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A descriptive study to assess the health-related quality of life among diabetic patients visiting medical out-patient department of selected health care facilities at District Mandi (Himachal Pradesh)

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Abstract
Diabetes Mellitus is a chronic lifelong disease one has to live with. The quality of life assessment is considered an important measure of outcome in long-term illness and management.
Objective: The objective of the study to assess the health-related quality of life among diabetic patients with determination of relationship between the domains and to determine the association between socio-demographic variables and health related quality of life.
Material and method: A quantitative research approach and descriptive research design was adopted to conduct study. The non- probability convenience sampling technique was used to select 150 diabetic patients visiting medical out-patient department of selected health care facilities. Modified quality of life instrument was used to assess the health-related quality of life among diabetic patients.
Result: All the study participants had good health related quality of life with mean percentage (68.345%), overall mean and SD score of health-related quality of life among subjects i.e. mean score $\pm$ S.D 136.69 $\pm$ 26.343. As the result of chi^2 test, gender, age (in years), education, monthly income, dietary habit, physical activity, treatment had significant association (p $\leq$ 0.05) with health-related quality of life.
Conclusion: The study concluded that majority of the subjects (diabetic patients) had good health related quality of life. Role limitation had positive relationship with all the domains of health-related quality of life. Gender, age (in years), education, monthly income, dietary habit, physical activity and treatment were significantly associated with health-related quality of life.

Keywords: Quality of life, diabetes mellitus, diabetic patient

1. Introduction

Diabetes Mellitus' is a disease known from ancient times. The term diabetes mellitus is derived from a Greek word which means to go through or a siphon and the word Mellitus is derived from a Latin word Me (honey) describes the sweet odor of the urine. It is also called the disease of prosperities. Non-communicable diseases associated with changes in lifestyle and diet has become a major public health problem in both the developed and developing countries. Diabetes is at the forefront of non-communicable diseases [1].

According to the World Health Organization (WHO), India had 69.2 million people living with diabetes in 2015 and 98 million people in India may have type II diabetes by 2030. As per the WHO global current report, about 422 million adults have diabetes, 1.6 million deaths are directly attributed to diabetes each year and 1 in 3 adults aged over 18 years is overweighed and 1 in 10 is obese. Diabetes is a growing challenge in India with estimated 8.7% diabetic population in the age group of 20 and 70 years. In 2016, an estimated 1.6 million deaths were directly caused by diabetes. Diabetes is a major cause of blindness, kidney failure, heart attacks, stroke and lower limb amputation [2, 3].

According to international diabetes federation report of 2017, Diabetes is a huge and growing burden. 425 million people have diabetes in the world and 82 million people in the South east Asia Region; by 2045 this will rise to 151 million. There were over approximately 7.2 million cases of diabetes in India in 2017 with prevalence rate of 8.8%. Most of these cases are type 2 diabetes, which is largely preventable through regular physical activity, a healthy and balanced diet, and the promotion of healthy living environments. About 279 million people are living in urban area and 146 million people are living in rural area.

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Early detection and timely management of diabetes can prevent many diseases [4].

It is not possible for anyone to visit the doctor or hospital over now and then for rest of life. Therefore, it is important that the patient learns how to manage their disease themselves as much as possible. Diabetes can affect the life of those who suffer from it in many ways: emotionally, physically, socially and financially [5].

Quality of life (QOL) is defined by World Health Organization as "individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns". It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of their environment [6]. Conventional outcome assessment for diabetes relies on laboratory indicators, primarily on haemoglobin A1c (HbA1c) and complications of diseases. The exclusive reliance on clinical outcomes, however, does not necessarily reflect patients' perceptions of their heath. Therefore, health-related quality of life (HRQOL) is increasingly used as an outcome indicator alongside traditional biomedical measures.[7]

1.1 Need of the study
As a major epidemic of the 21st century diabetes mellitus is a threat to public health and is associated with increased physical, psychological and social morbidity and mortality if left untreated. According to WHO estimates India will be the global capital of diabetes by 2025, accounting for 57.2 million diabetics. Worsening the situation is the fact that diabetes affects the economically productive age-group (45-65 years) in developing countries [3, 8].

