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Evaluation of knowledge, attitude and practice of newly diagnosed diabetes patients-a baseline study from Nepal

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Research Article

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Abstract

Objective: Diabetes Mellitus (DM) is a chronic metabolic disorder characterized by an increased blood glucose level than the normal. High prevalence of diabetes on the recent past has been attributed to sedentary life style, urbanization, lack of knowledge, low literacy rate and poor socio-economic status. Diabetes affects patient's quality of life and lead to increase morbidity and mortality. Diabetes cases are found much in Nepal due to lack of public awareness and knowledge regarding diabetes and poor medical facilities. The present study assessed the demographic details of diabetes patients enrolled in the study, and their Knowledge, Attitude and Practice (KAP) about diabetes.

Methods: A cross sectional study was conducted at Manipal Teaching Hospital, Pokhara, Nepal. Total 162 newly diagnosed diabetes patients were enrolled and their demographic details were noted in a pre-tested sociodemography form. Enrolled patients were then evaluated for their knowledge, attitude and practice (KAP) about diabetes by using a KAP questionnaire during their first day visit to the hospital. In case of knowledge question, each 'correct' answer was scored as one (1) and as zero (0) for 'incorrect' answer. In case of attitude and practice questions, scoring was done on the basis of 5 point and 3 point Likert scales, respectively.

Results: Of the total of 162 patients, males were 106 (65.43%) and the common age group of patients was between 41 to 60 years (59.26 %; n=96 patients). The mean ± sd age of the patients was 49.14 ± 12.50 years. The median interquartile range (IQR) scores were [3(2-7)] for knowledge, attitude [12(11-13)] and practice [1(0-2)]. The maximum possible scores for knowledge, attitude and practice questions are 18, 20 and 14, respectively.

Conclusion: Male patients were high in number in the study. Prevalence rate was higher between the age group of 41 to 60 years. The present study findings suggested a low median score for knowledge, attitude and practice of diabetes patients and emphasized the need of additional and systematic educational program for diabetes patients.

Keywords: *Attitude, Diabetes, Knowledge, Nepal, Practice*

Introduction

Diabetes Mellitus (DM) is a chronic metabolic disorder characterized by increased blood glucose level [1]. High prevalence rate of diabetes is due to sedentary life style, urbanization [2,3], lack of knowledge about the disease, low literacy rate and socio-economic status [1]**.** Apart from this, environmental factor and genetic susceptibility can also add in prevalence rate of diabetes [4]. It is estimated that one hundred and fifty (150) million people around the world are under the burden of diabetes and it is expected to be increased up to 300 million by year 2025 [5].

Diabetes may cause acute and chronic complications [6] if serious consideration is not taken in early stage of development. These complications can affect the quality of life of patients [7,8] and may lead to increased morbidity and mortality [9].DM is a major and growing health problem in developed and developing countries. It causes disability and premature mortality and increased demands on health care facilities [10]. Developed country like US is also with full burden of diabetes affected about 20.8 million American population [11]. Developing country like India where 31.7 million Indians were affected with diabetes in 2000 and it is expected that this number would be increased to 79.4 million in 2030 [12].

In the context of Nepal, total 23.2 million populations lived in urban areas [13]. The percentage of diabetes dominancy in urban and ruler areas is 25.9% and 3.1% respectively [14]. According to Nepal Diabetes Association (NDA), approximately 15% of people more than 20 years

and 19% of people more than 40 years of age and above are affected with diabetes in urban areas [15]. As per WHO estimation, more than 436,000 people are affected with diabetes in Nepal and expected to increase to 1,328,000 by 2030 [16]. There is significant increase in diabetes percentage from 2002 (19.04%) to 2009 (25.9%) in Nepal [17]. The reasons behind high prevalence of DM in Nepal are low literacy rate, lack of knowledge, changing life style and lack of health care facilities [18].

