Research Article

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Health-related quality of life and risk factors among type II diabetic mellitus patients attending public hospitals in Harari Regional State, Ethiopia.

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ABSTRACT

Objective : To assess the health-related quality of life and risk factors among type II diabetic mellitus patients attending public hospitals in Harari Regional State, Ethiopia, 2021.

Methods : An institution-based cross-sectional study design was conducted from 15 June to 15 July 2021. The total sample size turned to 430 and a simple random sampling approach was used. Epi-data version 3.1 was used for information access and Stata version sixteen was used for analysis. Simple linear regression was achieved and variables with a p-value less than 0.25 were taken to multivariable linear regression. Statistical significance was declared at a p-value less than 0.05 in adjusted odds ratio with a 95% confidence interval.

Result : The overall mean of health-related quality of life was 0.714±0.201. Age group above and identical to sixty-five years old (B= - 0.005), female (B= -0.067), being unemployed (B= -0.034), widowed (B= -0.083), and presence of complication (B= - 0.058) have been inversely related to health-related quality of life.

Conclusion : The overall mean of health-related quality of life among type II diabetic patients was low. Old age, female gender, unemployed career, being widowed, and complications have been inversely related to health-related quality of life. Consequently, giving special interest to aged diabetes mellitus sufferers, enhancing gender identity, breaking the cycle of low occupational fame through growing task opportunities, and giving fitness schooling for changing attitudes may enhance the health-related quality of life for type II diabetic patients.

Keywords : Type diabetic II patients, risk factors, health, health-related quality of life, Harari Regional State

INTRODUCTION

Diabetes mellitus (DM) is a metabolic disorder with multiple etiology, that's characterized by hyperglycemia in carbohydrate disturbances, fats, and protein metabolism taking place from defects in insulin secretion, insulin action, or both (WHO, 2016; ADA, 2020). DM is a persistent disorder that requires endured scientific and nursing care in multifactorial danger discount techniques similar to glycemic management (Weinberg et al.,

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2019; ADA, 2020). Schooling on continuous self-management and help is important in preventing acute complications and lowering risks for lengthy-term complications (ADA, 2020).

Health-related satisfaction of lifestyles (HRQoL) is the physiological, psychological, and social effect of persistent diseases inclusive of DM (Kim, 2014; Wegeberg et al., 2019). Consequently, measuring health-associated satisfaction of life is important to expect the affected person's potential to control and maintain lengthy-term health and well-being. It's far an increasing number of diagnosed as critical health final results in all health interventions (Gebremedhin et al., 2019; Wegeberg et al., 2019).

Literature review

Researchers suggest that the HRQoL for diabetic patients decreases with role hassle, emotional disturbances, aches, and fatigue. Except those factors; socio-demographic, and economic status, behavioral, clinical, and social-related elements additionally affect HRQoL (Gredig and Bartelsen, 2017; Wegeberg et al., 2019). Melancholy become additionally the main determinant aspect in HRQoL regarding physical and mental domain names in developed and coffee-earnings international locations (Jing et al., 2018; Gebremedhin et al., 2019). DM negatively affects the HRQoL (Zare et al., 2020; Jarab et al., 2021).

In Ethiopia, few studies have assessed the HRQoL using global health corporation first-rate existence tools (Reba et al., 2018). But, there's a paucity of studies that employ equipment inclusive of the Euro first-rate lifestyles five Dimensions 3 level, (EQ-5D-3L) that incorporate societal choice and offer a powerful approach to assess the impact of the sickness throughout exclusive health states. As a result, healthcare choice-makers in Ethiopia nevertheless lack properly set-up application values for DM patients. To this effect, this takes a look at assessing the HRQoL and decided health state application values and factors that have an impact on the values among type II patients attending public hospitals of Harari Regional State, Ethiopia.

