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Research Paper

ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICES REGARDING LIFE STYLE MODIFICATION AMONG TYPE 2 DIABETIC MELLITUS PATIENTS ATTENDING ADAMA HOSPITAL MEDICAL COLLEGE, OROMIA REGION, ETHIOPIA

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Background: The person with diabetes mellitus has a chronic lifelong disease, the person must be knowledgeable to coordinate life style modification in to a daily routine of work to achieve and maintain normal physiological blood glucose level. The objective of this study was to determine the knowledge, attitude and practices of LSM management of type 2 diabetic patients in Adama Medical College Hospital. Methodology: Across-sectional study was conducted to assess knowledge, attitude and practice of type 2 diabetic patients towards LSM management of DM in Adama Medical College Hospital. Data was cleaned and analyzed by using SPSS version 16.0 and presented descriptively and analytically. Result: Concerning knowledge of the patients towards LSM management of diabetic; majority of the patients were knowledgeable which accounts 90 (77.59%) followed by 13 (11.21%) patients fairly knowledgeable and the other 13 (11.21%) patients were poorly knowledgeable. Regarding attitude of the patients 95 (81.89%) patients had positive attitude and the other 21(18.11%) had fair attitude. In another way almost half of the patients 57 (49.1%) had good practice. The other 39 (33.62%) and 20 (17.24%) have poor and average practice respectively. Conclusion and Recommendation: The result of this study showed, majority of type 2 DM patients had good knowledge, positive attitude and good practices towards LSM. The researcher recommend all stake holders (Ministry of health, Diabetic associations, Health institution, health professionals, care givers and NGO) found around this area must cooperate to improve KAP of the patients towards LSM. Especial attention should be given to the practices of the patients and further research should also be done on this topic.

Keywords: Type 2 diabetes mellitus, Life style modification, Knowledge, Attitude, Practice

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INTRODUCTION

Background

Diabetes mellitus is a syndrome characterized by chronic hyperglycaemia, due to absolute or relative deficiency or diminished effectiveness of circulating insulin. It is the most common serious metabolic disease. Diabetes mellitus has been recognized as a clinical syndrome since ancient times and remains a crippling global health problem today (Kumar *et al*., 2013).

Its clinical diagnosis indicated by presence of symptoms such as polyurea, polydipsia and unexplained weight loss; and confirmed when one of the following abnormal glucose measured: Fasting Plasma Glucose (FPG) value of >= 7.0 mmol l^{-1} (126 mg dL^{-1}), or the casual plasma glucose value >= 11.1 mmol l^{-1} (200 mg dL^{-1}), or if the plasma glucose value 2 h after a 75 g oral load of glucose is>= 11.1 mmol l^{-1} (200 mg dL^{-1}). However, in asymptomatic subjects, the test should be performed more than one occasion to confirm the diagnosis and treat the subject (WHO, 2003).

There are different categories of DM; but the two broad categories are type 1 and type 2. Both types of diabetes are preceded by a period of abnormal glucose classified as Impaired Fasting Glucose (IFG) or Impaired Glucose Tolerance (IGT). Type 1 DM is the result of complete or near-total insulin deficiency. Type 2 DM is a heterogeneous group of disorders characterized by variable degrees of insulin resistance, impaired insulin secretion, and increased glucose production (Fauci *et al*., 2012).

The prevalence of type 2 diabetes is increasing in the world at high rate. For example according to the study of Diabetes Screening in Canada (DIASCAN) in the year 2000; the prevalence of Type 2 diabetes in individuals 40 years of age and older who see a general practitioner was 16.4% in Canada and nearly 20% in Québec. It was predicted that the number of Canadian diabetics will double within the next 15 years. The impact of diabetes on the health of populations and individuals afflicted with the disease is primarily related to late-stage complications. Diabetes is the primary cause of terminal kidney failure, blindness before the age of 65 and amputations (Jean-Pierre Hallé, 2001).

The burden of diabetes is increasing in the worldwide including developing countries like Ethiopia. International diabetic federation association reported Ethiopia to be ranked 3rd in Africa with 1.4 million DM and prevalence of 3.32 by year 2012. The study done to determine prevalence of un diagnosized DM and its risk factor in institution of Bishoftu town, East Shoa at 95% confidence interval with (p=0.05 and margin of error 5%) in the year 2012/2013 reported the prevalence of undiagnosed DM to be 5% (Megersa *et al*., 2013).

Ancient civilizations in Egypt, Greece, Rome and India recognized diabetes mellitus and recommended dietary modifications. During previous century's recommendation about dietary carbohydrates from diabetic individuals were based on theory rather than scientific facts. Prior to discovery of insulin, diabetes was treated with low carbohydrate, semi starvation diet. Even after insulin was discovered in 1921, most eastern diabetes specialists used low carbohydrates, high fat diets to treat diabetic individuals (Shills, 1995).