Diabetes mellitus permanently changes a patient's life. The Quality of life (QoL) is very important because it is a powerful tool to predict an individual's capacity to manage the disease and maintain long-term health and wellbeing [9]. Quality of life is an important aspect in diabetes because poor quality of life leads to diminished self-care, which in turn leads to worsened glycemic control, increased risks for complications [10]. India has become the capital and turned out to increase in the mortality rate. Although most of the modern drugs are medicated but due to some adverse effects it still remains a big question mark among researchers. Health care providers focus on only to control hyperglycaemia, lack of concentration on overall quality of

life of diabetic patients [11].

One goal of the measurement of quality of life is to have objective evaluations of how and how much the disease influences patient's life and how patients cope with it. The evaluation may be useful as a baseline and outcome measures and should provide framework to determine the impact of any change on patient's quality of life. The Quality of life (QoL) is very important because it is a powerful tool to predict an individual's capacity to manage the disease and maintain long-term health and wellbeing. Routine assessment of Quality of life (QoL) as a part of clinical practice has the potential to improve communication between the patient and the health care provider, identify frequently overlooked problems, assess the problems, and evaluate the effect of therapeutic efforts at the individual patient's level [8]. The purpose of present study is to throw a light on various domains of quality of life of diabetic patient. Understanding these domains that contribute quality of life among people with diabetes may help the health care professionals to provide holistic care

1.2 Objectives
1. To assess the health-related quality of life among diabetic patients visiting medical out-patient department of selected health care facilities at District Mandi, Himachal Pradesh.
2. To determine the relationship between the domains of health-related quality of life among diabetic patients.
3. To determine the association of level of health-related quality of life among diabetic patients with the selected socio-demographic variables.

1.3 Conceptual framework
Theoretical framework used for the present study is based on the health promotion model. The health promotion model (HPM) proposed by Nola J Pender (1982, revised, 1996) [12]. Health promotion means give awareness to people to choose healthy lifestyle and encouraging them to do things themselves. To achieve this one should focus on the health promoting strategies, such as daily physical activity, health nutrition, stress reduction or to avoid the use of tobacco, alcohol or drugs.

Components of the model
- Individual characteristics and behavior
- Behavior specific cognitions and affect
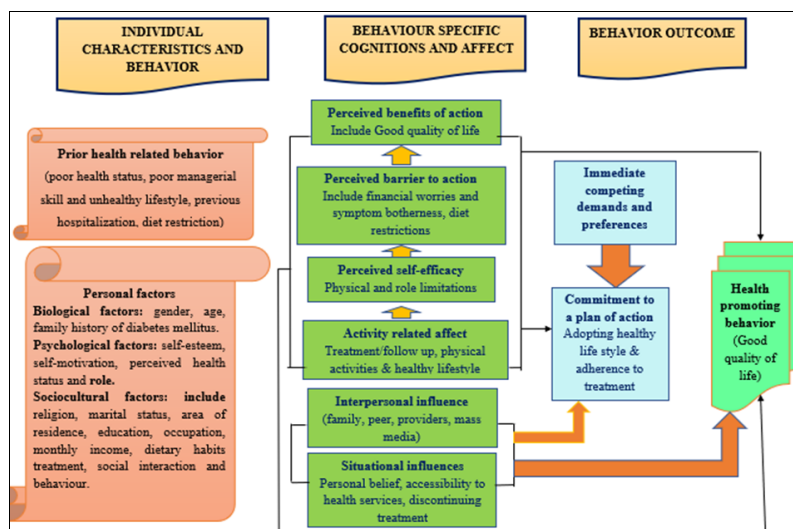- Behavior outcome- health promoting behavior

Fig 1: Health promotion by nola

2. Material and methods

2.1 Research approach and design: To accomplish the objective of the present study a quantitative approach, a Non-Experimental Descriptive research design was used to assess the health-related quality of life among diabetic patients.

2.2 Research setting: The study was conducted among diabetic patients visiting at medical out-patient department of Sri Lal Bahadur Shastri medical college and hospital Ner-Chowk, District Mandi, Sri Harihar Hospital and Research Centre, Gutkar, District. Mandi, Civil Hospital Sundernagar, District Mandi and Malhotra Trauma Centre, Ner-Chowk, District Mandi himachal Pradesh.

2.3 Sample and sampling technique: Sample consists of 150 diabetic patients under selected settings. Non-probability purposive sampling technique was adopted for the study.

2.4 Criteria for sample selection
Inclusion criteria
- Diabetic patients who were above 30 years.
- Both male and female patients.
- Diabetic patients available at the time of study.
- Patients diagnosed with Type 2 diabetes mellitus.
- Diabetic patients who can read and write Hindi or English.
- Diabetic patients who were willing to participate in study.

