ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH

ASSESSMENT OF HEALTH-RELATED QUALITY OF LIFE AND ASSOCIATED FACTORS AMONG TYPE II DIABETIC PATIENTS IN AYDER COMPREHENSIVE SPECIALIZED HOSPITAL, TIGRAY, ETHIOPIA

BY

HILUF KALAYU HAFTU (BSC.N)

A THESIS TO BE SUBMITTED TO ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCES, SCHOOL OF PUBLIC HEALTH, DEPARTMENT OF HEALTH ECONOMICS AS PARTIAL FULFILMENT OF THE REQUIREMENTS FOR MASTER'S DEGREE IN HEALTH ECONOMICS.

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School of public health, College of health science, Addis Ababa University

Approved by examining board

Chairman, school of graduate committee	date	signature
_____	_____	_____
Advisor (primary)		
_____	_____	_____
Internal advisor		
_____	_____	_____
External examiner		
_____	_____	_____

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Table of Contents

List of tables

List of figure

List of Annexes

ABBREVIATIONS AND ACRONYMS

AAU	Addis Ababa University
ACSH	Ayder comprehensive specialized hospital
BSC	Bachelor of Science
DM	Diabetes Mellitus
DR	Diabetes Retinopathy
EQ 5D 3L	Euro quality of life 5 dimensions 3 level
HRQoL	Health-Related Quality of Life
IDF	International Diabetes Federation
MSC	Masters of Science
OR	Odd Ratio
QALY	Quality adjusted life year
QoL	Quality of Life
S/E	Standard error
STATA	Statistical software for data analysis
TASH	Tikur Anbesa Specialized Hospital
UK	United Kingdom
US	United States
VAS	Visual Analogue Scale

ABSTRACT

Background: The overall prevalence of diabetic mellitus has increased from 171 million in 2000 to 366 million in 2030. Health-related quality of life of patients is essential in health economic evaluations. Type II diabetes shows a significantly greater decline in quality of life but data on Ethiopian population is rare.

Objective: This study aims to estimate health related quality of life, and associated factors among type II diabetic patients in Ayder comprehensive specialized hospital Tigray, Ethiopia.

Methods: A hospital-based cross-sectional study was carried out on 415 type II diabetic patients. Health outcomes were calculated in micro soft-excel and all the possible health states were valued by a general reference population of Zimbabwe tariff. The EQ-5D-3L instrument was used to evaluate patients' self-reported health status. An ordinary logistic regression analysis was used to show a significant association of factors with a health related quality of life.

Result: Overall, 415 patients participated in this study, with a mean age (± standard deviation) of 56.7 years (± 11.33). The total mean quality of life of the study participants was 0.73 (± 0.23) and the total quality adjusted life year for study participants was 2172.6. Quality of life for type II diabetic patients was mostly affected in the anxiety and depression component. Level 2, level 3 anxious patients were 1.77 times more affected than level 1 with (odd ratio = 1.77, p =0.02) and level 3 anxious patients were 2.74 more affected than level 1 with (odd ratio = 2.74, p =0.04). The study participants had an average 7.4 years of follow up with type II diabetic treatments. Variables which had a significant association with health-related quality of life were, age, occupation, monthly income, long waiting time and the presence of diabetic complications.

Conclusion: The results of this study revealed a relatively low health status (0.73) among type 2 diabetic patients as compared with the Zimbabwean general population health states (0.842). Quality of life for type II diabetic patients was mostly affected in the anxiety and depression component. It could be Worthwhile if the hospital assigns psychiatry professionals for regular and effective counseling.

Keywords; *Diabetes, Diabetes related complication, Quality of life, Utility, EQ 5D*

1. INTRODUCTION

1.1 . Background

Diabetes is a complex, chronic illness requiring continuous medical care with multifactorial risk-reduction strategies beyond glycemic control. Ongoing patient self-management education and support are critical to preventing acute complications and reducing the risk of long-term complications (1). Diabetes is classified into two major types called type I and type II. It is a major non-communicable disease that remains highly prevalent with an increasing incidence globally. It was estimated to be 2.8% in 2000 and 4.4% in 2030 worldwide. The total number of people with diabetes is projected to rise from 171 million in 2000 to 366 million in 2030 (2).

Diabetes mellitus has a chronic effect in which patients extensively suffer from mentally, physically, socially and economically. Diabetic complications have an association in lowering the quality of life in diabetic patients as compared with non-diabetic patients by 0.74 (3).

Type 2 DM is the most common form of DM characterized by hyperglycemia, insulin resistance, and relative insulin deficiency. People living with type 2 DM are more vulnerable to various forms of both short- and long-term complications, which often lead to their premature death. This tendency of increased morbidity and mortality is seen in patients with type 2 DM because of the commonness of this type of DM, its insidious onset and late recognition, especially in resource-poor developing countries like Africa (4).

Health-related quality of life (HRQOL) is defined as the overall impact of a medical condition on the physical, mental and social well-being of an individual. HRQOL measurements, including domains related to physical, mental, emotional and social functioning are valuable in the health outcomes. This helps us to understand the patients' overall health status, the impact of treatment, formulation of health policy and decision on resource allocation (5).

The substantial prolonging life expectancy in diabetes (6), health-related quality of life (HRQoL) is increasingly recognized as an important outcome of chronic disease reflecting the subjective impact of a disease condition and related interventions on patient-reported outcomes (7).

The effectiveness of an intervention on medical outcomes might be the interest of the health care providers, however; from the patients' point of view, outcomes are meaningful only if they can feel the positive changes in physical, emotional and social wellbeing (8).

1.2. Problem statement

The overall prevalence of type II diabetes mellitus has increased and the substantial human suffering is staggering. It occurs all over the world and about 2.8% global prevalence of diabetes mellitus has estimated in 2000 and the prevalence of diabetes is estimated to be projected up to 4.4% in 2030. The number of people suffering from diabetes mellitus is increasing globally from 171 million in 2000 to 366 million in 2030 (2).

The prevalence of type II diabetes in adults worldwide was estimated to be 4.0% in 1995 and rise to 5.4% by the year 2025. The number of adults with type II diabetes in the world will rise from 135 million in 1995 to 300 million in the year 2025. The major part of this numerical increase will occur in developing countries. There will be a 42% increase from 51 to 72 million in the developed countries and a 170% increase from 84 to 228 million in the developing countries. Thus, by the year 2025 greater than 75% of people with type II diabetes will reside in developing countries as compared with 62% in 1995. The countries with the largest number of people with type II diabetes are India, China, and the U.S. In the future type II diabetes will be increasingly concentrated in urban areas (9).

In developing countries, type II diabetes Mellitus is the burden of the productive age group (2). According to the international diabetes federation (IDF) data report, the highest prevalence rate of type II diabetes mellitus is in the region of low and middle-income countries in the world. In this region, about 12.5% of adults aged 20–79 years or 32.8 million people had diabetes in the 2011 year and this number is expected to double in less than 20 years (10).

Estimates from 2014 by the International Diabetes Federation suggest that the number of adults with type II diabetes in sub-Saharan Africa is 98%, from 12·1 million in 2010 to 23·9 million in 2030. Impaired glucose tolerance in sub-Saharan Africa is expected to rise by 75·8%, from 26·9 million in 2010 to 47·3 million in 2030. This proportion is more than double the predicted global increase of 37% (11).

The emerging of type II diabetes mellitus in Ethiopia becomes a public problem and affects all age groups which lead to health, economic, and social crisis. The overall prevalence of type II diabetes is estimated at 6.5% and 6.6% among men and women correspondingly (12).

Ethiopia is one of the countries in which most of the populations are young adults. The young adult age group is the backbone of the country that has the carrying capacity of economic, political, and social assets. However, because of many changes in lifestyles of the population, the young age group is also a victim of diabetic mellitus. According to some studies carried out concerning diabetic mellitus in the young age group of Ethiopian population about 8.9% of type II diabetic prevalence is the burden of youngster's (13).

Mortality attributable to type II diabetes in sub-Saharan Africa is estimated in 2010, at 6% of total mortality, an increase from 2.2–2.5% in 2000. The absolute and relative mortality rates are highest in the most economically productive population (13).

