are the dominant contributors to the global economic burden of NCDs. The Burden of infectious diseases is around 40% in Low Income countries (1).

The co-morbidity of psychiatric conditions specially that of depression with NCDs in general and with CVDs in particular is a sharp double blade burden beheading the already stunted economies of Sub-Saharan Africa countries. It is believed that depression is highly prevalent among cardiac patients accounting for 15 to 45% (5, 40). It should be considered as a hidden horrifying enemy of economic growth having synergistic effect with poverty with continuous downside decline of economy in these countries.

The average reported Non-adherence to treatment across chronic non-communicable disease was 50% in developed world and it was higher in developing countries (8, 12). Non adherences across cardiovascular diseases are equal with this finding (9,10).

In general treatment non adherence, cardiovascular disease and depression are a major public health issues. Depression has strong relationship with chronic non-communicable diseases including heart disease. As some studies showed it has strong contribution for treatment non-adherence including other factors in these patient populations. Non-adherence to prescribed medication results in re-hospitalization, poor quality of life, economic burden and social problems.

Statement of the problem

Non-adherence is a poly-faceted problem needing holistic problem-based approach as a means of solution for it. It is one of the major public health problems. World Health Organization categorized the determinants of non-adherence into five dimensions: social and economic, health system-related, therapy-related, condition related, and patient related (9).

Psychiatric conditions especially depression is prevalent in CVD. Depression accounts for 4 % of the GBD (10) and it is one of the top ten disease in DALYs affecting individuals within age range of 15-49 that belong to the most productive section of any society with negative economic consequences. It is also one of an independent factor for treatment non adherence in chronic physical illness especially in CVD. Study shows that depressed patients have lower medication adherence than non-depressed patients in CVD (11). A review conducted in USA also indicates Depressed CHD patients are less adherent to cardiac medication regimens than are non-depressed patients (12).

In our setting we also expect non-adherence of depressed cardiac patients to be high as we observe from our clinical practice encountered at JUTH. However, we don't have supportive scientific evidence-based data on this important issue. Furthermore, we speculate that lack of awareness among health professionals on physical-health problems co-morbidity as well as lack of well-organized interdisciplinary viable team approach tradition in patient care perpetuates this situation everywhere in the country.

Consequences of non-adherence are extensive. It negatively affects treatment effectiveness and leads to poor therapeutic outcomes (13). It bears both personal and social costs. At personal level it contributes for negative quality of life, daily functioning and poor self care (7). Non-adherence can also result in deterioration in one's mental health status and to relapse into depression. It also leads the individual for hospitalization.

At the societal level, treatment non-adherence is associated with increased costs, due to indirect expenses like loss of productivity which results from absenteeism, early retirement and

adds burden on the health care system (7). Therefore adherence is an important indicator of health system effectiveness.

Non-adherence to medications can be intentional or none intentional. Intentional non-adherence is an active process whereby the patient chooses to deviate from the treatment regimen.

Unintentional non-adherence is a passive process in which the patient may be careless or forgetful about the treatment. It include; living alone, low socioeconomic status, higher medication costs, lack of prescription drug coverage, higher number of physicians caring for the patient, depression, cognitive impairment, presence of side effects to medications, poor provider-patient relationship, complex treatment regimens, and financial issues (14).

To which extent depression and other factors affect treatment non adherence of the coexisting CVDs and other medical conditions remains an important area of research (12). This is true in Sub-Saharan Africa in general and in Ethiopia in particular!!

However, treatment non-adherence among cardiac patients both with and without depression is not yet published across the country (Ethiopia) Except that of Gondar which was done on chronic non communicable diseases as far as my knowledge is concerned despite it is a critical issue for the public. Therefore, identifying factors for treatment non adherence in CVD patients will reduce consequences such as hospitalization, morbidity and mortality as worldwide issue. So this study might be crucial for solving treatment non adherence associated with depression and other factors in South West Ethiopia as well as for overall.

Literature Review

Over view of treatment non-adherence and factors associated with it

Non-adherence to treatment is an inadequate long-term use of a prescribed therapy (8).Treatment adherence is patient-centered concept of health care in which patients and providers collaborate on treatment plans, rather than patients unilaterally following physicians' instructions(15). Adherence can be assessed in two ways which is subjective and objective. Subjective measures include self reported adherence or assessments by caregivers, family members, and clinicians. (4)

Depression is prevalent in cardiovascular disease. It is also one of an independent factor for treatment non adherence in chronic physical illness especially in CVD. There were over 298 million cases of MDD globally at any point in time in 2010, with the highest proportion of cases occurring between 25 and 34 years (16) . The existing research findings show that the global point prevalence of depression has remained similar (16). It is believed that depression is highly prevalent among cardiac patients accounting for 15 to 45% (5, 40).

Other factors for treatment non adherence includes living alone, low socioeconomic status, higher medication costs, lack of prescription drug coverage, higher number of physicians caring for the patient, cognitive impairment, presence of side effects to medications, poor provider-patient relationship, complex treatment regimens, and financial issues (14).

Most of the review results used in this thesis had used patient health questioner to identify depression and Morisky medication adherence scale to assess treatment adherence. Most of them have used cross sectional study design which was hospital based, some are observational, other are systematic review of literatures. But these findings couldn't describe the risk factors for non-adherence; further more it is more of qualitative expression. Most of them focus on only depression. So the following review is done as much as access was found.

Factors associated with treatment non adherence

Treatment non-adherence is not only the result of poor patient choices, rather it is a potential contributors attributable to patients , health care providers and the health care system more broadly (8).

Socio-demography and economic factors for treatment non adherence

As different evidence indicate treatment non-adherence is more common among younger patients and those with low income (17). Ackincigil and her colleagues examined treatment adherence among 4,312 patients with depression (aged 18 and over) and found that the younger age group was associated with lower adherence rates. This finding stated out this might be due to the greater life experience of older adults, which might contribute to their understating of the importance of treatment adherence (18).

Patient related factors for treatment non adherence

According to a study conducted in England on chronic disease co-morbid with depression typical reasons cited by patients for not taking their medications were forgetfulness (30 %), other priorities (16 %), decision to omit doses (11 %), lack of information about the consequences (9 %), and emotional factors (7 %); 27 % of the respondents didn't provide a reason for poor adherence to a regimen. (18). Perceived stigma, defined as the individual's perception regarding others' stigmatized views and negative responses towards people with mental health problems, was found to be associated with decreased treatment adherence (18).

Health care system factors for treatment non adherence

Physicians contribute to patients' poor adherence by prescribing complex regimens, failing to explain the benefits and side effects of a medication adequately, not giving consideration to the patient's lifestyle or the cost of the medications, and having poor therapeutic relationships with their patients (17, 19).This suggests that adherence can be improved by intervention strategies with trained health professionals (20).

Depression as factor for treatment non adherence

In study done in California on 940 out patients with coronary heart disease co-morbid with depression showed that, 7% of the participants reported not taking their medication as prescribed. Participants with depression were more likely than without depression reported not taking their medication as prescribed forget to take and decide to skip their medication. compared with participants who had no symptoms to minimal depressive symptoms, those with severe depressive symptoms showed 3 fold odds of not taking their medication as prescribed (21).

This study showed that there is no difference in the association with medication non-adherence in users of antidepressants, aspirin, statin and angiotensin system blockers. But the association between depression and medication non-adherence differed in users and non users of beta blockers. So this study showed that depression had association with treatment non-adherence especially severe depression. similarly Carney *et.al* found that depression was associated with non-adherence to prescribed aspirin where 10 depressed and 45 non depressed patients were non adherent to their medication (21).

Frasure-Smith found compelling evidence that depression was associated with a more than 4-fold increased risk of mortality during the first 6 months following acute MI (22). Depression decreases patient adherence to medical treatments for many chronic illnesses. Depressed CHD patients are less adherent to cardiac medication regimens, than are non-depressed patients (23).

This study stated out the reasons why depression is associated with treatment non-adherence like they may have hopelessness which may compromise any confidence in the benefit of therapy, it may also explained by lack of energy , lack of focus required to follow through with treatment recommendations and also this patients may be more sensitive to medication side effects and they may more likely discontinue medication use. Alternatively it may be that medication non-adherence leads to depression (23).

Report on Clevard Clinic Journals show that depressed patients perceive their health status and quality of life negatively (24). An observational study of patients with a recent hospitalization for Acute Coronary Syndrome demonstrated a dramatic increase in treatment non adherence between depression and non-adherence. Which was 15 % of non-depressed patients, 29 % of mildly depressed patients and 37 % of moderately-to-severely depressed patients took aspirin less than 80 % of the time (8).

Adherence on Antidepressant in Major Depressive Disorders

A national data on 6 chronic disease done in United state in 2008 of patients with depression, 85 % had filled a prescription for an antidepressant and 56 % had filled a prescription for either selective serotonin reuptake inhibitors or serotonin and nor epinephrine reuptake inhibitors (25).

On a study done in India on treatment non-adherence on uni-polar depression in tertiary hospital Kolkata by using MMAS show that out of 239 patients 16.9% were poorly adherent, 13.9% were moderately adherent, 19.2% were highly adherent to the prescribed treatment (13).

In one study of post-MI patients, less than 15% of depressed patients were accurately identified as such by their treatment teams and only 11% received treatment with antidepressants (26). Given the increased morbidity and mortality associated with depression, so this study recommend as it is very useful to identify them consistently (26).

Treatment adherence of cardiac patients in Ethiopia

As a study conducted on non compliance with drug regimens for chronic disease in Gondar showed, patients with chronic rheumatoid valvular heart disease were non adherent to their treatment regimen completely.(27).

Adherence of cardiac patients to antidepressant for co-morbid depression

Despite the existence of effective and safe treatments for depression in cardiac patients, depression remains under recognized and undertreated in this population (26)

In one study of post-MI patients, less than 15% of depressed patients were accurately identified by their treatment teams and only 11% received treatment with antidepressants. Given the increased morbidity and mortality associated with depression, it is important that these patients be more consistently identified (26). So routine screening of cardiac patients for depression is one potential way to improve detection of depression in this patient population.

According to WHO report of 2001 data for depression reveal non-adherence of between 30% and 60% to antidepressant therapies (23).

Care Management Programs

Treatment of depression is an important component of achieving improved outcomes among chronic disease patients with co-morbid depression (28). Collaborative care and related care management programs are one way to improve the identification and treatment of depression in patients with cardiac disease (29)

The collaborative care intervention led to greater reductions in depressive symptoms and fewer major adverse cardiac events at 9 months (11). Given the potential health consequences of untreated depression, accurate identification of depression and referral for treatment is recommended by Christopher M. Elano. Effectiveness of collaborative care for depression, however, has been found in highly diverse care settings, with robust effect sizes among patients with little resources and lower medication adherence.

Summary of risk factors for treatment non-adherence

The World Health Organization categorized the determinants of non-adherence into five dimensions: social and economic, health system-related, therapy-related, condition related, and patient related (9).