A large number of diabetes cases are found in Nepal due to lack of public awareness and knowledge regarding diabetes and poor medical facilities. Few studies have already done in Nepal to find the knowledge, attitude and practice level of diabetes patients [1,18,19]. These studies were done in old cases of diabetes patients suffering from disease more than a month to years and exposed with diabetes related information by their healthcare professionals during treatment before enrollment in the study. Therefore, this study was carried out in newly diagnosed diabetes patients to understand the patient's level of knowledge, attitude and practice about diabetes. This primary information can be useful to implement future interventional strategies especially when Nepal is lacking of qualified pharmacist as healthcare professional who are well trained in pharmaceutical care activities.

Objectives

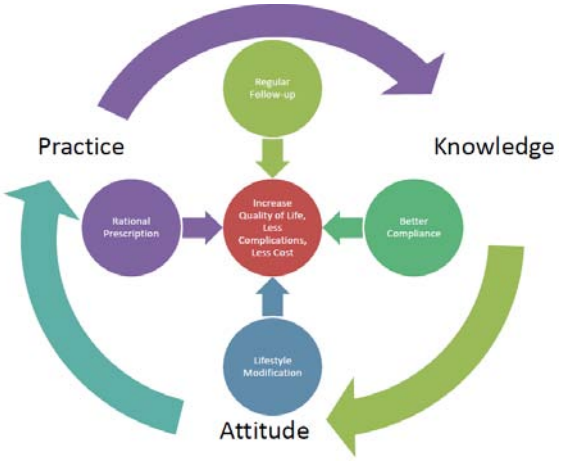
This study was conducted with the following objectives

1. To study demographic details of the newly diagnosed diabetes patients, and
2. To evaluate Knowledge, Attitude and Practice (KAP) of newly diagnosed diabetes patients.

Methodology

Study design: This study was a cross-sectional study. Newly diagnosed diabetes patients, both out patients and in-patients (incase if they get hospitalized) were enrolled in the study during their 1st day of hospital visit to the Medicine Department of the Manipal teaching Hospital (MTH). The theoretical framework of the study is presented in the figure 1.

Figure 1. Theoretical framework of the study



Ethical consideration and consent of the patients: Before conducting the research work, the request letter to carry out research study was submitted along with research proposal to the Research and Ethics and committee of MTH and approval was taken to carry out the study in the hospital. After getting the approval from the committee, patients were informed about the purpose of the study and written consent was taken from them prior to their participation in the study. Due to language fluency and barrier to English language, the consent form was prepared in Nepali language.

Study site: The study was carried out in medication counseling center (for out patients) and at the bed side corner for hospitalized patients in medicine ward of MTH, Phulbari, Pokhara, Nepal. MTH is an 825 bedded multidisciplinary private tertiary care teaching hospital of Manipal College of Medical Sciences located in Western region of Nepal with average bed occupancy of about 250 patients and an average out patient flow of about 450 per day. The hospital consists of both clinical and non-clinical specialty departments. Manipal College of Medical Sciences has been included in the 7th WHO lists of hospitals in the developing world [20]. The hospital provides healthcare service to patients of western and mid western region of Nepal.

Study duration: The study was carried out for the duration of six months from July 2010 to December 2010 at Manipal Teaching Hospital.

Study population and sample size: Newly diagnosed diabetes patients at MTH and visited to the Medicine Department of the hospital during the study period were included in the study. Both out patients and in-patients were enrolled in the study. Pregnant, mentally incompetent, immunocompromised and patients not interested in taking part in the study were excluded. The study managed to enroll a total of 162 patients during the study period.

Study tools:

i) Sociodemography form: This form was prepared to document the patient's sociodemography in details like name, age, gender, educational qualification, monthly income, food habits, family history of diabetes etc. Initially form was developed in English and it was translated into Nepali language.