Today ;essential components of the treatment for diabetes include diabetes self management education, lifestyle interventions, and goal setting glucose management and pharmacologic

management of hypertension and hyperlipidemia (ICMR Guidelines, 2005). Life style modifications are considered the corner stone of management of diabetes mellitus and include the prescription of healthy diet, regular exercise, and avoidance of tobacco (Kisokanth *et al*., 2013). Education regarding diabetes is very important to improve the life style of the patients which would be helpful in maintaining (controlling) blood glucose. Observation has been reported that improper guidance and communication can lead to poor compliance to both medication and life style (Badrudin *et al*., 2002). Dietary recommendations for DM patients focus on the reduction of fat intake and increase of vegetable consumption with moderate calorie restriction and it should be individualized according to the patients' physical activity, co morbid condition and personal preferences. Da Qing study in China showed diet intervention alone associated with 31% reduction in the risk of developing type 2 DM (Alberti *et al*., 2007). In the other way alcohol intake exacerbate neuropathy, dyslipidemia and obesity. Therefore it should be prohibited, if used it must be in moderation .Similarly smoking should be prohibited as it increases risk of complication (ICMR Guidelines, 2005).

Physical activity (exercise) also reduces the risk of developing DM type 2 by 30-50%. Physical activity improves insulin sensitivity, e.g., It can reduces free fatty acid load to the liver; there by reduces hepatic insulin resistance .Moderate exercise as little up to 30 min/day or 150 min/ week can show the differences (Binu *et al*., 2011).

Statement of the Problem

Despite the availability of different treatment modalities, diabetes has remained a major cause of death. Now a day's 3.8 million deaths are attributable to the diabetes in each year worldwide. It is the 4th leading cause of global death. In 2005 there were 246 million people worldwide were affected with diabetes and are expected to affect 380 million by 2025, over a seven fold increase just over 20 years (Seyoum *et al*., 1999). This indicates high burden of DM in today world and developing countries account for a substantially high proportion (Gning *et al*., 2007).

In Ethiopia; from hospital based studies; it was observed that the prevalence of diabetes admission had increased from 1.9% in 1970 to 9.5% in 1999 of all medical admissions (Feleke and Enquselassie, 2005). World Health Organization (WHO) also estimated the number of diabetics in Ethiopia to be about 800,000 cases by the year 2000, and the number is expected to increase to 1.8 million by 2030 (Worku *et al*., 2010).

In another way, according to the 2011 report of the International Diabetes Federation (IDF), the number of adults living with diabetes in Ethiopia was 3.5%. A study done on urban Commercial Bank employees in Ethiopia showed a 6.5% prevalence of DM (Abebe *et al*., 2014) which indicated the significance of lifestyle for DM aetiology and its burden to our country too.

Although, the diabetes is causing high wastage of life and resources the management is still low .Its management include pharmacologic and life style modification. However, LSM is ignored by many of the patients and care givers. For example study done in Omani on type 2 DM patients in the year 2013 reported only less than 40% of the patients participate on regular exercise (Al Bimani *et al*., 2014). The other study done at USA in the year 2008 showed among 69 patients classified as elevated risk of diabetes only 17%,32% and 30% had received advice for weight loss ,exercise & diet modification (Rosal *et al*., 2008).

Another similar cross sectional study done in four provinces of Kenya in the year 2010 found that; of the people participated in the study 75% had poor dietary practices, while 72% didn't participate in regular exercise and about 80% didn't monitor their body weight (Wk. Maina *et al.*, 2010).

In another way, study done at Jimma University Specialized Hospital in the year 2011 to assess quality of care given to diabetic patients showed that there was no attention given to diabetic education in Ethiopia. There were no diabetes nurse educators and diabetes dietician in the country and those who provide health services for diabetes had no special training for diabetes care (Gudina *et al*., 2011).

In AMCH the diabetes patients appointed to follow up clinic according their disease status. Most patients come to the Hospital every month or every two month and refill their medication. They check up their blood glucose only when they come according to their follow up appointment and contact the physician for less than five minutes for refill. Most of the time they asked only for adherence to medication and do not checked awareness for life style intervention. In certain circumstances both health care giver and patients do not raise all about non pharmacologic management of diabetes including new diagnosed type 2 DM patients. These observations raised the researcher' concern about the knowledge, attitude and practice of lifestyle modifications among diabetic patients at AMCH, which this study seeks to explore and document. Since there was no similar study in the area, this information gap about of LSM among AMCH type 2 DM patients could be answered by this study.

Significance of the Study

It is obvious that there is no adequate information on knowledge, attitude and practice of non pharmacologic management of diabetes in our country; Ethiopia. Most of literatures are drafted from developed countries like USA, Russia and European countries.

Majority of the studies were done to evaluate the knowledge, attitudes and practices about diabetes mellitus among diabetics rather than on lifestyle modifications.

The result of this current study could be useful as a base line in implementing a community based awareness program which will promote the importance of lifestyle modifications in the prevention and control of non-communicable diseases, particularly diabetes mellitus. Therefore it is helpful for all stake holders that involves in this areas, i.e., patients, caregivers, health care providers, health institution and policy makers (MOH, NGO, diabetic DM association)

The other benefit of this study is that the result of this study helps health care provider to give education and awareness on LSM management of DM. In addition DM patients' and family members realize the benefit of non pharmacologic management hand by hand with pharmacologic management for the success control of the disease and its complication. Thus the patients' care will improve and the patients' will be benefited.