Conceptual frame work

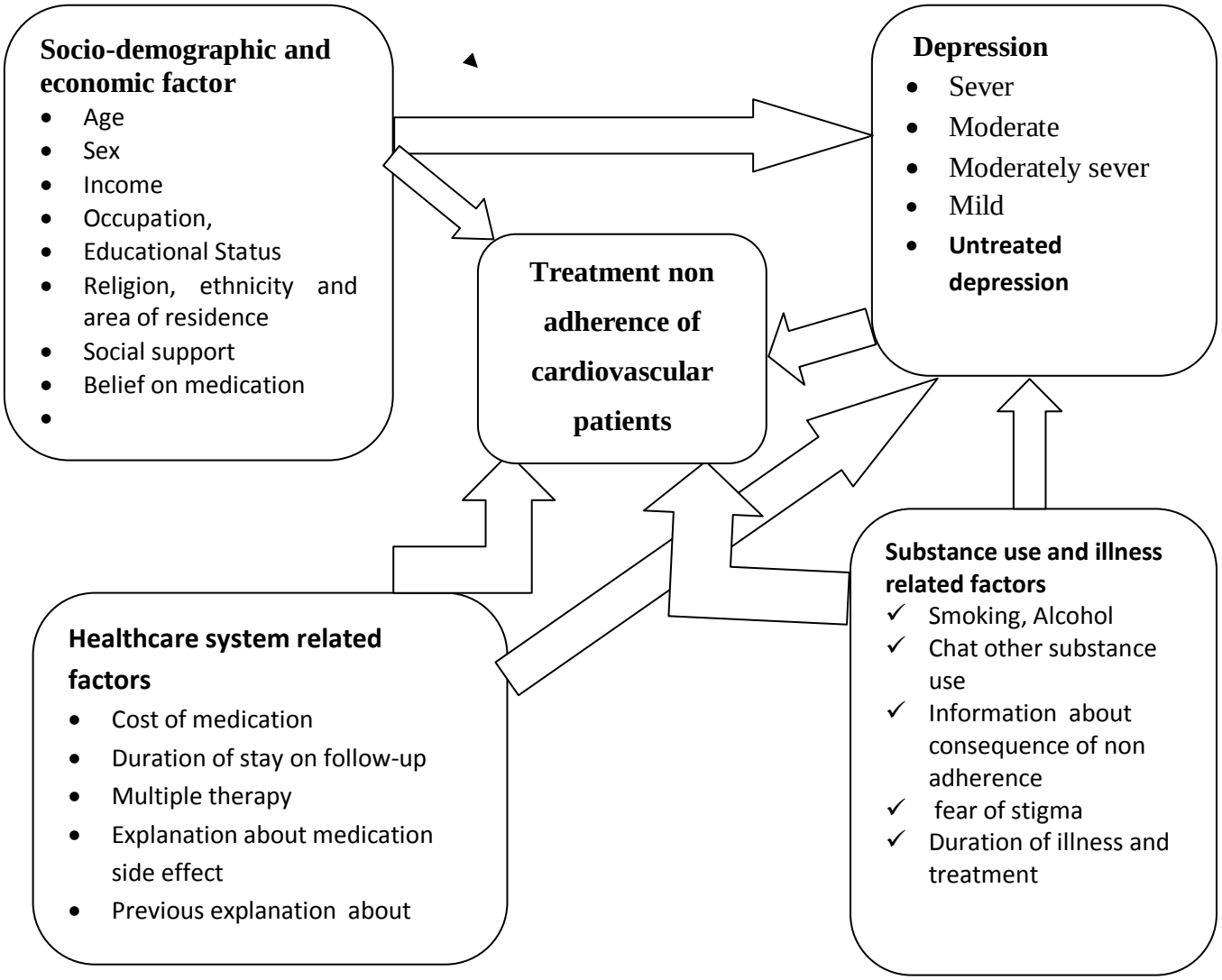

Figure 1: Conceptual framework of factors associated with treatment non adherence among adult cardiovascular patients (Developed by reviewing different articles and scientific journals) in JUTH south west Ethiopia.

Significance of the study

This is the first to be studied on factors associated with treatment non adherence among adult cardiovascular patients to my knowledge. Especially the presence of psychiatric problems such as depression was not recognized by different health professionals except in the area of psychiatry even though it is one of an independent factor for treatment non adherence .There is no publication to our knowledge of search in Ethiopia perhaps in sub Saharan Africa countries.

So this study will create awareness for physicians, nurses and cardiologists who involve on treatment of cardiac related problems and serve as a linkage for referral system to psychiatry unit for the treatment of depression if the cases exist. It also serves as reference for other researchers who are interested to study on treatment non adherence of cardiac related issues.

It may be used as a resource for policy makers, the hospital as well as university and also facilitate treatment adherence of patients (health information, education, psychotherapy and cognitive behavioral therapy) accordingly.

Objectives

General objective

To assess factors associated with treatment non adherence with special emphasis on depression among adult cardiovascular patients attending service at outpatient cardiac clinic of Jimma university teaching hospital from October – November, 2014.

Specific Objective

- To assess the prevalence of treatment non adherence in cardiovascular patients for their cardiac agent
- To assess possible association of depression with treatment non adherence among cardiovascular patients.
- To identify factors associated with treatment non adherence in cardiovascular patients

Methods and Materials

Study Setting and period

The study was conducted at Outpatient cardiac unit of Jimma University Teaching Hospital. Jimma is one of the towns found in Oromia regional state which is 352 km to the South West

of Addis Ababa, capital city of Ethiopia. JUTH is one of the well known governmental institutions in Jimma town which is a teaching and tertiary level hospital and provides inpatient and outpatient health services for more than 10 million people living in southwest of Ethiopia. It provides service for inpatient in six clinical departments (Internal medicine, surgery, gynecology and obstetrics, pediatrics, psychiatry and ophthalmology) and outpatient services in the chronic illness follow-up clinics like diabetes, cardiovascular, asthma, epilepsy, tuberculosis and HIV, psychiatry, dermatology, dentistry and other outpatient services (11). Among these; cardiac unit is one in the OPD which is providing service for about 1939 patients currently. This unit gives care by 1 internist, residents of internal medicine, medical interns on internship, 8 diploma clinical nurses, 1 BSc nurse and 1 porter by using 1 ECG and 1 Echocardiography

Data were collected from October to November 2014 in Jimma university teaching hospital.

Study Design

Institution based cross-sectional study

Source Population

All patients attending cardiac clinic of JUTH

Study population

Sampled cardiovascular patients who come to take their medication on follow up during the study period and fulfill the inclusion criteria by using consecutive method.

Eligibility criteria

Inclusion criteria

All cardiovascular patients 18 year old and above who came for follow up at the cardiac unit, whose chart show diagnosis of heart disease clearly as well not admitted during the study period were included in the study.

Exclusion criteria

- New patient
- Who was not able to give information because of his critical condition
- Patients included in the pretest
- Patients with severe mental illness

Study variables

Dependent Variable

- Treatment non adherence

Independent variables

- Socio-demographic and economic factor (age, sex, income, occupation, educational status, marital status, religion, ethnicity, area of residence and availability of social support)
- Substance use and illness related factors (Smoking, Alcohol use, chat use, other substance use, duration of the heart disease, duration of treatment for CVD, fear of stigma co morbid hypertension and diabetes mellitus)
- Health care system factors (time spent for follow up, previous explanation about depression and side effect of medication, cost of medication and medication regimen complexity)
- Depression (sever, moderately sever, moderate, mild and minimal) and previous treatment for depression

S**ampling procedure**

Data collection was started consecutively by interviewing a patient who arrived first at the cardiac unit for follow up and fulfill the study criteria. It continued till the desired sample size was completed.

Sample size estimation

The sample size was calculated using single population proportion formula. By using proportion of treatment non-adherence for cardiovascular diseases 50%, 95% confidence level,

5% tolerable margin of error and possible non-response rate of 10%, the final sample size was **353**.

$$n = \frac{(Z\alpha/2)^2 \quad p(1-p)}{d^2}$$

$= (1.96)^2 * 0.5(1-0.5)/ (0.05)^2 = 384$

But the study population was from finite population of size N then it need correction

$n' = \frac{n}{1+\frac{n}{N}} = \frac{384}{1+\frac{384}{1939}}$ =321

=321 +321*10% = **353**

Where

n= minimum sample size

n' = sample size

N= total cardiovascular patients =1939

Z= standardized normal distribution value for the 95% confidence interval (1.96)

P =proportion of treatment non-adherence for cardiovascular patients *(50%)*

d = the margin of error taken as 5%

Data collection process

Data collection tool

Data were developed from well structured questionnaire and check list. The questionnaire consists of socio-demographic and economic, substance use and illness related factors, health care factors and depression. Different well structured scales were used like PHQ-9 to assess depressive disorders, MMAS 8 to assess treatment adherence status, and OSS-3 to assess the strength of social support.

Patient health questionnaire (PHQ-9) - Amharic version which was valid and reliable with good internal (Cronbach's alpha=0.81) and test re-test reliability (intra class correlation coefficient=0.92). It has sensitivity=86% and specificity=67% (30).

Morisky medication adherence(MMAS 8) an eight item scale with specific Cronbach's alpha reliability of 0.83 specificity of 53% and sensitivity 93% was used to assess treatment taking behavior (31).

Oslo 3-items social support scale (OSS-3) was used to measure the strength of social support. The scores for this scale range from 3 – 14 with a score of 3-8 = poor support, 9-11 = moderate support and 12-14 = strong support. The Oslo-3 scale have been used in several studies, confirming the feasibility and predictive validity with respect to psychological distress (32)

Questionnaire were developed in English and translated in to "Amharic" and "Afan Oromo" then back to English to check for its consistency by language department master 2nd year student and he was native speaker.

Then it was rechecked by seniors in the department of psychiatry. Administration was done with "Afan Oromo" and Amharic version.

Data collection

Data were collected from primary and secondary sources. Primary data was collected from individual patients by using structured questioner, MMAS 8 item, PHQ-9 and Oslo 3-items. Secondary data was gathered from the patient's chart by using the already prepared check list that contains 8 items. It was collected by 6 BSC nurses after two day training was given to them. Supervision was made by 3 ICCMH II students. Principal investigator was involved in overall controlling activities of data collections. Data collections were stayed for 2 month of which only half 8 days of cardiac follow up. So primary data were collected only for half 8 days and secondary data were collected from the chart within this 2 month duration excluding training for data collectors and pretest of the questioner. Training was given for two days for

supervisors and data collectors how to perform the interview. Pre-test of questionnaires were done on cardiac patients (5%) who were not included in the actual study in order to check language clarity and consistency of questionnaire. Corrections of words on questionnaire that is ambiguous for respondents were done after pre-testing

Data analysis procedure

The collected data were edited, entered into a computer by using SPSS version 21 for windows and analyzed. Depression among cardiovascular patients was measured by using PHQ 9 where the cutoff point was five from the total 27 scores. Score of less than five was taken as non depressed and greater than or equal to five as depressed. Based on the level of depression those with 1-4 score had minimal depression, 5-9 mild depression, 10-14 moderate depression 15-19 moderately severe depression and 20-27 severe depression. Then Treatment adherence status was measured by MMAS 8 where scores less than or equal to six were taken as treatment adherent where as scores greater than six as treatment non adherent. Then association was done including other variables.

Bivariate analysis was used to analyze the statistical association of dependent and independent variables. Variables below P value of 0.25 were candidate variable for multivariate logistic regression. Multivariate logistic regression model were used to determine Odds ratio and 95% confidence interval for the different risk factors of treatment non-adherence of cardiovascular patients. Finally results were described using frequency distribution, percentages, tables and figures.

Data quality assurance or management

To assure the quality of data, PHQ-9, MMAS an 8 item scale and OSLO 3 were used to determine level of depression, treatment adherence and strength of social support of cardiovascular patients respectively. All the 3 scales were reliable and valid as listed before under data collection tool. Pretest was done before data collection time on 5% of sample population which were not included in the study population. Fulltime data collection was taken place, supervisors were visited the data collection site on dates of data collection, checked the

entire interview and questioner for completeness, consistency and accuracy. Corrections were made at the spot before patients left the cardiac clinic. Those respondent's questionnaires which were difficult to finish it were discarded. The obtained data were entered into laptop computer. Then entered data were cleaned and possible missing data were checked and rechecked. Then data were analyzed using SPSS version 21 for windows.

Ethical consideration

The proposal of this thesis was approved by the ethical review committee of College of Public Health and Medical Science, Jimma University. Then letter of permission was written by JU to Jimma University teaching hospital cardiac unit to get permission.

Written consent was obtained from every study participants. For those who cannot read, the consent content was read until the participants understand it and questions were answered as they arose during the consent period. Confidentiality of the information was assured and privacy of the respondents was maintained. Respondents were explained that the instruments and procedure could not cause any harm to the study subject. At the end of each patient interview PHQ-9 was summed up and if she or he had depression from moderate to severe depression were referred to psychiatry clinic for treatment and those with scores of mild depression were given psychotherapy by the supervisors and principal investigator. Participants with MMAS score of greater than or equal to six were also given health education by supervisors and the principal investigator.

Dissemination plan of the study findings

The result of this study will be disseminated to Jimma University College of public health and medical sciences, Department of psychiatry, Jimma University teaching hospital Outpatient cardiac unit and psychiatry clinic. It will be presented on national and international conferences and further attempt will be made to publish it on national and international scientific journals.