METHODS AND MATERIALS

Study area and period

This takes a look at become collected at public hospitals, Hiwot Fana specialized college medical institution, and Jugal Hospital, in Harari town. Harari City is the capital town of the Harari Regional State. The location is 526 km away from Addis Ababa (the capital city of Ethiopia). Within the metropolis, there are forty-five health facilities 934 fitness posts, 8 health facilities, 3 hospitals). There are a complete of 285 type II DM patients who were energetic on comply with-up in Hiwot Fana specialized university hospital. In Jugal Hospital, there are a complete of 250 type II DM sufferers who have been lively on follow-up. The study was conducted from 15 June to 15 July 2021.

Study design : An institution-based cross-sectional study was carried out.

Source population : All type II diabetic patients attending public hospitals in the Harari Regional State.

Study populace : All selected type II diabetic patients attending public hospitals in the Harari Regional State throughout the data collection period.

Eligibility criteria

All selected type II diabetic patients attending public hospitals in the Harari Regional State in the course of the observed duration were included. However, patients aged less than years old, significantly unwell, newly recognized within the last three months, and moms with gestational DM had been excluded.

Sample size determination

The sample size was calculated by using a single mean formulation, by thinking about the following assumptions: mean and standard deviation of general HRQoL among type II DM patients was 52.6±12.1 (Reba et al., 2018). The margin of error was 1.2 and 95% (z@/2 = 1.96) confidence interval (CI) as follows:

$$n = \frac{\left(z\frac{@}{z}\right)^2 x\, s^2}{E^2} = \frac{(1.96)^2 x (12.1)^2}{(1.2)^2} = 391$$

Then, with the aid of adding a 10% non-response rate, the final sample size was 430.

Where: n= minimum required to sample for the study.

Z= standard normal distribution (z=1.96) with a 95% confidence level

S= standard deviation (SD= 12.1)

E= is the tolerable margin of error (E= 1.2)

Sampling procedure

The hospitals within the Harari Regional State were included in the study, and the number of type II DM patients in each hospital was recognized 285 type II DM patients attending Remedy Gadgets at Hiwot Fana Specialized University Hospital and 250 type II DM patients attending remedy gadgets at Jugal hospital. Then, proportional allocation becomes used to decide the desired quantity of patients in each hospital. As a result, 229 were from Hiwot Fana Specialized University Hospital and 201 from Jugal Hospital. Finally, a simple random sampling approach was utilized by considering the registration book as a sampling frame to include DM sufferers. (Figure 1).