Exclusion criteria
- Patients with gestational diabetes.
- Patient with Type 1 Diabetes mellitus.
- Patients who were not willing to participate.
- Any other chronic illness which requires the patient to be admitted in the hospital for more than two weeks in the past one year.

2.5 Description of tool
Section I: Sociodemographic variables- It consists of fourteen items. It includes gender, age (in years), religion, marital status, area of residence, education, occupational status, monthly family income (in ₹), type of family, family history of diabetes mellitus, dietary habit, physical activity and treatment.

Section II: Modified Quality of life instrument for Indian Diabetic Patients- it is the modified version of the tool given by Jitender Nagpal [11] personal belief domain was added and modification were done in each domain. It consists of 40 items which is further divided into nine domains which includes, general health, physical limitation, symptom botherness, Role limitation, Psychosocial satisfaction, economic worries, diet satisfaction, Treatment satisfaction/follow up and personal beliefs.

2.6 Validity: Modified quality of life instrument for Indian diabetic patient was given to 10 experts of nursing field and their suggestion were expected and incorporated. The content validity of the tool was done by opinion of experts.

Initially in section 1, there were 15 variables. In section 2, 42 items were included in Modified quality of life instrument for Indian diabetic patient. The final tool consists of 14 variables in section 1 and 40 items in section 2. The tool was then translated in Hindi and retranslated in English and the tool was found to be consistent.

Table 1: Showing Criteria for assessing the overall health related quality of life

S. No	HRQOL	Score	Percentage (%)
1	Good	≥ 135	≥ 67
2	Average	68-134	34-66
3	Poor	≤ 67	≤ 33

Minimum score: 40
Maximum score: 200

2.7 Pilot study: The pilot study was conducted on 29/12/2018 & 30/12/2018 at Karan Hospital, Palampur District. Kangra (Himachal Pradesh) in order to test the feasibility and time required. Pilot study was conducted on the 10% of total population. The data was collected by administering modified quality of life instrument for Indian diabetic patient. The findings of the study revealed that study is feasible. Pilot study was done to check the items for their clarity and relevance.

2.8 Reliability: Split half method was used to check the internal consistency of modified quality of life instrument for Indian diabetic patient and the value of Karl Pearson correlation coefficient found (0.76), hence, the tool was reliable.

2.9 Data collection procedure: The main study was conducted in the month of February 2019 and March 2019 at selected health care facilities at district Mandi, Himachal Pradesh. The purpose of data collection was explained to the sample. Prior to data collection written consent was taken from the diabetic patients. By using non- probability convenience sampling technique 150 diabetic patients from medical outpatient departments of selected health care facilities were selected. Modified quality of instrument for Indian diabetic patient was administered. Coding sheet was prepared for data analysis.

2.10 Ethical consideration: Prior to the data collection permission was obtained from the concerned authorities to conduct the study. Written consent was obtained from the diabetic patients visiting medical outpatient department of selected health care facilities at district Mandi (Himachal Pradesh). The study subjects were assured that information collected from them was confidential.

3. Plan of data analysis
Data analysis and interpretation of data was done according to the objectives of the study. Analysis was done by using descriptive and inferential statistics. Assessment of level of health-related quality of life among diabetic patients was calculated by mean Percentage. Relationship among the domains of health-related quality of life was calculated by correlation coefficient method. Chi square test was used to determine the association between socio-demographic variables and health related quality of life among diabetic patients. Graphical presentation has been used to depict the findings.

Analysis and interpretation of data
Section 1: Description of selected variables
Section 2: Frequency, percentage, median, standard deviation, standard error of mean and range of domains of health-related quality of life.
Section 3: Correlation between the domains of health-related quality of life.

