HEALTH RELATED QUALITY OF LIFE AND IT'SASSOCIATED FACTORS AMONG DIABETIC PATIENTSON FOLLOW UP IN JIMMA UNIVERSITY SPECIALIZED HOSPITAL, JIMMA, SOUTH WEST ETHIOPIA

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HEALTH RELATED QUALITY OF LIFE AND ITS ASSOCIATED FACTORS AMONG DIABETIC PATIENTS ON FOLLOWUPIN JIMMA UNIVERSITY SPECIALIZEDHOSPITAL,

JIMMA, SOUTH WEST ETHIOPIA

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ABSTRACTS

***Background**: According to the 6th Edition of the International diabetes federation Atlas, in 2013 there are approximately 382 million people with diabetes worldwide. About eighty percent (80%) of people with diabetes live in low and middle income countries. Diabetes and its treatments may damage quality of life of patients even if later one improves their health. As a result, weighing up outcomes of diabetes care and impact of diabetes on quality of life is essential. It informs us not only about the patients' experience of living with the condition, but also shows us ways in which we could improve diabetes care.*

***Objective**: - The aim of this study was to assess status and factors associated with health related quality of life among diabetic patients having follow-up in diabetes clinic in Jimma Specialized Hospital, Jimma ,south west Ethiopia*

***Methods**: - Institution based cross sectional study was conducted from February 03, 2014 to May10, 2014. Systematic sampling technique was used to select 356 participants. Data were collected by 4 nurses using structured questionare through interview and medical records review.*

***Results**- A total of 341 respondents participated in the study and the response rate was 96.2%. Highest percentages (57%) of poor health related quality of life was found in general health followed by role physical (36%) and lowest in bodily pain dimensions in which 12% of the respondents had poorquality of life. Additionally, the results showed that type II diabetes, number of drugs, longer duration of illness and number of comorbidity were important predictors of impaired health related quality of life.*

Conclusion and Recommendations

Type II diabetes, higher number of drugs, longer duration of illness and number of comorbidity were important predictors of impaired health related quality of life. Additionally, general health and role physical dimensions of respondants quality of life were severly impared. Stakeholders in the diabetes mellitus should focus on strategies in the area of physical and emotional health of patients.

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HRQOL	Health related quality of life
SDSCA	Summary of diabetes self care activity
SF-36	Short form 36 item health survey
QoL	Quality of life
PCS	Physical component summary
MCS	Mental component summary
PF	Physical Functioning
RP	Role Physical
BP	Bodily Pain
GH	General Health
VT	Vitality
SF	Social Functioning
RE	Role Emotional
MH	Mental Health

CHAPTER ONE: INTRODUCTION

1.1 Background

Diabetes mellitus is a group of metabolic diseases characterized by increased level of glucose in the blood resulting from defects in insulin secretion, insulin action, or both [1]. The major classifications of diabetes are type one, type two, gestational diabetes and diabetes mellitus associated with other conditions or syndromes [2].

Diabetes mellitus is likely to become one of the most prevalent and economically important diseases of the 21st century. One in 20 deaths is attributable to diabetes; 8,700 deaths every day; six deaths every minute [3].

According to the 6th Edition of the IDF Atlas, in 2013 there are approximately 382 million people with diabetes worldwide. About eighty percent (80%) of people with diabetes live in low and middle income countries [4]. In Africa it was estimated that 4.3% of the population are affected by diabetes .Over the next 20 years, the number of people with diabetes in the region will almost double .This region has the highest mortality rate due to diabetes. In sub-Saharan Africa there is paucity of prevalence data, most of the prevalence data derived from studies in Ghana, Cameron, Nigeria, Tanzania and South Africa it ranges from 0.2%-8% [4]

Ethiopia, which is one of the developing nations, is at a risk of increased diabetes incidence [2].About 3.32% of the population is estimated to live with diabetes in Ethiopia and over 23,869 die at age 20-79 due to diabetes [4]. In Jimma Town a community based study done in 2006 shows that about 5.3% of adults 40 years and above live with diabetes [5].

Number of people with diabetes is increasing in every country. Four out of five people with diabetes live in low and middle income countries. Urbanization and accompanying changes in lifestyle are the main drivers of the epidemic. Health systems of most of these countries are not equipped to deal with the rapidly rising economic and social burden of diabetes [6].

Living with diabetes has an increased risk of developing a number of serious health problems. Consistently high blood glucose levels can lead to serious diseases affecting the heart and blood vessels, eyes, kidneys, nerves and

teeth. In addition, people with diabetes also have a higher risk of developing infections [6].

However, a full and healthy life is possible with diabetes if it is equipped with effective management [7].

Today, a wide range of studies on the outcome of treatments and interventions include some form of quality of life measure. It is patient-based and health outcomes will be evaluated from the point of view of the patient. Traditionally effectiveness of treatments and interventions were determined by objective outcome measures like laboratory investigations, mortality and morbidity ratios, etc. Objective measures are no longer sufficient, because they do not necessarily reflect patients' perceptions of their health [8, 9].

Quality of Life has been defined in several different ways it is almost always regarded as being multidimensional. The concept of QOL broadly encompasses how an individual measures the 'goodness' of multiple aspects of their life. Health Related Quality of Life usually includes physical, psychological and social components. Different scholars defined HRQOL in different ways. Gold et al. (1996) define as health related quality of life refers to the impact of the health aspects of an individual's life on the person's quality of life, or overall well-being. Kaplan and Anderson (1996) defined as HRQOL refers to the impact of health conditions on function [10].

There are several advantages to utilizing HRQOL measures. Quality of life indicators help to answer the question of whether the treatment leads to a life worth living, by providing a more patient-led baseline against which the effects of the intervention can be evaluated [11].

1.2 Statement of the problem

Diabetes has become one of the major causes of premature illness and death in most countries; globally it attributes about 4.8 million deaths mainly through the increased risk of cardiovascular disease. Cardiovascular disease is responsible for between 50% and 80% of deaths in people with diabetes [13].

Complications account for much of the social and financial burden of diabetes. The costs of diabetes to the individual and the family are not only financial, the intangible costs of, pain; anxiety and reduced quality of life have a tremendous impact [6, 13].

Diabetes mellitus, like any chronic medical condition, impacts on quality of life. In fact, individuals with diabetes have reduced HRQoL compared with those without diabetes. People with diabetes are constantly remind of the disease on a daily basis, they have to eat carefully, exercise, test their blood glucose and based on the result decide when to schedule their next meal or medication [14].

In addition diabetes-related changes may cause the disability in physiological, psychological, and social function leads to poor health related quality of life. Changes in physiological function may occur as a result of diabetes complications and common co morbidities that lead to mobility impairment and decline of activity of daily life [14].

Regarding change in psychological function, diabetes is frequently associated with adverse psychological effects, particularly depression. That is, diabetes patients are more like to suffer from common mental disorders, which is highly relevant with impaired health related quality of life, more days of work, none adherence, and difficulties with diabetes self care. Consequently, general health status perception is worse in the diabetic population [14].

Diabetic patients may experience discrimination by employers. This may affect hiring practices lead to loss of self-esteem and earning ability, failure to support a family and their future quality of life [15].