Operational definition

Cardiovascular diseases: A syndrome caused by cardiac and non cardiac multiple factors those results in heart disease.

Depressive disorder: PHQ 9 score of greater than or equal to five

Minimal depression: PHQ 9 score of 1-4 (30)

Mild depression: PHQ 9 score of 5 to 9 (30)

Moderate depression: PHQ 9 score of 10 to 14 (30)

Moderately severe depression: PHQ 9 score of 15 to 19 (30)

Severe depression: PHQ 9 score of 20 to 27 (30)

Non-depressed: PHQ 9 score of less than 5 (30)

Depressed cardiac patients - cardiac patients who have PHQ-9 score of 5 or more from the total 27 scores (33).

Treatment adherence: from the morisky medication adherence scale of 8 items if the score is less than 6 (31).

Treatment non adherent: from the morisky medication adherence scale of 8 items if the score is greater than or equal to six (31)

Poor social support: from the Oslo social support 3 scale a score of 3-8 (32)

Moderate social support: from the Oslo social support 3 scale a score of 9-11 (32)

Strong social support: from the Oslo social support 3 scale a score of 12-14 (32)

Life time substance use: use of any type of psychoactive substance once or more in his /her life time (34).

Current substance use: use of any type of psychoactive substance within the last 3 month (34)

Results

Socio- demographic and economic status of respondents

A total of 339 cardiovascular patients were interviewed making a response rate of 96% (due to loss of patient's chart that they took it to their home). The minimum age was 18 and maximum was 98. The mean age of the respondents was 50 (median 50 and ±17 SD). Comparing to other age category, majority 18.6 %(63) of the respondents were between 54 and 62 year. Female respondents account for 53.1% (180).Three quarter of respondents were Muslim which account for 75.2% (255), followed by Orthodox Church follower 20.9% (71). Concerning the educational status of respondents slightly more than half were illiterate which was 53.1% (180) with the least 12+ which accounts for 3.2 % (11).When we see the marital status of the respondents majority of them were married 76.7% (260) with low separated respondents 1.5%

(5). Half of them were farmer by their occupation 50.7 % (172) followed by housewife which was 8.9% (29). Most of them were Oromo 77.3% (262) in ethnicity, more than half were from rural area 64% (217). Coming to their income a quarter of patients 25.7 %(85) reported an income of less than 900, 21.8 %(74) reported an income between 901 to 2999, slightly more than a quarter 24.5 % (83) of respondents reported earning between 3000 to 9999 and 28% (95) reported an income of greater than or equal to 10,000 ETB per month. Respondents who had poor social support accounts for 38.9 % (132) followed by having moderate social support which was 38.3% (130). Almost all had a belief in the medication that they took for their heart problem and that they cured if they take their medication properly accounts for 90.3% (306) (Table 1)

Table 1; Socio demographic and economic characteristics distribution of adult cardiovascular patients attending service at cardiac clinic in JUTH southwest Ethiopia, 2014

Socio demographic status		Number	Percent
Sex	Male	159	46.9
	Female	180	53.1
Age of respondents	18-26	42	12.4
	27-35	46	13.6
	36-44	37	10.9
	45-53	55	16.2
	54-62	63	18.6
	63-71	61	18
	72-98	35	10.3
Ethnicity	Oromo	262	77.3
	Amhara	37	10.9
	Yem	16	4.7
	Others	24	7.2
Religion	Orthodox	71	20.9
	Muslim	255	75.2
	Protestant	13	3.8

Frequency of attending worship	Daily	119	35.1
	2 to 3 times per wk	45	13.3
	Once per week	150	44.2
	Less than a week	10	2.9
	Never	15	4.4
Educational status	Illiterate	180	53.1
	Able to read and write	68	20.1
	primary(1-8)	53	15.6
	secondary(9-12)	27	8
	tertiary(+12)	11	3.2
	Single	38	11.2
Marital status	Married	260	76.7
	Divorced	12	3.5
	Separated	5	1.5
	Windowed	24	7.1
	Jobless	67	19.8
	Daily laborer	8	2.4
Occupation	Employed	18	5.3
	Farmer	172	50.7
	Merchant	23	6.8
	Home maker	29	8.6
	Other	22	6.5
Social support	3-8= poor	132	38.9
	9-11= moderate	130	38.4
	12-14=strong	77	22.7

*Other –represent ethinicity like kafa, Tigrie,Gurage and Dawuro

Prevalence of treatment adherence status

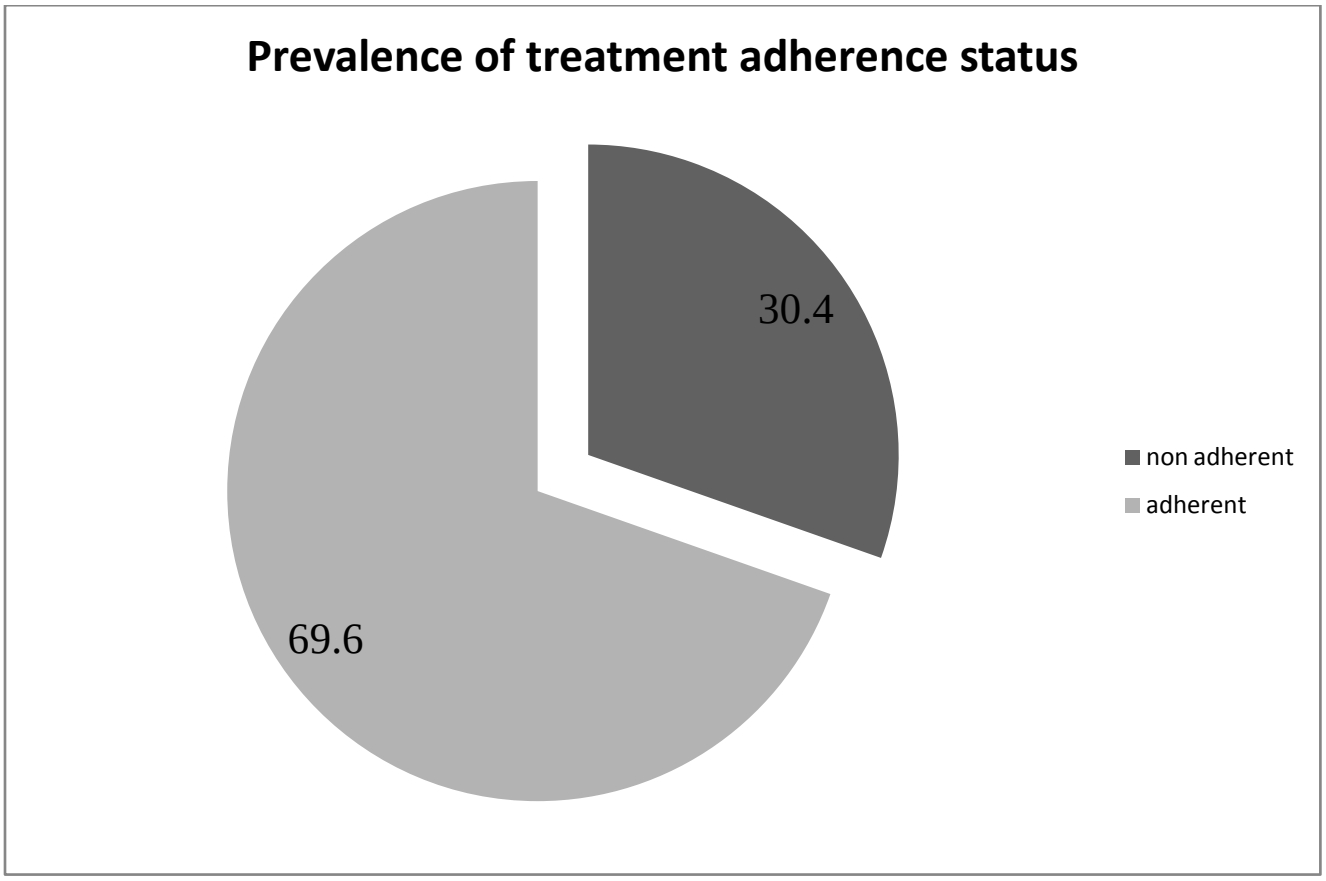

Figure 2: Prevalence of treatment adherence status among adult cardiovascular patients attending service at outpatient cardiac clinic of JUTH southwest Ethiopia, 2014

Depression and its previous treatment

The point prevalence of depression in these study participants was 57.5% (195). In terms of depression level 36.9% (38) minimally depressed, 32.0% (33) mildly depressed and 31.1% (32) moderately to severely depressed respondents are non adherent to their medication. Whereas non depressed participants account for 42.5% (144).We found only one patient taking Amitriptyline 0.3% during data collection period with the diagnosis hypertensive heart disease.

Substance use and illness related factors

From the total 339 respondents regarding use of substances, those who have used khat at lifetime constituted 26.3% (89) followed by those who used alcohol 9.1% (31). This is high compared to use of other substances. Most of the current users chew khat daily 4.1% (14) while alcohol users claimed to drink once or twice per week which were 4.4% (15). Most of the study participants reported that they have not been treated differently by the public and that they do not have fear regarding this issue which was 95.6% (332). Almost all of the respondents had information in one or other way on the consequence of not taking their medication. Only about a quarter of respondents had been sick for 1-3 years 26.5% (90) followed by those sick for less than 1year still nearly a quarter 24.5% (82).With the least 5 to 7 year 13% (44).These peoples' duration of treatment for their CVD were high for less than 1 year 32.2% (109), less in the 2 to 3 years of treatment 10% (34). Among the study participants, 33.6% reported to have an internal feeling of worry due to their CVD whereas 19.2% (65) reported no worry. Only 4.7% (16) of the respondents had co morbid DM where as 43.7% (148) had co morbid Hypertension. Concerning the diagnosis of these respondents 34.8% (118) were diagnosed as a case of hypertensive heart disease (Table 2)

Table 2: Frequency distribution of substance use and illness related factors of adult cardiovascular patients attending service at cardiac clinic in JUTH southwest Ethiopia, 2014

Patient related factors		Number	Percent
lifetime cigarette use	Yes	20	5.9
	No	319	94.1
life time alcohol use	Yes	31	9.1
	No	308	90.9
life time khat use	Yes	89	26.3
	No	250	73.7
life time cannabis	Yes	6	1.8
	No	333	98.2
life time other substances	Yes	4	1.2
	No	335	98.8
current cigarette use	Never	325	95.9
	1-2 per week	10	2.9
	Monthly	1	0.3
	Daily	3	0.9
current alcohol use	Never	321	94.7
	once or twice per week	15	4.4
	Monthly	2	0.6
	Daily	1	0.3
current khat use	Never	310	91.4
	once or twice per week	10	2.9
	Monthly	2	0.6
	Weekly	3	0.9
	Daily	14	4.1
internal feeling about her/his CVD	Worry	114	33.6
	Sad	98	28.9
	None	65	19.2
	Other(tiredness, fear)	62	18.3
hospitalized for CVD	Hospitalized before	205	60.5
	Not hospitalized	134	39.5
Response on negative consequences of non adherence	Relapse in to illness	100	29.5
	Seriousness of disease	110	32.4
	Both of the above	77	22.7
	Death	52	15.3
Duration of CVD RX	≤1year	109	32.2
	1 to 2 year	61	18
	2 to 3 year	34	10
	3 to 4 year	36	10.6
	≥5 year	99	29.2
Duration of CVD illness	≤1year	82	24.2
	>1 to 3 year	90	26.5
	>3 to 5 year	70	20.6
	>5to 7year	44	13
	>7year	53	15.6

*Life time other substance use –use of sedatives and injections

Health care system factors

There are different health care related data collected from the respondents. Concerning the cost of medication those who respond it was costly was 81.1% (275) from 339 respondents. From this (275) respondents those who respond as its level of cost was high was 41.0% (139) followed by moderately costly 35.7% (121), 4.1% (14) reported that it was not frequently available in the hospital's pharmacy. 46.9% (159) of respondents reported as explanation were given to them about the side effect of the medications they were taking. Half of the respondents reported that it took average time while they came for follow up 51.1% (173). More than three fourth 90% (305) of the respondents reported as they took more than two medications parallelly. Based on chart review ECG and Echocardiography was done for most of them 73.2% (248). Almost all of the respondents did not assessed for depression before the study was conducted by the treating physician. Only one patient was referred to psychiatry for evaluation previously (Table 3)