Type II diabetes mellitus has an impact on lowering the quality of life of patients with and without complication. The impact of type II diabetes is slightly lower than individuals of similar age in the general population with women 0.81 and men 0.78 respectively (3).

Type II diabetes mellitus has a chronic effect in which patients extensively suffer from mentally, physically, socially and economically. Diabetic complications have an association in lowering the quality of life in diabetic patients as compared with non-diabetic patients. Foot ulcer has an impact of lowering quality of life by 0.92 in physical endurance, 0.87 in the dimension of role limitation and 0.82 lower in physical endurance in patients aged 50-59 as compared to patients less than 50 (14).

The escalating rate of type II diabetes mellitus ends up with many diabetic complications. Studies suggest that diabetic complications in African countries are life-threatening. Because of scarce resources and poor control mechanisms, the micro vascular complications of diabetes mellitus are common and overall retinopathy affects 15–55% of patients. In individuals with type II diabetes 21–25% have retinopathy at diagnosis of diabetes compared with 9.5% of those with type I diabetes. By contrast, the proportion of macro vascular disease was low, with only 20% of diabetic foot lesions attributable to peripheral vascular disease (13).

In 2010, global health expenditure in the management of diabetes and its complications was estimated to be US$376 billion, and is expected to increase to US$490 billion in 2030. The direct costs of diabetes may consume 2.5–15.0% of the annual healthcare budgets of any country, depending on the treatment available and local prevalence .The economic impact of type II

diabetes Mellitus is staggering. Some studies indicate that the direct and indirect cost of type II diabetes care is estimated to be $98 billion. The direct costs $44 billion, including $27.5 billion for inpatient hospital care and $5.5 billion for nursing home care. The indirect costs $54 billion, including $37.1 billion for disability and $16.9 billion attributed to mortality (15).

The complication cost of type II diabetes is catastrophic. Studies show that diabetic foot ulceration and amputation are estimated to cost US taxpayers $10.9 billion in 2001 with corresponding estimates for the UK, 5% of total National Health Service expenditure or £3 billion that was attributable to diabetes. The total annual cost of diabetes-related foot complications was estimated to be £252 million. In addition to the direct costs of treatment, it is important to remember the indirect costs relating to the loss of productivity and loss of quality of life (11).

The total direct medical costs of Type II diabetes in the eight European countries was estimated in 1999 at euro 29 billion a year. The estimated average yearly cost per patient was euro 2834 a year. Of these costs, hospitalizations accounted for the greatest proportion (55%, range 30-65%) totaling EUR 15.9 billion for the eight countries (16).Studies showed that type II diabetes mellitus highly impaired HRQoL of patients. However there is rare data that shows the impact of type II diabetes in the Ethiopian population.

1.3 . Rationality and significance of the study

There is a lack of evidence concerning the impact of type II diabetes mellitus on health-related quality of life assessment in Ethiopian population. Here, my study is aiming to document the HRQoL of patients with type II diabetes mellitus. Besides, my study may also help as a reference for students and other researchers interested in cost-utility analysis for further similar studies.

This study may also help for policy makers, hospital managers, and decision makers by indicating the most significant factors that affect the QoL of type II diabetes in order to prepare for problem solving activities.

2. LITERATURE REVIEW

Studies conducted in Europe to examine the impact of type II diabetes mellitus for health-related quality of life in a total of 1348 patients shows that health-related quality of life of patients with complication is slightly lower than (0.74) individuals of similar age in the general population women 0.81, and men 0.78 respectively. These studies also show that patients without complications have the highest health-related quality of life as compared with patients who develop a complication. The type of therapy taken by patients and the presence of complications have a significant association with lowering health-related quality of life (3).

Studies that have examined the effect of type II diabetes mellitus for health-related quality of life in Mulago diabetic clinic in Uganda in a sample of 219 patients show that diabetic complications have an association in lowering quality of life in diabetic patients as compared with non-diabetic patients. Foot ulcer has an impact of lowering quality of by 0.92 in physical endurance. Health-related quality of life of patients is 0.87 and 0.82 lower in the dimension of role limitation and physical endurance in patients aged 50-59 as compared to patients less than 50 (14).

The study conducted in Nephrology Research Center, Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran 2017, revealed that Clinical outcomes and health-related quality of life (HRQOL) are much worse in diabetic compared to non-diabetic patients mainly due to more frequent of cardiovascular diseases the mean score of the was lower. Patients with diabetes had significantly worse quality of life. The mean score of SF36 in diabetics (n= 219; 41%) was 45.7 ± 20.9 versus 52.7 ± 20.5 in non-diabetics (n= 313; 59%). All SF36 subscales except social functioning and bodily pain were significantly inferior in diabetes. Also, both physical and mental component summaries were worse in diabetic patients (17).

Another study in Ontario, Canada 2016, indicated among 1143 participants reduction in HRQoL is associated with diabetic complications and the duration of therapy. Based on the OLS model, reductions in HRQL were associated with duration of diabetes (-0.0015, SE = 0.0006),

experiencing a myocardial infarction (MI) (-0.059, SE= 0.017), amputation (-0.063, SE = 0.059), stroke (-0.046) (18).

Studies that have examined the effect of diabetes mellitus for health-related quality of life Indian a sample of 97 diabetic retinopathy patients shows that health-related quality of life of patients was significantly lower in diabetes with DR when compared with those without DR with the maximum effect seen on general health, general vision and mental health. Quality of life decreased as the duration of retinopathy and severity of retinopathy increased ($p<0.001$) (19)

HRQOL of a person who has diabetes is not necessarily lower than for a non-diabetic if risk factors associated with vascular diseases are controlled. Vascular disease or risk factors for vascular diseases are associated with a significantly diminished quality of life for diabetic persons. Diabetes Mellitus and HRQoL have significant negative relationships with the value of the coefficient ranges between −0.04 and −0.054 points. In contrast, a comparison of diabetics and non-diabetics who exhibit vascular disease or risk factors for vascular disease reveals HRQOL is significantly diminished to a greater extent for those with diabetes between 0.152 and 0.175 points loss when comparing a non-diabetic person with a diabetic with vascular disease. Also, HRQOL in diabetic patients who have additional risk factors or vascular disease is lower than people non-diabetics who has additional risk factors or vascular disease (20).

Study conducted about assessing health-related quality of life in patients with type II diabetes mellitus in the different geographical regions of Brazil between December 2008 and December 2010, in 28 public clinics of the secondary and tertiary care level, located in 20 cities, suggest that the presence of clinical complications of diabetes have a potentially significant impact on worsening HRQoL, and patient characteristics have significant associations ($p<0.05$) (21).

A study conducted in Brazil in between December 2008 and December 2010 indicated the assessment of HRQoL by the Euro Qol assigned to general health in Brazil is markedly lower than those found in other Type II DM population-based studies conducted in Europe and better glycemic control can enhance the quality of life (22).

In Egypt Diabetes Endocrine and Metabolism Pediatric Unit, Children Hospital, Cairo University in 2017 comparison of total QoL regarding different studied variables showed that QoL was significantly affected by sex, residence, the severity of hypoglycemic attacks. Females had worse QoL than males ($p = 0.004$) and the total mean QoL score for males was significantly better than females (25.2 ± 7.3 vs. 29.1 ± 9.5, respectively) with $p = 0.004$. Rural residents had worse QoL than urban residents ($p = 0.02$), urban residents significantly better than rural residents in impact on daily activities and worries about diabetes with a p-value of 0.03 and 0.02, respectively (23).

Some study shows that persons with diabetic retinopathy are willing to trade off significant time to eliminate their ocular condition (mean time tradeoff score = 0.77-0.8). Also, health-related quality of life can become affected in persons with diabetic retinopathy before a visual loss, primarily because of anxiety about the future and emotional reaction to diagnosis and treatment (24).

Meta-analysis summarizes results from published English language empirical journal articles providing data on the relationship of patient adherence to aspects of disease severity. A strong association is reported between this chronic disease and quality of life. More specifically, individuals with type II diabetes have reported low health-related quality of life (HRQOL) and Successful intensive diabetes management requires significant patient engagement. Patients' beliefs have been shown to influence treatment commitment (25).