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Figure 1

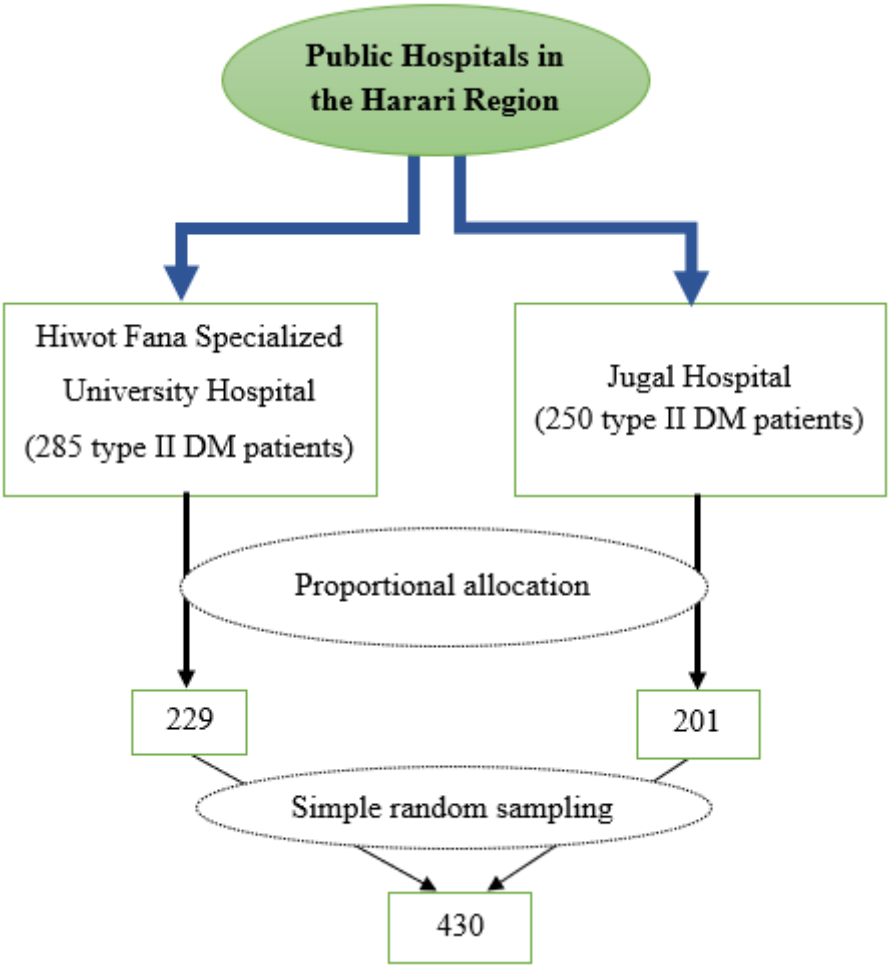


Figure 1: Sampling procedure for health-related quality of life and risk factors among type II DM patients attending public hospitals of Harari Regional State, Ethiopia, 2021.

Study variables

Dependent variable

Health-related quality of life

Independent variables

Sociodemographic factors : age, gender, marital status, educational status, and income level.

Medical factors : disease duration, DM complication, body mass index, duration of therapy, and health service factors (accessing distance, waiting time for service).

Operational definition

Health-related quality of life : The values for every measurement according to the Zimbabwe widespread population health states time alternate-off by the EQ-5D-3L calculated. The mean utility was calculated by way of the multiplicative assumption theory (Jelsma et al., 2003; Reba et al., 2018; Reenen et al., 2018).

Data collection tool and procedure

A structured questionnaire including sociodemographic and scientific traits was used. The health-related satisfaction of existence: changed into amassed the use of the EQ-5D-3L. The EQ-5D-3L entails patients self-reporting their health fame from 5 views: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. Each perspective has "no problem", "moderate problem", and "extreme problem" consisting of a three scale, which scores from 1 (no problem) to 3 (extreme problem). The responses of the EQ-5D-3L were presented separately for each perspective and converted into a weighted index by using the population preference score of Zimbabwe (Reenen et al., 2018) since EQ-5D-3L has no value set and is used in the Ethiopian context. Data were collected through interviewing patients and some of the clinical information was corroborated

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by patient records. The data were collected by four diploma nurses and supervised by epidemiologists.

Data quality assurance

The questionnaire was translated from the English version to Afan Oromo (the neighborhood language of the Harari Regional State) and back to English to ensure consistency. The training was given to data collectors and supervisors about the way to use questionnaires, the moral precept of confidentiality, and records management. A pre-test a look at became done on 5% of the overall pattern size at Bisidimo Primary Hospital a week before data collection. Primarily based on the pre-test a look at, the essential change becomes made. The records series became supervised day by day and the stuffed questionnaire changed into being checked daily by using supervisors and investigators for completeness.

Statistical analysis

Statistics have been entered with the use of Epi-data version 3.1 and exported to Stata model sixteen for evaluation. Descriptive facts of numeric variables had been provided in method and standard deviations and provided using frequency and percentage. The HRQoL utility score becomes calculated by the usage of the Zimbabwean value. Simple linear regression was done and variables with a p-value less than 0.25 were taken to multivariable linear regression. For the goodness of model suit, all leaner regression assumptions, adjusted R-squared, residual plot (p-p, q-q), general mistakes, and outliers were taken into consideration. Multicollinearity turned into checked thinking about variable inflation components and tolerance. Statistical significance becomes declared at a p-value much less than 0.05 with a 95% confidence interval.

RESULTS

Sociodemographic characteristics of patients

Four hundred fourteen type II DM patients participated in this study which gave a reaction rate of 96.3%. The mean age becomes (56.6±10.4) years and 209(50.5%) have been girls. Most, 329(79.5%) live in urban and 98(23.7%) were retired on career. A touch over half, 213(51.5%) were married and the common month-to-month profits become 2,500 Ethiopian birr. (Table 1).

