

Adherence Levels to Dietary Recommendations and Barriers among Type-2 Diabetic Patients on Follow-up at Mohammed Akila General Hospital: Cross Sectional Study Design



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Abstract

Background: Type-2 DM attributes for the large majority of people living with diabetes globally and is mainly the result of excess body weight and physical inactivity. It is now increasingly occurring in children and young people in contrary to the past, claimed is restricted to adults. WHO has announced on its recent global diabetes report that an estimated 422 million adults are living with diabetes mellitus (DM) worldwide.

Objectives: The main purpose of this study was an assessing the level of dietary adherence and its barriers among type-2 diabetic patients attending the medicine outpatient department in Mohammed Akila General Hospitals (MAGH), Afar regional state, Ethiopia.

Methods: A prospective hospital-based cross-sectional study was conducted from 2 July to September 2, 2021, at Mohammed Akila General Hospitals (MAGH). The Perceived Dietary Adherence Questionnaire (PDAQ) was used for dietary adherence measurement. Multivariate logistic regression was done to identify the barriers influencing dietary adherence.

Results: In the study, Majority (62.5%) of the study participants had poor adherence based on PDAQ while only 37.5% of the participants had good adherence towards dietary recommendations. Among nine perceived dietary adherence questions, the highest mean score was obtained for the question on how many of the last SEVEN DAYS did you eat foods high in fibre such as oatmeal, high fibre cereals, and whole-grain breads?

Conclusion: level of adherence to dietary recommendation was generally low as evidenced by only 37.5% of study participant reported good adherence to dietary recommendation. Lack of knowledge, diet education, and inability to afford the recommended diet, low monthly income, lack of previous exposure to dietary education and difficulty of adhering to the recommended diet during social or work events were the most significant barriers responsible for non-adherence.

Keywords: Type-2 diabetes; Diabetic; Dietary recommendations; Adherence; Ethiopia

Abbreviations: ADA: American Diabetic Association; E.Br: Ethiopia Birr; CDA: Canadian Diabetes Association; CFG: Canada's Food Guide; CVD: Cardiovascular Disease; DM: Diabetic Mellitus; DRH: Dilchora Referral Hospital; IDF: International Diabetic Federation; MNT: Medical Nutrition Therapy; PDAQ: Perceived Dietary Adherence Questioner; T-2DM: Type 2 Diabetic Mellitus; WHO: World Health Organization.

Introduction

Diabetes mellitus (DM) is a chronic metabolic disorder clinically manifested by hyperglycaemia. The vast majority of diabetic patients are classified into one of two broad categories: type-1 diabetes caused by inability of pancreas to produce enough of the insulin hormone, which regulates blood sugar, or type-2 diabetes defined by our body ineffective use of insulin that it produces with an inadequate compensatory increase in insulin

secretion [1]. Type-2 DM is attributed for the large majority of people living with diabetes globally and is mainly the result of excess body weight and physical inactivity. It is now increasingly occurring in children and young people in contrary to the past, claimed is restricted to adults. WHO has announced in its recent global diabetes report that an estimated 422 million adults are living with DM worldwide [2].

International Diabetes Federation (IDF) had also depicted that about 381 million people having diabetes in 2013. This number is expected to be almost double by 2030 in projection from the current world status. The number of people living with diabetes and its prevalence are growing in all regions of the world. In 2014, 422 million adults (or 8.5% of the population) had diabetes, compared with 108 million (4.7%) in 1980. Diabetes mellitus is a common health problem throughout the world, but it is more common in developed countries. However, the number of people living with diabetes has almost quadrupled since 1980 to 2014 million adults, with most of new cases were from developing countries [3].

Factors driving this dramatic rise of diabetes incidence in developing countries are flaring of urbanization and lifestyle changes, including increasingly sedentary lifestyles, less physically demanding work and the global nutrition transition from nutrient-rich to energy directed foods. Consequently, about 14.2 million are living with diabetes in the African region according to International Diabetes Fund report. Diabetes has numerous long-term complications that impair the quality of life and pose burdens on individuals and societies as well as increasing the risk for premature deaths [4]. WHO recommends expanding health-promoting environments: patients achieve and maintain a healthy body weight, perform a regular physical activity for at least 30min and moderate intensity activity on most days, eat a healthy diet, and avoid sugar and saturated fats intake and tobacco use, as a measure needed for halting the rise in diabetes.