.The study conducted in China, 2018 revealed that Clinical outcomes and health-related quality of life (HRQOL) are much worse in diabetic compared to non-diabetic patients. The mean EQ-5D-5L index scores were 0.971 ± 0.082 among individuals with unilateral DR and 0.970 ± 0.145 among those with bilateral DR, which were lower compared with those without DR (0.986 ± 0.045, $P = 0.02$). In multivariate analysis adjusting for confounders, people with bilateral DR reported lower the EQ-5D index scores compared with those without DR. The presence of DR was significantly associated with problems in usual activities (odds ratio [OR] = 0.16, $P = 0.02$, comparing participants with unilateral vs. no DR; OR = 0.11; $P = 0.01$, comparing participants with bilateral vs. no DR) (26).

The study conducted about assessing health-related quality of life in patients with type II diabetes mellitus over 5 years longitudinal study in the US suggests that there was a significantly greater decline in the EQ-5D index score in the type II DM group (-0.03), compared with those without diabetes (-0.016, p=0.001). Compared with respondents without diabetes, those with Type II DM had a larger reduction in EQ-5D index score, after controlling for demographics (p=0.001). EQ-5D VAS score declined over 5 years for both groups: -1.42 (18.1) for the type II DM group, and -0.63 (15.8) for the group without diabetes, but the between-group difference was not significant either before (p=0.09) or after (p=0.12), controlling for demographics. type II DM respondents with diabetic complications had a greater decline in EQ-5D scores than type II DM respondents without complications ($p<0.05$) (4).

Generally, findings of literatures show that health-related quality of life in type II diabetic patients has and has not a significant relationship between diabetic therapy and quality of life. Diabetic complications have also a significant negative effect on the considerable impact of lowering the quality of life. Hence, because of there is a lack of evidence concerning the impact of diabetes mellitus on health-related quality of life assessment in Ethiopian population, her for, the best of my knowledge, this is the study to assess the impact of type II diabetes mellitus in health-related quality of life and utility assessment as well as identifying the association between factors and health-related quality of life.

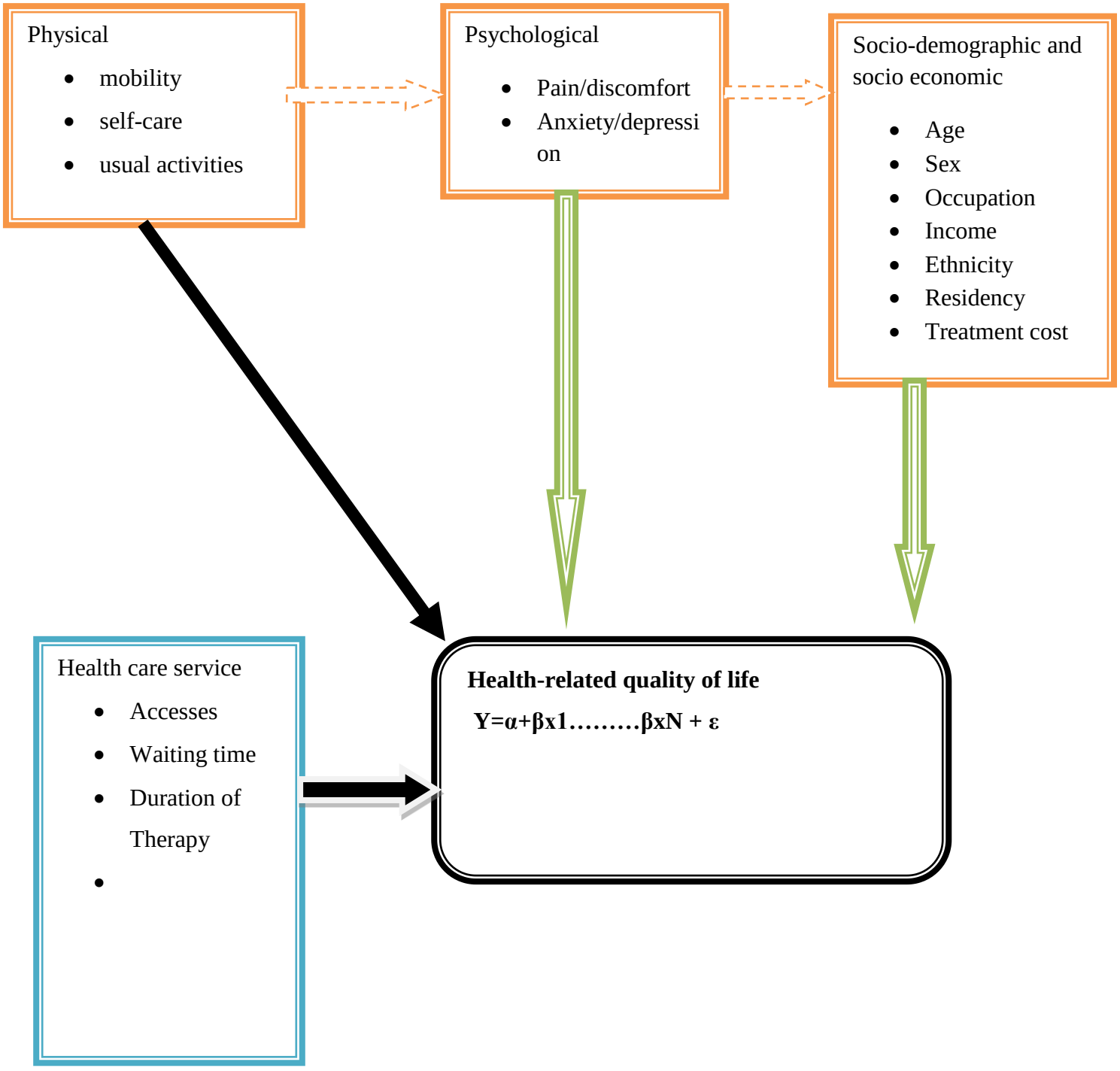

Figure 1: a Modified conceptual framework (Y=α+βx1……βxN + ε) to assess health-related quality of life among type II diabetic patients adopted from Oppe M (26).

3. OBJECTIVES

3.1 General objective

To estimate health-related quality of life and associated factors among type II diabetic patients under regular follow-up in ACSH, Tigray, Ethiopia, 2019.

3.2 Specific objectives

To estimate health-related quality of life for type II diabetic patients in Ayder Comprehensive Specialized Hospital.

To determine factors associated with quality of life for type II diabetic patients in Ayder Comprehensive Specialized Hospital.

4. METHODS AND MATERIALS

4.1. Study area & period

The study was conducted in ACSH which is found in Tigray. The hospital is located at north and 782 km away from Addis Ababa, the capital city of Ethiopia. It is a governmental hospital. It has a medical OPD that serves as a referral and follows up clinic for more than one thousand diabetic patients. Type II diabetic patients constitute a larger number among patients attending the follow-up clinic. The study was conducted from January 2019 up to march 2019.

4.2. Study design

A hospital-based cross-sectional study was conducted in the study participants.

4.3. Populations

4.3.1. Target population

All type II diabetic patients in Ayder comprehensive specialized hospital were the target population in this study.

4.3.2. Source populations

All type II DM patients under follow up in outpatient department in Ayder comprehensive specialized hospital were the source population for this study.

4.3.3. Study population:

All randomly selected type II diabetic patients were included in the actual sample study.

4.3.4. Study unit

Individual patients involved in the actual study were the study units for this study.

4.4. Eligibility criteria

4.4.1. Inclusion criteria

Patients under OPD follow up with type II diabetes Mellitus

4.4.2. Exclusion criteria

All pregnant mothers, children less than 18 years old and type II DM patients who were not voluntaries to participate in the actual study were excluded from the study.

4.5. Sample size determination and sampling technique

4.5.1. Sampling determination

The sample size was calculated using a single population proportion formula assuming the standard deviation of HRQOL among type II DM patients was 0.5, 5% margin of error (d) and 95% ($z\alpha/2 = 1.96$) and non-response rate 10%. Thus, the sample size was calculated to be 384 ($n= (z_{\alpha/2})^2 pq/d^2$). Finally, the total participants were adjusted with the adjustment formula, N=n/1-X, 384/1-0.1=427. So the total sample size to participate in this study was 427 participants.