Section 4: Association between socio-demographic variables and health related quality of life among diabetic patients

SECTION 1
Description of Selected Socio-demographic Variables
TABLE-2

Table 2: Showing the frequency and percentage distribution of socio-demographic variablesN=150

Sr. no.	Socio-demographic variables	Frequency (f)	Percentage (%)
	Gender		
1.	1.1 Male	77	51.3
	1.2 Female	73	48.7
	Age (in years)		
	2.1 31-40	13	8.7
2.	2.2 41-50	36	24
	2.3 51-60	40	26.7
	2.4 61 and above	61	40.7
	Religion		
3.	3.1 Hindu	144	96
	3.2 Sikh	02	1.3
	3.3 Muslim	04	2.7
	Marital status		
	4.1 Unmarried	04	2.7
4.	4.2 Married	125	83.3
	4.3 Divorced	01	0.7
	4.4 Widow/widower	20	13.3
	Area of residence		
5.	5.1 Rural	111	74
	5.2 Urban	39	26
	Education		
	6.1 Non-formal education	23	15.3
6.	6.2 Primary	32	21.3
	6.3 Higher secondary	53	35.3
	6.4 Graduate and above	42	28
	Occupation status		
	7.1 Government employee	20	13.3
	7.2 Self employed	26	17.3
7.	7.3 Private employee	15	10
	7.4 Home maker	65	43.3
	7.5 Retired	24	16
	Monthly income (in ₹)		
	8.1 ≤ 10,000/-	23	15.3
8.	**8.2** 10,001-20,000/-	45	30
	8.2 20,001-30,000/-	24	16
	8.3 ≥ 30,001/-	58	38.7
	Type of family		
9.	9.1 Joint family	103	68.7
	9.2 Nuclear family	47	31.3
	Family history of diabetes mellitus		
10.	10.1 No	88	58.7
	10.2 Maternal	35	23.3
	10.3 Paternal	27	18
	Dietary habit		
11.	11.1 Vegetarian	101	67.3
	11.2 Non- vegetarian	49	32.7
	Physical activity		
12.	12.1 Light	96	64
	12.2 Moderate	47	31.3
	12.3 Heavy	07	4.7
13.	**Do you have any other disease?**		

	13.1 Yes	76	50.7
	13.2 No	74	49.3
	Treatment		
14.	14.1 Oral hypoglycemic drugs	132	88.0
	14.2 Insulin	07	4.7
	14.3 Diet only	09	6.0
	14.4 Others	02	1.3

Table 2 describes the socio-demographic variable and the results revealed that out of 150 samples, nearly half of the subjects, (51.3%) were male, (40.7%) in age group of 61 and above, (96%) were Hindu, (83.3%) were married, (74%) were from rural area, (35.3%) had secondary education, (43.3%) were home maker, (38.7%) had monthly income ≥ 30,001/-, (68.7%) were from joint family, (58.7%) had no family history of diabetes mellitus, (67.3%) were vegetarian, (64%) had light physical activity, (50.7%) had other disease with diabetes mellitus, (88%) were on oral hypoglycemic drugs.

Section 2
Frequency, Percentage, Median, Range, Standard Deviation, Standard Error of Mean of Domains of Health-Related Quality of Life TABLE 3

Table 3: Showing mean, mean percentage, median, range, standard deviation, standard error of mean of following domains N=150

Domain of Health-related Quality of life	Mean	Mean %	Median	Range	SD	S.E. Mean
General health	11.77	58.85	12.00	16	3.666	.299
Physical limitation	17.42	69.68	18.50	20	5.331	.435
Symptom botherness	9.75	65.0	10.00	12	2.807	.229
Role limitation	19.64	65.46	21.00	24	6.005	.490
Psychosocial satisfaction	25.90	74.0	27.00	24	5.725	.467
Economic worries	18.77	75.08	20.00	19	4.416	.361
Diet satisfaction	8.38	55.86	9.00	12	2.616	.214
Treatment Satisfaction/follow up	13.95	69.75	15.00	16	3.345	.273
Personal beliefs	11.09	79.33	12.00	12	2.817	.230
Overall health related quality of life	136.69	68.34	141.50	122	26.34	2.151

Table 3 revealed that the overall mean and SD score of health-related quality of life among subjects i.e. mean score ± S.D 136.69 ± 26.343. The domain wise mean percentage of health-related quality of life score for general health is (58.85%), Physical limitation (69.68%), symptom botherness (65.0%), Role limitation (65.46%), Psychosocial satisfaction (74.0%), economic worries (75.08%), Diet satisfaction (55.86%), treatment satisfaction/ follow up (69.75%), personal beliefs (79.33%) and overall health related quality of life with the mean percentage (68.345%). TABLE 4

Table 4: Showing frequency and percentage distribution of overall health related quality of life among diabetic patients N=150

S. No	HRQOL	Frequency (n=150)	Percentage (%)
1	Good	90	60
2	Average	59	39.3
3	Poor	01	0.7

Table 4 shows frequency and percentage distribution of overall health related quality of life in which the most of subjects, (60%) had good quality of life, (39.3%) had average quality of life whereas only (0.7%) had poor quality of life. Thus, it is inferred that more than half of the subjects have good health related quality of life.