Table 1 : Sociodemographic characteristics of type II DM patients attending public hospitals in Harari Regional State, Ethiopia, 2021.

Variable (n=414)	Category	Frequency	Percent
Age (mean ±SD) in years		56.6 ± 10.37	
Sex	Male	205	49.5
	Female	209	50.5
Residence	Urban	329	79.5
	Rural	85	20.5
Marital status	Single	51	12.3
	Married	213	51.5
	Widowed	72	17.4
	Divorced	78	18.8
Occupation	Unemployed	77	18.6
	Gov't or NGO-employed	66	15.9
	Merchant	46	11.1
	Private	70	16.9
	Farmer or housewife	57	13.8
	Retired	98	23.7
Average monthly income (media with 50th IQR)		2500	

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Clinical characteristics of patients

Nearly half, 192(46.4%) have been on oral diabetics medicinal drugs and the median length of the therapy is 6 years. About half, 207(50.0%) suggested evolved complications and 127(30.7%) traveled 2.5-5 kilometers to reach the hospitals. To get provider sufferers ready time median turned into 2 hours. More than half, 223(53.9%) were normal body mass index. (Table 2).

Table 2 : Clinical characteristics of type II DM patients attending public hospitals at Harari Regional State, Ethiopia, 2021.

Variables (n=414)	Category	Frequency	Percent
Current treatment	Oral	192	46.4
	Injection	75	18.1
	Both	147	35.5
DM complication	Yes	207	50.0
	No	207	50.0
Distance health facilities in Kilometers	1- 2.5	104	25.6
	2.5- 5	127	30.7
	5 - 7.5	92	22.2
	>7.5	89	21.5
Body mass index	Underweight	33	7.8
	Normal	223	53.9
	Overweight	122	29.5
	Obese	36	8.7
Duration of therapy (median 50th IQR) year		6	
Waiting time (median, 50th IQR) in hr.		2	

Diabetic complications among patients

Out of the 414 patients, 201(48.6%) had diabetic complications. However, 213(51.4%) did not have diabetic complications. (Figure 2).

Figure 2

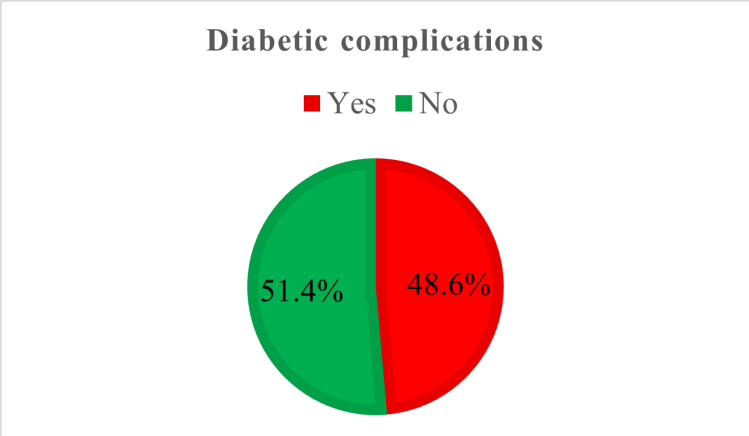


Figure 2 : Diabetic complications of type II DM patients attending public hospitals in Harari Regional State, Ethiopia, 2021 (n=414).

Types of diabetic complications among patients

Out of the 201 patients who had diabetic complications, 154(76.6%) had hypertension, 1(0.5%) had nephropathy, 21(10.4%) had neuropathy, 26(12.9%) had retinopathy, 21(10.4%) had foot ulcer, and 29(14.5%) had diabetic related heart diseases. (Figure 3).