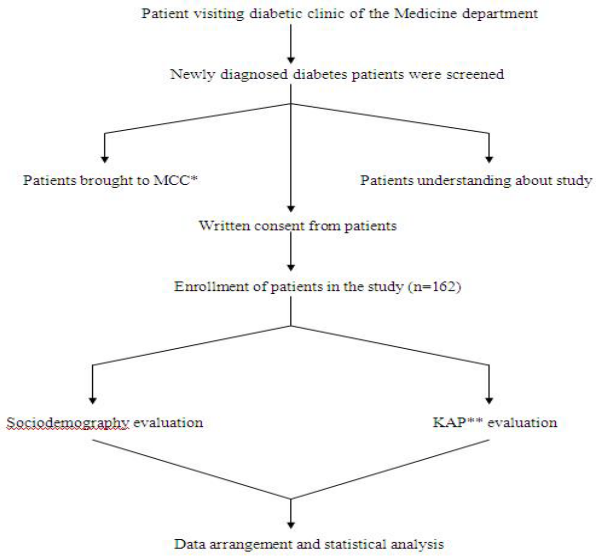
ii) Knowledge, Attitude and Practice (KAP) questionnaire: A self administered KAP questions were developed. The KAP questionnaire consisted of 29 questions (knowledge-18, attitude-4 and practice-7). The questionnaire was first developed in English and it was translated into local Nepali language by the professional experts. The face and content validity of the questionnaire was done by sending the questionnaire to

the experts. Before conducting the study, validation of the questionnaire carried out by obtaining response from diabetes patients. The responses were scored for their knowledge, attitude and practice. In case of knowledge questions, each correct answer was scored as one (1) and as zero (0) for incorrect answer. In case of attitude questions, scoring was done on the basis of 5 point Likert scale (strongly disagree=1, disagree=2, undecided=3, agree=4 and strongly agree=5). The practice questions were scored on the basis of 3 point Likert scale (never=0, occasional=1 and frequent=2). The maximum possible scores for knowledge, attitude and practice questions are 18, 20 and 14, respectively. The data were put into the

SPSS-version 16 and Chronbach α was determined. The Chronbach α value for knowledge, attitude and practice was 0.88, 0.64 and 0.85, respectively.

Operational modality: A total of 162 patients were enrolled in the study. The patient demographic details were noted down in pre-tested sociodemography form. All the enrolled patients were evaluated for their knowledge, attitude and practice (KAP) about diabetes by using KAP questionnaire on their first day visit to the hospital. The outpatients were evaluated for their KAP in medication counseling center by using KAP questions and hospitalized patients were evaluated for the same at their bedside corner in the ward. The questionnaire was given to the educated patients and it was filled by them whereas uneducated (illiterate) patients were explained the questionnaire properly along with their answers given in Nepali language. The answers were marked as per the reply given by the patients against each questions. The flowchart of the operational modality of the study is presented in Figure 2.

Figure2. Study flow chart



* MCC = Medication Counseling Center

** KAP = Knowledge, Attitude and Practice

Data analysis: The data obtained from the filled patient profile form was analyzed for various sociodemographic parameters of the patients [like age and gender of the patients, family history of diabetes, body mass index (BMI) etc] and response from the knowledge, attitude and practice questionnaire were scored and the data were entered in SPSS version and the mean±sd and median interquantile range (IQR) scores were calculated. The descriptive statistical analysis was applied to measure the mean± sd and median interquartile range (IQR) as per the objectives.

Results

Demographic details: A total of 162 patients were enrolled in the study. Males were 106 (65.43%). The prevalence rate of DM was high in patient's age group of 41-60 years (n=96; 59.26%) followed 31-40 years (n=30; 18.52%), 61-70 years (n=18; 11.11%), 21-30 years (n=8; 4.94%), 71-80 years (n=7; 4.32%). Three (1.85%) patients were between the age group of 10–20 years. The mean ± sd age of the patients was 49.14 ± 12.5 years.

Educational qualification: Literacy rate in Nepal is generally low and a high percentage of people is not well educated [18]. It may be because of low socioeconomic condition and lack of proper educational facility in the country. The present study also documented the high percentage (n=100; 61.73%) of primary and secondary educated patients (50 patients in each category). where as 23 (14.20%) patients were having tertiary qualifications. There were 39 (24.07%) patients enrolled in the study who did not go to school.