Section 3
Correlation between the domains of health-related quality of life of diabetic patient Table 5

Table 5: Showing inter- relation matrix showing relationship between various domains health-related quality of life.

Domain	r p	General Health	Physical Limitation	Symptom Botherness	Role Limitation	Psychosocial satisfaction	Economic worries	Dietary satisfaction	Treatment satisfaction/ follow up	Personal beliefs
General Health	r	1								
	p									
Physical Limitation	r	.72	1							
	p	.00*								
Symptom Botherness	r	.31	.30	1						
	p	.00*	.00*							
Role Limitation	r	.71	.71	.35	1					
	p	.00*	.00*	.00*						
Psychosocial satisfaction	r	.66	.66	.34	.73	1				
	p	.00*	.00*	.00*	.00*					
Economic	r	.43	.40	.10	.40	.46	1			

worries	p	.00*	.00*	.19	.00*	.00*				
Dietary	r	.11	.15	.02	.20	.10	.06	1		
satisfaction	p	.16	.06	.78	.01*	.18	.44			
Treatment	r	.45	.50	.12	.44	.56	.42	.19	1	
satisfaction/ follow up	p	.00*	.00*	.11	.00*	.00*	.00*	.01*		
Personal beliefs	R	.50	.52	.19	.44	.58	.36	-.00	.53	1
	p	.00*	.00*	.01*	.00*	.00*	.00*	.91	.00*	

r = coefficient correlation
* = p (level of significance): ≤ 0.05

Table 5 showing inter- relation matrix showing relationship between various domains health-related quality of life by using Pearson coefficient correlation. The relationship of role limitation with general health, physical limitation, symptom botherness, psychosocial satisfaction, economic worries, dietary satisfaction, treatment satisfaction/ follow up and personal belief was found weak positive (p ≤ 0.05).

Hence, Role limitation shows a positive relationship with all the domains of health-related quality of life.

Section 4
Association of Level of Health-Related Quality of Life among Diabetic Patients with the Selected Socio-Demographic Variables Table 6

Table 6: Showing association of level of health-related quality of life among diabetic patients with the selected socio-demographic variables. N=150

Sr. no.	Socio-demographic variables	Poor	Average	Good	Chi² (χ^2)	df	p value
1.	Gender:				9.15	02	.01*
	1.1 Male	0	22	55			
	1.2 Female	01	37	35			
2.	Age (in years):					06	.01*
	2.1 30-40	0	02	11			
	2.2 41-50	0	07	29	17.78		
	2.3 51-60	01	17	22			
	2.4 61 and above	0	33	28			
3.	Religion:				1.77	04	.77
	3.1 Hindu	01	58	85			
	3.2 Sikh	0	0	02			
	3.3 Muslim	0	01	03			
4.	Marital status:				11.13	06	.08
	4.1 Unmarried	0	01	03			
	4.2 Married	01	43	81			
	4.3 Divorced	0	01	0			
	4.4 Widow/widower	0	14	06			
5.	Area of residence:				.382	02	.82
	5.1 Rural	01	44	66			
	5.2 Urban	0	15	24			
6.	Education:				29.32	06	.00*
	6.1 Non-formal education	01	17	05			
	6.2 Primary	0	17	15			
	6.3 Higher secondary	0	17	36			
	6.4 Graduate and above	0	08	34			
7.	Occupation status:				11.35	08	.18
	7.1 Government employee	0	03	17			
	7.2 Self employed	0	08	18			
	7.3 Private employee	0	05	10			
	7.4 Home maker	01	33	31			
	7.5 Retired	0	10	14			
8.	Monthly income (in ₹):				12.46	06	.05*
	8.1 ≤ 10,000/-	0	14	09			
	8.2 10,001-20,000/-	01	18	26			
	8.3 20,001-30,000/-	0	12	12			
	8.4 ≥ 30,001/-	0	15	43			
9.	Type of family:				.71	02	.70
	9.1 Joint family	01	39	63			
	9.2 Nuclear family	0	20	27			
10.	Family history of diabetes mellitus:				2.37	04	.66
	10.1 No	01	38	49			
	10.2 Maternal	0	11	24			
	10.3 Paternal	0	10	17			