Not only diabetes affects daily functioning and wellbeing of patients but also its treatment regimens influence patients' daily functioning and wellbeing .Worsened health related quality leads the patients to trouble in participating

actively in the social and economic life of the community in which they live. Specifically it is associated with restricted social life, difficulty in accomplishment of roles, school or work absence, poor sleep, increased hospital visits, hospitalizations, and worsening of glycemic control. [8, 15].

When issues affecting a person's quality of life are not addressed and the incidence of complications increases, an individual's perceived quality of life is further impacted on negatively, additionally difficult attempts to improve disease progression [10]

Studies of clinical and educational interventions suggest that improving patient's health status and perceived ability to control their disease results in improved quality of life [15].

Understanding determinants of HRQOL among individuals with diabetes could guide tailored and targeted intervention strategies to improve outcomes for this population group [16].

Several studies have documented multiple factors contribute to poor health related quality of life like diabetes related medical, psychosocial, demographic and diabetes care factors [17].

However controversies exist regarding association between factors and HRQOL. The principal investigator didn't come across any study done in Ethiopia concerning HRQOL and its associated factors particularly in the study area. As a result such factors must be understood; therefore this study was assessed health related quality of life and its influencing factors among diabetic patients on follow-up in Jimma Specialized Hospital.

CHAPTER TWO

2.1 Literature review

This part of the paper examines factors influencing health related quality of life in diabetic patients. Numerous authors find that multiple factors contribute to poor quality of life in diabetes such as demographic factors, medical related factors and diabetes care. However controversies exist between studies.

Health related Quality of life

Health related quality of life consists of eight domains namely physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional and mental health. [18].

Regarding impacts of diabetes mellitus on quality of life number of studies report that quality of life among people with diabetes is worse than quality of life in the general population. Another cross sectional study done in South Africa found substantial impairment in bodily pain and general health domains of sf-36 [19, 20].

Sociodemogrophic Variables and Health Related Quality of life

Several researchers found that socio demographic variables affect health related quality of life. In relation to gender a number of researchers have reported that quality of life is increased among diabetic men than among diabetic women. Cross sectional studies done in Lesvos an island in Greece [21], Croatia [22], and Observational prospective study in Indonesia revealed women had consistently decreased scores on all dimensions HRQOL [23]

Regarding age, patterns of association is varies between studies. But several studies found significant association with physical functioning of HRQOL. Observational prospective study done in Indonesia found that increasing age was significantly associated with impaired physical functioning [23]. In contrast cross sectional studies done in Norway [24] and Romania revealed no statistically significant correlations between quality of life scales (domains) and age [25].

About relationship between body mass index and quality of life in people with diabetes, a cross sectional study done in Israel showed that higher

quality of life was significantly associated with lower body mass index [26]. Also a cross sectional study in China found positive association between BMI and MCS whereas negative association for PCS of HRQOL [27]. On the contrary side, a cross sectional study done in Norway observed no significant association between body mass index and HRQoL [28]

Significant associations have also been demonstrated between other socio demographic variables and quality of life. Cross sectional studies done in Nigeria [29], Croatia [30], and Malaysia [31] found unemployment, lower income and lower level of education were associated with decreased HRQoL [28]. On opposite sides a cross sectional study done in Thailand revealed demographic factors were not significantly associated with HRQOL [32].

Quality of life and Medical related factors

Other important influencing factors of health related quality of life are medical related factors namely duration of disease, co morbidity, treatment regimen, and diabetes control. Regarding relationship between glycemic control and quality of life in people with diabetes, many studies suggest that a relationship does exist. But their findings were varying in patterns of its association. Some studies found significant association with overall quality of life others limit the association only on specific aspects of quality of life. An observational prospective study done in Indonesia [23] and cross sectional studies done in Australia [33] and Israel [26] found that uncontrolled diabetes was significantly associated with decreased HRQoL. However, a cross sectional study done in Malaysia revealed uncontrolled diabetics groups scored decreased in the role emotional domain than groups with controlled diabetes. [30]. In addition to this, cross sectional study done in Romania revealed significant correlation with Vitality sub scales of HRQOL [23].

Concerning comorbidity, several researchers found presence of complications or co morbidity, particularly the presence of two or more complications, is associated with impared quality of life. Observational prospective studies done in Indonesia [23] and Canada [34] found higher number of comorbidities were significantly associated with lower HRQOL. In same study in Indonesia patients without complications reported the highest

HRQOL, whereas patients with two or more complications reported the lowest HRQOL [23].

In relation to duration of diabetes studies found that increased duration of diabetes was associated with impaired quality of life. A cross sectional study done in Singapore found increased duration of diabetes significantly associated with reduced HRQOL [35]. Additionally a cross sectional study done in Oman, south western Asia showed patients with less than5 years of disease duration reported significantly increased overall quality of life than patients more than 5 years duration of diabetes [36]. But an observational prospective study done in Indonesia and cross sectional study done in Pakistan revealed no significant association between quality of life and disease duration [37].

About association between treatment regimen and quality of life in people with diabetes, a cross sectional study in Malaysia showed that the respondents taking insulin had significantly lower adjusted mean scores in role physical and bodily pain components compared with respondents taking <3 oral drugs. In Same study similar associations were found between respondents with insulin and those taking 3 or more drugs for both sub scales (role-physical and bodily pain [30]. Additionally a cross sectional study in Virginia revealed insulin use significantly associated with decreased HRQOL in type II diabetes [40]. But observational prospective study in Indonesia found that Type 2 diabetes mellitus patients treated with insulin was experienced significantly greater improvement compared with triple oral medications [23]. On the contrary side, a cross sectional study done in Chinese shows that , treatment regimen, glycaemic control, duration of illness, type two diabetes were not significantly associated with HRQOL [27].

Diabetes care and health related quality of life

Diabetes care is comprises self care practice and patient satisfaction. Regarding quality of institutional care, level of user's satisfaction is highly relevant signals to measure quality of medical care because patient satisfaction reflects consumers' perceptions of standards of care, and success of providers at meeting client values and expectations. There are few studies available regarding association between Diabetes care and HRQOL. A study

done in Israel found higher quality of life was associated with greater satisfaction with medical care's [26]. About self care practice a study done in Thailand revealed that good frequent self care practice was associated with a higher HRQOL. Frequent dietary control and medication use were positively associated with HRQOL, while foot-care and exercise were not associated with HRQOL [41]. But a cross sectional study done in Greece revealed poor exercise significantly association with poor HQOL [42].