Body Mass Index (BMI): The study documented the large number of overweight (n=87; 53.70%) and grade 1 obesity (n=35; 21.60%) patients. The reason behind increase body weight is due to high intake of fatty food and low physical activities [21] as this study also reported high percentage (n=149; 91.98%) of non-vegetarian patients.

Alcohol intake and smoking habits: This is an important issue in case of diabetes. It is well know fact that alcohol and smoking may cause different life threatening problems like decrease or increase blood sugar level (depends upon consumption pattern), increased blood pressure, increased triglyceride level, heart attack and stroke etc. It is good to see in the study that high percentage of patients were non alcoholic (n=66; 44.74%) and non smoker (n=93; 57.41%).

Diabetic history: Three patients (1.85%) had their father and mother, 13 (8.02%) their father while 13 (8.02%) had their mother suffering from diabetes during the study period. There was no family history of diabetes (neither father nor mother) for 133 (82.10%) patients. The detail demography details for study population are given in Table 1.

Table 1. Demography details of respondents

	Age intervals (yrs)	Total number of patients N=162 n (%)
Age (yrs)	10-20	3 (1.85)
	21-30	8 (4.94)
	31-40	30 (18.52)
	41-50	49 (30.25)
	51-60	47 (29.01)
	61-70	18 (11.11)
	71-80	7 (4.32)
Gender	Male	106 (65.43)
	Female	56 (34.57)
Educational qualification	Primary	50 (30.86)
	Secondary	50 (30.86)
	Tertiary	23 (14.20)
	Never	39 (24.07)
BMI* (kg/m2)	<18.5 (underweight)	2 (1.23)
	18.5-24.9 (healthy)	34 (20.99)
	25-29.9 (overweight)	87 (53.70)
	30-34.0 (grade 1 obesity)	35 (21.60)
	34.1-39.9 (grade 2 obesity)	4 (2.47)
Religion	Hindu	131 (80.86)
	Buddhist	28 (17.28)
	Christian	3 (1.85)
Employment Status	Employed	30 (18.52)
	Unemployed	65 (40.13)
	Pensioner	22 (13.58)
	Business	42 (25.93)
	Student	3 (1.85)
Food habits	Vegetarian	13 (8.02)
	Non-vegetarian	149 (91.98)
Alcohol intake	Everyday	26 (16.05)
	Occasional	39 (24.07)
	Former	31 (19.14)
	Never	66 (40.74)
Smoking Status	Everyday	28 (17.28)
	Occasional	11 (6.79)
	Former	30 (18.52)
	Never	93 (57.41)
Monthly income (NRs)**	0-10000	59 (36.41)
	10001-20000	63 (38.88)
	20001-30000	29 (17.90)
	30001-40000	10 (6.17)
	40001-50000	1 (0.61)
Family type	Joint	124 (76.54)
	Separate	38 (23.46)
Family history of disease	Father	13 (8.02)
	Mother	13 (8.02)
	Both	3 (1.85)
	No history	133 (82.10)

BMI = Body Mass Index, **NRs. = Nepali rupees, 1 USD = 73.50 NRs

Response to knowledge questions: The response of the patients regarding the knowledge related questions are listed in Table 2.