Diabetic patients should be urged to modify nutrient intake and lifestyle as appropriate for the prevention and treatment of obesity, dyslipidaemia CVD, hypertension, and nephropathy [5]. Medical nutrition therapy (MNT) is important in deterring diabetes, managing existing diabetes, and preventing, or at least slowing, the rate of development of diabetes complications. It is, therefore, important at all levels of diabetes prevention. The American Diabetes Association (ADA) recommends eating food low in sucrose and high in fibre; fruits, vegetables, whole grains, legumes which are worthwhile for secondary prevention of T-2 DM. Control of blood glucose in an effort to achieve normal or near-normal level is primary goal of diabetes management. Food and nutrition interventions that reduce postprandial blood glucose excursions are important in this regard, since dietary carbohydrate is the major determinant of postprandial glucose levels.

Low-carbohydrate diets might seem to be a logical approach to lowering postprandial glucose. However, foods that contain carbohydrates are important sources of energy, fibre, vitamins, and minerals and are important in dietary palatability. Therefore, these foods are important components of the diet for individuals with diabetes [6]. Poor glycaemic control is more common among patients who did not follow dietary regimens, did not practice any physical activity. This could lead to intensification of pharmacologic

treatments [7]. Diabetes mellitus remains to be a major cause of morbidity and mortality [9]. The chronicity of diabetes and potential for serious complications often result in significant financial burden, decreased quality of life [10]. Diabetes caused 1.5 million deaths in 2012. Higher-than-optimal blood glucose caused an additional 2.2 million deaths, by increasing the risks of cardiovascular and other diseases. Many of these deaths (43%) occur prematurely, before the age of 70 years, and are largely preventable through adoption of policies to create supportive environments for healthy lifestyles and better detection and treatment of the disease [8]. Management of diabetes and its complications are responsible for a disproportionate amount of healthcare costs in the USA [11].

Likewise, the epidemic of diabetes has major health and socioeconomic impacts in developing countries. Thus, it is a growing public health and policy concern [12]. Dietary modification has been used as the cornerstone and initial recommendation in T-2 DM management despite enormous setbacks in implementation of dietary recommendation. Nonadherence to lifestyle regimes in diabetes is associated with increased hospitalizations and mortality, yet non-adherence to dietary recommendation in people with T-2 DM has been identified as high in both developed and developing countries. Collaboration between the patient and the healthcare provider has an inalienable role in making implementation of dietary recommendation successful [7,13,14].

Among possible influencing factors, socioeconomic status, duration of disease, lack of diabetes knowledge, cost of healthy diet and poor communication with healthcare providers are the most cited barriers as reasons for poor adherence to dietary recommendations [15-18]. Nevertheless, there is paucity of information regarding the level of adherence and barriers to dietary recommendations in individuals with T-2 DM in developing countries including Ethiopia. And low level of adherence to dietary recommendation was reported by few previous researches from Ethiopia and Africa, in general [19-22].

Governments also have to ensure that people are able to make healthy choices: to eat healthily, be physically active, and avoid excessive weight gain and that health systems are able to diagnose and treat people with diabetes, even in the poorest settings [8]. Poor adherence to dietary recommendation is among factors that lead to poor treatment outcome in Ethiopia including Afar regional state. The main purpose of this study was to assess the level of dietary adherence and its barriers among patients with type-2 diabetes attending the medicine outpatient department at Mohammed Akila General Hospital, afar regional state, Ethiopia during the study period between July-September 2021. The current study had the following specific objectives were to assess the perceived Dietary Adherence Questionnaire (PDAQ) scores for T-2 DM patients. ii. to identify the perceived barriers influencing adherence to the recommended diet and iii. to test the association between predictive variables and level of adherence.

Materials and Methods

Study area

This study was conducted at Mohammed Akila General Hospital at Afar regional state. The hospital is located in Bereta which is near Awash 7-kilo, around 20 Km distance apart. The distance between Awash to Addis Ababa is 214 Km by road. You can also find the distance from Awash to Addis Ababa using other travel options like bus, subway, tram, train and rail. Apart from the trip distance, refer Directions from Awash to Addis Ababa for road driving directions. The hospital serves as a general hospital for the entire Afar regional state such as, Awash 7-killo, Ambera Districts, Sabura District and Werer Districts. It has different wards include, internal medicine ward, surgery ward, paediatric ward, gynaecology, and obstetrics ward. It delivers diversified health services and clinics like ANC clinic, dental clinics, tuberculosis (TB) clinic, anti-retroviral therapy (ART) clinic, and ophthalmologic clinic.