2.2 Conceptual frame work of the study

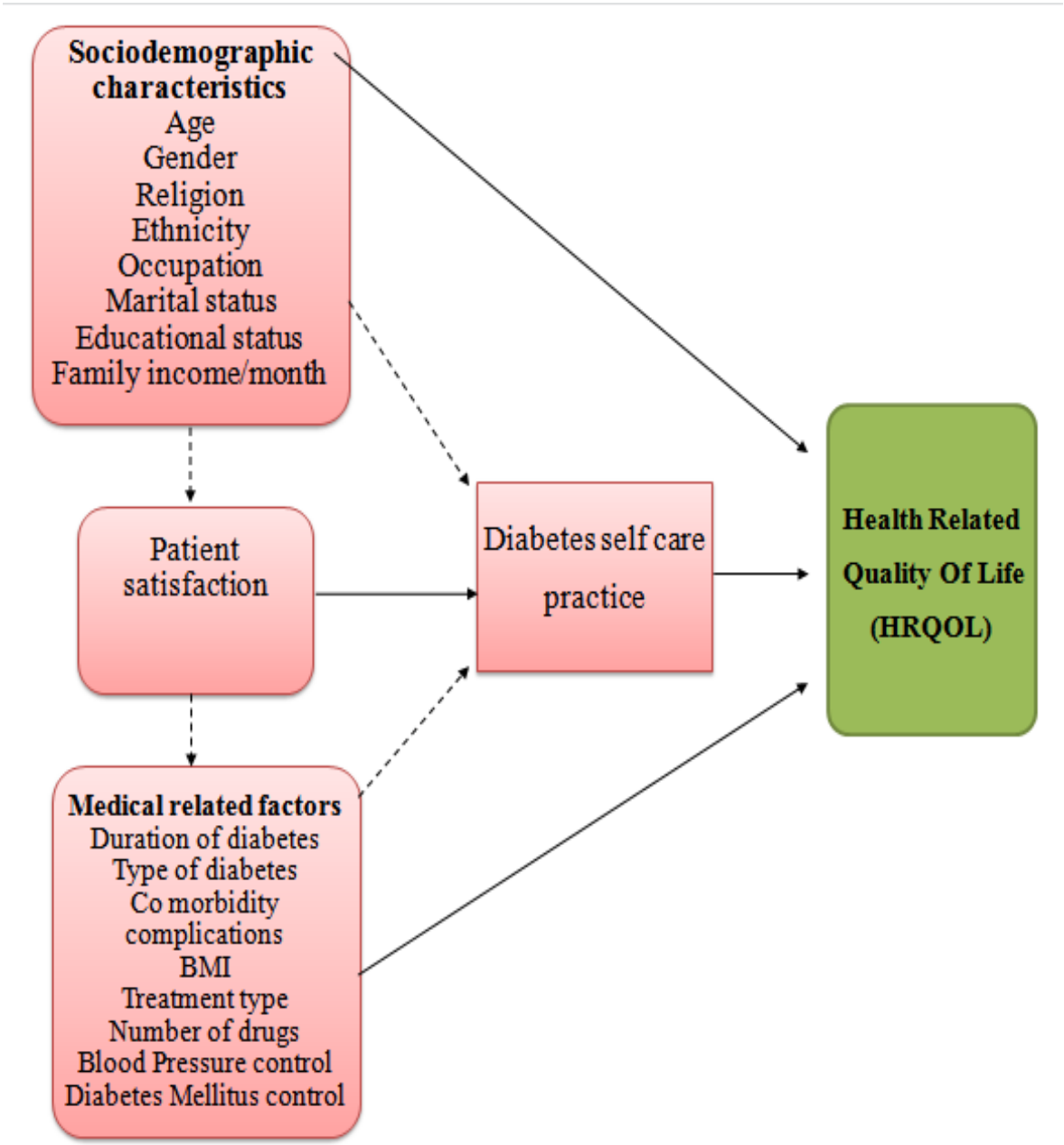

Figure 1: conceptual frame work of the study developed after extensive review of litreture.

2.3 Significance of the study

Diabetes-related changes may cause the disability in physiological, psychological, and social function. Additionally its treatments also may affect quality of life of patients even if they improve their health. When issues affecting a person's quality of life are not addressed and the incidence of complications increases, an individual's perceived quality of life is further impacted on negatively.Further more understanding determinants of HRQOL among individuals with diabetes could guide tailored and targeted intervention strategies to improve outcomes for this population group.

The goal of this investigation is to explore factors influence health related quality of life.

The findings of this study will assist health care professionals to understand factors related to health related quality of life .This enables them to manage diabetes appropriately. Also this study will be helpful to implement effective strategies that would lead the patient to optimum level of functioning.

Potentially findings of this study will help policy makers, program planning bodies and service providers to evaluate quality of existing policies, treatment strategies, programs and treatment guidelines and to improve or change them to attain optimum level of functioning and also helps as a baseline for future studies.

Finally since there is a limited research at country and lower level, this study can be used as resource for other studies related to quality of life in diabetes.

CHAPTER THREE: OBJECTIVES

3.1 General objective

- To assess status and associated factors of health related quality of life among diabetic patients following diabetes clinic in Jimma Specialized Hospital, Jimma, South west Ethiopia.

3.2 Specific objectives

- To describe health related quality of life status among diabetic patients.
- To identify associated factors of health related quality of life among diabetic patients.

CHAPTER FOUR: METHODS AND MATERIAL

4.1 Study area and Study Period

This study was conducted from February 2014 –May 2014G.C in Jimma University Specialized Hospital (JUSH) which is found in Jimma town. The town is located 356 kms south west of Addis Ababa. The town is divided in to 13 kebeles. JUSH is the only teaching and referral hospital in the southwestern part of the country. It has bed capacity of 450 and a total of more than 750 staffs of both supportive and professional. It provides services for approximately 9000 inpatient and 80000 outpatient attendants in a year. As one of the outpatient services, the hospital has specialty clinics where patients with specific chronic disease are referred for follow-up. Diabetes clinic is one of those clinics which give service for patients with Diabetes mellitus. The clinic currently gives service for about 2030 diabetic patients twice a week (i.e. Monday and Tuesday). On average 90 -110 patients are visiting the clinic in a day. The clinic is staffed with internist, residents and nurses who are trained in specific chronic disease patient follow-up.

4.2 Study design

Institution based cross sectional study design that employed quantitative method was used.

4.3 Population

4.3.1 Source population

All adult diabetic patients who have follow-up clinic in Jimma University specialized hospital.

4.3.2 Study population

Sampled adult diabetic patients who were in follow up clinic during study period and who fulfilled inclusion criteria.

4.3.3 Inclusion criteria

To be eligible for inclusion in this study patient should be

- Aged greater than18 years
- On treatment for at least 3 months.

4.3.4 Exclusion criteria

Patients who were seriously sick to be interviewed

4.4 Sample size and Sampling procedure

4.4.1 Sample size

The sample size was determined considering an estimate of 50% expected proportion of poor health related quality of life aged above 18 years, 5% margin of error and 95% confidence interval of certainty (alpha =0.05). Based on this assumption, the actual sample size for the study was computed using population proportion formula as indicated below.

$$n = \frac{(Z\alpha/2)^2 P(1-P)}{D^2}$$

Where, n= Sample size

$Z\frac{\alpha}{2}$= Critical value =1.96

P= estimate of proportion of population with poor health related quality of life among diabetic patients= (50%)

D=Precision (margin of error) =0.05

$$n = \frac{(1.96)^2\ 0.5(1-0.5)}{(0.05)^2} = 384$$

Since the source population was 2030 that was below 10,000 finite population correction was used:

$$n = \frac{n_0}{1+\frac{n_0}{N}} \qquad n = \frac{384}{1+\frac{384}{2030}} = 323$$

Adding non response rates of 10% the total sample size

$$323 + \frac{1}{10} * 323 = 355.3 \approx \mathbf{356}$$

4.4.2 Sampling procedure

Sampling frame was prepared by using those patient's card numbers. Systematic sampling technique was used to select individual patients. The k interval was calculated by using following formula:

K = N/n

N=number of diabetics who have follow up in JUSH.

n=sample size (required number of patients).After K^{th} interval computed, lottery method was used to identify starting point.