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Figure 3

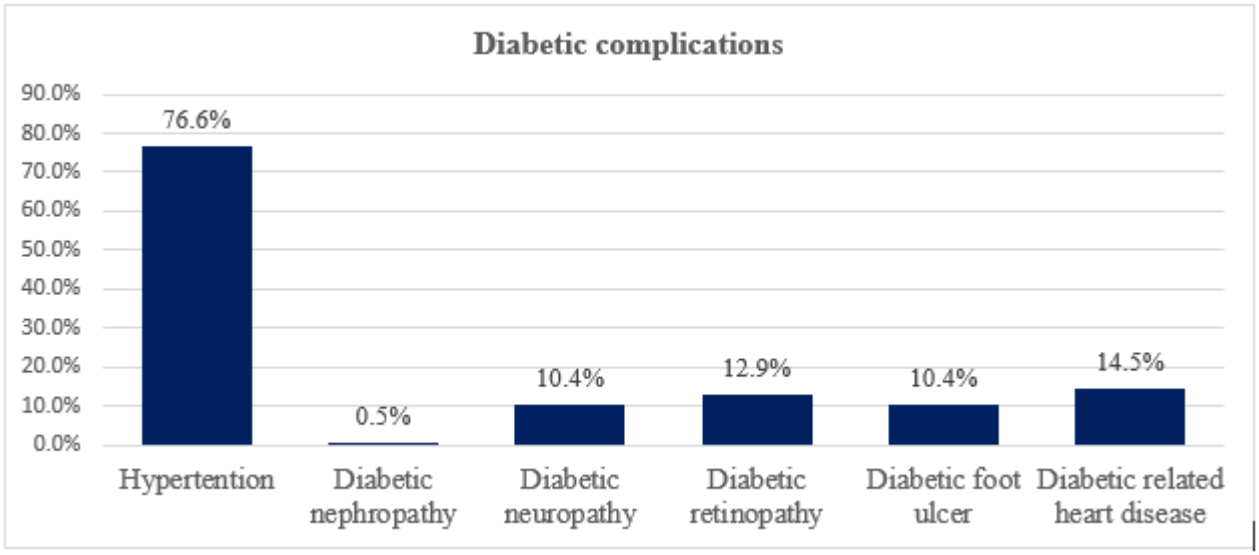


Figure 3: Types of diabetic complications of type II DM patients attending public hospitals in Harari Regional State, Ethiopia, 2021 (n=201).

Health-related quality of life among type II DM patients using EQ-5D-3L utility score

Out of 414 participants, 23(5.6%) had an extreme problem regarding mobility dimension, 46(11.1%) had an extreme problem regarding self-care dimension, 43(10.4%) had an extreme problem regarding activity dimension, 52(12.6%) had an extreme problem regarding pain or discomfort dimension, and 34(8.2%) had an extreme problem regarding anxiety and depression dimension. (Figure 4).

