Original research article

ASSESSMENT OF THE IMPACT OF HEALTH EDUCATION ON ATTITUDE, KNOWLEDGE, AND GLYCEMIC CONTROL IN PATIENTS WITH TYPE II DIABETES MELLITUS

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Abstract: *To assess the impact of education on attitude, knowledge, and practices in patients with type II DM. The case-control study was conducted in Nishtar Medical Hospital from January 2021 to January 2022. Patients aged > 40 years diagnosed with type II DM were included in the study. A total of 80 patients were included and were randomly divided into cases (n=40) and controls (n=40). The participants in the case group were educated about their disease, diets, lifestyle changes, and drugs. Patients in the control group were not provided any health education. Patients were followed up after every two months for six months. Random plasma glucose (RPG) and HbA1C were measured at baseline and follow-up visits. Knowledge and practices regarding DM were assessed using a questionnaire administered to each patient at baseline and during follow-up. Answers were recorded as Yes (score 1) or No (score 0). In the case group, RPR showed a declining trend from baseline to each follow-up visit, unlike the control group. Cases had a significantly higher mean knowledge score than controls (P=0.004). Cases had a significantly higher mean attitude score than controls (P=0.003). Cases significantly increased mean practice scores than controls (P=0.001). In the case group, there was a significantly reduction in HbA1C at the last follow-up (P=0.01). Effective health education improves attitude, lifestyle, and knowledge about DM and helps achieve glycemic control in patients with type II DM.*

Keywords: Type II Diabetes Mellitus, Glycemic control, Health Education

Introduction

Diabetes mellitus (DM) has long-term effects on the individual's quality of life and well-being. It can lead to cognitive problems, dementia, nephropathy, retinopathy, and neuropathy (Shi et al., 2019). Self-care and glycemic control with apt metabolic regulation impact ketoacidosis, hypoglycemia, or macrovascular and microvascular complications (Malik et al., 2019). The prevalence of DM has been increasing. Thus, there is a need to develop optimum user-friendly tests and preventive care. Though glycated hemoglobin (HbA1C) testing does not need fasting, it can not be solely used for diagnosis as its values may be affected by other co-morbid conditions (Avci et al., 2019; Kumar et al., 2021).

Diabetes education is an important tool as diabetes management mainly depends upon motivation, knowledge, and self-care. Thus, part of the treatment should be health education, counseling, and advice on diet and lifestyle modifications(Bruno et al., 2019; Misra et al., 2019). Though studies suggest that patients with knowledge and motivation for self-care achieve glycemic control, education methods for improving interventions are still debatable (Gupta et al., 2020; Ivers et al., 2019). DM poses a significant financial burden. Thus, health education is an important resource in underdeveloped countries. Primary care physicians should participate in educating patients as these are the first to engage with diabetic patients. These patients can be educated about diabetic complications and a healthy lifestyle for maintaining glycemic control. In this study, we will assess the impact of education on attitude, knowledge, and practices in patients with type II DM..

Methodology

The case-control study was conducted in Nishtar Medical Hospital from January 2021 to January 2022. Patients aged > 40 years diagnosed with type II DM were included in the study. Patients with psychotic disorders, mental retardation, and pregnancy were excluded. A total of 80 patients were included and were randomly divided into cases (n=40) and controls (n=40). Informed consent of the participants was taken. The ethical board of the hospital approved the study. All patients underwent clinical and laboratory investigations. Basic knowledge and attitude towards DM were assessed. The participants in the case group were educated about their disease, diets, lifestyle changes, and drugs. They were also provided with education leaflets in addition to verbal counseling. Patients in the control group were not offered any health education. Patients were followed up after every two months for six months. Random plasma glucose (RPG) and HbA1C were measured at baseline and follow-up visits. Knowledge and practices regarding DM were assessed using a questionnaire administered to each patient at baseline and during follow-up. Socio-demographic data was also collected. Answers were recorded as Yes (score 1) or No (score 0). Patients were treated according to standard guidelines.

SPSS version 23 was used for data analysis. The mean score was calculated to assess the results. Paired t-test was used to analyze the impact of health education. P value < 0.05 was considered statistically significant.

Results

The mean age of the controls 52.01 ± 7.93 years was, and of the cases was 55.40 ± 9.57 years. There were 23 (57.5%) males in controls and 20 (50%) in cases. Among controls,

29 (40.6%) were literate, and among cases, 21(52.5%) were literate. Diabetes was recently in 15 cases and 21 controls. All remaining had six months old diagnosis. 25 (62.5%) patients in case group and 31(77.5%) in control group were overweight. In the case group, RPR showed a declining trend from baseline to each follow-up visit, unlike the control group (Table I).

In the case group, the mean knowledge score at baseline was 3.96 ± .91, and at last follow up was10.18 ± 1.77. In the control group, the mean knowledge score at baseline was 5.56 ± 1.62, and at last, follow-up was 5.766 ± 1.82. Cases had significantly higher increases in mean scores than controls (P.004).