4.5.2. Sampling technique

Simple random sampling was used to select study participants. The required numbers of individuals were selected at random from a database list of all individuals using lottery methods.

4.6. Study variables

4.6.1. Dependent variable (outcome variable)

Health-related quality of life (HRQoL)

Health-related quality of life is defined as the overall impact of a medical condition on the physical, mental and social well-being of an individual. HRQoL has different cut off point values ranged from 1 to 0. Perfect health is 1 and death is 0. The cutoff point for higher health states is 0.835 to 1, moderate health states is 0.681 to 0.835 and lower health states is 0 to 0.681. Health states less than 0 are considered conditions worsen than death (27). The values for each dimension according to the Zimbabwe general population health states time trade of by the EQ 5D 3L tool is presented in a table. The mean utility is calculated by the multiplicative assumption theory according to the next formula.

$$=1-(u)x \quad = 1 - \sum_{j=1}^{n} kjuj(xj)$$

Level 1 in all dimensions = Value 1.			
EQ-5D VALUE SETS		**UK**	**Zimbabwe**
Mobility	Level 2	-0,069	-0,056
	Level 3	-0,314	-0,204
Self-care	Level 2	-0,104	-0,092
	Level 3	-0,214	-0,231
Usual activities	Level 2	-0,036	-0,043
	Level 3	-0,094	-0,135
Pain/discomfort	Level 2	-0,123	-0,067
	Level 3	-0,386	-0,302
Anxiety/depression	Level 2	-0,071	-0,046
	Level 3	-0,236	-0,173
Level 3 at least one dimension		-0,269	
Other than 1 at least one dimension		-0,081	-0,1

4.6.2. Independent variable

1. Socio-demographic characteristics
2. Socio economic characteristics
3. Duration of therapy
4. type of therapy
5. obesity
6. diabetes complications
7. health service related variables

4.7. Data collection Instruments and process

The health status of respondents was determined using the EQ-5D-3L instrument, because the EQ-5D 3L has seldom been used in Ethiopia. There was no reference value set, thus I adopted the health state values of Zimbabwe since both countries are in the low income region of sub-Saharan Africa. Data were collected using an interviewer-administered questionnaire. The questionnaire adapted from a validated instrument of the EQ 5D tool (28). The English version questionnaire was translated to Amharic and to Tigrigna (local language).The internal consistency of the translated Tigrigna local language has been done in the pretest phase accounted for crhon's batch alpha of 0.74. Four data collectors and one supervisor were recruited.

4.8. Data quality assurance

Pretest was done on 21 type II diabetic patients which were 5% of the total sample size. Data quality was also assured by train for data collectors. The training had included how to administer questionnaires, how to collect & record data and how to communicate with respondents.

4.9. Operational definitions

Lower/poor/health-related quality of life; if the study participants mean score value of quality of life is less than 0.681 cut off point for health states (27).

Moderate health- if the study participants mean score value of quality of life is in between 0.681 and 0.835 health states (27) .

Higher health-related quality of life; if the study participants mean score value of quality of life is greater than 0.835 cut off point for health states (27).

Quality outcome; Participants feel the positive changes in physical, emotional and social wellbeing.

Complication: Participants feel the negative changes in physical, emotional and social wellbeing.

4.10. **Data processing and analysis**

Each questionnaire was checked for completeness, and missed values. Descriptive statics of numeric variables was presented in means and standard deviations. Categorical variables were presented using frequency and percentage. The statistical significance test was $p < 0.05$ at a Confidence interval of 95%. A 3.5% discount rate for QALY was used. The data collected during the study were processed by epi data manager, STATA 14, and excel. Data were analyzed by ordinary logistic regressions model. Internal consistency was done for data collection tool for the reliability of the scale. Crhon's batch alpha (α) greater than 0.7 was taken as acceptable rough guide.

4.11. **Ethical considerations:**

Ethical clearance was obtained from the institute of research board, school of public health, College of Health Sciences, Addis Ababa University. The study was also approved by the Health Research Ethics Committee of the Mekelle University. Oral consent was obtained from all patients who participated, and the data collected were treated with the utmost confidentiality both during and after the study.

4.12. **Dissemination of results**

The findings of this study were presented in different tabular and graphical features and submitted to Addis Ababa University School of Public Health, and the findings of this study were also presented to Mekelle University research institute board.

5. RESULTS

5.1. Socio-Demographic characteristics

427 patients were recruited for the study. 415 type II diabetes patients had completed questionnaires regarding quality of life. Out of the total 415 types II diabetic patients who participated in the study females were 217 (52.3%). The study participants had an average 7.4 years of follow up with type II diabetic treatments. Most of type II diabetic patients 203 (48.9%) had taken oral treatments and 111(26.7%), 101 (24.3%) of type II diabetic patients had taken injection therapy and both oral and injection therapy respectively. 274 (66.0%) type II diabetic patients had no any diabetic complications. The general socio demographic characteristics of type two diabetic patients followed in Ayder Specialized Hospital are presented in table 1.

Table 1: Socio-demographic characteristics of patients under follow up in Ayder Comprehensive Specialized Hospital, Tigray, Ethiopia April 2019.

Characteristics	Frequency	Percentage (%)
Age in years		
<20	3	.7
20-30	32	7.7
30-40	53	12.8
40-50	91	21.9
50-60	93	22.4
>60	143	34.5
Sex		
Female	217	52.3
Male	198	47.7
Marital status		
Single	26	6.3
Married	306	73.7
Widowed	51	12.3
Divorced	32	7.7
Educational status		

Illiterate	150	36.1
9-10	67	16.1
11-12	57	13.7
Higher education	141	34.0
Occupation		
Governmental employee	133	32.0
un employee	85	20.5
Merchant	57	13.7
Student	20	4.8
Farmer	50	12.0
private employee	70	16.9

The economic status of patients and in general the health service related characteristics of type 2 diabetic patients are presented in table 2. 34.2 % of type 2 patients had earned between two thousand and five thousand Ethiopian birr monthly. 24.8 % of type two diabetic patients had travelled greater than 7.5 kilometer to access the health service. Most of the patients spent their time greater than one hour to get a service in the hospital. The general health service related factor characteristics are presented in table 2.

Table 2: health services characteristics for type II diabetic patients attending in Ayder Comprehensive Specialized Hospital Tigray, Ethiopia April 2019.

Characteristics	Frequency	Percentage (%)
affordability(income in birr)		
<2250	164	39.5
2250-5000	142	34.2
5000-10000	81	19.5
>10000	28	6.7
Accessibility (distance)		
1-2.5 kilometer	67	16.1
2.5-5 kilometer	145	34.9
5-7.5 kilometer	100	24.1
>7.5 kilometer	103	24.8
Waiting time (length of stay		
<30 minute	18	4.3
30-60 minute	73	17.6
60-90 minute	135	32.5
>90 minute	189	45.5
Treatment cost (payment)		
< 150 ETB	160	38.5
150 -200 ETB	41	9.9
200 -250 ETB	30	7.2
>250 ETB	184	44.4

5.2. **HRQOL using EQ-5D utility scores**

The study population had a total of 2172.6 QALY per life years and they had reported an average EQ5D utility score of 0.73 (± 0.23). This health state is lower health state as compared with the kappa statics of EQ 5D 3L tool used to assess the general population health states in Zimbabwe. The kappa statics for EQ 5D 3L tool considers higher health state if the utility score is greater than 0.8. Patients with a longer duration of diabetes had reported a 0.78 HRQOL which was lower than other patients. Quality of life for type II diabetic patients was severely affected in the anxiety and depression component with mean value of 0.65 (± 0.24).

Table 3: association of health dimensions with total utility according to the 5D Euroqol subscales in the ordinal logistic regression model.