Figure 4

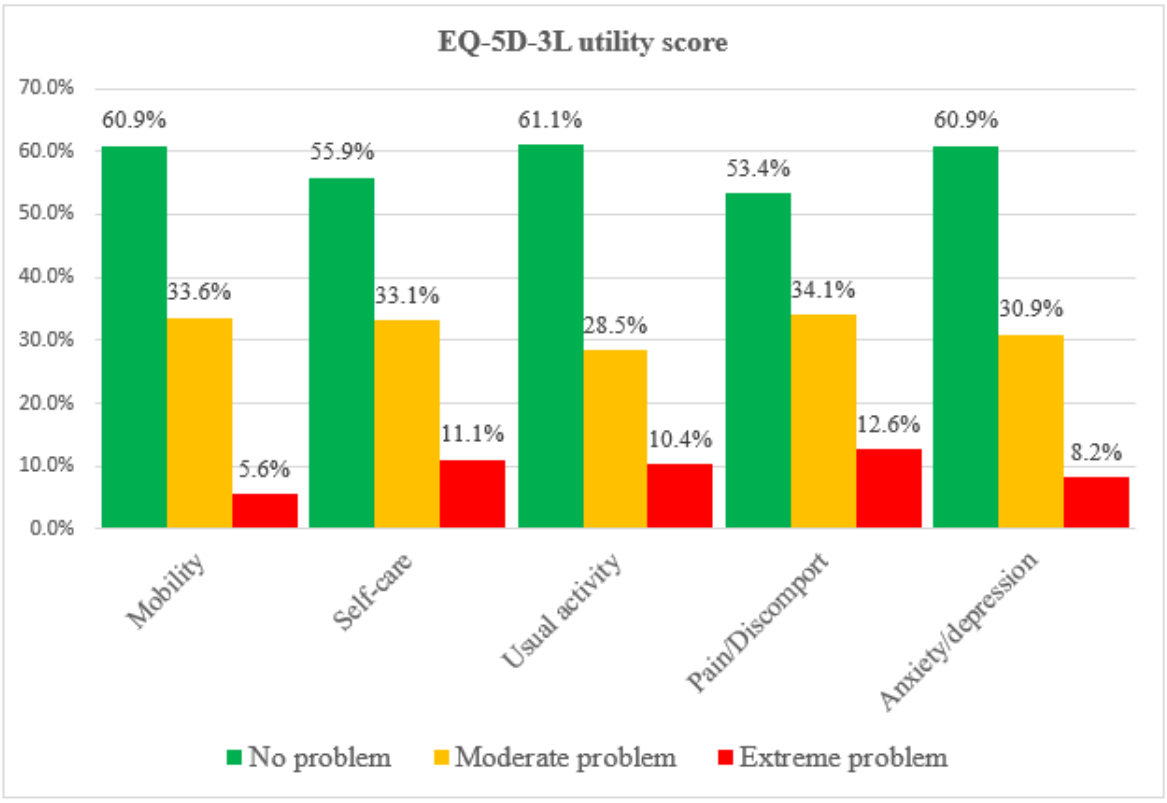


Figure 4: Health-related quality of life among type II DM patients using EQ-5D-3L utility score patients attending public hospitals in Harari Regional State, Ethiopia, 2021 (n=414).

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Risk factors HRQoL among type II DM patients

Simple linear regression analysis

From factors entered; age intercourse, residence, marital status, occupation, waiting time, complication, treatment regimens, and body mass index were extensively related to HRQoL. (Table 3).

Table 3 : Simple linear regression analysis of HRQoL among type II DM patients attending public hospitals in Harari Regional State, Ethiopia, 2021.

Variables (n=414)	Category	HRQOL Mean	B	95% CI
Age in years C		0.714	- 0.006	(- 0.007, - 0.004)*
Sex	Male	0.748	1	1
	Female	0.681	-0.067	(-0.106, - 0.029)*
Residence	Urban	0.720	1	1
	Rural	0.690	-0.030	(-0.018, - 0.078)*
Marital status	Single	0.768	1	1
	Married	0.739	-0.029	(-0.237,-0.098)
	Widowed	0.633	-0.134	(-0.206, - 0.064)*
	Divorced	0.683	-0.085	(-0.154, - 0.015)*
Occupation	Employed	0.728	1	1
	Unemployed	0.709	-0.019	(-0.084, -0.046)
	Merchant	0.779	0.070	(0.005, 0.145)
	Self-employed	0.727	-0.018	(-0.049, 0.085)
	Farmer/housewife	0.740	0.031	(-0.039, 0.102)
	Retired	0.650	-0.059	(-0.122, - 0.003)*
Distance of health facility	1-2.5km	0.709	1	1
	2.5-5	0.727	0.018	(-0.034, 0 .070)
	5-7.5	0.723	0.014	(-0.043, 0.0702)
	>7.5	0.692	-0.017	(-0.074, - 0 .040)
Diabetic complication	Yes	0.673	-0.082	(-0.120, - 0.043)*
	No	0.214	1	1
Current treatment	Oral	O.734	1	1
	Injection	0.737	0.003	(-0.051, 0.056)
	Both	0.675	-0.060	(-0.103, -0.017)*
Body mass index	Normal	0.740	1	1
	Underweight	0.673	-0.067	(0.140, 0.006,)*
	Overweight	0.681	-0.059	(-0.103, -0.015)*
	Obese	0.703	-0.037	(-0.107, 0.034)
Duration of therapy type II diabetes mellitus [C]		0.741	0.002	(-0.002, 0.005)
Waiting time in hour [C]		0.741	0.018	(0.007, 0.043)*
Average monthly income [C]		0.714	0.004	(0.006, 0.025)*

HRQoL: health-related quality of life; C: continuous variable; *: p-value less than 0.25.