Finally, Adama Medical College Hospital also uses this result for improving its services for DM patients and other chronic disease patients. It also helps to encourage good services of the clinics and modify the possible problems of between hospital mission and actual services given by diabetic follow up clinic .The hospital management can use this result to expand its services especially, this can help AMCH and diabetic

association as feedback for the services they are giving for the patients.

OBJECTIVES

General Objective

- To assess knowledge, attitude and practice of Life Style Modification management of type 2 DM in Adama Medical College Hospital patients following diabetic clinic.

Specific Objectives

To determine the knowledge, attitudes and practices of patients in relation to type 2 diabetes mellitus with reference to:

- Diet modification
- Importance of regular exercise
- To determine the demographic characteristics of type 2 diabetes mellitus patients attending diabetic clinic at Adama Hospital.

MATERIALS AND METHODS

Study Area and Period

The study was conducted in Adama Medical College Hospital (AMCH) located 99 km south east of Addis Ababa, Ethiopia, Oromiya region, East Shoa zone. It was established in 1946 by Italian Missionaries and named as Hailemariam Mammo memorial hospital little bit after establishment but its name was changed to Adama Referral Hospital in mean time and now it renamed AMCH by Oromiya regional state health bureau after it start to teach accelerated medicine, emergency surgery and anaesthesia nurses. The hospital gives services for about 5 million people east and southern parts of Oromia, Afar, Somali and Southern Nation Nationalities and People (SNNP).

Now the hospital has 465 different workers to give different services, of which 194 are administration workers. The other 271 workers are health professionals. There are specialist in different field (23), general practitioners (GP) 36, Nurses (116), laboratory workers (20), x-ray (5), physiotherapy (2), sanitarians (2), Biomedical (1), Midwifery (16), Anaesthesia (9), Health officers (9), psychiatry nurses (3) and masters in different fields.

AMCH has different departments in it: Outpatient Department (OPD) team case, internal medicine, dermatology, paediatrics, gynacology/obstetric, surgery, dentistry, psychiatry, physiotherapy, ophthalmology, hospital pharmacy, Anti Retroviral Therapy (ART) and tuberculoses (TB) Clinic. The study was conducted in OPD case team from April 1 to May 1.

The data from hospital management 2012/13 show the top 10 leading causes of outpatient visit were: Trauma, Pneumonia, Dyspepsia, Acute Upper Respiratory Tract Infection, Other or unspecified diseases of the eye and Adnexa, Urinary tract infection, Diarrhoea (non-bloody), Dental and gum diseases, Acute febrile Illness and Helmenthiasis. But the top 10 causes of admissions were: Other delivery , Trauma (Injury, Fracture, etc.), Pneumonia, AIDS and related diseases, Appendicitis, Medical Abortion without complication (safe abortion), Other or unspecified obstetrics condition, Diarrhoea with dehydration, Diabetes mellitus and Severe acute malnutrition.DM ranked 19th from outpatient visit but 9th causes of hospital admission (Adama Medical College Hospital Management Office).

Study Design

This study was a descriptive cross-sectional study.

Populations

Source Population: All diabetic patients attending the diabetic clinic follow up were used as source population.

Study Population: The study population consisted of all type 2 diabetes mellitus patients, aged 30 years and above, attending Adama Hospital for regular follow-ups from the 1st April 2014 to the 1st May 2014. Age of 30 years was chosen as the cut-off age. One hundred sixteen (116) type 2 diabetes mellitus patients attended the diabetic clinic of AMCH during this period.

All diabetic patients who visited the follow up clinic within the limit of study period were included in the study.

Sample Size and Sampling Technique

The size of study population was limited by the number of diabetic patients visiting the clinic during the study. All diabetic patients those visited the hospital during study period were included depending on their consent.

Inclusion and Exclusion Criteria

Inclusion Criteria: Type 2 diabetes mellitus patients aged 30 and above attending the diabetic clinic at Adama Medical College Hospital for their regular follow up visits and had willing to participate in the study were included in the study.

Exclusion Criteria*:* Patients with type 1 diabetes mellitus, gestational diabetes, other specific types of diabetes mellitus and diabetes insipidus were excluded from the study. In addition, all type 2 diabetes mellitus patients with impaired memory or cognitive functions and those younger than 30 years were also excluded.

Variables

Dependent Variables: Knowledge, attitude and practice.

Independent Variables: Age, religion, sex, educational status, marital status, ethnicity, monthly income, duration of disease.

Data Collection Process and Collection Technique

In this study a face-to-face interview using a structured questionnaire was carried out for data collection. The data was collected by the researcher and his assistant colleagues using a structured questionnaire. The researcher trained two qualified graduating students of clinical pharmacy, proficient in the local language (Amharic and Afan Oromo) as research assistants. They assisted him throughout the data collection processes through a face-to-face interview. During and after data collection principal investigator checked the consistence and completeness of the data.