EQ SD 3L Dimensions		HRQoL (the mean score of participants is 0.73 which is lower QoL than cut point 0.8)		
		OR	**P value**	**95% CI**
Mobility	I have no any problem in mobility (ref)			
	I have some problem in walking	0.9	0.73	0.50 - 1.63
	I am confined to bed	2.31	0.24	0.57 – 9.37
Self-care	I have no any problem (ref)			
	I have some problem in washing my self	0.89	0.73	0.46 - 1.71
	I am un able to wash or dress my self	0.21	0.01	0.07 – 0.66
Usual activities	I have no any problem to perform (ref)			
	I have some problems to perform activities	0.63	0.20	0.31 - 1.28
	I am un able to perform my usual activities	0.67	0.45	0.24 - 1.89
Pain/ discomfort	I have no any pain (ref)			
	I have some pain/discomfort	1.77	0.12	0.87 - 3.61
	I have extreme pain/ discomfort	0.74	0.63	0.22 - 2.54
Anxiety/ depression	I am not anxious/ depressed (ref)			
	I am moderately anxious/ depressed	1.77	0.02	0.23 - 0.86
	I am extremely anxious/ or depressed	2.74	0.04	0.24 - 0.74

5.3.**Decomposition of EQ5D quality-of-life scores**

The frequency distributions of the problems with in the EQ 5D dimensions for individual patients had assessed. In the mobility dimension most of the patients report level 1 and in the dimension 2 most of the patients reported level 1.The frequency of the distribution is presented in fig 2.

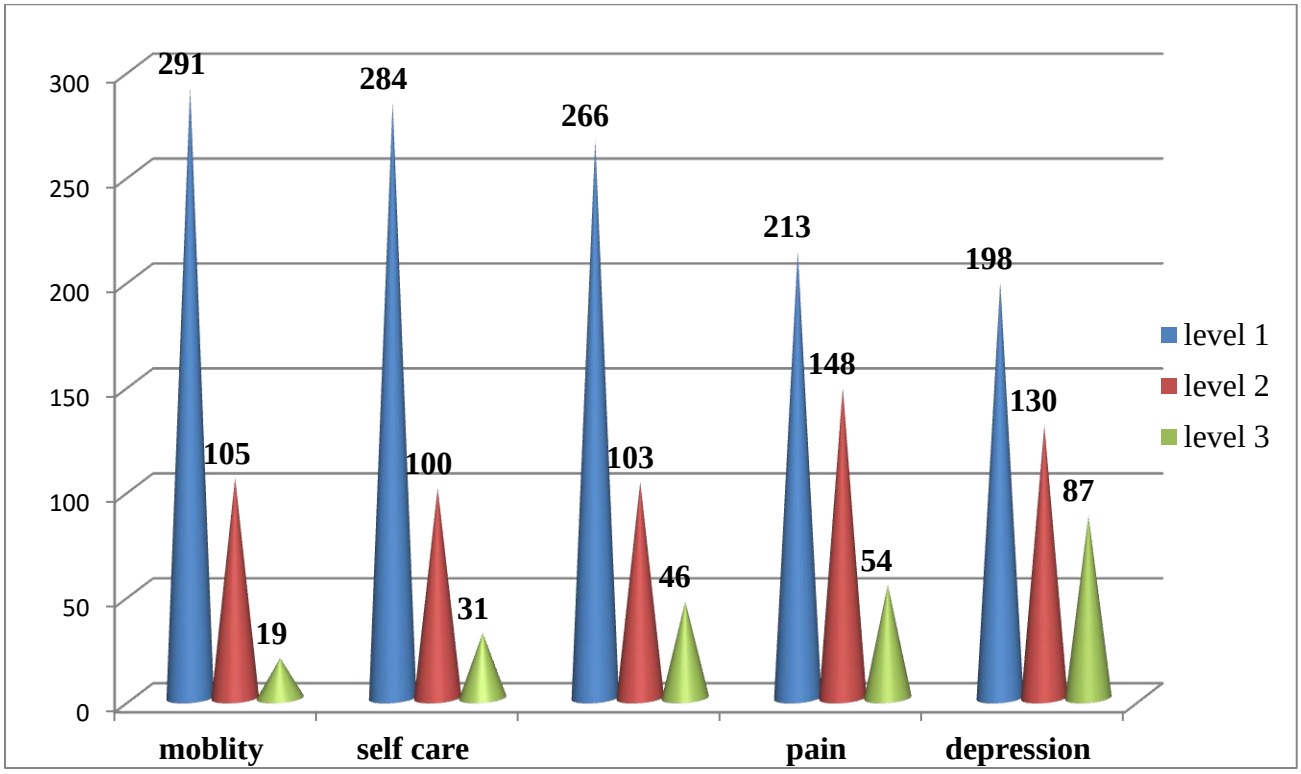

Figure 2: The frequency distributions of problems with in the EQ 5D dimensions for individual patients.

The severity of any disease is determined by its worst health state in the EQ 5D 3L component. Level 3 is the worst health state for each dimension. The severity of Problems with mobility, usual activities, and pain were less frequent and problems with anxiety/ depression components

were frequently reported. Type II diabetic patients had suffer from anxiety and depression component with the worst out come in level 3 and this is presented in fig 3.

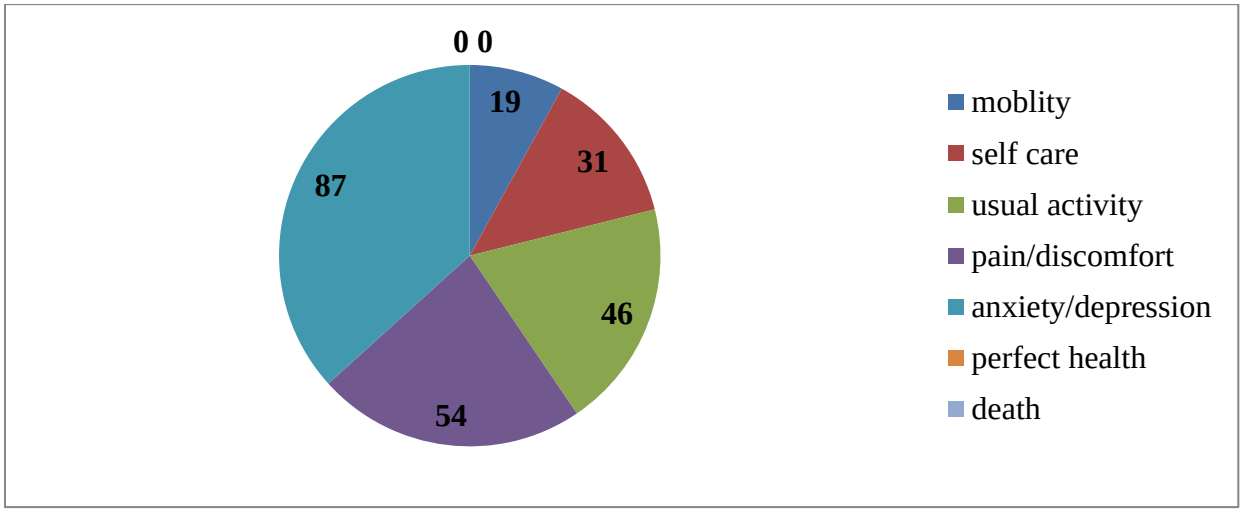

Figure 3: the severity distribution for the worst health state in each dimension according to the EQ 5D 3L subscales for patients with type II diabetics attending in Ayder comprehensive hospital Tigray, Ethiopia April 2019.

Health-related quality of life of patients with complication was slightly lower than individuals without complications. The type of therapy taken by patients had a different scale of quality of life. Patients who take both oral and injection therapy had the lowest quality of life with a mean score of 0.77 as compared with a mean score of oral therapy 0.86 and injection therapy 0.78 respectively and the average score assigned to EQ-VAS by people with Type 2 diabetes in Ayder was of 87.4. The average utility for each data of the assessed population is presented in table 4.

Table 4: Quality of life reported by type II diabetic patients attending in Ayder comprehensive Specialized Hospital Tigray, Ethiopia April 2019.

