

ORIGINAL ARTICLE

IMPACT OF PATIENT COUNSELLING ON KNOWLEDGE, ATTITUDE AND PRACTICE IN MANAGEMENT OF DIABETES MELLITUS AMONG PATIENTS VISITING NATIONAL MEDICAL COLLEGE & TEACHING HOSPITAL, BIRGUNJ, NEPAL

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**ABSTRACT**

Introduction: Type 2 diabetes mellitus (T2DM) is a major metabolic disease. Counselling of a patient uplifts the patient's ability to cope with disease and make decisions on its management and medication. The aim of counselling is to provide information about KAP needed for disease management thereby enhancing therapeutic outcomes.

Materials and Methods: A case control study was conducted among 113 T2DM patients. The fasting blood sugar (FBS), Post prandial (PP); KAP and medical adherence (MA) scores were obtained with the aid of questionnaires. A control group and intervention group were provided with the questionnaires to assess KAP and MA scores. The intervention group was provided with counselling, information leaflets and medication chart. Data was entered in Microsoft Excel and the statistical methods used were Mann-Whitney U, Wilcoxon's signed rank and Chi square tests.

Results: The mean baseline KAP and MA scores and FBS levels were 11.01 ± 4.29 , 8.63 ± 2.51 , 6.11 ± 2.42 and 1.98 ± 2.03 and 171.22 ± 50.27 mg/dL, respectively for the intervention group and 12.61 ± 3.18 , 8.99 ± 2.19 , 6.99 ± 2.28 and 1.64 ± 1.44 and 145.81 ± 50.16 mg/dL for the control group, respectively which improved to 14.56 ± 3.39 , 9.58 ± 1.95 , 7.98 ± 1.89 and 1.02 ± 1.11 and 131.36 ± 51.28 mg/dL for the intervention group after counselling ($p < 0.05$).

Conclusion: The outcomes of the study emphasize patient counselling provided by the clinicians aid in the improvement of patient's knowledge about the disease and its management, directly affects the patient's attitude and practice towards the disease and ultimately helps into better glycemic control.

Keywords: Attitude, Diabetes Mellitus, Knowledge, Medical Adherence, Practice

INTRODUCTION

Type 2 diabetes mellitus (T2DM) is a major metabolic disease that is characterized by sustained high level of blood glucose with defective secretion of insulin, ineffective insulin action or both.^{1,2} The rate of increase of type 2 diabetes mellitus (T2DM) is more globally¹, more so in under developed countries like Nepal due to rapid urbanization.^{2,3} A resolution made by United Nation (UN) in 2007 confirmed diabetes mellitus (DM) as a significant global public health issue.² It causes a major public health epidemic with considerable number of premature deaths, disabilities, high morbidity and mortality rates.³ With recent estimates, about 462 million people were with T2DM in 2017 which equivalent to 6.3% of world population.⁴ Till today, T2DM is the 9th leading cause of mortality that makes 1 million human lives annually.

Clinical conditions with T2DM include hypoglycemia,

hyperosmolar hyperglycemic state, diabetic ketoacidosis, retinopathy, nephropathy, neuropathy and cardiovascular events.^{5,6} Lower limb amputations are cause by one of leading condition of T2DM.^{7,8} The complications associated with T2DM might be managed by following proper management services in order to achieve optimum glycemic control.^{9,10} The control of T2DM involves modification of lifestyle and pharmacological therapy or both. In order to optimize patient's health outcome requires good knowledge of disease, access to insulin and other oral hypoglycemic agents, and monitor blood glucose level.¹¹

Recent researches to assess about knowledge, attitude and practices (KAP) of patients T2DM explained the necessity of higher awareness among patients with regard to preventing, diagnosis, mitigating risk factor and

minimizing complications of the diseases.^{12,13} Probably, higher knowledge could improve attitude and practice of patients in regard to their diseases. Several studies have shown that patients who were well known about T2DM and its complication reported improved treatment in comparison to patients who had poor knowledge of T2DM and its complications.

Counselling of a patient is a process that uplifts the patient's ability to cope with their disease and make informed decisions regarding the concept of management and medication. It also helps to change any harmful dietary and lifestyle habits.¹⁴ The aim of counselling is to provide information about KAP needed for disease management thereby enhancing therapeutic outcomes.¹⁵

Currently, little is known on level of knowledge, attitude, and practice of patients to T2DM. Therefore, this study was conducted to evaluate knowledge, attitude, and practice among patients with T2DM. This study also investigated association between knowledge, attitude, and practice among patients with regards to sociodemographic and clinical characteristic of patients. Finding of this study could improve future decision and intervention to control over blood glucose level, reduce the incidence of complications, and improve care and quality of life.

MATERIALS AND METHODS

Study design

A case control study was conducted from 1st September 2024 to 30th August 2025. It was conducted among 113 patients with T2DM above 18 years who were attending the outpatients departments (OPDs) of National Medical College & Teaching Hospital, Birgunj, Nepal. Pediatric individuals, pregnant women and those unwilling for participation were excluded from the study.