Multivariable linear regression

Multivariable linear regression evaluation declared that old age, female, widowed marital status, unemployment, and

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complication had an inverse affiliation with HRQoL. As age increased by way of 12 months, patients' HRQoL reduced by way of 0.005 while preserving the effect of different variables constant [B= -0.005, 95% (-0.006-0.003)]. Females had on common 0.067 decrease in HRQoL compared with men retaining the impact of different variables consistent [B= -0.067, 95% (-0.105-0.029)]. Being widowed changed into an average 0.083 lower HRQoL compared with the unmarried, preserving the impact of different variables steady [B= -0.083, 95% (-0.151-0.014)]. Being unemployed could probably decrease HRQoL using 0.034 whilst in comparison to the employed, preserving the impact of other variables consistent [B= -0.034, 95% (-0.104-0.037)]. individuals who had complications had on common 0.058 lower HRQoL in comparison with the sufferers who had no complication, maintaining the effect of different variables regular [B= -0.058, 95% (-0.097-0.020)]. (Table 4).

Table 4: Multivariable linear regression analysis of HRQoL among type II DM patients attending public hospitals in Harari Regional State, Ethiopia, 2021.

Variables (n=414)	Category	HRQOL Mean	B	95% CI
Age in years C		0.714	- 0.005	(-0.006, - 0.003)**
Sex	Male	0.748	1	1
	Female	0.681	-0.067	(-0.105, -0.029)**
Residence	Urban	0.720	1	1
	Rural	0.690	-0.042	(-0.091, 0.006)
Marital status	Single	0.768	1	1
	Married	0.739	-0.017	(-0.075, 0.041)
	Widowed	0.633	-0.083	(-0.151, -0.014)**
	Divorced	0.683	-0.044	(0.111, 0.023)
Occupation	Employed	0.728	1	1
	Unemployed	0.709	-0.034	(-0.104, -0.037)**
	Merchant	0.779	-0.035	(-0.037, 0.106)
	Self-employed	0.727	-0.003	(-0.061, 0.067)
	Farmer/housewife	0.740	-0.025	(-0.043, 0.093)
	Retired	0.650	-0.022	(-0.090, 0.047)
Monthly income C		0.714	0.005	(0.006, 0.002)
Waiting time in an hour. C		0.174	0.024	(- 0.003, 0.048)
DM complication	Yes	0.673	-0.058	(-0.097, -0.020)**
	No	0.214	1	1
Current treatment	Oral	O.734	1	1
	Injection	0.737	0.035	(-0.015, 0.085)
	Both	0.675	-0.014	(-0.067, -0.039)
Body mass index	Normal	0.740	1	1
	Underweight	0.673	-0.035	(-0.104, 0.034)
	Overweight	0.681	-0.027	(-0.069, 0.016)
	Obese	0.703	-0.012	(-0.056, 0.081)
Constant			1.007	(0.865, 1.149)

HRQoL: health-related quality of life; C: continuous variable; **: p-value less than 0.05, R2 = 21.6%

DISCUSSION

The overall common health-associated best of life amongst type II diabetic sufferers turned to 0.714 (±0.204), which was surprisingly low to the norm rating of the Zimbabwean populace which became 0.842 (Jelsma et al., 2003). This discrepancy

is probably because of variations inside the look at the population the Zimbabwean examine turned into on the overall populace, but, the cutting-edge examine focused on type II diabetic sufferers. Similarly to that differences in socioeconomic and healthcare systems would possibly contribute to the differences. In growing and resource-constrained countries which include Ethiopia, a few humans with diabetes stay undiagnosed till headaches arise. These delays in searching for hospital therapy due to restrained earnings and lack of understanding can harm the satisfaction of lifestyles of these individuals (Jelsma et al., 2003, Janssen and Szende, 2014).

The locating of this observation was constant with the preceding research carried out in numerous parts of the sector on type II DM patients (Adibe et al., 2018; Jarab et al., 2019; Zare et al., 2020). This might be a similarity between the examined populace and the device used throughout the research. But, it turned into slightly higher than a few research (Arifin et al., 2019; Alshayban and Joseph, 2020; Jarab et al., 2021). This distinction can be due to variations in socio-demographics, sampling technique, pattern size, and socio-cultural variations.