No.	Variable				χ²	df	p
11.	Dietary habit:				7.47	02	.02*
	11.1 Vegetarian	01	47	53			
	11.2 Non- vegetarian	0	12	37			
12.	Physical activity:				26.78	04	.00*
	12.1 Light	0	52	44			
	12.2 Moderate	01	05	41			
	12.3 Heavy	0	02	05			
13.	Do you have any other disease?						
		0	31	45	1.12	02	.56
	13.1 Yes 13.2 No	01	28	45			
14.	Treatment:				29.64	06	.00*
	14.1 Oral hypoglycemic drugs	0	55	77			
	14.2 Insulin	01	04	02			
	14.3 Diet only	0	0	09			
	14.4 Others	0	0	02			

df: degree of freedom
significant (*): (p ≤ 0.05)

Table 6 shows association of level of health-related quality of life among diabetic patients with the selected socio-demographic variables. As the result of chi^2 test, association of level of health-related quality of life with gender (χ^2 = 9.15, p=.01), age (in years) (χ^2 = 17.78, p=.01), education (χ^2 = 29.32, p=.00), monthly income (χ^2 = 12.46, p=.05), dietary habit (χ^2 = 7.47, p=.02), physical activity (χ^2 = 26.78, p=.00), treatment (χ^2 =29.64, p=.00) found significant at level of p <0.05. Hence, health-related quality of life is significantly associated with gender, age (in years), education, monthly income, dietary habit, physical activity and treatment.

4. Discussion
The findings of the study are discussed on the basis of objectives under following sections:

Section 1 describes of the frequency distribution of socio-demographic variable
Section 1 describes the socio-demographic variable and the results revealed that out of 150 samples, nearly half of the subjects, (51.3%) were male, (40.7%) in age group of 61 and above, (96%) were Hindu, (83.3%) were married, (74%) were from rural area, (35.3%) had secondary education, (43.3%) were home maker, (38.7%) had monthly income ≥ 30,001/-, (68.7%) were from joint family, (58.7%) had no family history of diabetes mellitus, (67.3%) were vegetarian, (64%) had light physical activity, (50.7%) had other disease with diabetes mellitus, (88%) were on oral hypoglycemic drugs.

Section 2 describes the frequency, percentage, median, range, standard deviation, standard error of mean of domains of health-related quality of life.
In the present study results shown the overall mean and SD score of health-related quality of life among subjects i.e. mean score ± S.D 136.69 ± 26.343 and overall health related quality of life with the mean percentage 68.34% (136.69). The study results revealed the overall health-related quality of life in which the most of subjects, (60%) had good quality of life, (39.3%) had average quality of life whereas only (0.7%) had poor quality of life.

Section 3 describes the relationship between domains of health-related quality of life.
In the present study, the relationship of role limitation with general health, physical limitation, symptom botherness, psychosocial satisfaction, economic worries, dietary satisfaction, treatment satisfaction/ follow up and personal belief was found moderate positive relationship (p ≤ 0.05). Hence, role limitation has impact on all the other domains of health related quality of life.

Section 4 describes the association of level of health-related quality of life among diabetic patients with the selected socio-demographic variables.
With view to determine association of level of health-related quality of life among diabetic patients with the selected socio-demographic variables, association was calculated by chi square test. The results revealed that the level of health-related quality of life among diabetic patients had significant association with gender, age (in years), education, monthly income, dietary habit, physical activity and treatment (p ≤ 0.05).

5. Conclusion
Finding of the present study revealed that more than half of the subject had good health related quality of life with mean ± S.D 136.69 ± 26.343. Mean percentage of overall health related quality of life was (68.345%). The improvement in the role limitation will simultaneously improve all the domain of health-related quality of life which will helps to improve the overall quality of life. Health-related quality of life among diabetic patients had significant association with gender, age (in years), education, monthly income, dietary habit, physical activity and treatment. Adopting healthy life style and continuous treatment is necessary to maintain the good quality of life in diabetes. Hence, the present study concluded that high quality of life represents an ultimate goal and an important outcome of all medical interventions in diabetic patients.

6. Recommendations
Keeping in the view of present study findings, the following recommendations have been made:
- A similar study may be conducted on a large sample to validate and generalize the findings.
- Similar study can be conducted on different population of different culture and ethnic groups. A comparative study can be done on quality of life between rural and urban patients of Diabetes Mellitus.
- A true experimental study can be conducted to assess the quality of life of patients with diabetes mellitus.

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