Characteristics	*EQ 5D 3L utility score*	EQ-VAS (0-100)
age in years	**Mean (SD)**	**Mean (SD)**
<20	0.76 ± 0.47	95.0 ± 4.7
20-30	0.70 ± 0.34	93.0 ± 6.5
30-40	0.83 ± 0.29	90.8 ± 8.41
40-50	0.81 ± 0.24	87.5 ± 10.3
50-60	0.88 ± 0.18	83.7 ± 10.1
>60	0.72 ± 0.23	81.9 ± 10.7
Sex		
Female	0.82 ± 0.26	87.5 ± 11.7
Male	0.81 ± 0.25	86.4 ± 11.1
Marital status		
Married	0.81 ± 0.25	86.2 ± 10.5
Widowed	0.88 ± 0.17	82.8 ± 10.4
Divorced	0.77 ± 0.25	79.7 ± 10.2
Educational status		
9-10	0.78 ± 0.26	86.3 ± 10.3
11-12	0.80 ± 0.26	87.8 ± 8.7
higher education	0.84 ± 0.27	89.8 ± 10.7
Monthly income		
5000-10000	0.75 ± 0.29	87.5 ± 10.9
>10000	0.77 ± 0.28	87 ± 6.2
Distance travelled		
2.5-5kilometer	0.79 ± 0.25	86.1 ± 10.3

5-7.5kilometer	0.79 ± 0.27	87.2 ± 8.8
>7.5 kilometer	0.87 ± 0.18	83.7 ± 11.5
30-60 minute	0.74 ± 0.29	87.5 ± 8.5
60-90 minute	0.78 ± 0.25	85.9 ± 10.7
>90 minute	0.87 ± 0.20	84.7 ± 11.2
Payment		
150-200 birr	0.75 ± 0.30	87.3 ± 10.5
200-250 birr	0.80 ± 0.23	91.8 ± 5.1
>250 birr	0.79 ± 0.27	85.1 ± 10.8
Duration		
6-10 years	0.78 ± 0.28	86.4 ± 9.8
11-15 years	0.85 ± 0.20	82.6 ± 9.8
>15 years	0.81 ± 0.23	80.1 ± 12.3
Complication		
Yes	0.81 ± 0.26	84.7 ± 10.9
Obesity		
Yes	0.85 ± 0.22	83.6 ± 10.7

The association of significant variables with health related quality of life (utility) is presented in table 5.Variables which had a significant association with health related quality of life Using the ordinal logistic regression analysis was age, occupation, monthly income, waiting time, and presence of diabetic complications. The average Euroqol VAS score was 86.4. EQ5D utility score and Euroqol VAS scores had no significant association with EQVAS (coefficient 0.003 S/E 0.009 p= 0.77 > p= 0.05, 95% C/I (-0.01 .02).

Table 5: association of variables and EQ 5D 3L utility score for quality of life (ologit, utility, i. age i.sex i.educationalstatus i.occupation i.typeoftherapy i.monthlyincome i.distance i.waitigtime i.payment i.duration i.compilication)

Ordered logistic regression	**Number of obs = 415**
	Wald chi^2 (32) = 52.48
	Prob > chi^2 = 0.01
	Pseudo R^2 = 0.08

Utility	**Odds Ratio**	**P – value**	**(95% CI)**	
Age (<20 ref)				
20-30	0.36	0.04	0.01	0.25
30-40	0.61	0.02	0.01	0.26
40-50	1.15	0.03	0.03	0.49
50-60	1.97	0.01	0.05	0.82
>60	1.29	0.05	0.03	0.99
Sex (fem ref)				
Male	1.02	0.94	0.65	1.59
E.status				
9-10	0.67	0.24	0.35	1.29
11-12	0.65	0.22	0.33	1.29
higher education	0.95	0.87	0.48	1.87
occupation				
un employee	0.78	0.049	0.39	0.56
merchant	0.89	0.070	0.48	0.64
Student	3.02	0.015	0.66	0.83
Farmer	0.75	0.051	0.32	0.76
private employee	2.31	0.01	0.19	0.48

Type of therapy				
Injection	1.04	0.89	0.62	1.74
Both	0.95	0.86	0.55	1.65
Monthly income				
2250-5000	0.76	0.028	0.46	0.62
5000-10000	0.63	0.023	0.30	0.43
>10000	0.79	0.046	0.27	0.63
Distance				
2.5-5kilometer	0.94	0.87	0.45	1.96
5-7.5kilometer	0.92	0.84	0.41	2.07
>7.5 kilometer	0.98	0.95	0.45	2.10
Waiting time				
30-60 minute	1.03	0.039	0.28	0.78
60-90 minute	1.03	0.029	0.32	0.71
>90 minute	2.19	0.041	0.49	0.98
Payment				
150-200 birr	1.55	0.36	0.61	3.98
200-250 birr	1.87	0.21	0.71	4.91
>250 birr	1.10	0.73	0.64	1.88
Duration				
6-10 years	0.73	0.21	0.44	1.20
11-15 years	0.79	0.47	0.42	1.49
>15 years	0.72	0.41	0.32	1.59
Complication				
Yes	0.95	0.02	0.60	0.91

6. DISCUSSION

The current study demonstrated the HRQOL of patients living with diagnosed type II diabetes and attending DM follow up clinic in ACSH. In this study, we are able to identify 0.73 (± 0.23) mean score of the overall HRQOL among patient with diagnosed type 2 diabetes. The findings showed that the mean health status of respondents was relatively low health status when compared with the Zimbabwean population norms. The results indicate that type II diabetic patients in the study valued their health lower than the Zimbabwean general population which was 0.842. Perhaps the observed variations were expected as the Zimbabwean study used the general population, who were not necessarily sick, while this study used type II diabetic patients. Differences in socioeconomic and healthcare systems across the regions could be major contributors. In developing and resource-limited countries such as Ethiopia, some individuals with diabetes remain undiagnosed until complications set in. Thus, such delays in seeking medical attention, largely due to limited income and ignorance, may negatively impact on the health status of such individuals (29).

The finding of this study was also compared with the previous studies which used the EQ 5D 3L scale to determine HRQOL of patients with type II DM. In a study conducted in Enugu State, Nigeria, the mean score of overall QOL was 0.72 in type II diabetic patients which was consistent with the finding of this study and this may be due to the poor socio economic status, sociocultural status of the study populations (29).

The mean EQ-5D 3L score in the study participants was 0.73 which was lower than studies that used the same instruments in Norwegian, UK, Japanese, Korean, and patients with a mean score of 0.85, 0.851, 0.862, 0.9, and respectively. This could be due to the influence of socioeconomic and health care systems related factors. Some of these differences could be due to difference in main characteristics of study subjects such as; age, duration of diabetes, educational status and the presence of long waiting time (10).

The finding of this study was also compared with the previous studies which used the EQ 5D 3L scale to determine HRQOL of patients with type II DM. In a study conducted in Shantou, China, the mean score of overall QOL was 0.79 in type II diabetic patients which was higher than the finding of this study and this may be due to the sociocultural status of the study populations and

perception of health as well as questions on the validated tool to get adequate information regarding the socio economic, behavioral and cultural status of the study participants (30).

The finding of this study showed that the impact of diabetes on HRQL in type II diabetic patients follow DM clinic in Ayder Comprehensive Specialized Hospital was higher than (0.73) from the type II diabetic patients in Bangladesh (0.70). This may be due to societies better awareness on seeking medical attentions and early diagnosis until other incapacitating symptoms had developed and this may be due to easily accessible for healthy services and short waiting time in the health services than Bangladesh (31).

Among the five domains of HRQOL, study participants had the lowest mean score (0.65) on the anxiety/ depression component in this study which had similar finding with a study conducted in Catalonia in which type II diabetic patients were more likely to report moderated or severe problems in 4 of the 5 dimensions of EQ-5D (20,30).

Individuals with type II DM who had completed high school, preparatory and above had a HRQOL 0.8, 0.82, 0.85 which was higher than those who had no education (0.76). The finding of the study conducted in Ethiopia, felege Hiwot Hospital on QOL also showed that HRQOL was better in type II diabetic patients who had higher educational status. This could be due to better ability to make decision on self-care, better understanding about the disease, its complication, and treatment (32).

Patients who were living with type II DM for more than 5 years had worse HRQOL as compared with those who live with it for 5 years and less. This relationship between QOL and duration of DM was demonstrated in previous studies. In a study conducted among type II diabetic patients in Ethiopia showed that the long duration of DM had a negative influence on the QOL of patients (32).

This study had observed a significant association between age, occupation, monthly income, and HRQOL of patients. It had demonstrated that patients with type II DM who were aged, unemployed, and with low income had worse QOL. The negative effect of aging, low economic status and unemployment of type II diabetic patients on HRQOL had been reported in previous studies (30,31).