Table 2. Response to knowledge questions

Questions	Number of patients answering correctly N = 162, n (%)
The following food materials are very effective in reducing blood sugar level in the body……	112 (69.14)
A person is called diabetic when his / her body contains...	108 (66.67)
The most accurate method of monitoring diabetes is……	87 (53.70)
The different sign(s) and symptom(s) of diabetes are…..	82 (50.62)
Complications due to diabetes can be prevented by……..	52 (32.10)
A diabetic patient should avoid the following…….	51 (31.48)
The healthy and planned diet for diabetes patient should have……	48 (29.63)
What are the risk factors you think that contribute to diabetes…?	35 (21.60)
A regular exercise will help the diabetic patient in……..	31 (19.14)
The hypoglycemic symptoms (decrease blood glucose level) can be managed at once by……	28 (17.28)
A diabetic patient should do the comprehensive foot care by……	27 (16.67)
Diabetes if left untreated is responsible for causing other serious health complications like……..	25 (15.43)
Insulin is a hormone which controls…….	22 (13.58)
The symptoms of hypoglycemia (decrease blood glucose level) are…	17 (10.49)
Diabetes is the result from defects in…….	13 (8.02)
A diabetic patient should go for his / her eye check up….	11 (6.79)
Commonly how many types of diabetes are there……?	09 (5.56)
Which part of the body is mainly affected by diabetes…?	06 (3.70)

Response to attitude questions: The response of the patients regarding the attitude related questions are listed in Table 3.

Table 3. Response to attitude questions

Statements	Responses	Number of patients responded N= 162, n (%)
Controlled diet and regular exercise helps in maintenance of blood glucose…	SD	2 (1.23)
	D	4 (2.47)
	UD	34 (20.99)
	A	86 (53.09)
	SA	36 (22.22)
Diabetes patients should do exercise three times in a week…	SD	12 (7.41)
	D	37 (22.84)
	UD	100 (61.73)
	A	11 (6.79)
	SA	2 (1.23)
A diabetic person with normal blood glucose level can eat without restriction...	SD	38 (23.46)
	D	57 (35.19)
	UD	52 (32.10)
	A	11 (6.79)
	SA	4 (2.47)
Sexual dysfunction / satisfaction is a common problem in diabetes patients….	SD	4 (2.47)
	D	9 (5.56)
	UD	96 (59.26)
	A	46 (28.40)
	SA	7 (4.32)

SD = strongly disagree, D = disagree, UD = undecided, a =agree, SA= strongly agree

Response to practice questions: The response of the patients regarding the practice related questions are listed in Table 4.

Table 4. Response to practice questions

Statements	Responses	Number of patients responded N= 162, n (%)
Do you monitor your blood glucose level at home……..?	Never	161 (99.38)
	Occasional	0 (0.00)
	Frequent	1 (0.62)
Do you follow the diet plan at home……..?	Never	145 (89.51)
	Occasional	14 (8.64)
	Frequent	3 (1.85)
Do you get your family support in carrying your diet plan…….?	Never	141 (87.04)
	Occasional	13 (8.02)
	Frequent	8 (4.94)
Do you stick to your diet when you eat outside……..?	Never	124 (76.54)
	Occasional	29 (17.90)
	Frequent	9 (5.56)
Have you taken any herbal medicine or food remedy for your diabetes in the past 6 months…….?	Never	153 (94.44)
	Occasional	0 (0.00)
	Frequent	9 (5.56)
Do you monitor your body weight at home…….?	Never	86 (53.09)
	Occasional	69 (42.59)
	Frequent	7 (4.32)
Do you exercise at home……..?	Never	111 (68.52)
	Occasional	42 (25.93)
	Frequent	9 (5.56)

Mean and median scores of the patients: The mean and median interquartile range (IQR) was obtained for knowledge, attitude and practice of study population. The mean±sd and median interquartile range (IQR) for knowledge, attitude and practice was [4.70±4.0, 3(2-7)], [12.20±1.4, 12(11-13)], [1.53±1.8, 1(0-2)] respectively. The overall mean and median score was also calculated for KAP and it was found 6.19 ± 5.2 and 4 (1-12).

Discussion

The management of diabetes mellitus not only requires proper drug prescription but also intensive education and counseling to the patients. Education and counseling can increase the better patient's knowledge, attitude and practice about the disease.