Table 3: Frequency distribution of health care system related factors among adult cardiovascular patients attending service at cardiac clinic in JUTH southwest Ethiopia, 2014

Health care system related factors		Number	Percent
Cost of medication	Costly	275	81.1
	Not costly	64	18.9
how costy	High	139	41.0
	cost is moderate	121	35.7
	Cheap	1	.3
	not frequently available	14	4.1
another health problem	Got explanation	87	25.7
	Do not got explanation	252	74.3
explanation for side effect	Got explanation	159	46.9
	Do not got	180	53.1
Explanation not to stop medication	Got explanation	247	72.9
	Do not got	92	27.1
time spant during follow-up visit	long time	128	37.8
	Average	173	51.0
	Fast	36	10.6
	not remember	2	.6
multiple therapy	Took more than 2 medication	305	90.0
	Took only one medication	34	10.0
ECG and echocardiography	ECG &Echo done	248	73.2
	Not done	91	26.8
assessment for depression previously	Not assessed	339	100.0
referral to psychiatry	Referred	1	.3
	Not referred	338	99.7
psychotherapy if given previously	Not given	339	100.0

Factors associated with treatment non-adherence of CVD patients

Socio-demographic and economic factors of treatment adherence of CVD patients

Of the socio-demographic factors age, religion, educational status, marital status and social support had p value of below 0.25. Amongst this age and marital status were statistically significant at P value of 5% (Table 4)

Table 4: Association of socio-demographic factors with treatment adherence status among adult cardiovascular patients attending service at cardiac clinic in JUTH southwest Ethiopia, 2014

Socio-demographic status		Non-adherent	Adherent	COR	P value
age of respondents	18-26	18	24	REF	
	27-35	11	35	2.39(0.96-5.94)	0.62
	36-44	11	26	1.77(0.69-4.51*)	0.23
	45-53	20	35	1.31(0.58-2.99)	0.52
	54-62	17	46	2.03(0.89-4.64*)	0.09
	63-71	15	46	1.65(0.63-4.33)	0.31
	72-98	10	22	0.75(0.04-12.82)	0.84
Sex	Male	45	114	1.20(0.76-1.92)	0.43
	Female	58	122	REF	
Ethnicity	Oromo	78	184	REF	
	Amhara	14	23	0.69(0.34-1.42)	0.32
	Yem	6	10	0.71(0.25-2.01)	0.51
	Others	5	19	1.06(0.20-5.58)	0.94
Religion	Orthodox	22	49	0.41(0.08-1.98)	0.26
	Muslim	79	176	0.41(0.09-1.87)*	0.24
	Protestant	2	11	REF	
Frequency of attending worship	Daily	34	85	REF	
	2 -3 times	12	33	0.91(0.27-3.05)	0.88
	Once per wk	46	104	1.0(0.27-3.75)	1
	Less than a wk	7	3	0.82(0.25-2.72)	0.75
	Never	4	11	0.16(0.02-0.92)*	0.04
Educational level	Illiterate	58	122	REF	
	able to read and write	18	50	0.21(0,21-1.68)*	0.14
	primary(1-8)	15	38	0.28(0.03-2.33)*	0.24
	Secondary (9-12)	11	16	0.25(0,03-2.16)*	0.21
	tretiary(+12)	1	10	0.15(0.02-1.31)*	0.85
Marital status	Single	15	23	REF	
	Married	81	179	0.22(0.06-0.87)*	0.03
	Divorced	3	9	0.32(0.09-1.09)*	0.06
	Separated	1	4	0.43(0.07-2.54)	0.35
	Windowed	3	21	0.57(0.05-6.98)	0.66
Occupation	Jobless	19	48	REF	
	Daily laborer	0	8	REF	
	Employed	5	13	1.03(0.32-3.28)	0.96
	Farmer	56	116	0.82(0.44-1.54)	0.53
	Mechant	7	16	0.91(0.32-2.55)	0.85
	Housewife	11	18	0.79(0.07-9.25)	0.35
	Other	0	6	0.89(0.25-3.24)	1
social support	3-8= poor	38	94	0.87(0.46-1.64)	0.66
	9-11= moderate	45	85	0.66(0.36-1.24)*	0.2
	12-14=strong	20	57	REF	

Depression and its previous treatment

Of the two variables level of depression (having moderate depression) have a p value of less than 0.25 but it is not statistically significant at p value of 5%.Even though it is not statistically significant nearly three forth 63.1%(n=195) of the study participants were non adherent to their CVD treatment.

Substance use and illness factors

Of the patient and illness factors life time cigarette use, current khat use, type of diagnosis of CVD, having information about negative consequences of not taking medication, duration of CVD treatment and duration of CVD illness had p value of below 0.25 (Table 5).

Table 5; Association of substance use and illness related factors in relation to treatment adherence status among adult cardiovascular patients attending service at cardiac clinic in JUTH southwest Ethiopia, 2014

Patient and illness factors		Non adherent	Adherent	COR	P value
lifetime cigarette use	Yes	2	18	0.2(0.55-0.98)*	0.06
	No	101	218	REF	
lifetime alcohol use	Yes	9	22	REF	
	No	94	214	0.9(0.41-2.10)	0.86
lifetime khat use	Yes	24	65	0.8(0.47-0.99)	0.41
	No	79	171	REF	
lifetime other use	Yes	3	1	0.1(0.015-1.38)*	0.09
	No	100	235	REF	
urrent alcohol use	Never	97	224	REF	
	1 to 2 times	5	10	0.9(0.29-2.60)	0.8
	Monthly	1	1	0.4(0.03-6.10)	0.55
	Daily	0	1	-	
Current khat use	Never	90	220	REF	
	1 to 2 per week	6	4	0.3(0.08-0.99)*	0.05
	Monthly	0	2		
	Weekly	1	2	0.8(0.07-9.14)	0.87
	Daily	6	8	0.6(0.18-1.62)	0.27
Bereavement for the last 3 month	Has bereavement	6	25	REF	
	Has no bereavement	97	211	0.7(0.40-1.85)	0.7
negative consequences of not taking	relapse in to illness	26	76	REF	
	seriousness of disease	32	77	0.8(0.45-1.51)	0.53
	Death	23	31	0.5(0.23-0.93)*	0.05
	all or above two	22	52	0.8(0.41-1.58)	0.53
Duration of CVD treatment	<1 year	25	84	RE	
	1-2 year	19	42	0.7(0.33-1.33)*	0.24
	2-3 year	14	20	0.4(0.19-0.96)*	0.04
	3-4 year	11	25	0.7(0.29-1.56)*	0.36
	≥5year	34	65	0.6(0.31-1.05)*	0.07
Duration of CVD illness	<1 year	17	65	REF	
	1 to 3 year	33	57	0.5(0.23-0.90)*	0.02
	3 to 5 year	20	50	0.7(0.31-1.38)	0.26
	5 to 7 year	14	30	0.6(0.24-1.28)*	0.17
	>7 year	19	34	0.5(0.22-1.02)	0.55

**-indicate variables significant with treatment non adherence (p value <0.25)*

Health care system related factors of treatment non adherence of CVD patients

Of the health care system factors cost of medication, time spent during follow up visit and previous explanation about depression had p value of below 0.25.Among this factors cost of medication was significant factor at p value of 5% (Table 6)

Table 6: Association of selected healthcare system factors in relation to treatment adherence status among adult cardiovascular patients attending service at cardiac clinic in JUTH southwest Ethiopia, 2014

Health care system factors		**Non-adherent**	**Adherent**	**COR**	**P value**
Cost of medication in the hospital	Costly	89	186	0.6(0.31-0.99) *	0.1
	Not costly	14	50	REF	
if yes how costy	High	44	95	REF	
	cost is moderate	36	85	1.09(0.64-1.86)	0.74
	Cheap	0	1		1
	not frequently available	9	5	0.3(08-0.81) *	0.02
Previous Explanation for depression	Got explanation	31	56	0.7(0.40-1.21)	0.22
	Do not got explanation	72	180	REF	
Explanation about the side effect	Got explanation	51	108	0.7(0.54-1.37)	0.52
	Do not got	52	128	REF	
Explanation not to stop medication	Got explanation	76	171	REF	
	Do not got	27	65	1.2(0.64-2.12)	0.61
Time spant during follow-up visit	long time	49	79	1.9(1.18.3.18)*	0.01
	Average	42	131	1.2(0.57-2.70	0.59
	Fast	12	24	REF	
	not remember	0	2		
Patient who took multiple therapy	Took m ore than 2 med.	93	212	0.9(0.44-2.07)	0.9
	Took only one medication	10	24	REF	
ECG and echocardiography	ECG &Echo done	77	17	0.8(0.5-1.51)	0.66
	Not done	26	65	REF	

***-** *indicate variables significant with treatment non adherence (p value <0.25)*

Multivariate Logistic regression

Independently associated factors of treatment non adherence of CVD patients

Among the socio-demographic and economic factors age, marital status specifically being divorced, having moderate social support were those which were statistically significant variables on the final model with p value of less than 0.05. These factors are described in terms of their odds as follows. Respondents in the age range of 27 to 35 with [AOR (95% CI) = 4.43(1.12-18.21)] were more non adherent by odd of 4.43 than respondents in the age group of 18 to 26. Age group of 54 to 62 with [AOR (95%CI) =3.6 (1.02-14.1)] were three times more non adherent than those in the age group of 18 to 26.

Being divorced with [AOR (95%CI) =0.21 (0.05-0.8)] was less non adherent than single respondents by odds of 80%. Respondents having moderate social support with [AOR (95%CI) = (0.42(0.17-0.98)] were found to be less non adherent than those who reported having strong social support by odd of 60%.

When we came to health care system factors the only variable which was statistically significant on the final model was unavailability of cardiac medications in the hospital pharmacy. Patients who respond on the unavailability of medications in the hospital pharmacy regarding cost of medication were less non adherent than those who respond as the cost were high with [AOR (95%CI) =0.2 (05-0.9)] by odds of 80%. In general these four variables described above were significantly associated with treatment non adherence of respondents on multivariate analysis. The final model was fit and there is no any co-linearity diagnosed among age, marital status, social support and frequent unavailability of medication in the hospitals pharmacy because of above 0.1 tolerances and below 10 variance inflation factors for each variable (Table 7 and 8)

Table 7: Shows the multivariate regression of the relative effect of variables on treatment non adherence among adult cardiovascular patients attending service at cardiac clinic in JUTH southwest Ethiopia, 2014

Statistically significant variables		Non-adherent (MMAS≥ 6)	Adherent(MMAS<6)	ADJUSTED OR(95%CI)
Age of respondents	18-26	18	24	REF
	27-35	11	35	4.4(1.12-18.21)*
	36-44	11	26	1.6(0.41-6.28)
	45-53	20	35	1.8(0.48-7.15)
	54-62	17	46	3.6(1.02-14.13)*
	63-71	15	46	3.2(0.89-12.03)
	72-98	11	42	3.3(0.73-15.64)
Marital status	Single	15	23	REF
	Married	81	179	0.3(0.05-1.91)
	Divorced	3	9	0.2(0.05-0.87)*
	Separated	1	4	0.3(0.03-3.21)
	Windowed	3	21	0.7(0.04-12.44)
Social support	3-8= poor	38	94	0.5(0.20-1.26)
	9-11= moderate	45	85	0.4(0.17-0.98)*
	12-14=strong	20	57	REF
Cost of medication	High	44	95	REF
	cost is moderate	36	86	0.6(0.33-1.33)
	not frequently available	9	5	0.2(0.05-0.93)*

Note *- indicate variables which are significantly associated with treatment adherence status or P<0.05 during the multivariate analysis

Table 8: Shows variables which were not statistically significant on multivariate analysis on treatment non adherence among adult cardiovascular patients attending service at cardiac clinic in JUTH southwest Ethiopia, 2014

