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Review Article

Correlation between knowledge of type II diabetes mellitus and glycaemic control

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ABSTRACT

Effective glycemic control in type II diabetes mellitus (T2DM) is crucial but challenging, with patient knowledge playing a key role in successful management. Observational cross-sectional analytical study. A review of recent studies was conducted, focusing on the impact of diabetes knowledge on glycemic outcomes. There is a positive correlation between increased type II diabetes mellitus knowledge and improved glycemic control. Patients who had better disease knowledge of T2DM could effectively manage their disease condition, including regular monitoring and lifestyle changes, and had improved glycemic outcomes, while those with less knowledge had poorer control. Improving patient education is essential for better glycemic control in Type II diabetes mellitus. Healthcare systems should implement targeted educational programs to address knowledge gaps, especially in areas with limited healthcare access.

Keywords: Diabetes education, Glycemic control, Patient knowledge, Self-management, Type II diabetes mellitus

INTRODUCTION

Accurate knowledge on diabetes improves self-management, lowers complications, and yields better outcomes. Based on etiology and clinical presentation, diabetes mellitus (DM) can be classified into three primary types: type I diabetes, type II diabetes, and gestational diabetes (GDM). Type II diabetes is a common metabolic illness that is characterized by chronic hyperglycemia. It is associated with a shortened life expectancy because of a higher risk of peripheral neuropathy, renal failure, heart disease, stroke, blindness, and amputation. The American Diabetes Association (ADA), the International Diabetes Federation (IDF), and the European Association for the Study of Diabetes (EASD) recommend using Hemoglobin A1C (HbA1c) levels above 6.5% as a diagnostic criterion. This guideline is based on the observed correlation between an HbA1c level greater than 6.5% and an increased risk of diabetic retinopathy.[1,2] .The American college of endocrinologists and the international diabetes federation set it at less than 110 mg/dl (6.1 mmol/l) and 100 mg/dl (5.5 mmol/l), respectively.[4] It has been reported that greater diabetes knowledge is associated with better control of HbA1c and self-care behaviours in patients with diabetes.[9,11] Inadequate glycemic control may lead to uncontrolled diabetes, which leads to many complications of diabetes mellitus. These complications, in turn, can greatly reduce the quality of life of patients, reduce the life expectancy, as well as increase the healthcare costs of the disease. Rigorous recording and controlling of the level of blood glucose is essential to diabetes care and management in order to delay and reduce the incidence of complications. On the other hand, improving glycaemic control reduces morbidity and increases the life expectancy and quality of life of patients.[3,4,5]

KNOWLEDGE ABOUT DIABETES MELLITUS AND ITS SIGNIFICANCE ON GLYCEMIC CONTROL

Chronic non-communicable diseases are the leading cause of morbidity and mortality worldwide among all chronic

diseases the prevalence of type-2 diabetes mellitus (T2DM) is reaching epidemic proportions and is expected to rise to 366 million by 2030.[9] A total of 297 patients were included, sixty-seven percent (67%) were women with a median of six years since the diagnosis of diabetes. Only 7% of patients had adequate diabetes knowledge and 56% had regular knowledge.[10] According to the International Diabetes Federation (IDF), an estimated 19.4 million adults aged 20–79 years lived with diabetes in the IDF Africa Region in 2019, representing a regional prevalence of 3.9%.[11] Several studies have shown that knowledge of T2DM is helpful in improving glycemic control table1.[6-11]

Table 1: Summary of studies conducted on diabetic patients has shown that knowledge of Type II diabetes mellitus is helpful in improving glycemic control.

Authors, Journal, Year	Objectives	Design	Material and methods	Outcomes measures	Results
Hui et al[6], PLoS One, 2014	To evaluate the knowledge of how exercise influences well-being (termed "PA knowledge") and its association with levels of PA in Chinese adults with Type 2 diabetes, and to identify demographic and lifestyle factors that influence this association.	Observational study design	Two hundred and fifty-eight adults with Type II diabetes completed an interviewer-administered survey at a diabetes clinic in Hong Kong. Data on demographics, lifestyle factors and diabetes-related medical indicators were obtained. A 20-item questionnaire was developed to measure PA-related knowledge level of PA was measured by the International Physical Activity Questionnaire.	PA knowledge score (out of 20). Level of PA (measured by International Physical Activity Questionnaire)	University-educated participants had higher PA knowledge scores (14.3 vs. 12.6, P<0.05). Younger, female, and obese participants had lower levels of PA (P<0.05). A 1 unit increase in PA knowledge score was associated with 19% greater odds of having moderate-to-high PA level (CI: 1.09-1.29; P<0.001). The association was strongest in participants with tertiary education.
Lima et al[7], J Phys Educ, 2019	To examine the association between physical activity, sociodemographic variables, health conditions, and knowledge and attitudes towards type II diabetes in older adults.	Observational cross-sectional study**.**	A questionnaire was used for sociodemographic data and health conditions. International Physical Activity Questionnaire (IPAQ), Diabetes Knowledge Scale (DKN-A), and Diabetes Attitude Questionnaire (ATT-19) were applied to 204 older adults. Statistical analysis included chi-square test, bivariate analysis, and logistic regression.	Physical activity Knowledge of type 2 diabetes. Attitude towards self-care in type 2 diabetes	Significant associations were found: Being physically active was less likely in those above 70 years. Good knowledge of DM2 was strongly associated with physical activity (OR=12.7; 95%CI: 6.8-30.1). Positive attitude towards DM2 self-care was strongly associated with physical activity.
Cameron P et al[8], PLoS One, 2020	To investigate the impact of diabetes knowledge, diabetes management self-efficacy, and diabetes self-management on glycemic control among people with type 2 diabetes in Thailand.	Observational Multi-Centre Cross-Sectional Study.	To investigate the impact of diabetes knowledge, diabetes management self-efficacy, and diabetes self-management on glycemic control among people with type 2 diabetes in Thailand.	Glycemic control (measured by HbA1c levels) Diabetes knowledge (DK) Diabetes management self-efficacy (DMSE) Diabetes self-management (DSM)	Over half (52.4%) of the participants had poor glycemic control (HbA1c > 7%). - In bivariate analysis, all three psychometric measures (DK, DMSE, DSM) were associated with glycemic control. The study suggests that enhancing DMSE may lead to better glycemic control and reduce the risk of chronic diabetes complication.