Study period

The hospital has 1908 diabetic patients registered for follow-up care in the hospital. The study period was conducted the period between 2 July to 2 September 2021 at Mohammed Akila General Hospital, Afar regional state.

Study design

This study is a hospital-based cross-sectional study design.

Study population

It was considered all patients with T-2 DM who visit the hospital for follow-up. Under this study all patients with T-2 DM (aged 18 years and above) who was visiting the hospital for follow-up were the study population.

Sample size determination

Sample size was determined by simple mean formula and prevalence of adherence was 25.7% according to previous study done in Debratabor Referral Hospital, Southern Gondar.

Where, n = the required number of sample size, $=1.96 =$ the standard normal distribution designed 95% confidence, $P =$ percentage of patient adherence rate of dietary recommendation from previous study in Ethiopia, which is 0.257, $d =$ degree of accuracy (usually 5%). Expecting an overall adherence rate of 25.7% (Gondar) at a 95% confidence interval, and after adding 5% of the calculated sample size for possible nonresponse, 307 patients were interviewed.

Sampling techniques

The study subjects were selected by using simple random sampling method.

Variables Considered Under this Study

Dependent variable

The level of adherence to dietary recommendations and barriers among type-2 diabetic patients was the dependent variable for this study.

Independent variables

Adherence perception and socio-cultural characteristics of the study participants and other socio-demographic characteristics were considered as the independent variables in this study.

Eligible Criteria

Inclusion criteria

All patients with T-2 DM (aged 18 years and above) who visit the hospital for follow-up from 02 July to 02 September 2021 were included in the study.

Exclusion criteria

Individuals aged \leq 17 years was excluded. On the other hand, those who are critically ill and unable to participate in the interview and also those who are recently diagnosed and have a follow-up of fewer than 6 months were excluded.

Data Collection Tool and Techniques

The data collection tool used in this study will be adopted and modified from previous studies on similar topics. The questionnaire has two major parts. Part, one assesses the socio-demographic characteristics of respondents. Part two included queries about dietary adherence. The Perceived Dietary Adherence Questionnaire (PDAQ) was used for dietary adherence measurement. PDAQ is nine-item questioners which are developed in 2015 by Ghada Asaad et al. [23] to measure patient perceptions of their dietary adherence. The response is based on a seven-point Likert scale to answer the question phrased as on how many of the last 7 days did you? (Table 1). Higher scores reflect higher adherence except for items 4 and 9, which reflect unhealthy choices (foods high in sugar or fat). For these items, higher scores reflect lower adherence, therefore, for computing a total PDAQ score, the scores for these items were inverted. Patients will be classified as having good dietary adherence if they eat a healthy diet for at least four days a week.

Data collectors

For this study two experienced nurse professionals were recruited for the data collection.

Quality control

The questionnaire was pre-tested on 5% of study population at different sites from the study areas to check the practicality and applicability of the questionnaire. The feedback obtained

was used to modify and enhance the questionnaires. The data collectors were trained intensively on the contents of the objectives of the study, questionnaire, data collection methods and ethical concerns. The questionnaires was translated and localized as necessary, so as to maintain the unbiased response. The filled questionnaires were checked daily for completeness each day by the principal investigator. The reliability (psychometric property) of the tool was evaluated and demonstrated a Cronbach alpha value of 0.871. The content of the questionnaires was reviewed by clinical pharmacists.

Data processing and analysis

The collected data was cleaned and entered to analyse using the Statistical Package for the Social Sciences (SPSS) software version-25.0 and SAS Version 9.0. Descriptive statistics (percentage, mean and standard deviation) were used to present categorical data. Multivariate logistic regression was conducted to determine the factors influencing dietary adherence. The 95% CI and p-value was < 0.05 was used to determine significance of association.

Operational Definitions

Adherence: the extent to which the patient continues the agreed upon mode of treatment under limited supervision when faced with conflicting demands as distinguished from compliance or maintenance.

Good dietary adherence: eating healthy diet for at least four days in the week.

Poor dietary adherence: eating healthy diet for not more than three days in the week.

Level of adherence: the percentage of recommended diet consumed by the patient.

Adherence rate: the proportion/ or percentage of patients who adhered to daily dietary recommendation.

Method of Data Analysis

The design was a cross-sectional survey because the data were collected at a point of time. Descriptive and multivariate binary logistic regression was used to estimate the respective indicators, and effects of factors on the level of adherent (poor and good adherent).