Variables which are not statistically significant		Non-adherent (MMAS≥ 6)	Adherent(MMAS<6)	ADJUSTED OR(95%CI)
Educational level	Illiterate	58	122	REF
	able to read and write only	18	50	0.36(0.04-6.12)
	primary(1-8)	151	38	0.65(0.04-9.31)
	Secondary (9-12)	11	16	0.64(0.04-9.64)
	tretiary(+12)	1	10	0.31(0.02-4.81)
Depression status of CVD pts	Non depressed	71	177	REF
	depressed	32	59	1.76(0.83-3.72)
Lifetime cigarette use	Yes	2	18	6.85(0.64-72.91)
	No	101	218	REF
Current khat use	Never	90	220	
	1-2 per week	6	4	2.88(0.71-11.64)
	Monthly		2	1.74(0.19-15.68)
	Weekly	1	2	
	Daily	6	8	1.00(0.2-39.43)
Negative consequences of not taking	relapse in to illness	26	76	REF
	seriousness of disease	32	77	1.19(0.53-2.68)
	Death	23	31	0.51(0.20-1.27)
	all or above two	22	52	0.63(0.26-1.54)
Duration of CVD treatment	≤1year	25	84	REF
	1 to 2 year	19	42	0.94(0.27-3.34)
	2 to 3 year	14	20	1.13(0.28-4.62)
	3 to 4 year	11	25	0.62(0.13-3.01)
	≥5 year	34	65	1.00(0.23-4.34)
Duration of CVD illness	<1 year	17	65	REF
	1 to 3 year	33	57	0.42(0.12-1.60)
	3 to 5 year	20	50	0.72(0.44-3.56)
	5 to 7 year	14	30	0.71(0.12-4.18)
	>7 year	19	34	0.38(0.07-2.03)
Medication this hospital is costly	Costy	89	186	
	Not costy	14	50	REF
Another health problem (if not clear about depression)	Got explanation	31	56	1.03(0.49-2.22)
	Do not got explanation	72	180	REF

Discussion

This is the first study on factors associated with treatment non adherence to my knowledge among patients suffering from CVD in Ethiopia and perhaps in sub-Saharan African countries. So this facilitates for identifying factors associated with poor adherence towards cardiovascular patients on their medication and recommends solution to be given by the concerned body accordingly.

Non-adherence to treatment in cardiovascular disease were equal with non adherence across chronic non-communicable disease(7, 11). This problem accounts on average 50% in developed countries and score higher percent in developing countries (12). A study done on non compliance with drug regimen in Gondar town and Dabate woreda shows none adherence on chronic illnesses account for 42% (27). But this study didn't consider the issue of depression so the current study might be the one which might open the way in this area.

In this study a month prevalence of treatment non adherence were 103(30.4%) where as treatment adherence were 236(69.6%). The difference with the above figure might be due to explanations given by the health professional at this clinic, having information about the consequence of treatment non-adherence as it was found most of the study participants had information about the consequence in one or other way, difference in population and difference in time might also explain this difference.

Early Adulthood (27 to 35) age and elder (54-62) age groups are significantly associated with treatment non adherence with AOR=4.43 95% CI; 1.12-18.21 and AOR= 3.68 95%CI; 1.02-14.13 respectively. This finding is supported by A systematic review which shows treatment non adherence is more common in the younger age and elder groups (35), 17). The reasons might be due to life experience of older adults and tiredness, cognitive impairment and other physiological changes of elders (35) as well it might be due to our society background where most of the burden is in these age group and sayings from the society might strengthen this groups not to adhere to their prescribed medication.

In this study marital status were significantly associated with treatment non adherence specifically divorced patients with AOR=0.21 95%CI 0.05-0.87. Being divorced was 80% less likely non adherent than being single. Secondary data analysis from prospective and longitudinal study shows that unmarried patients (single, separated, divorced and widowed) were 2.2 times non adherent than married patients. This may be explained by lack of social support and emotional disturbance of divorced patients (37).

Having moderate Social support was also associated with treatment non adherence. However, patients who have moderate social support were found to be less (60%) non- adherent than those who have strong social support. This is in line with a systematic review which reveals patients who receive practical support are more adherent than those who do not obtain support. This might be associated with emotional, psychological and social stability which facilitate a way for taking their medications properly and have remainder for taking their tablets (38).

Depression was not found to be statistically significant in multivariate analysis but its prevalence was 57.5% from the total 339 respondents. This number is large when compared to prevalence of depression in the general population which was 26%(39). Additionally 63.1% of the non adherent respondents had depression.

When we came to previous treatment for depression in cardiovascular patients only one patient was found taking antidepressant Amitryptline with the diagnosis of hypertensive heart disease even it was not out lined for what purpose that physician prescribe this medication .So there was even awareness gap that giving antidepressants for cardiovascular patients had its own risk.

Cost of mediation especially unavailability of medication [AOR=0.23 95% CI (05-0.93)] in the hospital pharmacy was another variable similarly statistically associated with treatment non adherence. However, these groups are less non adherent (80%) than those who respond as the cost of medication was high. A community based cross sectional study in south west Ethiopia

(Gondar town and Dabate woreda) shows unavailability of cardiac medication is one factor for non compliance. Also national data done in Newtown found that unavailability of medication was a factor for non adherence in chronic diseases in general (25). This might be due to low monthly income(lack of money), expensiveness of cardiac medications which we are observing in our setting and that majority of the respondents are from rural also they may travel long distance by transportation which require high payment.

Factors like Lifetime cigarette use, Current khat use, having information about negative consequences of not taking medication, duration of CVD treatment, duration of CVD illness, time spent during follow-up visit are all significant on bivariate analysis but not statistically significant on multivariate analysis.

When we discuss these variables one by one current khat users those who chew daily or 1 to 2 times per week are more non adherent than the other groups 6(5.8%). Those who have information on the consequences of non-adherence are less non adherent than those who have no information 103 of respondents.

Non adherence is also associated with long duration illness and treatment. As patients took long time treatment non adherence percent increased. Also duration of treatment greater than 5 year accounts for 34 (33.0%) which is the highest among the non adherent group. Not only non adherence since the number of patients decrease after one year we can estimate that there is chronicity, admission and even death as a result.

Regarding time spent for follow up there is increment on non adherence percentage in a gradient fashion which is fast 12(11.7%), average 42(40.8%), long time 49(47.6%).This may result in negative consequences of non adherence.

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Strength and limitation of the study

Strength

It is the first study up to the knowledge of the investigator

Limitation

More than half of the CVD patients in this study were depressed as the reason for appearing there is no association might be due to inability to conduct comparative study and the nature of instrument I used even if it is valid and it was used previously in this area.

Since only one month was given for data collections even if I was interested in comparative study unable to do that. So this might affect the significance of depression on the final model in this study

Nature of cross sectional study that hinder to identify cause and effect relationship

Conclusion

Age, being divorced, having poor social support and unavailability of medication were factors for treatment non adherence. Depression was not statistically significant for treatment non adherence but more than half 63.1% were among the non adherent groups. So it might be a problem for these patients not to well adhered to their medication. So treatment non adherence is a multi-factorial problem which requires collaborative activity of the patient, family, hospital administrative body. Considerations should be given to alleviate this problem.

Recommendation

Based on the finding I would like to recommend the following responsible bodies

- Jimma university teaching hospital Pharmacy department to follow availability of medication in the pharmacy timely and to communicate with the concerned body.
- Cost of medications need attention.
- For Cardiac clinic staffs Psychological reassurance for those who have no social support.
- Special attention need to be given on accessibility of cardiac medications prescribed by physician in the outpatient pharmacy.
- Giving information for patients to adjust their living situations

Jimma University and the hospital to enable;

- staffs to conduct comparative study on depression and treatment adherence in cardiovascular patients
- To conduct another study on factors affecting treatment non adherence among adult cardiovascular patients using other study design.
- For physicians to communicate with patient's family about treatment adherence that patient need to get support from them.
- For patients' family to give support for cardiovascular patients at home

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Appendix; Questionnaires

I. English version Questioner

Jimma University
College of public health and medical sciences
Department of psychiatry ICCMH post graduate program
Annex I English version Questionnaire

***A questioner developed to assess the prevalence of treatment non adherence of depressed cardiac patients in cardiac unit* of Jimma university teaching hospital, southwest Ethiopia, 2014**

IDENTIFICATION

Type of institution ……. Name of institution ……
Address of the institution…….. Institution code No. ……....

Informed consent form before coding the Interview

Greetings: Hello, how are you?
My name is _____. I am working in the research team of postgraduate thesis of Jimma University.
I would like to interview you questions about non adherence to antidepressant treatment. The objective of this study is to assess the magnitude of treatment non adherence for depression among adult cardiac patients, this is important to improve psychiatric and cardiac services as well as to facilitate the healing process and improve adherence to your treatment for cardiac illness. Your cooperation and willingness for the interview is helpful in identifying problems related to non adherence to antidepressant among adult patient with cardiac disease. Letter was written f

rom JU department of psychiatry and given to head department of cardiac unit permission was obtained. There is no need to write your name on this questioner, everything that you told to me is kept private, no one has access to get it. Your participation is voluntary and you are not obliged to answer any question you do not wish to answer. If you are not still feeling discomfort with the interview, please feels free to drop it at any time you want. Do I have your permission to continue?

1 – If yes, continue
2 – If no, skip to the other participant
Participant Card number _____ signature_____
Name of data collector _____ signature_____ date____
Name of supervisor_____ signature _____date_____

Thank you!!!

I .Questions concerning socio-demographic and economic factors

No.	Question	Answer	remark
100.	Sex:	1. Male 2. Female	
101.	Age (year)	_____	
102.	Educational status:	a. Illiterate b. Able to read and write **c.** Formal education ____	
103.	Religion of respondent	a. Orthodox church follower b. Muslim c. Protestant d. Other	
103.	Occupation	a. Unemployed b. House wife c. Daily laborer d. Government employee e. Farmer f. Other (specify)	
104.	How many annual income do you have?(birr or kind)	_____	
105.	Marital status:	a. Single b. Married c. Divorced/separate	

		d. Widowed	
106.	Residence	a. Rural areas b. Urban areas	
	Belief in the medication	a. Believed b. Not believed	

Oslo 3-items social support scale

The following 3 questions ask about how you experience your social relationships. The inquiry is about your immediate personal experience. Please circle the option that represents your experience.

201.	How many people are so close to you that you can count on them if you have serious personal problems (choose one option)?	1.None	
		2.1 or 2	
		1. 3-5	
		4. 6 or More	
202	How much concern do people show in what you are doing (choose one option)?	5. A lot of concern and interest	
		4. Some concern and interest	
		3. Uncertain	
		2. Little concern and interest	
		1.No concern and interest	

203	How easy is it to get practical help from neighbors if you should need it (choose one option)?	5. Very easy	
		4. Easy	
		3. Possible	
		2. Difficult	
		1. Very difficult	

II. Questions concerning patient and illness related factors

No	Questions	Answer	
300	Have you had support at home who reminds you to take your medication?	**. Yes** **. No**	
301	Would you faced bereavement for the last 3 month?	a. Yes b. No	
302	Is there anything you fear from the public not to take your medication?	a. If so can you list b. No	
	What did you know about the negative consequences of not taking the prescribed medication properly? Can you list them please?		
	What do you feel about your heart problem?		
303	In your life, how much of the following substances have you used? (like during holidays or weekends)	__ _____	
	a) Tobacco products (cigarettes, chewing tobacco, cigars, etc.)		
	b) Alcoholic beverages (beer, wine, spirits, etc.)		
	c) Amphetamine type stimulants (khat, speed, diet pills, ecstasy, etc.)		
	d) Cannabis (marijuana, pot, grass, hash, etc.)		

	e) Other – specify: Cocaine (coke, crack, etc.), Inhalants (nitrous, glue, petrol, paint thinner, etc.) , Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.), Opioids (heroin, morphine, methadone, codeine, etc.)				
304	*If "No" to all items, stop interview.* *If "Yes" to any of these items, ask Question 206. For each substance ever used.* In the past three months, how often have you used the substances you mentioned *(FIRST DRUG, SECOND DRUG, ETC)*?	Never	Once or Twice	Weekly	Daily or almost daily
	a) Tobacco products (cigarettes, chewing tobacco, cigars, etc.)				
	b) Alcoholic beverages (beer, wine, spirits, etc.) c) Amphetamine type stimulants (khat, speed, diet pills, ecstasy, etc.)				
	d) Cannabis (marijuana, pot, grass, hash, etc.) e) Other – specify: Cocaine (coke, crack, etc.), Inhalants (nitrous, glue, petrol, paint thinner, etc.) , Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.), Opioids (heroin, morphine, methadone, codeine, etc.)				