Data Quality Assurance

In order to assure the quality of the data the following measures was under taken:

- Data was collected by three of graduating class of clinical pharmacy students
- The data collectors were taken the training to check completeness of the data during the data collection and appropriate recording.
- The Body Mass Index (BMI) of each participant was calculated by the researcher and his assistants using the formula BMI = Weight (kg)/ Height (m2) after the weight and height were measured using a calibrated beam scale with height rod graduated in cm and participants

were classified according to the WHO international classification of adult weight.

- The principal investigator supervised all field work, check for completeness and accuracy of data collection daily.

Data Processing and Analyzing

The collected data was coded and checked for completeness. Once data coded and checked for completeness, data processing was done by SPSS version 16.1 and, presentation of the data was done by using frequency distribution, percentage and rate.

Ethical Consideration

Ethical clearance letter was written by Ambo University Department of Pharmacy after approved the proposal of the study to request AMCH for the permission. AMCH management and research office approved the letter of study and requested different hospital departments and any help during the study. The purpose of the study was explained to the respondent and data was collected after ensuring their willingness to give their response. Confidentiality of participants maintained at all time. Participants were informed that the participation were voluntary.

Operational Definitions

LSM: Non pharmacological management such as diet modification, and exercise design to treat problem of type 2 DM patients.

Knowledge: Understanding lifestyle modification in glycemic control and management of type 2 DM patients.

Attitude: A patients' positive or negative feeling towards performing the defined behavior, i.e. (LSM).

Practice: Is a previous utilization of any of LSM.

RESULTS

Demographic Characteristics of Respondents

From total number of 116 type 2 DM patients participated in the study 44 (37.9%) male and 72 (61.1%) were female. Regarding marital status of the patients; 16 (13.8%) single, 80 (69%) married, 10 (8.6%) widow and 10 (8.6%) patients were divorced. Concerning age of the clients 14 (12.1%), and 52 (44.83%) were in age group of 30-40, and >=61 respectively. The other 50 were in 1:1 ratio of 41-50 and 51-60 ages. Ethnicity of the patients participated in the study include Oromo (33.6%), Amhara (37.9%), Tigre (5.2%) and 27 (23.3%) were other ethnic groups.

On the other hand 38 (32.8%) patients do not read and write, and 24 (20.7) patients read and write only. The other 28 (24.1%), 23 (19.8%), and 3 (2.6%) patients attended grade 1-8, grade 9-12 and college respectively. When we consider employment status of the study participants; 27 (23.8%) patients were unemployed (private employee) and other 11 (9.5%) were unable to do because of old age. Furthermore, 3 (2.6%) were government employee, 17 (14.7%) farmers, 34 (29.3%) house wife and other 22 (19%) had different jobs. In another way, about 41 (35.3%) patients had monthly income less than 500 birr and 60 (51.71%) patients had monthly income of 501-1500 birr. Only 14 (12.1%) and 1 (.9%) patients had monthly income of 1500-2500 and 2500-3000 birr per month respectively.

Anthropometric Characteristics of Respondents

Among the study population only 5 (4.3%) patients were obese class I. The other 59 (50.9%) patients

Table 1: Distributions of Socio Demographic Characteristics of Diabetic Patients at Diabetic Follow Up Clinic in AMCH in April, 2014

Socio demographic characteristics or variables		Number	Percent
Sex	Male	44	37.9
	Female	72	62.1
Age	30-40	14	12.1
	41-50	25	21.55
	51-60	25	21.55
	=>61	52	44.83
Marital status	Single	16	13.8
	Married	80	69
	Widow	10	8.6
	Divorced	10	8.6
Religion	Muslim	25	21.6
	Orthodox	65	56
	Protestant	18	15.5
	Other	8	6.9
Ethnicity	Oromo	39	33.6
	Amhara	44	37.9
	Tigre	6	5.2
	Other	27	23.3
Educational status	Not read write	38	32.8
	Read and write only	24	20.7
	Grade 1-8	28	24.1
	Grade 9-12	23	19.8
	College graduate	3	2.6
Employment status	Gov. Employee	3	2.1
	Un employed (Private employee	27	23.28
	Farmer	17	14.66
	House wife	34	29.31
	Not able to work	13	11.21
	Other	22	18.99
Monthly income in birr	<500 birr	41	35.3
	501-1500	60	51.7
	1501-2500	14	12.1
	2501-3000	1	0.9

and 52 (44.8%) were in the range of normal weight and overweight respectively.

Health Education and Duration of Disease

Regarding diabetic education such as attending group classes or having meeting with health professional half of the patients didn't get the opportunities while the other half got the chance one or more till now.

On the other hand, majority of the patients 59 (50.9%) were 1-5 years with the disease followed by 6-10 years with the disease which were 42 (36.2%), only one patient with disease for 25 years.