Hence,

K=2030/356= 5.7 ≈6

4.5 Study variables

4.5.1 Dependent Variable

- Health related quality of life

4.5.2 Independent variables

- Demographic factors: -Age, Gender, BMI, Religion, Ethnicity, Occupation, Marital status, Educational status, Family income/month.
- Medical related factors:-Duration of diabetes, Type of diabetes, Co morbidity, Treatment type, Number of drugs, Blood Pressure control, Diabetes Mellitus control.
- Diabetes care: -level of self care practice and patient satisfaction

4.6 Data collection instrument and procedure

Data was collected using a structured questionnaire. Four data collectors (nurses) working in JUSH other than chronic illness department and familiar with local customs were recruited. A supervisor was selected from JUSH. The enumerators and the supervisor were given training for three days on procedures, techniques and ways of collecting the data. The questionnaires was initially prepared in English and then translated in to Amharic and Affan Oromo. The Amharic and Affan Oromo version was again translated back to English to check for any inconsistencies or distortions in the meaning of words and concepts (annex).

The questionnaire was pre tested prior to the actual data collection on 18 (5%) respondents that were not included in the main survey. The result of the pre test was discussed, and some corrections and changes were made on the questionnaire. During the actual data collection, the supervisor checked study sites at least twice a day. The Principal Investigator (PI) and the supervisors rechecked all filled questionnaires daily to see whether the interviewers have

done correctly or not. Anything that was unclear or ambiguous and incomplete was corrected on the next day. The questionnaire was used to collect information on variables such as score of demographic characteristics, health related quality of life, Patient satisfaction, diabetes self care activities, and depression.

4.7 Data analysis procedure

Data were entered by using Epidata3.1 for cleaning and coding and was exported to SPSS version 20 for analysis. Univariate analyses were done and Frequency distributions were used to organize and present the data. Measures of central tendency were calculated and utilized for appropriate variables to describe the data.

For bivariate analysis simple logistic regression was used and variables $p<0.25$ were candidates for MLR analysis. Multiple logistic regression analysis was used to predict factors which affect health related quality of life (dependent variable). And those variables with a p value ≤ 0.05 were considered as statistically significant in multivariate analysis.Finally the result was displayed using charts, graphs and tables.

4.8 Data quality control

To assure the quality of the data, properly designed data collection instrument was developed. Training was given for data collectors and supervisor. Every day, the collected data were reviewed and checked for completeness and consistency by the supervisor and the principal investigator. Pre-testing and supervisions were made before and during actual data collection respectively. Reliability of scales by coefficient alpha

Chrobach's alpha was 0.908 for sf-36 and 0 .801 for satisfaction scale.

4.9. Operational definitions

Blood Pressure control: - Is level of average three consecutive appointments systolic and diastolic blood pressure .Controlled if Systolic blood pressure is <140 mmHg and Diastolic blood pressure is <90 mmHg. Uncontrolled if Systolic blood pressure ≥140 mmHg and Diastolic blood pressure ≥90 mmHg. Uncontrolled blood pressure is ≥125/75 mmHg for those with renal impairment/ gross proteinuria.

Diabetes control: -Blood glucose control status of the patient determined by average three consecutive appointments fasting blood glucose levels. Controlled diabetes levels is <126 mg/dl, Uncontrolled diabetes ≥126mg/dl.

Health related quality of life: - It was assessed by SF-36 questionnaire, assess eight health concepts (subscales of sf-36).Namely

- **Physical Functioning** assesses limitations on normal physical activities, designed to estimate the severity of limitation. (Ten questions).
- **Role/Physical** assesses limitations on the individual's work function that are caused by physical health problems. The questions are structured in such a way that "role" may apply to work or everyday responsibilities, thus applying to retired people or those who work within the home as well as outside the home. (Four questions)
- **Bodily Pain** assesses both the severity of pain and the extent to which it interferes with normal activities. (Two questions)
- **General Health** assesses physical health status and has been documented to be a good predictor of health care expenditures. (Five questions)
- **Vitality/Energy** assesses a subjective feeling of well being including energy and fatigue. (Four questions)
- **Social Functioning** assesses the quantity and quality of interactions with others, extending measurement beyond exclusively physical and mental health concepts. (Two questions)
- **Role/Emotional** assesses limitations on the individual's work functions, but restricts the cause of the distinct from those caused by physical problems. (Three questions)
- **Mental Health/Emotional Well-Being** assesses the four major mental health dimensions of anxiety, depression, loss of behavioural or emotional control, and psychological well-being. (Five questions)

❖ Each subscales were transfred in to 0-100 scores.Less than or equal to 50 considered as poor where as above 50 was better quality of life.

Patient satisfaction: -is a summary score of 15-items measure patient satisfaction to ward health services at the out-patient department of diabetes

clinic that are available in the JUSH. Higher score indicate higher satisfaction.

Diabetes self care practice: -Refers to a total score derived by adding scores for subscales of diabetes self-care activities scale namely diet, exercise, self monitoring blood glucose and foot care. Response options range from 0 to 7 to correspond to the number of days in a week. The average score across items for each of subscale represents frequency of performing self care activities in the past seven days [34].

Poor diabetes self care practice ≤mean of total score

Good diabetes self care practice> mean of total score

4.10 Ethical considerations

Before the data collection, ethical clearance letter was obtained from ethical review committee of JU College of public health and medical sciences then permission to conduct the study from JUSH. The respondents were informed about the purpose of the study, and their oral consent was obtained. The respondents' right to refuse or withdraw from participating in the interview was fully maintained and the information provided by each respondent was kept strictly confidential.

4.1 Dissemination of findings

The result of the study was communicated to Jimma University college of Public Health and Medical Sciences Graduate School, Department of Nursing to concerned bodies in the study area. Finally an effort also will be made to publish in local or international journals.

CHAPTER 5: RESULTS

Socio demographic characteristics of the study subjects

A total of 341 respondents participated in the study giving response rate of 96.2%. The sample consisted of 183 males (56%) and 158 females (44%) with mean age 46.37± 15.9 years. Of the study participants, 81% were married, majority (65.7%) was Oromo and 30% can't write and read. Further information on the socio-demographic background is presented in Table 1.