The details of demographic picture, baseline fasting blood sugar (FBS) levels, Post prandial (PP); KAP and medical adherence (MA) scores were obtained with the aid of questionnaires and the factors responsible for medication non-adherence were assessed. The questionnaire for KAP was designed and validated by conducting a pilot study. It includes 18 knowledge, 6 attitude and 10 practice questions. Each correct answer for knowledge and practice was given a score of 1 and 0 was given for wrong answer. For attitude, score of 2 was given for each correct answer. The data were collected through use of questionnaire in face-to-face interviews. The interviewers were trained to administer interviews.

The scores for knowledge were divided into good knowledge (15-18), moderate knowledge (9-14) and poor knowledge (0-8). Similarly, attitude scores were divided into positive attitude (8-12) and negative attitude (0-7). The scores for practice were divided into good practice (7-10) and poor practice (0- 6). Morisky medication adherence questionnaire, which consists of 8 questions, was used for assessing the medication adherence. Scores were divided into high adherence (<1), moderate adherence (1-2) and poor adherence (>2).

At the beginning of the study, a control group and intervention group were provided with the questionnaires to assess KAP and MA scores. The intervention group was provided with extensive counselling, patient information leaflets and medication chart to document time of medication administration on regular basis. Intervention group patients were followed up for a period of 1 month. The control group was not counselled during the study. After a period of 1 month, control and intervention group were reviewed for assessment of FBS and PP levels, KAP and MA scores.

Data analysis, Ethics approval and consent to participate

The data were collected and the statistical methods used were Mann-Whitney U, Wilcoxon's signed rank and Chi square tests. Data of all the participants were analyzed using SPSS version 15.0 software. Ethics approval was obtained from the Institutional Review Committee (IRC) of National Medical College & Teaching Hospital, Birgunj, Nepal bearing reference number (Ref. F-NMC/699/080-081). The informed written consent was taken before enrolling in the study.

RESULTS

Among 113 patients (56 control subjects and 57 intervention subjects) enrolled in our study, 63 (55.8%) were male and 50 (44.2%) were female. The percentage distribution of patients in our study was shown in Figure 1. More patients were found in 50-64 years age group with 55 (48.6%), followed by >65 years with 25 (22.1%) and 35-49 years with 19 (16.8%). The major number of participants 55 (48.6%) had secondary level education (up to 10th standard) and most of the subjects were employed 73 (64.6%) followed by unemployed (30, 26.5%) or retired (10, 8.9%). The mean age for the patients was 52.4 ± 8.65 years with average BMI of the patients was 27.13 ± 3.26 and mean duration of diabetes of the patients was 7.80 ± 6.87 years.

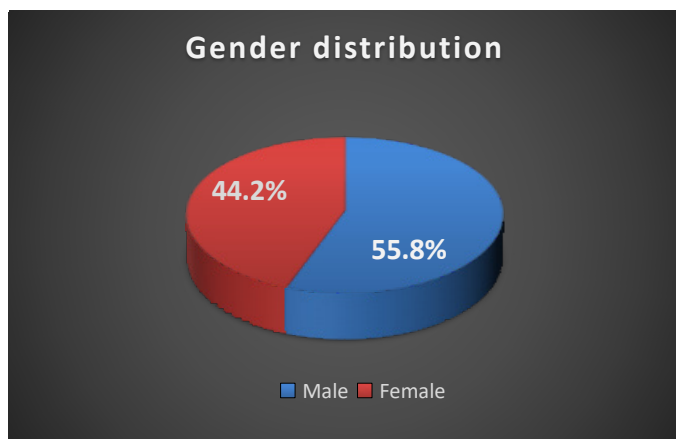


Figure 1: Participants as per the gender distribution

The results at the first visit showed that, mean knowledge score of the study population was 12.05 ± 3.74 that comes under the 'moderate score', the mean score for attitude was 8.81 ± 2.35 which falls in 'positive attitude'. The average practice score was 6.55 ± 2.58 i.e., good practice.

The mean MA score was found to be 1.65 ± 1.89 i.e., 'moderate adherence'.