Sources of Life Style Modification

Majority of the patients 68 (58.62%) following the diabetic clinic get the information from health

Figure 1: Distribution of Type2 DM Patients by Their Body Weight in AMCH in April, 2014

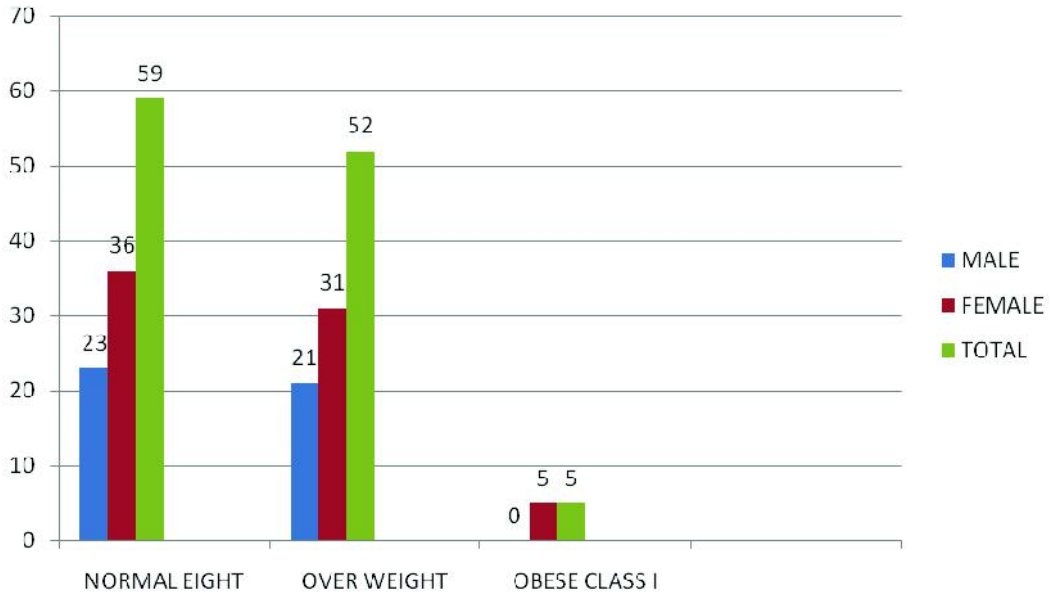
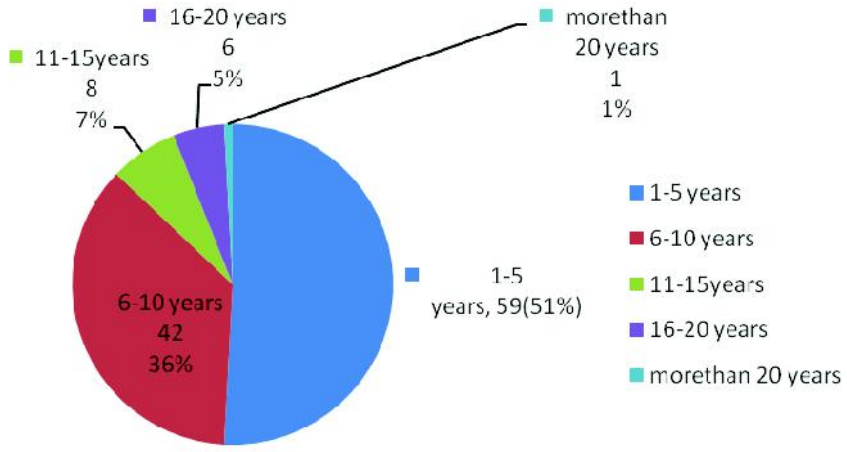


Figure 2: Duration of Disease of Type 2 DM Patients in AMCH in April, 2014



personnel followed by those who get information from more than one source 25 (21.55%). From the whole participants 12 patients reported that they have no information about LSM management of diabetes. See Table 2 below.

Types of Treatment

When this study conducted; almost all patients were taking more than one types of treatment modalities. All patients attending the clinic were at least on one type of pharmacologic treatment and in parallel practice LSM partially or completely. Only 2 patients were taking one type of treatment modalities.

Dietary Habit

Regarding selected dietary practices of cigarette smoking, alcohol consumption, fruit and

Table 2: Source of LSM Management of Type2 Dm Patients in AMCH in April, 2014

Source of information	Frequency	Percent	Valid Percent
No Information	12	10.3	10.3
Health Personnel	68	58.6	58.6
Media	4	3.4	3.4
Relative	2	1.7	1.7
Friends	3	2.6	2.6
More Than 1 Option	25	21.6	21.6
Other	2	1.7	1.7
Total	116	100.0	100.0

Figure 3: Frequency Distribution of Type of Treatment of Diabetes patients in AMCH in April, 2014