Table 1 Socio demographic characteristics of respondents in JUSH, Jimma, South west Ethiopia, May 2014

		Frequency	Percent
Marital status	Single	55	16.8
	Married	277	81.2
	Widowed	8	2.3
	Divorced	1	0.3
Religion	Orthodox	133	39
	Islam	192	56.3
	Protestant	15	4.4
	Others	1	0.3
Ethnicity	Oromo	224	65.7
	Amhara	67	19.6
	Dawro	16	4.7
	Yem	14	4.1
	Others	20	5.9
Educational status	Illiterates	106	30.1
	Can write and read	24	6.9
	Grade 1-6th	102	28.8
	Grade 7-12th	58	16.9
	Grade 12th and above	49	16.7
Occupation	Government worker	43	12.6
	Housewife	81	23.8
	Farmer	124	36.4
	Merchant	28	8.2

	Daily laborer	19	5.6
	Others	46	13.5

Medical related factors

Medical related factors were also assessed. Among 141 participants 229(66.9%) were type II diabetes, Mean duration of DM was 5.7±5 years, mean BMI and FBS were 23.4 ± 4.3 and 172 mg/dl ±67 respectively. Of the study participants, 200(58.7%) had comorbidity, 233(68.3%) were insulin users. And 15.8% had hypertension. Further descriptive statistic information is show in the table2 and 3

Table 2: Frequence of medical related factors of respondents in JUSH, Jimma, South west Ethiopia, May 2014

		Frequency	Percentage
Insulin use	None users	108	31.7
	Users	233	68.3
Types of diabetes	Type I	111	32.6
	Type II	228	66.9
Hypertension	Yes	54	15.8
	No	287	84.2

Table 3: Mean distribution of medical related factors of respondents in JUSH, Jimma, South west Ethiopia, May 2014

	(Mean±S.D)
Average systolic blood pressure	122`±16
Average diastolic blood pressure	79.48±17
Duration of illness	5.7±5
BMI	23.4±4.2
Doses of insulin	22.5±8.7
FBS	172.4±67.5
Number of comorbidity	1±1
Number of drugs	2±1

Diabetes care factors

Finally Patient satisfaction and diabetes self care practice were assessed. Table 3 shows the mean score of the patient satisfaction was 73.6±11.7 (the scale score is 19 to 95 least to highest), and the mean for diabetes self care practice 9.11± 3.5, (scores of the scale least 0 and highest 46).

Table 3: Descriptive Statistics of respondent's self care practice and satisfaction scores, JUSH, Jimma, south west, Ethiopia

	Mean score	Std. Deviation
Diet related practice	1.5034	1.0
Exercise	1.1334	1.6
Self blood glucose testing	0.8206	1.5
Foot care	5.6721	2.2
Over all diabetes self care activities	9.1105	3.5
Patient satisfaction	73.5894	11.7

Health related quality of life

HRQOL was assessed using SF-36 questionnaire having eight domains i.e. physical functioning (PF), bodily pain (BP) general health (GH), and vitality (VT), social functioning (SF), role emotional (RE) and mental health (MH) were transferred in 0-100 scores. Proportions of poor quality of life were analyzed for each eight domains and found highest in general health and lowest in bodily pain.. For further information it presents in table 2.

Table 4 descriptive statistics of health related quality of life domains in study participants in JUSH, Jimma, South west Ethiopia, May 2014.

	% of poor HRQOL	Mean	Std. D
Physical functioning	34.6	65.9384	28.5
Role physical	39.9	63.6730	40.9
Bodily pain	12.9	78.1305	23.4
General health	57.5	51.6751	12.5
Mental health	24	58.1818	13.8
Role emotional	34.3	65.9365	43.0
Vitality	21.4	62.1896	16.7
Social functioning	36.7	71.0117	26.0

Predictors of impaired health related quality of life

Variables that were found to have p< 0.25 were further analyzed using multiple logistic regressions separately for each domain. Multivariate regression analyses (Table 5) indicate that medical related factors are more important predictors of poor HRQOL, compared to demographic and diabetes care factors. Depression symptoms, type II diabetes, Number of drugs, longer duration of illness and Number of comorbidity were most important predictors of impaired HRQOL.Age, being female, low level of education were important predictors in certain aspects of health related quality of life. Further information show in Table 5.

Table 5 Logistic regression of the net effect of the explanatory variable on respondent's HRQOL domians, JUSH, Jimma south west Ethiopia, 2014

*P<0.05; **p<0.005***, PH Physical functioning, RP Rrole limitation due to physical functioning, BP Bodily pain, GH General health ,MH Mental health, RE Role limitation due to emotional problems, VT Vitality, SF Social functioning.

	PH	RP	BP	GH	MH	RE	VT	SF
	OR 95% C.I.	OR (95% C.I)	OR (95%C.I.)	OR (95%C.I)	OR (95%C.I.)	OR (95%C.I)	OR (95%C.I)	OR 95% C.I
Sex(female)	1.05 (0.42,2.63)	1.07 (0.47,2.4)	0.69 (0.20,2.4)	1.04 (0.5,2.2)	4.21 (1.4,12)*	0.68 (0.3,1.5)	1.23 (0.5,3.3)	0.57 (0.3,1.3)
Age	1.05 (1.01,1.09)*	1.00 (0.97,1.04)	1.03 (0.97,1.09)	1.00 (0.9,1.04)	1.04 (0.99,1)	1.02 (0.9,1.0)	0.98 (0.9,1.0)	1.02 (0.9,1.1)
Grade 7-11th	0.18 (0.04,0.90)*	2.34 (0.63,8.73)	0.87 (0.08,9.20)	1.60 (0.53,4.9)	2.52 (0.5,13)	1.35 (0.4,5.1)	0.50 (0.1,2.1)	1.08 (0.3,3)
Grade 12th and Above	0.09 (0.01,0.669)*	0.79 (0.17,3.80)	0.25 (0.01,12.03)	0.39 (0.10,1.54)	0.85 (0.1,8.8)	0.84 (0.2,4.1)	0.32 (0.0,2.6)	1.02 (0.2,4)
Duration of illness	1.11 (1.01,1.23)*	1.02 (0.94,1.10)	0.92 (0.81,1.06)	1.01 (0.9,1.08)	0.94 (0.9,1.0)	1.04 (0.9,1.1)	0.95 (0.9,1.0)	1.09 (1.0,1)*
Type II diabetes	0.74 (0.19,2.82)	5.64 (1.8,17.3)**	0.81 (0.18,3.8)	1.16 (0.42,3.15)	0.20 (0.1,0.8)*	2.01 (0.7,5.9)	0.69 (0.2,2.3)	4.49 (1.5,13)*
Number of comorbidity	1.74 (1.1,2.76)*	1.15 (0.8,1.71)	0.88 (0.5,1.55)	1.22 (0.84,1.77)	1.20 (0.7,1.9)	1.20 (0.8,1.7)	1.67 (1.1,3)*	0.77 (0.5,1.2)
Number of drugs	0.93 (0.53,1.61)	1.16 (0.7,1.81)	2.27 (1.1,4.9)*	0.96 (0.63,1.46)	1.80 (1.1,3.1)*	1.21 (0.7,1.9)	1.73 (1.1,3)*	0.39 (0.2,0.7**
Poor of diabetes self care	0.997 (0.3,3.01)	1.377 (0.5,3.6)	0.829 (0.2,3.8)	1.024 (0.4,2.3)*	0.04 (0.0,0.4)*	0.693 (0.3,1.8)	0.298 (0.1,1.2)	0.479 (0.2,1.2)
Fasting blood sugar	1 (0.9,1.0)	0.991 (0.9,0.99)*	1.003 (0.99,1.01)	0.992 (0.98,0.9)*	0.999 (0.9,1.0)	0.995 (0.9,1.0)	1.006 (0.9,1.0)	1.002 (0.99,1.0)

CHAPTER SIX: DISCUSSION

This study assess health related quality of life and its associated factors among diabetic patients on follow up in jimma university specialized hospital, jimma, south west Ethiopia.

Improving the quality of life is often the major goal in the provision of health care and clinicians and policy-makers recognize the importance of measuring health-related quality of life (HRQoL) in informing patient management, policy decisions and resource allocation [29].