Fitting Logistic Regression Model

In this study multivariate binary logistic regression model was used to examine the association between dependent variables (adherent levels) where each of them has two possible outcomes (poor adherent and good adherent) and independent variables. Suppose that a sample of n independent observation of the pair (x_{ik}, y_{ij}), i=1, 2, , n; j=1, 2, 3, and k=1, 2, , P. Where, P is the number of independent variables and y_{ij} is the value of the ith subjects on the jth outcome variable and x_{ik} is the value of the ith subjects on the kth independent variables. Then, the model is illustrated as:

$$= \alpha + \beta_1 + \dots +$$

Results

Table 1: Socio-demographic characteristics of the respondents at Mohammed Akila General Hospital, Afar region, Ethiopia July-September 2021.

Socio-Demographic Characteristics	Categories	Frequency (n)	Percentage (%)
Sex	Male	138	45
	Female	169	55
Marital status	Married	210	68.4
	Single	21	6.8
	Divorced	22	7.2
	Widowed	54	17.6
Occupation	Government Employee	104	33.9
	Farmer	25	8.1
	Business person	55	17.9
	Others	123	40.1
Residence	Urban	269	87.6
	Rural	38	12.4
Education level	No formal education	98	31.9
	Primary	82	26.7
	Secondary	78	25.4
	College/University	49	16

Monthly income	<500	14	4.6
	500-1000 ETB	62	20.2
	1001-2000 ETB	143	46.6
	>2000 ETB	88	28.7
Age	57.4756±10.46		

Table 2: Clinical characteristics of the respondents at Mohammed Akila General Hospital, Afar region, Ethiopia July-September 2021.

Clinical Characteristics	Categories	Frequency (n)	Percentage (%)
Family history	Yes	109	35.5
	No	198	64.5
Co-morbidity	Yes	151	49.2
	No	156	50.2
Physical exercise	Yes	189	61.6
	No	118	38.4
Previous exposure to any education regarding diet recommendation from health care providers	Yes	278	90.9
	No	28	9.1
Follow doctor's recommendation regarding diet	Yes	221	72
	No	86	28
Encounter problem of remembering eating foods according to doctors advise	Yes	79	31.6
	No	210	68.4
Duration since diagnosis	6.3668± 4.96164		
Duration since starting DM treatment	6.3342± 4.98300		

Among the total of 307 approached study participants, more than half (55%) of them were females. Most (33.9%) of the respondents are government employees with a mean age of 57.4756±10.46072 and 68.4% of them were married. The majority (87.6%) of them made urban as place of residence. About 31.9% had no formal education and 46.6% of them had 1000-2000 Eth. Birr income monthly (Table 1). Clinical characteristics of study participants, from study participants about 65% of them had a family history of DM. The respondents have 6.3668±4.96164 mean years since diagnosis of DM. About half of study participants found to have comorbid medical condition apart from DM and only 38.4% of them have followed weakly exercise recommendation. The majority (90.9%) of study participants have received counselling regarding healthy diet from health professionals while only two over three (72%) of respondents followed doctor recommendation regarding diet (Table 2).

Perceived Dietary Adherence Questionnaire (PDAQ) score for DM patients Among nine perceived dietary adherence questions, the highest mean score was obtained for the question on how many of the last SEVEN DAYS did you eat foods high in fibre such as oatmeal, high fibre cereals, and whole-grain breads? followed by question on how many of the last SEVEN DAYS have you

followed a healthy eating plan?. The lowest point was scored by question on how many of the last SEVEN DAYS did you eat foods that contained or was prepared with canola, walnut, olive, or flax oils? and on how many of the last SEVEN DAYS did you eat fish or other foods high in omega-3 fats? The majority (62.5%) of the study participants had poor adherence based on PDAQ while only 37.5% of the participants had good adherence towards dietary recommendations (Table 3).

Perceived Barriers influencing adherence to the recommended diet among possible perceived barriers to hinder patient adherence to dietary recommendation, Lack of knowledge/ or lack of diet education 256(83.4%) and unable to afford Cost of the recommended diet 219(71.3%) were the major setback claimed by study participants (Table 4). Predictor of adherence to dietary recommendation in multivariate logistic regression residence, monthly income, family history of DM, duration since diagnosis of DM, duration since treatment of DM and previous exposure to dietary education are the factor that determine adherence to dietary recommendation. Accordingly, study participants who are living in urban were 1.5 times more likely to have good adherence (AOR=1.558(95%CI: 1.26-3.589). Study participants who had monthly income of greater than 2000 E. Br were 7.2

times more likely to have good adherence (AOR=7.238(95% CI: 1.510-34.692). Regarding dietary education, study participants who have received counselling on healthy diet were 2.1 times more likely to have good adherence to dietary recommendation (AOR=2.107(95% CI: 1.818-5.423) (Table 5).