The present study was carried out to find knowledge, attitude and practice (KAP) scores of newly diagnosed diabetes patients in Nepal. The study showed the maximum prevalence of diabetes in patients of age group between 41-60 years (59.26%) and mean ± sd age of the patients was 49.14 ± 12.5 years. Other studies also reported the age group between the same range [22,23]. Male patients were documented more (65.43%) and patients with primary and secondary education were found in equal proportion (50 patients in each category; 30.86% in each case). Large number of patients were overweight (n=87; 53.70%) and 'grade 1' obesity (n=35; 21.60%). Thirteen patients reported their family history of diabetes either in their father or in their mother in equal (13 in each case; 8.02% in each case) proportion whereas a total of 133 (82.10%) patient who did not have any family history of diabetes.

This study showed a low KAP scores. Several studies have been done in the area of KAP of diabetes in different locations and they also found the similar kind of observation [18-19, 24-25]. Not many studies have been done in KAP of diabetes in Nepal. In a hospital based study done in Nepal by *Upadhyay DK et al* reported a low level of knowledge, attitude and practice among the diabetes patients [18].This study was well supported by the findings of low level of knowledge reported by *Shrestha L et al* from same country [19]. A study done in Saudi Arabia revealed a good knowledge but poor attitude and practice about diabetes among Saudi Women [26]. However the study from South India reported a positive knowledge and attitude of diabetes patients [27]. The variation in finding among different studies done in different location may be due to patient's educational qualification, received special training and education on diabetes from well organized diabetes camps and better healthcare facilities. These facilities are lacking in Nepal which have contributed to a low level of KAP.

Active participation of the patient is necessary for management of diabetes. Drug alone is not helpful for the patient to manage their problem unless they strictly follow the non-pharmacological measures like life style changes. Adequate patient knowledge with proper compliance of advices may lead to better therapeutic outcomes in diabetes patients. A large number of studies have found the good correlation between patient knowledge and better therapeutic outcome [28,29]. Good knowledge regarding drug therapy and life style modification for the patient can be provided by proper counseling and education program [30]. Education and counseling to the patient is not a one time phenomenon, it may require enforcement in the patients. Once the patient is well exposed with the information, it may help them in achieving better glycemic control [31]. Better patient knowledge in turn may lead to better patient compliance.

Diabetes mellitus is a chronic problem which is directly related with life style modification [32]. The important life style changes include dietary modification, regular exercise, smoking cessation and alcohol stoppage. Education regarding life style changes can be provided by distributing leaflets, dietary chart, pictorial charts showing aerobic exercises etc. It is well established fact that healthy eating and regular exercise can delay the diabetes and its complications [33]. Obesity is an important risk factor for diabetes and hypertension [34]. Weight reduction can be achieved by doing regular exercise. Reduction in weight can delay the development of diabetes and hypertension.

Since diabetes is a chronic disease condition therefore it should be taken care properly in early stage before it knocks the door of the life. Proper care is required good patient knowledge and complete patient involvement.

Study limitations and strengths: The study enrolled the patients only from one hospital from one development region of Nepal and hence can not be generalized to the diabetic population of Nepal. The study was conducted only in newly diagnosed diabetes patients. It was thought that newly patients would have not been exposed with any diabetes related information in past and can provide the accurate information about their KAP at initial stage, however doing the same in old cases of diabetes patients who might have exposed several times with diabetes related information from healthcare professionals and with other resources, may give somewhat inaccurate result.

Conclusion

The study found very low KAP among the diabetes patients enrolled in the study. Male patients were more in the study. The maximum incident rate of diabetes was documented between the age group of '41-60' years. In the study high percentage of non-alcoholic and non-smoker patients were documented with large number of patients not having any family history of diabetes. The present study stressed that there is need of active participation of healthcare professionals to provide structured education and counseling to diabetes patients to improve the therapeutic outcomes. Group education program can be organized at community level in country like Nepal where resources are very limited.

Declaration: Authors hereby declare that this research is completely new work and it has not been sent partially or fully in any other journal for publication.

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AUTHORS' CONTRIBUTIONS

Authors contributed equally to all aspects of the study.

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CONFLICTS OF INTEREST

The authors declare that they have no competing interests