This study found substantial impairments in general health and role limitation due to physical functioning domains of sf-36. This is congruent with other a study done in turkey found substantial impairments in general health [19]. Addtionally, another study done in South Africa found substantial impairment in bodily pain and general health domains [20]. All these findigs were layed in physical health dimensions.As a result possible explanation for this is diabetes has more impact on physical health than other dimensions of health.

This study found determinants of poor HRQOL. type II diabetes, number of drugs, duration of illness and number of comorbidity were most important predictors of HRQOL.

This study found individuals with higher comorbidity had impaired HRQOL in physical functioning and vitality. It is consistent to studies conducted in Indonesia [23] and Canada [34] found higher number of comorbidities was significantly associated with impared HRQOL.

Regarding impacts of diabetes mellitus on quality of life, this study found that individuals with type II diabetes had impaired quality of life than type I diabetes, particularly in terms of role limitation due to physical functioning, mental health and social functioning. This finding is congruent to study done in Turkey found type II diabetes were associated with decreased health related quality of life than type 1 diabetes, particularly in terms of physical and social functioning [20].

This study also found association between treatment regimen and quality of life. Specifically found significant relationships between number of drugs and health related quality of life. Individuals with higher number of drugs had significantly impaired HRQOL than individuals with lower number of

drugs particularly in bodily pain, mental health, vitality, and social functioning. A study done in Malaysia showed that those taking 3 or more drugs had impaired HRQOL in sub scales (role-physical and bodily pain) [30].

In relation to duration of diabetes our study found that higher duration of diabetes was significantly associated with impaired quality of life. It is consistent with studies conducted in Singapore found increased duration of diabetes significantly associated with poor HRQOL [35]. This may be due to associated factors of years of illness like complications and treatment side effects.

There was no relationship between health related quality of life and body mass index. Consistent with a study done in Norway observed no significant association between body mass index and HRQoL [28]. However several studies found that increased BMI was associated with poor HRQoL, as Studied in Israel [26] and China [27] showed that higher quality of life was significantly associated with lower body mass index. Possible source of in consistence may be due to variation in factors associated with BMI and its magnitude across coutry. It is clear that higher the proportion of obesity associated with number of comorbidities and drugs.

Previous studies have produced inconsistent findings regarding the relationship between glycemic control and HRQoL. Studies done in Indonesia [23], Australia [33] and Israel [26] found that uncontrolled diabetes was significantly associated with impaired HRQoL. However In our study we had’t found significant relationship between diabetes control and HRQOL which is consistant with a study done in Chinese [27].Possible incosistencies may be due to deference in method of measuring bloodglucose level. HA1c is best to determine diabetes controle than FBS. Secondly may be due to variation in HRQOL instruments.

Our study also found significant relationship between diabetes self care practice and health related quality of life. Specifically individuals with good diabetes self care had significantly better HRQOL, particularly in mental health. Better self care practice has better glycemic control leads reduced hyper glycemic symptoms.

About patient satisfaction and quality of life our study found no significant association between patient satisfaction and health related quality of life. Contradicts with study done in Israel found patients that dissatisfaction with medical services had significantly impaired HRQOL.Possibly it may be due to factors may affect relevance of patient's expectation such as level of knowledge, value and belief of pateints. Because true satisfaction level, depends on rationality of patient's expectation.

In our study significant association was demonstrated between age and quality of life. Increasing age was significantly associated with poor HRQOL particularly physical health functioning. A study done in Indonesia found that increasing age was significantly associated with reduced HRQOL. Ageing is clearly associated with a decline in most physiological systems that limited physical capacity. The cardiovascular and musculoskeletal systems have involved with the most basic functions of everyday life [23].

In this study level of education also an important predictor of HRQOL.Lower level of education significantly associated with poor health related quality of life in physical functioning.Other study done in Malaysia found lower level of education were associated with impaired HRQoL [31].

However, our study found no significant relationship between quality of life and other sociodemographic variables. A study done in Thailand found no significant relationship between quality of life and sociodemographic variables.

6.1. Limmitations of the study

Design issues present one of the main limitations of this study, cause and effect cannot be ascertained since it is cross sectional study. Due to limited resources it is impossible to include important and variables like level of LDL and HbA1c.

CHAPTER SEVEN: CONCLUSION AND RECOMMENDATION

Evaluation of outcomes of diabetes care is essential to assess the impact of diabetes on QoL. It informs us not only about the patients' experience of living with the condition, but also shows us ways in which we could improve diabetes care. Thus understanding determinants of HRQOL among individuals with diabetes is mandatory.

This study found substantial impairments in respondants general health and role physical domains of HRQOL (sf-36). Addtionally found having depression symptoms, type II diabetes, number of drugs, longer duration of illness and higher comorbid conditions were important predictors of impaired health related quality of life.

Based on these findings:

1. The hospital should give emphasis to prevention of co comorbidity and strengthening of life style change to reduce effects of medical treatments.
2. Care giver should give more emphasis to type II diabetes.
3. Diabetes care giver should provide health information to those who have low educational status.
4. Stakeholders in the diabetes mellitus program should focus on care strategies in the area of physical and emotional health of patients.
5. Further diabetes specific QoL research might be necessary in order to examine and address the problems of peoples with diabetes.

CHAPTER EIGHT: REFERENCES

1. Suzanne C,Smeltzer, eta'l,editors. Brunner & Suddarth's textbook of medicalsurgical nursing. 12th ed. Newyork: Wolters Kluwer Health; 2010.

2. Ethiopian diabetes association[internate]. 2013[cited 2013 January 19]. Available from: http://www.diabetesethiopia.org.et/about_eda.html#intro

3. Robert A, Rizza MD. Atlas of Diabetes Mellitus. Third edition. London: Informa Healthcare;2007.

4. International Diabetes Federation[internate]. Diabetes atlas. 6thed. Brussels; 2013. Tilahun Y,

5. Tefera B, Bekalu A, Olana B. Type II diabetes mellitus in jimma town south west Ethiopia. Ethiopian Journals of health science. 2007; 17(2).

6. Jean M, Ekoe MR. The epidemiology of diabetes. Second edition. chichester: Jhon Wiley and Sons Ltd; 2008.

7. World helth organization. Diabetes actions now.Geneva: 2004.

8. Narelle B, Bush R. Measuring Quality of Life among those with type 2 diabetes in primary care. Queensland: Healthy Communities Research Centre; 2008.

9. Edmunds BS. Review of disease specific quality of life measurement scales. Second Edition. London: Ann Bowling; 2001.

10. John E. Ware J,PD. sort form 36 item health survy[internate]. 2013[cited 2013 December 13. Available from: http://www.sf-36.org/tools/SF36.shtml#VERS2
11. Bowling A. Health related quality of life. Penguin Books Ltd:1999.

12. Complications of diabetes [Internet]. 2013[Cited 2013 Nov 10]. Available from: http://www.idf.org/complications-diabete.

13. Hui-fen W. Quality of life in diabetic patients[internate]. 2007[Cited 2013 Nov 10].Available from:http://ep.ypu.edu.tw/~08100810/repository

14. Jean M, Ekoe MR, editors. The epidemiology of diabetes. Snd ed. Chichester: Jhon Wiley and Sons Ltd; 2008.

15. Imayama I, Plotnikoff R, Courneya K, Johnson J. Determinants of quality of life in adults with type 1 and type 2 diabetes. BioMed Central Ltd. 2011; 9 (1):1-15.