This has a look at suggests that age has an inverse affiliation with fitness-associated satisfaction of existence. Health-related excellent of life decreases when age increases using one unit. It became consistent with different research that said age changed into inversely related to health-associated best of lifestyles (Didarloo and Alizadeh, 2016; Ekwunife et al., 2016; Gebremedhin, et al., 2019; Parik and Patel, 2019; Rwegerera et al., 2019; Feyisa et al., 2020; Barua et al., 2021). This is probably due to the younger human beings seeking health care higher than elders. It also is probably because of the organic alteration as they get older, growing cellular degeneration, lowering immune gadgets, lowering muscular health, increasing muscular atrophy, and increasing cognitive impairment.

This look confirmed that being a female-affected person has an inverse relationship with health-associated nice of lifestyles. It turned into consistent with other research (Jarab et al., 2019; Parik and Patel, 2019). This might be associated with the sociocultural situations that the network offers to the women.

Patients with type II DM who are widowed had additionally decreased health-associated pleasant lifestyles than folks who are single. It turned just like the preceding observation (Jarab et al., 2019). The viable reason behind this is probably that being widowed can also increase social isolation by way of the populace, feeling lonely, an absence of self-assurance in the community, own family fitness instability, and monetary problems.

In this examination, unemployed type II diabetes patients had lower health-associated first-rate lifestyles as compared with the patients who were employed. Another examination mentioned a significant affiliation between employment and health-related best-of-existence of patients with type II DM (Jarab et al., 2019). The viable rationalization is probably patients who are not hired develop stress and that they might be psychologically and emotionally disturbed.

This has a look at finding an inverse association between the presence of headaches and health-related nice of lifestyles amongst DM patients. Patients who have evolved DM headaches have worse fitness-associated best of existence. The negative impact of DM complications on health-associated pleasant lifestyles has been said in previous studies (Gebremedhin et al., 2019; Alshayban and Joseph, 2020; Zhang et al., 2020). This could be because patients who develop complications feel unhappy and they'd be below psychological, physical, emotional, social, and non-secular pain.

Limitations of the study

The study might be susceptible to interviewee bias as the information had been accumulated through interviews and fluctuations may additionally arise as the records were accrued at a point in period.

Implications for exercise

Determining the general average and identifying unbiased risk factors of fitness-related great of existence among type II diabetic patients is important in helping policymakers to expand addressable strategies. Planning and imposing a method for diabetes mellitus sufferers in attention to age, gender, career, marital fame, and problem can mean the effectiveness of general health-related first-rate lifestyles amongst type II diabetic patients.

CONCLUSION

The overall health-related quality of life among type II diabetic patients was low. Old age, female gender, unemployed profession, being widowed, and complications were inversely associated with fitness-related quality of life. Therefore, giving special interest to aged diabetes mellitus sufferers, enhancing gender identity, breaking the cycle of low occupational repute via growing task possibilities, and giving health training for converting attitudes might enhance the health-related quality of life for type II diabetic patients.

Abbreviations used

DM: Diabetes Mellitus; **EQ-5D-3L:** Euro exceptional of existence 5 Dimensions 3 stage; **HRQoL:** Health-Related Quality of Life

Availability of records

The statistics used for this look are available from the

corresponding writer on secured and reasonable request.

Ethical Considerations

Ethical approval for this study was obtained from Haramaya University College of Health and Medical Sciences Institutional Health Research Ethical Review Committee (IHRERC/070/2021).

Informed consent

Written informed consent was obtained from all participants before interview. Confidentiality was ensured throughout the accomplishment of the study. All the information given by the respondents was used for research purposes only. To keep the anonymity of study participants, code numbers rather than personal identifiers were used.

Authors' contribution

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis, and interpretation, or all areas; took part in drafting, revising, and critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agreed to be accountable for all aspects of the work.

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Competing of interests: Authors declare that they have no competing of interests.

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Availability of data

The data used for this study are available from corresponding authors on secured and reasonable request.

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