Table 1: Comparison of fasting blood sugar between control and intervention groups

Parameter	Control		Intervention	
	Pre (mean $\pm$ SD) mg/dL	Post (mean $\pm$ SD) mg/dL	Pre (mean $\pm$ SD) mg/dL	Post (mean $\pm$ SD) mg/dL
Fasting Blood Sugar	145.81 ± 50.16	136 ± 41.11	171.22 ± 50.27	131.36 ± 51.28

Control: p value 0.512, Intervention: p value 0.007

Table 2: Comparison of PP blood sugar between control and intervention groups

Parameter	Control		Intervention	
	Pre (mean $\pm$ SD) mg/dL	Post (mean $\pm$ SD) mg/dL	Pre (mean $\pm$ SD) mg/dL	Post (mean $\pm$ SD) mg/dL
PP Blood Sugar	214.61 ± 58.11	151.02 ± 51.15	249.18 ± 59.23	158 ± 54.26

Control: p value 0.519, Intervention: p value 0.008

Table 3: Comparison of knowledge score between control and intervention groups

Parameter	Control		Intervention	
	Pre (mean $\pm$ SD)	Post (mean $\pm$ SD)	Pre (mean $\pm$ SD)	Post (mean $\pm$ SD)
Knowledge	12.61 ± 3.18	13.09 ± 3.56	11.01 ± 4.29	14.56 ± 3.39

Control: p value 0.003, Intervention: p value 0.000

Table 4: Comparison of attitude score between control and intervention groups

Parameter	Control		Intervention	
	Pre (mean $\pm$ SD)	Post (mean $\pm$ SD)	Pre (mean $\pm$ SD)	Post (mean $\pm$ SD)
Attitude	8.99 ± 2.19	9.09 ± 2.21	8.63 ± 2.51	9.58 ± 1.95

Control: p value 0.167, Intervention: p value 0.005

Table 5: Comparison of practice score between control and intervention groups

Parameter	Control		Intervention	
	Pre (mean $\pm$ SD)	Post (mean $\pm$ SD)	Pre (mean $\pm$ SD)	Post (mean $\pm$ SD)
Practice	6.99 ± 2.28	7.48 ± 2.18	6.11 ± 2.42	7.98 ± 1.89

Control p value. 0.007, Intervention: p value 0.001

Table 6: Comparison of medical adherence score between control and intervention groups

Parameter	Control		Intervention	
	Pre (mean $\pm$ SD)	Post (mean $\pm$ SD)	Pre (mean $\pm$ SD)	Post (mean $\pm$ SD)
Medical Adherence	1.64 ± 1.44	1.51 ± 1.38	1.98 ± 2.03	1.02 ± 1.11

Control: p value 0.214, Intervention: p value 0.008

DISCUSSION

Diabetes mellitus is a chronic metabolic disorder which can lead to life threatening complications due to lack of KAP and MA. The efficient diabetes care mainly encompasses of individualized lifestyle modifications and good self-care skills of the patient. In chronic diseases like diabetes, clinicians play an essential role in helping patients control their disease.¹⁶

This is a case control study conducted among 113 patients with T2DM above 18 years who were attending the outpatients departments (OPDs) of National Medical College & Teaching Hospital, Birgunj, Nepal for a study duration of 1 year. The mean baseline KAP and MA scores and FBS levels were 11.01 ± 4.29 , 8.63 ± 2.51 , 6.11 ± 2.42 and 1.98 ± 2.03 and 171.22 ± 50.27 mg/dL, respectively for the intervention group and 12.61 ± 3.18 , 8.99 ± 2.19 , 6.99 ± 2.28 and 1.64 ± 1.44 and 145.81 ± 50.16 mg/dL for the control group, respectively which improved to 14.56 ± 3.39 , 9.58 ± 1.95 , 7.98 ± 1.89 and 1.02 ± 1.11 and 131.36 ± 51.28 mg/dL for the intervention group after counselling (p < 0.05).

A similar study done in India in 2011 concluded that counselling provided by health professionals improved the perception of patient about the diabetes, lifestyle modifications and diet which thereby helps in the improvement of glycemic control. Male participants enrolled in this study was more than females which is

similar to the results of our study.¹⁷

Knowledge regarding any disease is a crucial factor in its effective management. Studies from both developed and developing countries have reported that poor knowledge among diabetic patients is a leading factor decreased therapeutic outcomes.¹⁸ Participants in intervention group showed a significant improvement in the knowledge scores after follow up compared to control group (Table 3). The current study, suggests that educational intervention has an impact in improving the knowledge scores.

In the present study, a statistically significant improvement ($p=0.005$) was observed in the attitude score of the intervention group patients compared to the control group (Table 4). Most of our study subjects believed that keeping blood sugar level close to normal can prevent diabetic complications. There was a significant association between the attitude and practice of the study subjects. In our study, maximum number of the subjects had a good practice. A significant improvement between the practice scores of intervention and control group was found ($p=0.001$) (Table 5).

MA is the medication taking habit of the patient and is very much important for the treatment to be effective. Most of the patients in both the groups had high medication adherence. There was a significant improvement in the mean medication adherence score in the case group after follow up ($p=0.008$) (Table 6). There was a significant improvement in the MA scores of intervention group compared to control group after follow up.

CONCLUSION

The outcomes of the current study emphasize on the fact that patient counselling provided by the clinicians and health professionals aid in the improvement of patient's knowledge about the disease and its management, thereby directly affects the patient's attitude and practice towards the disease and ultimately helps into better glycemic control and prevention of further complications of the disease.

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