16. Rubin R, Peyrot M. Quality of Life and Diabetes. Diabetes research and review. 1999 NOV; 15:205–18.

17. John E. Ware J,PD. sort form 36 item health survy[internate]. 2013[cited 2013 January 13]. Available from: http://www.sf-36.org/tools/SF36.shtml#VERS2

18. Jahanlou A, Karami N. The Effect of Literacy Level on Health Related-Quality of Life, Self-Efficacy and Self-Management Behaviors in Diabetic Patients. Acta Medica Iran. 2011; 49 (3):153-158.

19. Saraç Z, Tütüncüo P, Par S, Sayg F, Cande Y, Tüzün M. Quality of Life in Turkish Diabetic Patients. Turk journal of medicine. 2007; 11:48–53.

20. Mikolajczyk R, Kraemer A. Health-related quality of life in diabetic patients and controls without diabetes in refugee camps in Gaza strip. School of Public Health University of Bielefeld Germany :2000.

21. Papadopoulos A, Kontodimopoulos N, et'al. Predictors of health-related quality of life in type II diabetic patients in Greece. BMC Public Health. 2007; 7:186.

22. Polji T, Ajdukovi D, Mario Š, Pibernik-okanovi M, Metelko Ž. Diabetes mellitus and hypertension have comparable adverse effects on health-related quality of life. BMC Public. 2010; 10 (12).

23. Andayani T. The association of diabetes related factor and quality of life in type II diabetes mellitus. International Journal of Pharmacy and Pharmaceutical Sciences. 2010; 2 (1):139–45.

24. Maddigan S, Feeny D, Johnson J. Comorbidity on health related quality of life.2000

25. Porojan M, Poantã L, Dumitra D. Assessing Health Related Quality of Life in Diabetic Patients. Rom journal of internal medicine. 2012; 50 (1):27–31.

26. Liat A, Revital G. Determinants of quality of life in primary care patients in with diabetes. J.health and social work.2008; 33.

27. Wong C, Lo Y, Wong W, Fung C. The associations of body mass index with physical and mental aspects of health-related quality of life in Chinese patients with type 2 diabetes mellitus.Journal of health and quality outcome. 2013; 11:1–9.
28. Solli O, Stavem K, Kristiansen IS. Health related quality of life in diabetes: The associations of complications with EQ-5D scores. BioMed Cent. 2010; 8:1–8.
29. Issa B, Baiyewu O. Quality of Life of Patients with Diabetes Mellitus in a Nigerian Teaching Hospital. Ju psy. 2006;16(1):27–33.
30. Polji T, Ajdukovi D, et'al. Diabetes mellitus and hypertension have comparable adverse effects on health-related quality of life. BMC Public . 2010; 10 (12):23-56
31. Cheah W, Lee P, Lim P. Perception of Quality of Life among People with Diabetes. Malaysian Family Physician journal.2012; 7(2):15–6.
32. Chaveepojnkamjorn W, Pichainarong. Quality of life and compliance among type II diabetic. 2008; 39 (2):328–34.
33. Valerie H. Myers P. Exercise Training and Quality of Life in Individuals with Type 2 Diabetes. Diabetes journals. 2013
34. Imayama I, Plotnikoff R, Courneya K, Johnson J. Determinants of quality of life in adults with type 1 and type 2 diabetes. BioMed Central Ltd. 2011; 9 (1):115
35. Shim Y,Ko Y. Health Related Quality of Life and Glycemic Control in Patients with Type 2 Diabetes Mellitus.Journal of national health care group. 2004; 9 (1):115
36. Masoud Y, Ali O. Assessment of quality of life in patients with type 2. Saudi journals of Medicine. 2011;968(March):1285–90
37. Riaz1, R., Rehman, R. Hakeem, F. Health related quality of life in patients with diabetes using SF-12 questionnaire. Journal of Diabetology. 2013; 2:1–7.
38. Robert D, Goldney M, PAT J, Diabetes, Depression, and Quality of Life. J. Diabetes Care. 2004; 27:1066–70.
39. Sarah E.Choi R. Gender differences in the relationship between diabetes specific quality of life and depressive symptoms. J.Gerontological Nursing.. 2013; 6(4):283–192.
40. Sundara M. Health related quality of life in type II diabetes. Ju Pati.2009; 2 (2):121–33.

41. Georgios L, yrakos N. Predictors of health-related quality of life in Diabetic Neuropathy type II diabetic patients. Greece Health Science journals. 2013; 7 (3).

42. Storey H, Gage H. The measurement of satisfaction practice from a systematic review. Health Technol Assess.2002;6(32).

43. Ohn E,Ware J. short form of health survey[internate]. 2013 [cited 2013 December 13. Available from: http://www.sf-36.org/tools/SF36.shtml#VERS2

44. Deborah J,et'al. Summary of Diabetes Self Care. J.Diabetes Care. 2000;23(7):943–50.

45. Ahmed S, et'al. Level of Patients ' Satisfaction Toward National Health Insurance in Istanbul City .Journals of International Training Centre for Case mix . 2012;17(8):976–85.

CHAPTER NINE: ANNEX

Jimma University College of Public Health and Medical Sciences

Department of nursing

Questionnaires for the assessment on Health related quality of life and associated factors among diabetic patients attending follow up at JUSH.

Consent form:

Hello: My name is ---------- and I ‘m from Jimma University. We are conducting an assessment on related quality of life and associated factors among diabetic attending follow up at JUSH. As part of this you are kindly requested to be included in the assessment which has great importance to improve the medical care which patients receive for diabetes and ultimately their quality of life. The interview will take a maximum of 30 minutes. It will not cause you any physiological, financial or psychological harm nor affect the health care service you are getting. No information concerning you as an individual will be passed to another individual or institution. Your participation will be based on your willingness and you have the right not to participate fully or partially. If you agree to be included in the study, I will start my question by asking general identification questions.

May I continue? 1.) Yes ---------- Continue the interview

2.) No---------- Stop and thank the respondent

Name of the interviewer ---------- Date ---------- Signature -------

Name of the supervisor ---------- Date ---------- Signature ----

Respondents code number----------

Card number _____

Part I. Demographic characteristics

Please ask the following questions and record the response as follows for closed ended questions please circle the response of the respondents and put the response of the respondents for open ended and for semi- closed questions (if the response is not listed) on the space provided.

01. Gender……

02. Age (yrs).....

03. What is your marital status?

a. Single
b. Married
c. Widowed,
d. Divorced,
e. others

04. What is your Religion?

a. Orthodox
b. Islam
c. Protestant
d. Catholic
e. Others

05. What is your Ethnic group?

a. Oromo
b. Amhara
c. Dawro
d. Yem
e. Others

06. Educational status

a. Illiterate
b. Read and write
c. Grade 1-6
d. Grade 7-12
e. 12 and above

07. What is your Occupation?

a. Government employed
b. House work
c. Farmer
d. Merchant
e. Daily Laborer
f. Others

08. Family income/month (birr)_____

Part II. Health related quality of life

Instructions for completing the questionnaire: - Please circle the corresponding numbers that best represents response of the participant.