This study had also tried to analyze the association between HRQoL and health services characteristics. The length of stay for receiving services had the most significant effect in lowering quality of life for type II diabetic patients attending in Ayder Comprehensive Specialized Hospital and the long duration of waiting time for type II diabetic patients had a significant association with lowering quality of life. Distance traveled to get access to the Specialized Hospital affects the third dimension of EQ 5D with a significance association $p<0.05$. This finding was comparable with the previous studies which used the EQ 5D scale to determine HRQOL of patients with DM and analyze the association between health service characteristics. In a study conducted in UK Primary Medical Care Group, Faculty of Health Medicine and Biological Sciences, University of Southampton showed that long waiting time and the long appointment had a significant association with reducing health-related quality of life for type II diabetic patients and finding of the current study shows similar outcome (33,34).

The ordinal logistic regression analysis was used to determine factors associated with problems in each EQ-5D dimensions. Ordinal logistic regression analysis resulted in a model containing diabetic complication had a significant association ($p =0.04$) between diabetic complication and quality of life. This finding was compared with the previous studies which used the EQ 5D scale to determine HRQOL of type II diabetic patients. In a study conducted in Dutch, Iran, UK, Ethiopia, Brazil, China, Uganda, showed that the presence of diabetic complications affects QoL (3,7,10,20,30–32,35).

EQ 5D utility and Euroqol VAS scores had no significant Association with EQVAS (coefficient 0.003 S/E 0.0091756 p= 0.8 > p= 0.05, 95% C/I (-.015, .021). The EQ 5D utility and Euroqol VAS scores were correlated (Spearman correlation coefficient ® -0.014, P >0.05). This finding is comparable with the previous studies which determine the association between EQ5D utility and Euroqol VAS scores. A study conducted for assessment of health-related quality of life in Dutch Patients with Type II diabetes showed that the EQ5D utility and Euroqol VAS scores Correlated well (Spearman coefficient 0.64, $P < 0.001$) but the difference between these two studies may be due to low or high score on one scale did not necessarily mean a low or high score on the other scale because, many patients with a relatively low EQ5D utility score had a tendency to report a moderate Euroqol VAS score (3).

6.1. **Strength of the study**;

The study tires to get adequate information from a representative sample and the data collected was a primary data direct from patient interview. The study also uses an international standard tool for data collection.

6.2. **Limitations of study**

Because this was a cross-sectional study, the observed associations were not necessarily causal and it has to be noted that the data was collected using an interviewer-administered questionnaire which may make the finding prone to interviewer administer bias and the differences in socio cultural, socio economic and behavioral activities of the study participants were not assessed weather to fit with the tool. The data of this study was collected at a point period and fluctuations are likely to occur if HRQoL measured at multiple points in time.

7. CONCLUSION

The overall health related quality of life among type II diabetic patients was low. Age, low income status, educational status, occupation, duration of DM and presence of long waiting time were significantly associated with lowering health related quality of life. The average utility of health related quality of life was 0.73. The current study showed a low mean score over the anxiety/depression domain of HRQOL of type II diabetic patients.

8. RECOMMENDATIONS

To Ayder comprehensive specialized Hospital

It could be better if the hospital has additional OPD clinic to break the cycle of long waiting time to improve the quality of life of type II DM patients. Since most of the diabetic patients had low health status in anxiety and depression domains of health status, it could be better if the hospital assigns psychiatry health professionals in the OPD department for counseling about DM care and treatment for patients with anxiety and depression. To improve HRQOL it could be better if shortening the duration of waiting time as the target goal and quality indicator for diabetes management in the hospital.

To researchers

Because this study is a point study my advice is that it could be better if researchers conduct the full quality of life assessment at 6 weeks, 2 months, 4 months and 12 months for better estimation of QoL. Even though the tool is a standard tool there may be socio cultural questions in the Ethiopian populations so it could be better if researchers try to consider such issues whether the EQ5D instrument is sensitive enough to detect clinically relevant differences in quality of life.

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Annex I: Information and Consent Sheet

Information sheet and consent form are prepared for patients who are participated in research Project, a cross-sectional study to assess health-related quality of life and their utilities in diabetic patients in the medical OPD diabetic clinic, in Ayder comprehensive specialized hospital, 2018/19.

Name of Principal investigator: Hiluf Kalayou

Name of the organization: ACSH

Name of the Sponsor: Addis Ababa University

This information sheet and consent form are prepared to explain the study you are being asked to join. Please listen carefully and ask any questions about the study before you agree to join. You may ask questions at any time after joining the study. The investigator is the final year Master of health economic student from the school of public health, college of health science, Addis Ababa University, and two advisors from the health economics department, Addis Ababa University.

Purpose of Research Project:

Resources are limited and scarce in the health system that is why the economic evaluation of programs is readily increasing. One of the salient issues in the field of economic evaluation is how to measure, value and including changes in quality of life. So, the importance of studying HRQoL in DM patients has many advantages besides analyzing by traditional measurement of clinical outcomes, like morbidity and mortality rates. Here, my study is aiming to document the HRQoL of patients with diabetic mellitus and making policy makers, clinicians, and researchers familiar with the HRQoL of patients in diabetic mellitus. Also, my study may also help as a reference for students and other researchers interested in cost-utility analysis for further similar studies. You are invited to take part in this project. If you are willing to participate in this project, you need to understand and tick yes in the agreement form. Then after, you will receive the questionnaire from the data collector to give your response. You do not need to write your name on the questionnaire and all your responses and the results obtained will be kept confidentially by using a coding system whereby no one will have access to your response.

Risk/ Discomfort:-By participating in this research project, you may feel that it has some discomfort especially on wasting time about 30 minutes. We hope you will participate in the

study for the sake of the benefit of the research result. There is no risk in participating in this research project.

Benefits: If you participate in this research project, there may not be a direct benefit to you but your participation is likely to help us in assessing the health-related quality of life and utilities in diabetic patients. Ultimately, this will help us to identify the gap and take the appropriate intervention by the authorized stakeholder.

Incentives:-You will not be provided any incentive or payment to take part in this project.

Confidentiality:-The information collected from this research project will be kept confidential and information about you that will be collected by this study will be stored in a file, without your name, but a code number assigned to it. Besides, it will not be revealed to anyone except the principal investigator and will be kept locked with the key.

Right to refuse or withdraw: You have the full right to refuse from participating in this research. You can choose not to respond to some or all questions if you do not want to give your response. You have also the full right to withdraw from this study at any time you wish, without losing any of your rights.

Persons to contact: If you have any question to ask, please contact Hiluf Kalayou

Tel: +251939641566, Email = hilufkalayou939@gmail.com.

Annex II: Questionnaire

Addis Ababa University College of Health Science

Department of health economics

Consent form: - This questionnaire is prepared to assess health-related quality of life and utilities in diabetic patients. The assessment is made for the partial fulfillment of a Master's Degree in Health Economics. The results of the study will be used as baseline information to design appropriate intervention strategies for cost-utility analysis. The questionnaire contains ranked questions and will be provided in the interviewer-administered form. You are therefore kindly requested to provide genuine answers to the questions. The information you provide is confidential and is used only for this study. If you have any questions, don't hesitate to ask the data collector. Your cooperation and participation until the completion of the questionnaire is very necessary for the successful completion of the assessment. We, therefore, ask your genuine willingness. However, you have the right to turn down if you are not voluntary to participate fill No" in the box below.

If you are voluntary

YES ☐ NO ☐

Thank you in advance for your cooperation

Data collectors Name----------signature----------

Part one: Socio-Demographic characteristics

All questionnaires are completed anonymously. We would appreciate it if you answer all the questions and answer as honestly as possible. Please circle on the number you select that best answers in the question. Kindly make only one Selection unless otherwise instructed.