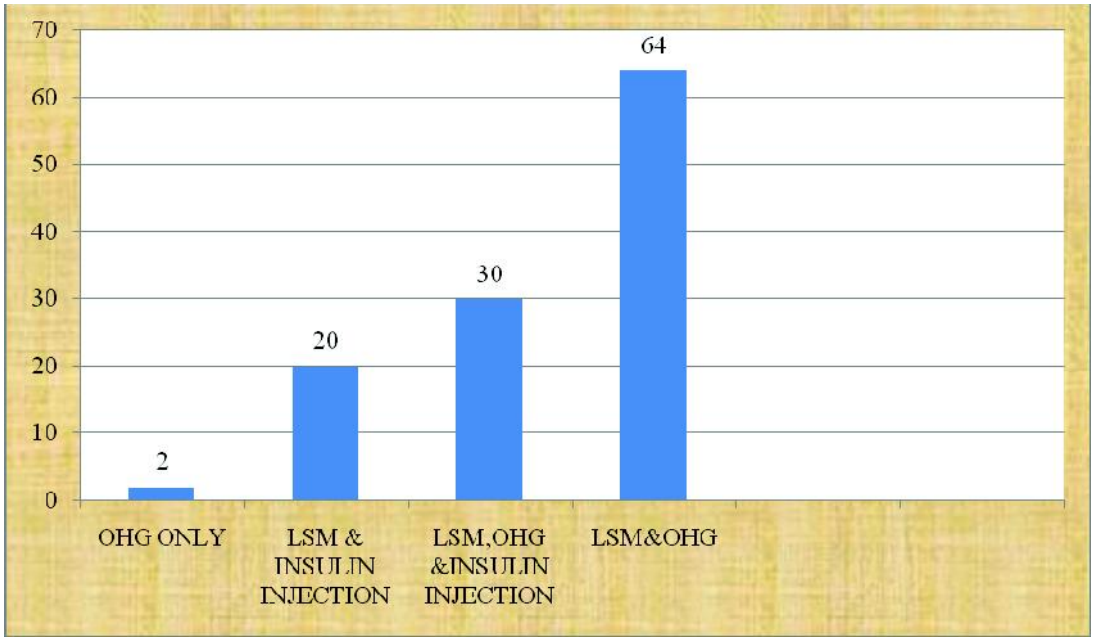


Table 3: Selected Dietary Practice of Type2 Dm Patients at AMCH in April, 2014				
Type of diet	**Always**	**Some time**	**Occasionally**	**Never**
Smoke	0	2	6	108
Alcohol	0	6	17	93
Chat	4	4	3	105
Fruit & vegetable	30	52	31	3
Sugar	2	13	34	67
Egg	0	27	54	35
Buttery and fatty meal	0	4	41	71

vegetable, sweet sugar, buttery and fatty meal; almost all patients do not smoke and consume alcohol always while 67 (57.8%) patients never take sweaty food, 71 patients never take buttery and fatty meal, while only 3 (2.6) patients never take fruit and vegetable because of lack of resource. About 54 (46.6%) and 37 (30.21%) patients take eggs usually and never respectively. Surprisingly only one patients use herbal medicine to control her diabetic symptom with her medication.

Physical Activity

Regarding physical activity, 77 (66.4%) patients exercise on regular program or physical active and 39 (33.6%) do not exercise on regular program and were not physically active due to difference reasons. Of those who exercise regularly 19 (16.4%) exercise less than 15 min per day, 21 (18.1%) 15-30 min per day, 14 (12.1%) patients 30 min per day, 11 (9.5%) 30-45 min per day , 2 (1.7%) 46-1 h per day and only 8 (6.9%) patients exercise for greater than 1 h per day.

Knowledge Assessment of Respondents

Concerning knowledge of the patients towards LSM management of diabetic; majority of the patients were knowledgeable which accounts 90 (77.59%). Of the left 26 patients, 13 (11.21%) fairly knowledgeable and the other 13 (11.21%) were poorly knowledgeable. Figure 1 below summarize status of the knowledge of the patients.

Table 4: Frequency Distribution of Respondents with Regard to Physical Activity		
Variable	**Number**	**Frequency (%)**
Exercising regularly Yes	77	66.4
No	39	33.6
Total	116	100
If yes, how often		
Less than 15 min/day	21	18.1
Less than 30 min/day or less than 150 min/week	40	34.5
More than 30 min/day or more than 150 min/week	21	18.1

Figure 4: Distribution of Respondents According to their Knowledge Regarding the Benefit of Life Style Modification at Diabetic Follow up Clinic AMCH April, 2014

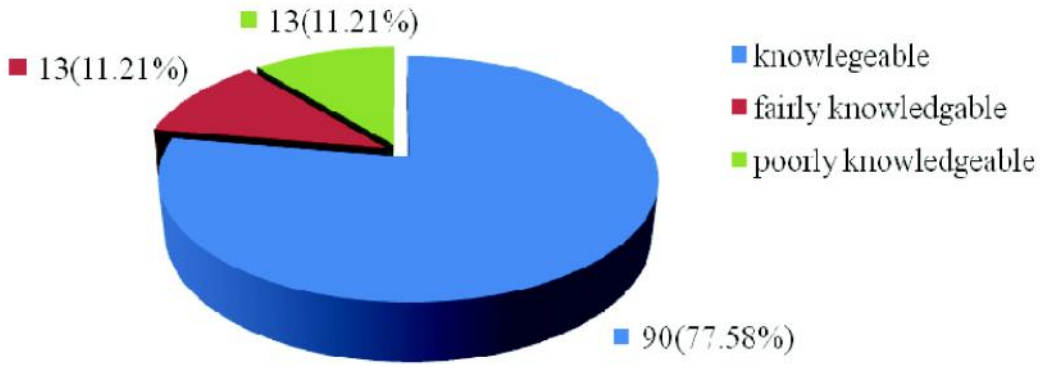


Table 5: Attitude Status of the Diabetic Patients to Ward LSM in AMCH April, 2014