Table 9: Show depression assessment tool in cardiac patients

Notification clarify as Some times for 2-6 days, For most of the time for 7-11days and Nearly every day for 12-14days				
Sr.No	I will ask you weather you faced with the following listed problems within the last 2 weeks			Code
1	Have you lost initiation or interest to do or perform your daily activities	Yes	1	
		No	0	
	If your answer is yes within this 2 weeks how Many time you feel	Some times	1	
		For most of the time	2	
		Nearly every day	3	
2	Have you felt sad feeling ,depressed or hopeless	Yes		
		No		
	If yes within this 2 weeks how frequent is it or for how long	Some times	1	
		For most of the time	2	
		Nearly every day	3	
3	Have you faced with difficulty to fall asleep or fail to get good sleep	Yes	1	
		No	0	
.	If yes for how long you faced this problem	Some times	1	
		For most of the time	2	
		Nearly every day	3	
4	Have you faced with excessive sleep	Yes	1	
		No	0	
	If yes for how long or how frequent is it	Some times	1	
		For most of the time	2	
		Nearly every day	3	

5.	Have you faced with poor food intake or poor appetite	Yes	1	
		No	0	
	If yes how frequent is it or for how long	Some times	1	
		For most of the time	2	
		Nearly every day	3	
	Does you eating interest increased than usual	Yes	1	
		No	0	
	If yes how frequent is it or for how long it increased	Some times	1	
		For most of the time	2	
		Nearly every day	3	
6	Have you faced with feeling of loss of interest for your self worthless and helpless	Yes	1	
		No	0	
	If yes how frequent it happen	Some times	1	
		For most of the time	2	
		Nearly every day	3	
7	Have you faced with easily distractible , inattentive(for e.g. while you play with others failure to listen them	Yes	1	
		No	0	
	If yes how frequently it happen	Some times	1	
		For most of the time	2	
		Nearly every day	3	
8	Have you faced with low volume of speech and movement which is detected with others	Yes	1	
		No	0	
	If yes how frequently it happen	Some times	1	
		For most of the time	2	
		Nearly every day	3	

	Restlessness ,difficulty to stay at one place or stand long which is detected by others	Yes	1	
		No	0	
	If yes how many times it occur	Some times	1	
		For most of the time	2	
		Nearly every day	3	
9	Have you ever feel hopeless feeling of self harm or suicidal idea	Yes	1	
		No	0	
	If yes how many times it occur	Some times	1	
		For most of the time	2	
		Nearly every day	3	
10	From the above listed options if yes answer is given for any of the m then ask the following	Never	0	
	Due to this problems have you faced failed to work ,difficult to fulfill responsibility at home and fail to enjoy with others	To the minimum	1	
		It is serious problem	3	

IV. Questions concerning health system related factors for treatment non-adherent

No.	Questions	Answer	Remark
401	Do you say the medication you take from this hospital is costly?	a. Yes b. no	
402	If Q no. one is yes How costly is it?	a. It is high b. It is cheap c. The cost is moderate d. It is not frequently available in the hospital pharmacy	
403	How long do you stay in the clinic to get the service while you come or follow-up	a. It take long time b. Moderate c. It is fast d. I did not remember it	
404	Have you ever told by your clinician that you have another health problem (if not clear about depression)	a. yes b.no	
405	Would you ever given a clear explanation about the side effect of your prescribed medication and the need for treatment adherence?	a. yes b.no	

Table 10: Morisky medication Adherence Scale

	Questions	***Patient answer (yes or no)***	***Score Yes=1 No=0***
1	Do you sometimes forget to take your medicine?		
1.	People sometimes miss taking their medicines for reasons other than forgetting. Thinking over the past 2 weeks, were there any days when you did not take your medicine?		
3	Have you ever cut back or stopped taking your medicine without telling your doctor because you felt worse when you took it?		
4	When you travel or leave home, do you sometimes forget to bring along your medicine?		

5	Did you take all your medicines yesterday?		
6	When you feel like your symptoms are under control, do you sometimes stop taking your medicine?		
7	Taking medicine every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your treatment plan?		
8	How often do you have difficulty remembering to take all your medicine? A. Never/rarely A = 0; B-E=1 __ B. Once in a while __ C. Sometimes __ D. Usually __ E. All the time Total		

NB Scores: $\geq$ 6 non adherence < 6 adherent

Check list (to be filled from the respondents medical chart)
Check lists prepared to help enter to interview process

List of questions	**Response obtained**
1. Current diagnosis of the patient	
2. Treatment she /he is taking and number of drug	
3. Number of follow up he is on	
4. Evaluation with ECG & Echocardiography	
5. Assessment for depression previously	
6. If so referral to psychiatry clinic	
7. If depression is diagnosed previously if she/he start antidepressant	
8. Other help given for the patient like psychotherapy and CBT	

II: Amharic version questionnaire

ጅማ የኒቨርሲቲ

<u>የህብረተሰብጤናእናሕክምናሳይንስኮሌጅ</u>

<u>የአእምሮ ህክምናት/ትከፍል</u>

<u>በጅማ ዩኒቨርሲት ማስተማሪያ ሆስፒታል የልብ ህመም እና ድብርት ኖሮአቸዉ የልብ ህመም መድሃኒት አወሳሰዳቸዉን ለማጥናት የተዘጋጁ ጥያቄዎች</u>

፡ ጥቅምት 2007

ስሜ……ይባላል::እዚህየተገኘሁትጂማየኒቨርሲቲጤናሳይንስእናህክምናከሌጅየአእምሮህክምናት/ትክ ፍልንወክየነዉ።የጥናቱአላማ ለልብ ህመም መድሃኒት ላለመዉሰድ የሚዐጋልጡ ምክንያቶችን ለመሌየት ነዉ።የእርስዎበታማኝነትጥያቄዉንመመለስትክክለኛዉጤትእንደገኝእናትክክለኛእርምጃእንዲወሰድይረዳል፤ስለዚህምበታማ ኝነትእንዲሳተፉ፤እንጠይቅዎታለን።ተሳትፎወበፈቃደኝነትላየየተመሰረተነዉ።መመለስያልፈለጉትንጥያቄመዝለልይችላሉ፣ ነገርግንየእርስዎንተብብርእንፈልጋለን።ያልገባዎትታቄካለእንዳብራራልዎትሊጠይቁኝይችላሉወይምመጠይቁንበማንኛዉምጊ ዜሊያቆሙይችላሉ።ማቆምዎከሆስፒታሉበሚያገኙትህክምናላይምንምችግርአያሳደርም።በመጨረሻምእርስዎለዚህጥናትየሚ ሰጡንመረጃምስጢራዊነታቸዉሙሉበሙሉየተጠበቀነዉ።ለሚሰጡንመረጃስምዎትእናማንነትዎአይገለፅም::

ለመሳተፍፍቃደኛነዎት?

1. አዎ _____

2. አይደለም_____

የተሳታፊዉፊርማ _____

ስለተሳተፉእናመሰግናለን!!!

የጠያቂዉስምናፊርማ_____ቀን_____/_____/_____

የተቆጣጣርዉስምና

No.	ጥያቄ	መልስ	
100.	ፆታ	○ ወንድ ○ ሴት	
101.	1. እድሜ/|ህ/ሽ/ዎት	_____	
102.	1. የትምህርት ሁኔታ	ያልተማረ/ች ማንበብ እና መጻፍ የሚችል / የሚትችል ከ 5ኛ -10ኛ የተማረ/ች 12ኛ \እና ከዝያ በላይ	
103.	ሃይማኖት	እስላም ኦርቶዶክስ ቤተክርስቲያን ተከታይ ፕሮቴስታንት ሌላ	
104.	የስራ ሁኔታ	የመንግስት ተቀጣሪ ያልተቀጠረ/ች አርሶደር ሌላ	
	ብሄር	ኦሮሞ አማራ ትግሬ የም	
105.	በአንድ ወር ውስጥ ምን ያዘህል የኢትዮጲያ ብር ገቢ ይኖርዎታል	_____	
106.	የጋብቻ ሁኔታ	ያላገበ/ች ያገባ/ች	

		የፈታ/ች የሞተባት /የሞተችበት	
107.	የ መኖሪያ አከባቢዎ	ገጠር ከተማ	
108	የአ ር ሁኔታ	ብቸኛ ከቤተሰብ ጋር ሌላ	
	በመዉሰድ ላይ ያሉ መድሃኒት ያድነኛል ብለዉ ያምናሉ?	አዎ የለም	

ከዚህ በመቀጠል የሚመጡት ሦስት ጥያቄ ዎች የእርስዎን ማህበራዊ ግኑኝነት አና የግል ተሞክሮዎን ይመለከታሉ;; እባክዎትን የእርስዎን የግል ተሞክሮ የሚመለከተውን ምርጫ ብቻ በመንገር ይተባበሩን ::

111	ምን ያህል ሠው አደጋ (ችግር) በሚያጋጥሞት ጊዜ በቅርብ የችግርዎ ተካፋይ ሊሆኑልዎት ይችላሉ?	1.ምንም 2.1ወይም 2 3.3-5 4.ከ 5 በላይ
112	ምን ያህል ሠው ስለ እርስዎ ግድ ይለዋል?	5.ብዙ 4. ጥቂት 3. አርግጠኛ አይደለሁም 2. በጣም ትንሽ 1. ምንም
113	ከባለብት ከሚስትዎ ወይም ከቅርብ ዘመግዎ ተጨባጭ እርዳታ የማግኘት እድልዎ ምን ያህል ነው?	5. በጣም ቀላል 4. ቀላል 3. መጠነኛ

		2. ከባድ 1. በጣም ከባድ
114	ከቤተሰቦ የገንዘብ ወይም የማሰታመም እርዳታ ያገኛሉ?	1.አዎ 2.የለም

<u>ክፍል 2 ከታማሚዉ እና ከህመም ጋር ያይዞ ያሉ ሚከንያቶች</u>

300	እቤት ዉስጥ አብረዉ የሚኖር መድሃኒቶን የሚያስታዉሶዉ ሰዉ አለዎት?	አዎ የለም	
301	ላለፉት 3 ወራት ህዘን ኣጋጥመዎታል?	አዎ የለም	
302	መድሃኒቶን እንዳይወስዱ ያደረገዎት ነገር አለ(ከሰዎች አባባል ጋር ቴያይዞዎ)?? ህክም ያዘዘሎትን መድሃኒት አለመዉሰድ ምን ምን ችግር ያስከትላል ካለ \እባክዎ ይዘርዝሩ	ካለ ይግለፁ---------- አላዉቅም	
		_____	
	ስለ ልብ ህመሞት የሚሰማዎትን ነገር ይግለፁ	---------- ----	

128	በህይወት ዘመኖ፣ከሚከተሉት ሱስአምጪ ነገሮች ምን ያህል ይጠቀሙ ነበር?(በበአል ወይም በሳምንቱ መጨረሳ)	1.አዎ	2.የለም
	ነ.የሲጋራ ምርት(ሚጨስ፣የሚታኝክ ሌላ)		
	2.አልኮለ ያለው መጠጥ(ቢራ፣ውስኪ፣ሌላም)		
	3.አነቃቂ ሱሶ አይነቶች(ጫት፣ሌላም)		
	4. ጋንጃ		
	5. ሌላ_---------		
129	ባለፉት 3ወርውስጥ፣በየምንያህልግዜ ከሚከተሉት ሱስአምጪ ነገሮች ይጠቀሙ ነበር?	እድያውም	በሳምንት በየቀኑ
	ነ.የሲጋራ ምርት(ሚጨስ፣የሚታኝክ ሌላ)		
	2.አልኮለ ያለው መጠጥ(ቢራ፣ውስኪ፣ሌላም)		
	3.አነቃቂ ሱሶ አይነቶች(ጫት፣ሌላም)		
	4. ጋንጃ		