Age	1. <20 2. 20-30 3. 30-40 4. 40-50 5. 50—60 6. >60	Income according to salary explorer for low income countries(ETB)	1.< 2250 2. 2250 -5000 3. 5000 - 10000 4. > 10000
Sex	1. Male 2. Female	How far do you travel to access the health service	1. 1-2.5KM 2. 2.5-5KM 3.5-7.5KM 4.> 7.5 KM
Marital status	1. Single 2. married 3. widowed 4. divorced	For how long you wait to get a service	1.<30’ 2.30-60’ 3.60-90’ 4.>90’
Educational status	1. 9-10 2. 11-12 3. Higher education 4. Illiterate	By how much you get a service	1.<150 Birr 2.150-200 birr 3.200-250 birr 4.>250 birr
Occupation	1. Government employee 2. Un employee 3. Merchant 4. Student 5. Farmer 6. Private employee	Diabetic type	1. Type 1 2. Type II
Type of therapy	1. Oral 2. Injection		

	3. Both		
Duration of therapy	1. <5yrs 2. 6-10 3. 11-15 4. >15		
Obesity	1. Yes 2. No		
BMI	1. <18.5 2. 18.5-25 3. 25-30 4. >30		
Presence of diabetic Complication	1. Yes 2. No		

EQ-5D-3L (UK English sample version)

By placing a tick in one box in each group below, please indicate which statements best describe your health state today.

Mobility

I have no problems in walking about □

I have some problems in walking about □

I am confined to bed □

Self-Care

I have no problems with self-care □

I have some problems washing or dressing myself □

I am unable to wash or dress myself □

Usual Activities (e.g. work, study, housework, family or leisure activities)

I have no problems with performing my usual activities □

I have some problems with performing my usual activities □

I am unable to perform my usual activities □

Pain/Discomfort

I have no pain or discomfort □

I have moderate pain or discomfort □

I have extreme pain or discomfort □

Anxiety/Depression

I am not anxious or depressed □

I am moderately anxious or depressed □

I am extremely anxious or depressed □

Annex III: EQ-5D-3L

የጤናመጠይቅ፡የአማርኛትርጉምለኢትዮጵያ (Amharic version for Ethiopia)

በእያንዳንዱርዕስስር፣እባክዎዛሬያለዎትንጤንነትበተሻለሁኔታየሚገልጸውአንድሳጥንላይምልክት ያድርጉ።።

እንቅስቃሴ

የመራመድ ችግር የለብኝም ☐

መጠነኛ የሆነ የመራመድ ችግር አለብኝ ☐

ምንም መራመድ አልችልም ☐

ራስንመንከባከብ

ለመታጠብም ሆነ ለመልበስ ምንም ችግር የለብኝም ☐

ለመታጠብም ሆነ ለመልበስ መጠነኛ ችግር አለብኝ ☐

ራሴልታጠብምሆነልለብስአልችልም ☐

መደበኛተግባራት

(ለምሳሌ፡-ስራ፣ትምህርት፣የቤትውስጥስራ፣ቤተሰባዊወይምየእረፍትጊዜተግባራት)

መደበኛ ተግባራቶቼን ያለምንም ችግር አከናውናለሁ ☐

መደበኛተግባራቶቼንለማከናወንመጠነኛችግርአለብኝ ☐

መደበኛተግባራቶቼንለማከናወንአልችልም ☐

የሕመም ስሜት/ምቾትማጣት

የሕመም ስሜትም ሆነ የምቾት ማጣት ስሜት የለኝም ☐

መጠነኛ የሕመም ስሜት ወይም የምቾት ማጣት ስሜት አለኝ ☐

የከፋ የሕመምስሜት ወይም የምቾት ማጣት ስሜት አለኝ ☐

ጭንቀት/ድብርት

ጭንቀትምሆነድብርትየለብኝም ☐

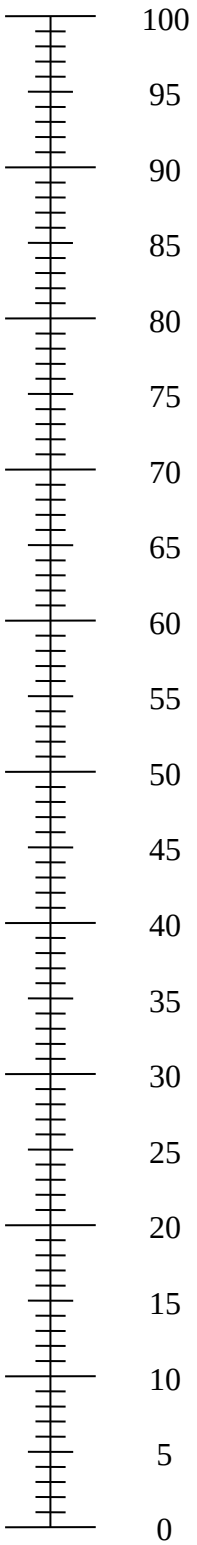
መጠነኛጭንቀትወይምድብርትአለብኝ ☐

እጅግከባድጭንቀትወይምድብርትአለብኝ ☐

- ዛሬየጤናሁኔታዎምንያህልጥሩወይምመጥፎመሆኑንለማወቅእንፈልጋለን።
- መለኪያውከ0 እስከ 100 ድረስቁጥሮችአሉት።
- 100 ማለትሊኖርዎየሚችለውበጣምጥሩውየጤናሁኔታነው።

  0 ማለትሊኖርዎየሚችለውበጣምመጥፎውየጤናሁኔታነው።
- በመለኪያውላይዛሬጤንነትዎያለበትንሁኔታለማሳየትየ X ምልክትያድ

የዛሬጤንነትዎ=አሁን፣ከስርባለውሳጥንውስጥበመለኪያውላይምልክትያደረጉበትንቁጥርይጻፉ።



ናይ ጥዕና መጠይቕ ናይ ትግርኛ ትርጉም

ኣብ ሕድሕድ ርእሲ ሎማዓንቲ ዘለዎም ዝሐሸ ናይ ጥዕና ኩነታት ዝገልፅ ኣብ ሓደ ሳጹን ምልክት ያቕምጡ

ምንቅስቃስ

ኣብ ምንቅስቃሰ ምንም ችግር የብለይን ☐

መጠነኛ ዝኮነ ናይ ምንቅስቃስ ፀገም ኣለኒ ☐

ምንም ክንቀሳቀስ ኣይክእልን ☐

ዓርስካ ምንክብካብ

ንምሕፃብ ይኩን ክዳን ንምክዳን ምንም ፀገም የብለይን ☐

ንምሕፃብ ይኩን ክዳን ንምክዳን መጠነኛ ዝኮነ ፀገም ኣለኒ ☐

ባዕለይ ንምሕፃብ ይኩን ክዳን ንምክዳን ኣይክእልን ☐

መዓልታዊተግባራት(ለምሳሌ፡-ስራሕ፣ትምህርቲ፣ናይ ውሽጢ ገዛ ስራሕቲ ፣ቤተሰባዊ ወይ ናይ ዕረፍቲ ጊዜ ተግባራት)

መዓልታዊ ተግባራተይ ብዘይ ምንም ፀገም ይፍፅም ☐

መዓልታዊ ተግባራት ንምፍፃም መጠነኛ ዝኮነ ፀገም ኣለኒ ☐

መዓልታዊ ተግባራተይ ምክንዋን ኣይክእልን ☐

ናይ ሕማም ስምዕት/ ምቾት ምስኣን

ናይ ሕማም ስምዕት ይኩን ምቾት ናይ ምስኣን ስምዕት የብለይን ☐

መጠነኛ ዝኮነ ናይ ሕማም ስምዕት ይኩን ምቾት ናይ ምስኣን ስምዕት ኣለኒ ☐

ዝከፈአ ናይ ሕማም ስምዕት ይኩን ምቾት ናይ ምስኣን ስምዕት ኣለኒ ☐

ጭንቀት/ድብርት

ጭንቀት ኮነ ድብርት የብለይን ☐

መጠነኛ ጭንቀት ወይም ድብርት ኣለኒ ☐

ብጣዕሚ ከብድ ጭንቀት ወይም ድብርት ኣለኒ ☐

Annex IV: Declaration

I the under designed declared that this my original work, not been presented for degree in this or other university and that all sources of materials used for this thesis has been fully acknowledged

Name: hiluf kalayou

Signature: _____

Place: Addis Ababa University

Date of admission _____

This thesis has been submitted for examination with my approval as university advisor,

Name: Professor Damen Haile Mariam (MD, PH.D)

Signature: _____