Table 3: Perceived dietary adherence questionnaire (PDAQ) score for DM patients at Mohammed Akila General Hospital, Afar region, Ethiopia July-September 2021.

Item		Mean ± SD
On how many of the last SEVEN DAYS have you followed a healthful eating plan?		4.8436± 1.06411
On how many of the last SEVEN DAYS did you eat the number of fruit and vegetables?		4.4072± 1.41433
On how many of the last SEVEN DAYS did you eat carbohydrate-containing foods with a low Glycaemic Index? (Example: dried beans, lentils, barley, pasta, low fat dairy products)		4.2378± 1.50993
On how many of the last SEVEN DAYS did you eat foods high in sugar such as rice, potatoes & etc.?		1.4951± 1.25602
On how many of the last SEVEN DAYS did you eat foods high in fibre such as oatmeal, high fibre cereals, and whole-grain breads?		5.4463± 1.53804
On how many of the last SEVEN DAYS did you space carbohydrates evenly throughout the day?		2.1140± 1.20864
On how many of the last SEVEN DAYS did you eat fish or other foods high in omega-3 fats?		0.7231± 1.08986
On how many of the last SEVEN DAYS did you eat foods that contained or was prepared with canola, walnut, olive, or flax oils?		0.3192±0.77695
On how many of the last SEVEN DAYS did you eat foods high in fat (such as high fat dairy products, fatty meat, fried foods or deep-fried foods)?		1.3420± 1.12472
Over all Adherences: n (%)		
Good	115(37.5%)	
Poor	192(62.5%)	

Table 4: Perceived Barriers influencing adherence to the recommended diet at Mohammed Akila General Hospital, Afar region, Ethiopia July-September 2021.

Barriers	Frequency (n)	Percentage (%)
Lack of knowledge/lack of diet education	256	83.4
Unable to afford Cost of the recommended diet	219	71.3
Don't believe diet can control blood glucose	89	29
Lack of Appetite for recommended diet	145	47.2
Unable to remember the recommended diet	119	38.8
It takes too long to cook recommended diet	97	31.6
The difficulty of adhering to the recommended diet during social or work events	28	9.1
Stress	162	52.8
Others	27	9

Table 5: Level of adherence and associated factors among diabetic patients at Mohammed Akila General Hospital, Afar region, Ethiopia July-September 2021.

Variables	Categories	Adherence		Odd Ratio (95%CI)		P-Value
		Good	Poor	COR	AOR	
Sex	Male (Ref.)	60	78	1	1	0.84
	Female	55	114	0.627(0.394-0.999)*	0.586(0.341-1.005)	1
Residence	Rural (Ref.)	10	36	1	1	1
	Urban	105	156	2.423 (1.153- 5.094)*	1.558(1.26-3.589)*	0.029
Monthly income	<500 ETB (Ref.)	3	1	1	1	1
	500-1000 ETB	18	41	1.668(0.978-2.846)	2.511(0.305-4.833)	0.162
	1001-2000 ETB	49	89	2.092(1.053-4.155)*	2.440(0.58-5.629)	0.095
	>2000 ETB	45	49	3.980(1.064-14.882)*	7.238(1.510-34.692)*	0.013
Family History of DM	No (Ref.)	59	141	1	1	1
	Yes	56	51	2.624(1.614-4.267)*	2.710(1.532-4.794)*	0.01
Duration since diagnosis of DM	< 5 years (Ref.)	38	98	1	1	1
	5-10 years	59	76	1.288(0.617-2.691)	1.789(0.482-6.642)	0.341
	> 10 years	18	18	2.579(1.214-5.476)*	3.432(1.364-8.635)*	0.009
Duration since starting DM treatment	< 5 years (Ref.)	29	106	1	1	1
	5-10 years	59	71	2.166 (1.055-4.448)*	3.851(0.908-12.33)	0.067
	> 10 years	27	15	6.579(3.098-13.971)*	7.521(4.823-16.637)*	0
Previous exposure to diet education	No (Ref.)	8	32	1	1	1
	Yes	107	160	2.675(1.187-6.028)*	2.107(1.818-5.423)*	0.001