Attitude level	Number	Percent %
Positive	95	81.9
Neutral	21	18.1
Negative	0	0

Table 6: Frequency Distribution of Diabetic Patients by Their Practice of LSM Management of Diabetes AMCH April, 2014

Level Practice	Frequency	Percent
Good practice	57	49.13
Average practice	20	17.24
Low practice	39	33.62
Total	116	99.99

Table 7: Correlations Between Knowledge, Attitude and Practice Level Regarding Lifestyle Modifications

		Knowledge of Clients	Level of Attitude	Level of Practice
knowledge of clients	Pearson Correlation	1	.098	.184*
	Sig. (2-tailed)		.293	.048
	N	116	116	116
level of attitude	Pearson Correlation	.098	1	.517**
	Sig. (2-tailed)	.293		.000
	N	116	116	116
level of practice	Pearson Correlation	.184*	.517**	1
	Sig. (2-tailed)	.048	.000	
	N	116	116	116

Note: * Correlation is significant at the 0.05 level (2-tailed); ** Correlation is significant at the 0.01 level (2-tailed).

Attitude Assessment of Respondents

Majority of the patients 95 (81.89%) had positive (good) attitude toward s LSM management of diabetes. No patient had negative attitude to LSM but, 21 (18.1%) patients had neutral attitude.

Practice Assessment of Respondents

Regarding practice of LSM, almost half of the patients 57 (49.1%) had good practice. The other 39 (33.62%) and 20 (17.24%) had low and average practice respectively. Table 3 below summarize the results.

Correlation Between Knowledge, Attitudes and Practices

Table 7 shows the correlation of level of knowledge, attitude and practice towards LSM. It shows that there is positive Pearson correlation between level of knowledge and attitude (r=0.098, p=0.293), positive Pearson correlation of 0.184 (p=0.048) between knowledge and practice, and positive Pearson correlation of 0.517 (p=0.000) between level of attitude and practice level.

DISCUSSION

Demographic Characteristics of Respondents

There were more females (62.1%) than males (37.1%) participated in this study, a reflection of the gender ratio attendance of patients in the diabetic clinic at AHMC hospital. More recent reports from developing countries have found that DM and its risk factors are more common in women This finding is in keeping with the results from a study conducted in South Africa at Mamelodi Hospital in which 81.1% were female and 18.9% were male (Ikombele**,** 2011).

Majority of respondents in this study came from the age groups 41-50 years, 51-60 years and >61 years with 21.55%, 21.55% and 44.83% of respondents respectively, which add up to 87.93 % of respondents. This is reflective of the fact that the ethnology of type 2 diabetes mellitus usually at old age (Fauci *et al.*, 2012; Al Bimani *et al.*, 2014; and Ikombele**,** 2011).

In this study respondents with no formal education consists (53.5%) and only (2.6%) respondents with higher education. This indicates that most respondents had little or no education. This result may be the direct consequence of scarcity of higher education system in Ethiopia in the past. Additionally the results of this study reported less than half (45.7%) of the participants got diabetic education such as attending meeting with health professionals. This confirmed with the study conducted in 2011 at Jimma University Specialized Hospital which reported as there was no attention given to diabetic education in Ethiopia (Gudina *et al*., 2011).

Majority of respondents in this study had income between 501 birr and 1500 birr (51.7%) followed by respondents in the less than 500 birr income (35.3%). This low income amongst majority of respondents could limit their accessibility and affordability of a well-balanced diet and healthy food and it was considered as the main factors (barrier) to their practice of life style modification especially diet modification.

This finding was in keeping with the results from a cross sectional study of Adherence to Diabetes Self-Management Practices among Type II Diabetic Patients in Ethiopia; in which majority of the study participants 139 (43%) had very low monthly income (Berhe *et al.,* 2013).

Majority of respondents (50.9%) had normal weight, followed by 44.8% with overweight and only 4.3% had class I obesity. In the study class 2 obesity and class 3 (morbid obesity) were not found. This study had just demonstrated that lack of physical activities and poor dieting habit among respondents, seem to contribute to the development of type 2 DM rather than obesity. But about 45% of the patients in the study were overweight which increases the risk of obesity.

This finding is in contrast with many studies done on this area in which obesity was common in the representative sample of type 2 diabetes patients attending a diabetes clinic (Shivap*aksh et al*., 2011).

Knowledge Assessment of Respondents

In this study (77.59%) of respondent had adequate knowledge (11.21%) of respondents had fair (average) knowledge and 11.21% of respondents had poor knowledge of the benefits of exercise, and healthy diet. Large numbers of the participants (68%) got information from health professionals may have contributed to this result. This relatively revealed similar result with study done in Nigeria at Kaduna in the year 2012 on 347 patients; 230 non diabetic and 117 diabetic patients'. The study recorded 56.4% score of knowledge for diabetic participants (Hamoud Nehad *et al*., 2012).