	5. ሌላ_---------		

<u>ክፍል 3፣ ከጠና ድርጅቱ ጋር ተያይዞ የሚመጡ ችግሮችን አስመልክተዉ የቀረቡ ጥያቄዎች</u>

ቁጥር			
	ከዝህ ሆስፒታል የምትወስደዉ መድሃኒት ዋጋዉ ውድ ነዉ ቢለዉ ያስባሉ ጥያቀ ቁጥር 1 መልሶ አዎ ከሆነ ምን ያህል ውድ ነዉ በሀኪመዎት ሌላ የጤና ችግር አለቦት ተብለዉ ያዉቃሉ (መደበት በተመለከተ)	አዎ አይደለም በጣም ውድ ነዉ መካከለኛ ነዉ ርካሽ ነዉ በብዛት በሆስፒታሉ ፋርማሲ አይገኝም አዎ የለም	
	ስለ ምወስዱት መድሃኒት የጎኒዮሽ ጉዳት የተሰጠዎት ገለፃ አለ? ስለ መድሃኒት አለማቐረጥ ገለፃ የተደረገለዎ ነገርስ አለ ?	አዎ ○ የለም	
	የልብ ችግር አለቦት ከተባሉ ስንት ግዜዎት ኑዉ ? --------	----------	

	መልሱ አዎ ከሆነ በሁለቱ ሳምንታት ዉስጥ ለምን ያህል ጊዜ ተቸገሩ?	አልፎ አልፎ ብቻ	1	
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
4.	የድካምወይም የአቅም ማነስ ስሜት ይሰማዎት ነበር?	አዎ	1	PHLE
		የለም	0	
	መልሱ አዎ ከሆነ በሁለቱ ሳምንታት ዉስጥ ለምን ያህል ጊዜ ተሰማዎት?	አልፎ አልፎ ብቻ	1	
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
5.1	የምግብ ፍላጎትዎ ቀንሶ ነበር?	አዎ	1	PHLR
		የለም	0	
	መልሱ አዎ ከሆነ በሁለቱ ሳምንታት ዉስጥ ለምን ያህል ጊዜ ቀንሶ ነበር?	አልፎ አልፎ ብቻ	1	
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
5.2	የምግብ ፍላጎትዎ ከተለመደዉ በላይ ጨምሮ ነበር?	አዎ	1	PHLA
		የለም	0	
	መልሱ አዎ ከሆነ በሁለቱ ሳምንታት ዉስጥ ለምን ያህል ጊዜ ጨምሮ ነበር?	አልፎ አልፎ ብቻ	1	
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
6	ራስዎን የመጥላት ወይም ዋጋ የለኝም የማለት ወይም ራሴንም ሆነ ቤተሰቤን አሳዝኛለሁ የሚል ስሜት ተሰምቶዎት ነበር?	አዎ	1	PHFH
		የለም	0	
	መልሱ አዎ ከሆነ በሁለቱ ሳምንታት ዉስጥ ለምን ያህል ጊዜ ተሰማዎት?	አልፎ አልፎ ብቻ	1	
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	

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7	በሚሰሩት ስራ ላይ ሃላብዎን ለመስብሰብ/ትኩረት መስጠት አስቸግርዎት ነበር? (ለምሳሌ፤ከሰዎች ጋር ሲጨዋወቱ ትኩረት ሰጥቶ ማዳመጥ?)	አዎ	1	PHDC
		የለም	0	
	መልሱ አዎ ከሆነ በሁለቱ ሳምንታት ዉስጥ ለምን ያህል ጊዜ ተቸግረው ነበር?	አልፎ አልፎ ብቻ	1	
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
8.1	ለሌሎች ሰዎች እስከሚታወቅ ድረስ በእንቅስቃሴዎ ወይም በንግግርዎ በጣም ቀስ ብለዉ ነበር?	አዎ	1	PHDT
		የለም	0	
	መልሱ አዎ ከሆነ በሁለቱ ሳምንታት ዉስጥ ለምን ያህል ጊዜ ተቸግረው ነበር?	አልፎ አልፎ ብቻ	1	
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
8.2	ለሌሎች ሰዎች እስከሚታወቅ ድረስ መረጋጋት አቅቶዎት፤አንድ ቦታ አርፎ መቀመጥ ወይም መቆም እስከማይችሉ ሆነዉ ነበር?	አዎ	1	PHDS
		የለም	0	
	መልሱ አዎ ከሆነ በሁለቱ ሳምንታት ዉስጥ ለምን ያህል ጊዜ ተቸግረው ነበር?	አልፎ አልፎ ብቻ	1	
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	
9	ከምናር ብሞት ይሻለኛል ብለዉ አስበዉ ወይም ራስዎን በሆነ መንገድ ሊጎዱ አስበዉ ነበር?	አዎ	1	PHWD
		የለም	0	
	መልሱ አዎ ከሆነ በሁለቱ ሳምንታት ዉስጥ ለምን ያህል ጊዜ ተሰምቶዎት ነበር?	አልፎ አልፎ ብቻ	1	
		በዛ ላለ ጊዜ	2	
		ከሞላ ጎደል በየቀኑ	3	

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10	**ከተዘረዘሩት ችግሮች ለአንዳቸዉም አዎ የሚል መልስ ከተሰጠ የሚከተለዉን ይጠይቁ፡፡** **በእነዚህ ችግሮች ምክንያት ስራዎን ለመስራት፣ የቤት ሓላፊነትዎትን ለመወጣት ወይም ከሰዎች ጋር ተስማምተው ለመኖር ምን ያህል አስቸጋሪ ሆኖብዎት ነበር?**	**በጭራሽ አልተቸገርኩም**	0	PHDR
		በመጠኑ ተቸግሬ ነበር	1	
		በጣም ተቸግሬ ነበር	2	
		እጅግ በጣም ተቸግሬ ነበር	3	

የመድሃኒት አወሳሰድ መለኪያ ቅጽ

	ጥያቄዎች	***የህመምተኛዉ መልስ (አዎ/የለም)***	***ነጥብ አዎ=1 የለም=0***
1.	አልፎ አልፎ መድሃኒቶን መዉሰድ ይረሳሉ?		
	ሰዎች በተለዩ ምክንያቶች ከመርሳት ዉጭ መድሃኒታቸውን መዉሰድ ይዘነጋሉ እስት ያሰቡበትና ላለፉት ሁለት ሳምንታት መድሃኒቶን ያልወሰዱበት ጊዜ አለ?		
3.	ይብስቦት እየመሰሎት መድሃኒቶን ለህክሞት ሳያምክሩ ያቐረጡበት ጊዜ አለ?		
4.	ጉዞ ለይ/ከቤት በሚወጡበት ጊዜ አንዳንዴ መድሃኒቶን የዘዉ መዉጠት ይረሳሉ?		
5.	ትላንትና ሁሉንም መድሃኒቶን ወስደዋል		
6.	አንዳንዴ ህመሞት የተሻለዎት ስመስለዎት መድሃኒቶን መዉሰድ ያቆማሉ		
7	በየቀኑ መድሃኒት መዉሰድ አሰልች ነዉ በእዉነቱ አንቱ መድሃኒቶን በትክክል ሳየቆርጡ ተጨንቀዉበት ለመዉሰድ ጥረት የደርጉ ነበር?		
8.	ለምን ያክል ጊዜ መድሃኒቶን መዉሰድ ይረሳሉ? __ ሀ. በጭራሽ አልረሳም $\upsilon = 0$; ከለ-ሰ=1 __ ለ.ከስንት ጊዜ አንዴ __ ሐ. አንድ አነድ ጊዜ __ መ.በብዛት __ ሰ.ሁል ጊዜ		
			ጠቅላላ ዉጤት

III. QUESTIONNER OROMIC VERSION

Gaaffiwwan afaan oromoon qophaa'an

University jimmatti koleejjii saayinsii fayyaa hawaasaa fi medikalltti kutaa fayyaa samuu

Hospitala barsisummaa yuniiversittii jimmaa

Kaayyoo qorannichaa hubachuudhaan waiigaltee fedhii irrati hundaa'e

Lakkofsa addaa gaaffichaa_____ maqaa dhaabbata fayyaa_____

Gosa dhaabbata fayyichaa _____ koodiiidhaabata fayyichaa.

Bakka argama dhaabbata fayyichaa_____

Nagaa!

Itti galumsa

Maqaan koo _____ n jedhama. Kanaan hojjedhu yuuniversittii Jimmaatti garee qorannaa kan digrii lammaffaa keessadha. Kanan si gaafachuu barbaadu mallattolee gaddaa akkasumas haalawwan isaan walqabatee kan dhuukkuba onee ati qabduu wajjin walliti dhufeenya qabu yoo ta'u galmeekees ilaaluudhaan odeeffannoo muraasa nan fudhadhaa. Kaayyoon qo'annaa kanaa baayinaa fi waan isaan walqabatan kan dhukkuba Gaaddaa ga'eessota dhukkuba onnee qaban irratti mul'atu fooyyeessuu fi tajaajila kennmus kutaa wallaansssa sammuu waliin ta'uun haala jireenya dhukkubsataa fi dhukkuba fooyyessufiidha. Fedhii fi tums ati gaaffii kana keessatti hirmaachuun barbachisaa dha . Gaaffii kana irratti maqaan kee hin barreeffamuu akkasumas odeeffannoo ati nuuf kennitu dhoksaan isaa eegamaadha. Kardiinkee dhoksaan isaa eegamaadha. Gaafficha keessatti hirmaachuun fedhii irratti kan hundaa'e ta'ee gaaffii deebisuu hin barbadne deebsuudhaaf hin dirqamtu. Yoo gaafficha kessatti himaachuun sijibbisiise yeroo kamittiyyuu addaan dhaabuu nidandeessa. Itti fufuudhaaf fedhii qabdaa?

1. Yoo eeyee ta'e itti fufi
2. Yoo lakkii (hin barbaaduu) ta'ee gaafatamaa itti aanuutti darbi

Galatoomaa!

kutaa I. Gaafiwwan hawaasummaa ilaallatan

No.	Gaaffii	Deebii	Dabalataa
100	umurii(waggaadhaan)	_____	
101	Saala	1. dhiira	
		2. durara	
102	Sadarkaa barumsaa	a. kan hin baratin	
		b. dubbisuu fi barreessu kan danda'uu	
		c. mana barumasa	
		(1-8,9-12,kooleejjii)	
103	Hojjii	a. kan hojii hin qaba	
		b. hadha mana	
		c. dafqan bulaa	
		d. hojjetaa moottummaa	
		e. Qonnaan bulaa	
		f. Kan birraa (ibsii yokkaa tarreessa)	
104	Galii waggaa giddugaleessaan argattan hagam ta'a ?(qarshiidhaan)	_____	
105	Haala fuudhaa fi heeruma keesaanii	a. Kan hin fuudhin/ hin heerumin	
		b. Kan fuudhee/heerumtee	
		c. Kan addaan bahee/tee	
		d. Kan abbaan manaa/haati manaa irraa du'e/te	
106	Bakka jireenyaa	a. Baadiyyaa	
		b. Magaalaa	
103	**Qomoo**	1.0romoo	
		2.Amharaa	
		5.kafaa	
		6. kan biroo (taressii) ……..	
		1. Ortoodooksii	
104	Amantii dhukkubsataa	2. Musiliima	
		3. Prootestaantii/peenxee	
		4. Kaatoolikii	
		5. Kan biraa	