In the case group, the mean attitude at baseline was 1.10 ± 0.93; at last, follow-up was 3.56 ± 0.83. In the control group, the mean attitude score at baseline was 1.88 ± 0.96, and at last, follow-up was 1.69 ± 0.58. Cases had significantly higher increases in mean scores than controls (P.003). (Table 2)

In the case group, the mean practice at baseline was 0.41± 0.54, and at the last follow up was 3.24 ± 0.76. In the control group, the mean practice score at baseline was 1.55 ± 0.33, and at the last follow up was 1.59 ± 0.96. Cases had significantly higher increases in mean scores than controls (P.001). (Table 3)

In cases, baseline HbA1c ranged from 7.1–8% in 21 patients, 8.1–9% in 15 patients, and 9.1–10% in remaining patients. At the last follow-up, 25 patients had HbA1c 7%; ten had 7.1–8%, and 8.1–9% remaining. There was a significant reduction in HbA1C (P=.01). In the control group, baseline HbA1c ranged from 7.1–8% in 10 patients, 8.1–9% in 25 patients, and 9.1–10% in the remaining five patients. At the last follow-up, 12 patients had HbA1c 7.1-8.0%, 25 had HbA1C between 8.1–9%, and the remaining three had between 9.1–10%. HbA1C reduction in the control group at the last follow-up was insignificant (P=.159). (Table 4 A, B)

Table I: Random Plasma glucose in controls and cases

RPG	Baseline		First, follow up		Last, follow up	
	Cases	Controls	Cases	Controls	Cases	Controls
≤200	0	0	0	0	0	0
201-210	0	0	0	0	0	0
211-220	0	0	0	0	5	0
221-230	0	0	0	0	20	0
231-240	0	0	3	0	9	0
241-250	1	0	0	0	0	0
251-260	1	0	12	0	0	0
261-270	0	0	13	0	0	0
271-280	0	0	7	0	3	0
281-290	0	0	2	0	3	0
291-300	0	0	3	0	0	2
301-310	4	6	1	7	0	5
311-320	0	4	1	3	0	9
321-330	0	2	0	4	0	6
331-340	9	10	0	7	0	5
341-350	7	9	0	5	0	3
351-360	8	0	0	0	0	1
361-370	1	5	0	5	0	5
371-380	2	3	0	2	0	0
381-390	3	0	0	0	0	2
391-400	2	1	0	2	0	1
401-410	1	1	0	4	0	1
411-420	1	1	0	1	0	0
421-430	0	0	0	0	0	0
431-440	0	0	0	0	0	0
441-450	0	0	0	0	0	0
≥451	0	0	0	0	0	0

Table 2: Attitude Scores:

Group	Baseline Mean ± SD	Last Follow Up Mean ± SD	P-value
Case	1.10 ± 0.93	3.56 ± 0.83	P = 0.003
Control	1.88 ± 0.96	1.69 ± 0.58	

Table 3: Practice Scores:

Group	Baseline Mean ± SD	Last, Follow Up Mean ± SD	P-value
Case	0.41 ± 0.54	3.24 ± 0.76	P = 0.001
Control	1.55 ± 0.33	1.59 ± 0.96	

Table 4A: HbA1c Levels: (Case Group)

Baseline HbA1c Range	Patients	Last, Follow Up HbA1c Distribution	P-value
7.1–8%	21	25 patients had HbA1c 7%	0.01
8.1–9%	15	10 had 7.1–8%, Remaining 5 had 8.1–9%	
9.1–10%	5	nill	

Table 4B: HbA1c Levels: (Control Group)

Baseline HbA1c Range	Patients	Last, Follow Up HbA1c Distribution	P-value
7.1–8%	10	12 had HbA1c 7.1–8.0%	0.159
8.1–9%	25	25 had HbA1c between 8.1–9%	
9.1–10%	5	3 had between 9.1–10%	

Discussion

DM can have a devastating long-term impact on the social and physical well-being of the patient. Various studies show that health education slows disease progression and prevents complications. This study evaluated the effect of health education on attitude, knowledge, and practices in patients with type II DM. RPG was monitored in all patients, and results showed that the case group had a decline in RPD from baseline to the last follow-up visit. This shows that health education has an impact on glycemic control. Another study also noted that the intervention group's post-prandial and fasting glucose levels declined from baseline to subsequent follow-ups (Champagne et al., 2019). In the current study, KAP SUM and knowledge, practice, and attitude scores in cases significantly increased from the baseline to the final follow-up. A previous study reported that diabetes knowledge scores improved from 18.06% to 26.53% in the study group. There also was a significant decrease in the complication of DM in the study group(Rashid Nazir et al., 2020). In the current study, the case group significantly reduced HbA1C from baseline to final follow-up. A similar reduction was not seen in the control group. Another study reported that HbA1C in cases significantly decreased at the follow-up visit. Moreover, there was a significant negative correlation between HbA1C and knowledge attitude (KA) score and fasting blood glucose and KA score Chawla et al., 2019).

A study showed contrasting results and reported that though knowledge scores improved in the case group, this improvement was insignificant. They noted that health education improved knowledge scores but did not change practice and attitude Krishnakumar et al., 2020). Another study found that patient counseling increased knowledge about DM-related risk factors, symptoms, complications, and personal precautions. Patients were motivated to monitor and control blood sugar and undergo regular check-ups. They underlined the need for massive awareness programs to improve practice and general attitude towards diabetes (Harshitha et al., 2022). A study noted that educational intervention is a significant tool for motivating patients and effectively improving glycemic control (Alhaiti et al., 2020). The inclusion of self-management support in

diabetes control program effectively enhances the quality of life and self-care and reduce medical costs. A study suggested that educational practices should include self-care guidance and disease prevention strategies (Marques et al., 2019). Diabetes intervention and behavioral intervention can snowball effect on attitude and physiologic control. With an increase in the popularity of evidence-based healthcare it is important to include patient in the process of disease management. Physicians should be adequately trained to effectively impart health education to the patients

Conclusion

Effective health education improves attitude, lifestyle, and knowledge about DM and helps achieve glycemic control in patients with type II DM.

Declarations

Data Availability statement
All data generated or analyzed during the study are included in the manuscript.
Ethics approval and consent to participate.
Approved by the department Concerned.
Consent for publication
Approved
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Not applicable

Conflict of interest

The authors declared an absence of conflict of interest.

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