Continued.

Authors, Journal, Year	Objectives	Design	Material and methods	Outcomes measures	Results
Palaniswamy et al[9], J Med Sci Res, 2020	To investigate the knowledge, attitude, and practice of exercise among patients with type 2 diabetes mellitus (T2D).	Observational Cross-Sectional Study	165 patients with Type II diabetes mellitus (85 males, 80 females) recruited through convenience sampling. Data collection: A questionnaire was used to evaluate patients' knowledge, attitude, and practice of exercise. Descriptive and inferential statistics were applied.	Knowledge, attitude, and practice of exercise Association between these factors and demographic variables (e.g., gender, SES).	78.7% of patients had good knowledge and attitude towards exercise. 57.6% regularly practiced exercise. Significant association found between knowledge and exercise practice ($p<0.05$). Low physical activity was linked to poor glycemic
Shaqra et al[10], Int J Health Sci, 2022	To estimate the knowledge level among diabetic patients attending primary care centres about DM and its impact on their health.	Observational study.	Two ninety-three type II diabetic patients in Makkah city. Data collection: Self-administered validated Arabic questionnaire used to collect sociodemographic data, knowledge about the disease, and level of control.	Demographics: 50.2% females, 85.3% Saudis, mean age 50 years (range 31-77). Knowledge about diabetes mellitus and glycemic control	Blood glucose was uncontrolled in 90.4% of patients. Mean knowledge score was 8.3±2.5 out of 20. Higher educated patients ($p=0.043$) and those who practiced physical activities ($p=0.007$) were more knowledgeable.
López, et al[11], ATEN Prim 2023	To identify the association between glycemia control with level of diabetes knowledge, diabetes education, and lifestyle variables in patients with type 2 diabetes.	Observational Cross-sectional analytical study	Two ninety-two type 2 diabetes patients from IMSS clinics in Mexico Measurements: Glycated haemoglobin (HbA1c), glucose, and lipid profile levels from fasting blood samples. Disease knowledge was assessed using the Diabetes Knowledge Questionnaire (DKQ-24). Blood pressure, weight, abdominal circumference, and body composition were also measured.	Demographics: 67% of participants were women, with a median of six years since diagnosis. Knowledge of diabetes mellitus with help diabetes knowledge questionnaire.	The study found that only a small percentage (7%) of patients with type 2 diabetes had adequate knowledge about their disease. Those with adequate diabetes knowledge were more likely to have better health indicators, such as lower body mass index (BMI), lower fat percentage, and better dietary adherence. Additionally, these patients had received more diabetes education.

Studies conducted till date could not establish definite conclusion for comprehensively, assessment of disease knowledge of T2DM patient's perception and intentions towards their knowledge about diabetes mellitus and glycemic control. Better understanding of the relationship between glycemic control and knowledge about diabetes mellitus adherence will help researchers and medical professionals to create interventions that support both variable and enhance clinical outcomes, which can guide healthcare practitioners, policymakers and public health professionals in designing more effective strategies for diabetes prevention and management in this vulnerable population. The studies mentioned above doesn't correlate with sociodemographic factors that also help researchers and medical professional to create interventions that will enhance clinical outcomes.

CONCLUSION

It is essential to address the gap in research by conducting further research a study that evaluates the knowledge of type II diabetes mellitus and its correlation with glycaemic control. Patients with inadequate understanding of diabetes and its risk factors, such as improper medication use, poor blood sugar management, lack of lifestyle changes, and excessive sugar intake, are at greater risk for severe complications. Better understanding of the relationship between knowledge about type II diabetes mellitus and glycemic control adherence will help

researchers and medical professionals to create interventions that support both variable and enhance clinical outcomes. This will serve as a guide for healthcare practitioners, policymakers, and public health professionals in designing more effective strategies for diabetes prevention and management in this vulnerable population.

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