9. In general, would you say your health is:

    1. Excellent
    2. Very good
    3. Good
    4. Fair
    5. Poor

10. Compared to one year ago, how would you rate your health in general now?

    1. Much better now than one year age
    2. Somewhat better now than one year ago
    3. About the same as one year ago
    4. Somewhat worse now than one year ago
    5. Much worse now than one year ago

The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?			
Items of Q3	Yes, limited a lot	Yes, limited a little	No, not limited at all
11. Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports.	1	2	3
12. Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	1	2	3
13. Lifting or carrying groceries	1	2	3
14. Climbing several flights of stairs	1	2	3
15. Climbing one flight of stairs	1	2	3
16. Bending, kneeling, or stooping	1	2	3
17. Walking more than a mile	1	2	3
18. Walking several hundred yards	1	2	3
19. Walking one hundred yards	1	2	3
20. Bathing or dressing yourself	1	2	3

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?		
Items	Yes	No
21. Cut down on the amount of time you spent on work or other activities	1	2
22. Accomplished less than you would like	1	2
23. Were limited in the kind of work or other activities	1	2
24. Had difficulty performing the work or other activities (for example, it took extra effort)	1	2

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?		
Items	Yes	No
25. Cut down on the amount of time you spent on work or other activities	1	2
26. Accomplished less than you would like	1	2
27. Did work or activities less carefully than usual	1	2

28. During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or group
    1. Not at all
    2. Slightly
    3. Moderately
    4. Quite a bit
    5. Extremely
29. How much bodily pain have you had during the past 4 weeks?
    1. None
    2. Very mild
    3. Mild
    4. Moderate
    5. Severe
    6. Very Severe

30. During the past 4 weeks, how much pain did interfere with your normal work (including both work outside the home and housework)?

1. Not at all
2. A little bit
3. Moderately
4. Quite a bit
5. Extremely

These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. **How much of the time during the past 4 weeks...**

Items	All of the time	Most of the time	Some of the time	Good Bit Of the time	A little of the time	None of the time
31. Did you feel full of life?	1	2	3	4	5	6
32. Have you been very nervous?	1	2	3	4	5	6
33. Have you felt so down in the dumps that nothing could cheer you up?	1	2	3	4	5	6
34. Have you felt calm and peaceful?	1	2	3	4	5	6
35. Did you have a lot of energy?	1	2	3	4	5	6
36. Have you felt downhearted and depressed?	1	2	3	4	5	6
37. Did you feel worn out?	1	2	3	4	5	6
38. Have you been happy?	1	2	3	4	5	6
39. Did you feel tired?	1	2	3	4	5	6

40. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?

1. All of the time
2. Most of the time
3. Some of the time
4. A little of the time

How TRUE or FALSE is <u>each</u> of the following statements for you?					
Items	Definitely TRUE	Mostly TRUE	Don't know	Mostly FALSE	Definitely FALSE
41. I seem to get sick a little easier than other people	1	2	3	4	5
42. I am as healthy as anybody I know	1	2	3	4	5
43. I expect my health to get worse	1	2	3	4	5
44. My health is excellent					

Part III. Frequency of Self-care Activities

Please ask the respondents the following questions about frequencies of self-care practice and circle appropriate response.								
45. How many of the last seven days have you followed a healthful eating plan?	0	1	2	3	4	5	6	7
46. On average, over the past month, how many days per week have you followed your eating plan?	0	1	2	3	4	5	6	7
47. On how many of the last seven days did you eat five or more servings of fruits and vegetables?	0	1	2	3	4	5	6	7
48. On how many of the last seven days did you eat high fat foods such as red meat or full-fat dairy products?	0	1	2	3	4	5	6	7
49. On how many of the last SEVEN DAYS did you participate in at least 30 minutes of physical activity? (Total minutes of continuous activity, including walking	0	1	2	3	4	5	6	7
50. On how many of the last SEVEN DAYS did you participate in a specific exercise session (such as swimming, walking, biking) other than what you do around the house or as part of your work?	0	1	2	3	4	5	6	7
51. On how many of the last seven days did you test your blood sugar?	0	1	2	3	4	5	6	7
52. On how many of the last seven days did you test your blood sugar the number of times recommended by your health care provider?	0	1	2	3	4	5	6	7
53. On how many of the last seven days did you check your feet?	0	1	2	3	4	5	6	7
54. On how many of the last SEVEN DAYS did you inspect the inside of your shoes?	0	1	2	3	4	5	6	7

SECTION V: PATIENT SASTIFACTION TOWARDS HEALTH SERVICES

Based on the reaction of patient to each statement below, please circle in the appropriate satisfaction level of patient with the following statements:

	Very dissatisfied	Dissatisfied	Neutral	Satisfied	Very satisfied
57. Physicians examine and treat me in a very friendly and courteous manner	1	2	3	4	5
58. Physicians and their staff who treat me should give me more respect about my wishes	1	2	3	4	5
59. When I am receiving medical care, physicians and their staff should pay more attention to my privacy	1	2	3	4	5
60. I feel free to complain about my health problem when I am with my physicians	1	2	3	4	5
61. There are enough seats at the waiting area	1	2	3	4	5
62. I do not have to wait too long for getting medical care at this OPD	1	2	3	4	5
63. Here, I find it hard to get an appointment for medical care right away at this OPD	1	2	3	4	5
64. Places where I get medical care are very conveniently located	1	2	3	4	5
65. The location of services is clean and has enough space to use	1	2	3	4	5

	Very dissatisfied	dissatisfied	Neutral	satisfied	Very satisfied
45. I feel the atmosphere of this OPD is good	1	2	3	4	5
46. Facilities and equipment at the OPD are tidy	1	2	3	4	5
47. Physicians and their health staffs are available whenever I need during my visit.	1	2	3	4	5

48. I think my physician's office has adequate medical instruments and equipment needed to provide complete medical care.	1	2	3	4	5
49. Physicians are careful to check everything when examining and treating me.	1	2	3	4	5

Thank you

Document review checklist

Respondent's card number _____

Please review patient chart and record the data as follows for those options listed please circle the options and if it is not listed put the information on the space provided.

9. Height_____ meter
10. Wight_____ kilogram
11. Duration of illness _____Years
12. Co morbid condition
    1. Retinopathy,
    2. Foot Problem,
    3. Ischemic Heart Disease
    4. Hypertension
    5. Others specify……
13. Numbers of drug_____
14. doses of Insulin_____
15. Total frequencies _____
16. Recent three consecutive appointment Fasting blood sugar
    1_____2_____3_____
17. Recent three consecutive appointments blood pressure.
    1_____2_____3_____
18. Types of diabetes_____

ASSURANCE OF THE PRINCIPAL INVESTIGATOR

The undersigned agrees to accept responsibility for the scientific ethical and technical conduct of the research project and for provision of required progress reports as per terms and conditions of the college of public health and medical sciences in effect at the time of grant is forwarded as the result of this application.

Name of the student: Mohammed

Date. _____ Signature _____

APPROVAL OF THE ADVISORS

Name of the first advisor: Professor Kifle Woldemichael

Date. _____ Signature _____

Name of the second advisor: Mr. Endalew Hailu

Date._____ Signature _____

APPROVAL OF THE EXAMINER

Name of the internal examiner:

Date. _____ Signature _____

Name of the external examiner:

Date. _____ Signature _____