In contrast to this finding, Ikombele found in his study that no respondent had good knowledge and 92.6% of respondents had poor knowledge of the benefits of exercise, weight loss and healthy diet (Ikombele**,** 2011).

Attitude Assessment of Respondents

The majority of respondents (81.89%) had positive attitude towards lifestyle modifications, followed by 18.1% of respondents who had neutral attitude, and no respondents had a negative attitude. This revealed relatively similar results with study conducted on 100 patients attending diabetic clinic at kinik kashitan Seri Manjung which recorded 99% of patients answered greater than or equal to 50% of attitude question (UK's Essays, 1999).

This finding is similar to those of studies done in South Africa at Mamelodi Hospital in which the majority of respondents (92.7% and 51.6% respectively) had positive attitude towards lifestyle modifications (Ikombele**,** 2011).

Practice Assessment of Respondents

The proportion of respondents with good practice (49.1%) and those with average practice (17.24%) and poor practice (33.62%). About one third, patients had poor practice of LSM and the result was not satisfactory as that of knowledge and attitude. That could be due to majority of the patients had limited resources and low income which limit their affordability for a well balanced dieting and necessary equipment to exercise. This result was similar with study conducted in Qatar and Omani which reported 49.5% of the respondents were not exercise regularly and 48% of the participants were not practices recommended diet (Abyad, 2011) and less than 40% exercise regularly and only 56% of the patients were adhere to recommended diet respectively (Wk. Maina *et al.*, 2010).

Regarding consumption of alcohol ,chat and smoking the results of this study is promising as 93.1%, 90.51% and 80.2% patients never smoke, chew chat and take any type of alcohol respectively. This result is similar with study conducted in Western Nigeria in 2012 which reported all study patients neither consume

alcohol nor smoke cigarette (Oguntibeju *et al*., 2012). The other similar study conducted in Omani in the year 2013 also reported out of 106 study patients only 10.6% were smoker.

Additionally the result of this study showed as only one patient use herbal medicine. Surprisingly study in Omani also reported only 2 patient use herbal medicine regularly (Al Bimani *et al*., 2013).

Correlation Between Knowledge, Attitudes and Practices

There was a weak, non-significant positive correlation (r = 0.098, p = 0.293) between knowledge level and practice level of respondents. This means that being knowledgeable did not necessarily willingness to observe healthy lifestyle habits. In other way, there was a significant positive correlation (r = 0.184, p = 0.048) between the knowledge level and the practice level of respondents in this study. This means that the better respondents were knowledgeable, the better they were practice healthy lifestyle.

Finally, there was a very significant positive correlation (r = 0.517, p = 0.000) between attitude level and practice level. This means the better the patients had positive attitude toward LSM, the better they were practices healthy life style modification.

The result found in this study were opposite to the study conducted in South Africa at Mamelodi Hospital which reported significant positive correlation (r = 0.171, p = 0.012) between knowledge and attitude level, and weak positive non significant correlation (r = 0.037, p = 0.587) between attitude and practice level. In addition that study also reported weak positive non significant correlation (r = 0.102, p = 132) between attitude and practice level (Ikombele**,** 2011).

CONCLUSION AND RECOMMENDATION

The discussion on the findings of this study shows that the knowledge and attitude levels of lifestyle modifications among type 2 diabetes mellitus patients attending Adama Medical College Hospital were generally high. However practice of the patients regarding LSM still not sufficient as more than half of the patients had no good practices. The study also found out that there was significant positive correlation (r = 0.0184, p = 0.048) between knowledge and practice, very significant positive correlation (r = 0.517, p = 0.000) between attitude and practice and a weak non-significant correlation (r = 0.098, p = 0.293) between knowledge and attitude.

Lifestyle modification has important roles in prevention and management of chronic diseases like type 2 DM patients. But its prevalence is increasing worldwide at an alarming rate especially in developing countries due to different factors like sedentary life style (westernization), and deficits in the knowledge and practice of LSM.

Based on these facts and on our research findings, it was recommended that:

- Health education about life style modification (importance of exercise, physical exercise and weight loss) to the general society should be implemented by the responsible body.
- Medical nutrition intervention program should be implemented with a multidisciplinary team (Doctor, dietician, pharmacists…) and all stake holders (health institution, MOH, diabetic association other responsible nongovernmental organization) should work cooperatively on this issues.

- Empower and train Adama hospital healthcare workers about this issue in order to promote behavioral change and adoption of healthy lifestyle practices by patients.
- Further research should be done on this area

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ACRONYMS AND ABBREVIATIONS

AHMC	Adama Hospital Medical College
ART	Anti Retroviral Therapy
BMI	Body Mass Index
DM	Diabetes Mellitus
IDF	International Diabetic Federation
KAP	Knowledge, Attitude and Practice
LSM	Life Style Modification
OPD	Outpatient Department
OHG	Oral Hypoglycaemic
USA	United States of America
WHO	World Health Organization