105	Sadarkaa barnoota dhukkubsataa	1. Kan dubbisuuf barreessuu hin Dandeenye	
		2. Kan dubbisuu fi barreessuu danda'u	
		3. Kan barate/baratte yoo ta'eef, kutaa meeqa barate/baratte_____	
106	Haala ga'ela dhukkubsataa	1. kan hin fuune/ heerumne	
		2. kan fuudhe/ heerumte	
		3. kan hiike/te	
		4. kan gargar jiraatan	
		5. kan abbaan warraa/hati warraa irraa du'e/te	
107	Hojii dhukkubsataa	1. qonnaan bulaadha	
		2. hojjataa guyyaa	
		3. kan hojjii hin qabne	
		4. hojjaataadha(hojjetaa mootummaa ykn mitimootummaa)	
		8. kan biraa yoo ta'e ibsi_____	
108	Galiin keessan ji'a giddu galeessan hagam ta'a?(qarshiidhaan)yookaan qonnaadhaan jiraattu yoo ta'e,omisha omishtan gosaa fi		
	baay'ina isaa ibsaa.		
	Fakkenyaaf:buna,xaafii,boqqolloo,baaqelaa,Barbaree(mixmixa)	Ji'aan----------	
	kuntaalaan,caatii(hidhaan)	waggaan ----------	
109	Eenyuu wajjin jiraatta?	1. Qophaa koo	
		2. Maatii koo wajjin	
		3. Fira koo wajjin	
		4. Kan mana hin qabne	
		5. Kan biraa yoo ta;eef ibsi_____	

110	Umrii kee kessa, arradda kan kanatti anan kessa haagam fuudhatan ? (yeroo ayyana yookaa sanbataafi dilbataa)		
	a) omishaaTamboo (cigarettes, chewing tobacco, cigars, etc.)		
	b.dhugatti alcoholi (Biiraa, Wayinii, Diraaftii, Araqee, Daadhii, Farsoo, Kanneen biraa yoo ta'e ibssi----------)		
	c) arradda nama dadamaqasuu (chatii, (khat, speed, diet pills, ecstasy, etc.)		
	d) Cannabis I (marijuana, pot, grass, hash, etc.)		
	e) Kan biroo – taressii: kan funfatamuu (nitrous, glue, petrol, paint thinner, etc.) , Sedatives yookaa koricha hiribaa (Valium, Serepax, Rohypnol, etc.), Opioids (heroin, morphine, methadone, codeine, etc.)		
	Deebin keessan lakkii yoo tahe arrada hundaaf , gaaffi xumuree. *Deebin eye yoo tahe gaaffi itti anuu gafadhuu.*		
111	Ji'oot 3 darban kessa, yeroo meeqa aradda fudhate kan arman dura taressiteeraa*(kan duura, kan lammataa fi kan kan fakatan)*?	Yeroo tokkoo yookaa lammaaf	Ji'an
	a) omishaaTamboo (cigarettes, chewing tobacco, cigars, etc.)		
	b) dhugatti alcoholi (Biiraa, Wayinii, Diraaftii, Araqee, Daadhii, Farsoo, Kanneen biraa yoo ta'e ibssi--------)		
	c) arradda nama dadamaqasuu (chatii, (khat, speed, diet pills, ecstasy, etc.)		
	d) gaanjaa (marijuana, pot,		

	grass, hash, etc.)		
	e) Kan biroo – taressii: kan funfatamuu (nitrous, glue, petrol, paint thinner, etc.) , Sedatives yookaa koricha hiribaa (Valium, Serepax, Rohypnol, etc.), Opioids (heroin, morphine, methadone, codeine, etc.)		
202	Manattii nama akka qooricha fuudhatuu si gargaaruu jiraa?	a. eeyee b. lakkii	
203	Ji'aa 3 darbee keessa gadda ykn namni isinirraa duu'ee beekaa?	a. eeyee b. lakkii	
204	Qoorichi fuudhatee akka si fayyisee ni ammanta?	a. eeyee b. lakkii	
205	Qooricha siritii fuudhachu dhabudhaan rakkoo gesisu beekta?	_____	
206	Qooricha fuudhachuu dhabu dhaan Hawaasa irraa wanni soodatuu jiraa?		
207	Waa'ee dhukkuba keetti maal sitti dhagahaama?		

Kutaa 3. waa'ee qooricha fuudhachuu dhabuu irraa tajaajilla fayyaa kenamuu ilaalchisa

Lakk.	Gaaffii	Deebii	Dabalataa
300	Qoorich assii fudhatuu gattiin isaa dhabeenyaa?	a. eeyee	
301	Yoo gaafiin 300. Eeyee yoo tahe hagam ta'a?	a) Gatii guudaa b. giddu gallessa c. salphaa d. mana qorichatti hin argamuu	

302	Tajaajila fayyaa argachuu dhaaf yeroo meeqa sittii fuudhataa	**a. dheeraa** b) Gidduu galessa c. gabaabaa **d. hin yaadadhu**		
303	Ogeessa fayyaadhaf rakkoo fayyaa biraa kan biraa akka qabduu itti himtee beekta?	a. eeyee b. lakkii		
304	Waa'ee dhuukuba oonee fi miidhaa qooricha wal qabqtee dhuufu ilaalchisee odefanoon sitti keenameejiraa Dhukuba ooneef	a. eeyee	b. lakkii	

Kutaa II. Gaaffiilee sadarkaa dhukkuba gaddaa sakata'an

PHQ-9 **hubachissa :** Darbe darbee **/2-6 guuyyoota/** Yeroo baayyeef **/7-11 guuyyoota/** guuyaa guuyyaan **/12-14 guuyyoota/**			
	Torbe 2 darbe keessa, yeroo meqa rakkolee gadi anan kessa issin mudate ?		
1	Fedhi tiqa yokka gammachu wantota tokko tokko godhun	eeyee	1
		Lakkii	0
	Debbin kessan eye yoo ta'ee torbee 2 darbee kessa yeroo meqa issiniti dhagahame ture?	Darbe darbee	1
		Yeroo baayyeef	2
		guuyaa guuyyaan	3
2	Gadi-antumma issiniti dhagahama,, gadda, or abdi kutu	eeyee	1
		Lakkii	0
	Debbin kessan eye yoo ta'ee torbee 2 darbee kessa yeroo meeqa isiniti dhagahame ture?	Darbe darbee	1
		Yeroo baayyeef	2
		guuyaa guuyyaan	3
3	Hirribni si qabu didu yookin hirribaa dadammaquu yookin haala baratame caalaa rafuu.....	eeyee	1
		Lakkii	0
	Debbin kessan eye yoo ta'ee torbee 2 darbee	Darbe darbee	1

	kessa yeroo meeqa isiniti dhagahame ture?	Yeroo baayyeef	2
		guuyaa guuyyaan	3
	torbee 2 darbee kessa rakko haala baratame caalaa rafuu jira?	eeyee	1
		Lakkii	0
	Debbin kessan eye yoo ta'ee torbee 2 darbee kessa yeroo meeqa isiniti dhagahame ture?	Darbe darbee	1
		Yeroo baayyeef	2
		guuyaa guuyyaan	3
4	Dadhabi isiniti dhagahamma yokka human xiqa kabu	eeyee	1
		Lakkii	0
	Debbin kessan eye yoo ta'ee torbee 2 darbee kessa yeroo meeqa isiniti dhagahame ture?	Darbe darbee	1
		Yeroo baayyeef	2
		guuyaa guuyyaan	3
5	fedhi nyata tiqqa Qabachu yokka baa' e nyaachu	eeyee	1
		Lakkii	0
	torbee 2 darbee kessa yeroo meqaa hira' ate?	Darbe darbee	1
		Yeroo baayyeef	2
		guuyaa guuyyaan	3
5.1	torbee 2 darbee kessa fedhin nyaata kessan yeroo birra irra gudatee	eeyee	1
		Lakkii	0
	Debbin kessan eye yoo ta'ee torbee 2 darbee kessa yeroo meqaa yeroo meqa (hamam) gudatee	Darbe darbee	1
		Yeroo baayyeef	2
		guuyaa guuyyaan	3
6	Of jibbuu yokka gatti hinqabu jechuu yokka ofis tahe matti gaddisise jechuu	eeyee	1
		Lakkii	0
	Debbin kessan eye yoo ta'ee torbee 2 darbee kessa yeroo meqaa (hamam) isiniti dhagahamee	Darbe darbee	1
		Yeroo baayyeef	2
		guuyaa guuyyaan	3
7	Rakko yadda Walliti qabu wantota adda addan, fakenyaaf dubisu yokka television ilaalu…….....	eeyee	1
		Lakkii	0
	Debbin kessan eye yoo ta'ee torbee 2 darbee kessa yeroo meqaaf (hamam) rakkon isin mudatee?	Darbe darbee	1
		Yeroo baayyeef	2
		guuyaa guuyyaan	3
		eeyee	

8	Sochi yooka dubachuu suta gedhu kan namonni birra hubatan ? Debbin kessan eye yoo ta'ee torbee 2 darbee kessa yeroo meqaaf (hamam) rakkon isin mudatee?	Darbe darbee	1
		Yeroo baayyeef	2
		guuyaa guuyyaan	3
8.2	kan namonni birra hubatan tasgabahu dadhabun bakka tokko dhabachu yokka ta'u dadhabuu yeroo birra irra adda ta'ee	eeyee	1
		Lakkii	0
	Debbin kessan eye yoo ta'ee torbee 2 darbee kessa yeroo meqaaf (hamam) rakkon isin mudatee?	Darbe darbee	1
		Yeroo baayyeef	2
		guuyaa guuyyaan	3
9	karra kamiyuu ta'ee Yadda kan osoo dutan garri akka tahe yokka Off midhuu?	eeyee	1
		Lakkii	0
	Debbin kessan eye yoo ta'ee torbee 2 darbee kessa yeroo meqaaf Isinitti dhagahamee turee	dararbe darbeef	1
		Yerroo bayyeef	2
		guuyaa guuyyaan	3
10	Rakkollee eramanif deebin kessan eyee yoo tahe kan itti anu gafadhaa. Rakko kanan kan ka'ee hajji hojachuuf halafttina mana bahuuf yokka namootta wajjin walli galtani jirrachuuf hagam takka isin rakkisee?	siruuma hin rakkanee	1
		haga murta'eef rakadhee ture	2
		Baayyee rakkadhe turee	3
		Sirri malee baayyee rakkadhe turee	4

Kutaa. V Hordoffii safara qoricha mooriski

Waa'ee qoricha ogeessi fayyaa siif ajajee yaadudhaan ,maaloo Gaaffilee armaan gadii deebisi:

No.	Torbaan lamaan darban keessa	Eyyee(1)	Lakki (0)

500.	Yeroo tokko tokko qoricha fudhachu ni irraaffattaa?		
501.	Namoonni yeroo tokko tokko irraanfachuun ala sababa birootiin qoricha odoo hin fudhatin hafu.Torban lamaan darban keessa, guyyaan ati qoricha odoo hin fudhatiin hafte jiraa?		
502.	Qoricha fudhatte keessa keetitti wanti badaan sitti dhagahame odoo doktora ketitti hin himin yeroon qoricha dhaabdee jiraa?		
503.	Yeroo imala deemtuu yookin manaa baatuu, yeroon qoricha qabattee deemuu irraanfatte jiraa?		
504.	Kaleessa qoricha kee hunda fudhatte jirtaa?		
	Yeroo mallattoon dhukkubbi keetii to'annoo jala oole sitti fakkaatuu, darbee darbee qoricha fudhachuu ni dhaabdaa?		
505.	Guyyaa guyyaan qoricha fudhachuun namoota tokko tokko ni nuffisisa.Qoricha kee irratti irkachuun si aarsee beekaa?		
506.	Yeroo hammamiif qoricha fudhachuu irraanfatte beekta?	A.Goonkumaa B.Yeroo tokko C.Darbee darbee D.Yeroo heddu/Baay'ee E.Yeroo hunda	

{Furtu: Eeyyee=1 Lakki=0, Gaafii Dhumaatiif A=0; B-E=1 fi qabxii edda'amaan}

Kan hordofuu (ida'ama waligalaa <6)

Kan hin hordofne(ida'ama waliigalaa $\geq$ 6) **Galatoomaa!!**

Declaration

I, undersigned, declare that this thesis l is my original work, has not been presented for a degree in this or other university and that all sources of materials used for this have been acknowledged.

Name _____

Signature _____

Date of submission _____

This thesis has been submitted with my approval as university advisor:

Name of advisor signature

_____ _____

_____ _____