Discussion

This study has tried to assess level of adherence to dietary recommendation and associated factor among T-2 DM patients in Mohammed Akila General Hospital, afar region, Ethiopia. The study has revealed low adherence among type T-2 DM patients in which only 37.5% of study participants depicted good adherence to dietary recommendation. This finding was comparable with adherence level that reported by previous studies done globally [24-26]. However, it was slightly higher than previous study done in northern Ethiopia in which only 25.7% of study participants following their doctor 's recommendation [27]. In contrast, it was lower than another study that was done on dietary practice and associated factors in Addis Ababa, Ethiopia has depicted 48.6% good diet adherence [28]. This could be explained by the difference in setting and associated socio-demographic of study participants among studies, availability of healthy diet in the area. Limiting carbohydrate intake had favourable effects on body weight, BMI, abdominal circumference, systolic blood pressure, diastolic blood pressure, triglyceride level, fasting glucose level, insulin level, HDL cholesterol level, and C-reactive protein level [29].

Low-carbohydrate diets in T-2 DM result in the improvements of glycaemic control and triglyceride levels according to meta-analysis of 13 randomized clinical trials [30]. However, carbohydrate intake is higher in this study participants compared to another source of foods. The average level of carbohydrate intake for the current study participants was more than 4 times a week. This was consistent with previous study in south Gondar, Ethiopia which reported high carbohydrate intake among study participants. This could be due cheapness and easily availability of carbohydrate containing food in Ethiopia [27]. Similarly, study participants had a high consumption of fruits and vegetables 4 days in week. This was in contrast with previous study [27]. Concerning barriers to dietary adherence, lack of knowledge/ or lack of diet education was the major setback claimed by 83.4% of study participants. This was comparable with previous study in Ethiopia, in which 87% of the study participants have cited lack of knowledge/ or lack of diet education as the main barriers that hinder adherence to the recommended diet [27].

Another obstacle that reported by 71.3% respondent was unable to afford Cost of the recommended diet. This was corroborated by previous studies done in Ethiopia and globally [15,27,31,32]. In multivariate logistic regression residence, monthly income, family history of DM, duration since diagnosis of DM, duration since treatment of DM and previous exposure to dietary education are the factor that determine adherence to dietary recommendation in this study. Accordingly, study participants who have received counselling on healthy diet were 2.1 times more likely to have good adherence to dietary recommendation. This is in line with previous study in Addis Ababa and other studies done globally [28,33,34]. This may be due to the fact that those who get nutrition education follow the advice

from clinicians and have better knowledge and understanding about the food disease association, food guides and prescriptions than those who don't get nutrition education.

Study participants who had monthly income of greater than 2000E.Br were 7.2 times more likely to have good adherence (AOR=7.238(95%CI, 1.510-34.692). This agrees with previous study in which study participants with monthly incomes below \$150 were poorly adherent to dietary recommendations [27]. The annual increase in the cost of healthy foods might have a negative impact on patients who were from low socioeconomic levels like Ethiopia. Therefore, providing reliable information regarding lists of low-cost healthy foods and foods that can be cheaply cooked at home may also be beneficial for patients to overcome the cost barrier for dietary adherence especially in low-income patients. In multivariate regression, respondents who had ≥ 10 years duration of diabetic disease were 3.4 times more likely to have good dietary adherence in comparison with their counterpart who had less than 5 years duration of DM. This might be due to prolonged exposure to health professional and dietary counselling of those who had ≥ 10 years duration of diabetic disease.

Conclusion

In this study, the level of adherence to dietary recommendation was generally low as evidenced by only 37.5% of study participant reported good adherence to dietary recommendation. Lack of knowledge, diet education, and inability to afford the recommended diet, low monthly income, lack of previous exposure to dietary education and difficulty of adhering to the recommended diet during social or work events were the most significant barriers responsible for non-adherence. Therefore, health professionals must become proactive in identifying and addressing these barriers and health care decisions and policymakers should design effective dietary practice guidelines for people with T-2 DM in areas where these are not available.

Limitations of the Study

This study tried to assess adherence to dietary recommendations and barriers using a self-reported survey, which may be subjected to recall and social desirability biases. This study being cross sectional study design has limitation of determining the exact cause and outcome relationships genuinely.

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