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Research Article

The Knowledge of Diabetes, Diagnosis, Treatment and Complications. Where are we?

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Abstract

Globally, type 2 diabetes mellitus (T2DM) is considered as one of the most common diseases. The etiology of T2DM is complex and is associated with irreversible risk factors such as age, genetic, race and ethnicity and reversible factors such as diet, physical activity and smoking. The objectives of this review are to examine various studies to explore relationship of T2DM with different dietary habits/patterns and practices and its complications. Dietary habits and sedentary lifestyle are the major factors for rapidly rising incidence of DM among developing countries. In type 2 diabetics, recently, elevated HbA1c level has also been considered as one of the leading risk factors for developing microvascular and macrovascular complications. Improvement in the elevated HbA1c level can be achieved through diet management; thus, the patients could be prevented from developing the diabetes complications. Awareness about diabetes complications and consequent improvement in dietary knowledge, attitude and practices lead to better control of the disease. The purpose to conduct this study was to know how many people know about diabetes, diet, management and its complications. We found some interesting results in this study regarding the knowledge about diabetes, dietary habits and complications, which is very poor in sense of knowledge of diabetes. Health care sector must do something to sensitize the people about diabetes, its complications and healthy food practices.

Keywords: *Type 2 Diabetes Mellitus (T2DM); HbA1c; Diabetes; Diet; Management; Complications*

Introduction

Diabetes has become a major cause of death in people under the age of 60. Diabetes mellitus is defined as "a metabolic disorder characterized by hyperglycemia resulting from either the deficiency in insulin secretion or the action of insulin". Diabetes affects at least 285 million people worldwide, and that number is expected to reach 438 million by the year 2030, with two-thirds of all diabetes cases occurring in low- to middle-income countries [1].

The poorly controlled diabetes can lead to damage to various organs, especially the eyes, kidney, nerves, and cardiovascular system. Diabetes mellitus is be of three major types, based on etiology and clinical features. These are Diabetes mellitus type 1 (T1DM), Diabetes

mellitus type 2 (T2DM) and gestational Diabetes mellitus (GDM). In T1DM, there is absolute insulin deficiency due to the destruction of β cells in the pancreas by a cellular mediated autoimmune process. In T2DM, there is insulin resistance and relative insulin deficiency. Gestational diabetes is any degree of glucose intolerance that is recognized during pregnancy. Diabetes mellitus can arise from other diseases or due to drugs such as genetic syndromes, surgery, malnutrition, infections, and cortico-steroids intake. There is a need to improve dietary patterns of the people worldwide to prevent incidence of non-communicable diseases like diabetes, cancer and others [2].

T2DM factors which can be irreversible such as age, genetic, race, and ethnicity or reversible such as diet, physical activity and smoking. There is a need for bold and creative policies that address harmful alcohol consumption, improve diet and improve physical activity [3].

Obesity is in independent risk factor for development of Diabetes mellitus. Obesity increases the risk of development of diabetes even in the absence of other metabolic dysregulation like Insulin resistance, Hypertension and dyslipidaemia [4]. Investment in effective diabetes prevention and management has become necessary to battle this global epidemic. Along with urbanization and economic growth, many countries have experienced dietary changes favoring increased caloric consumption.

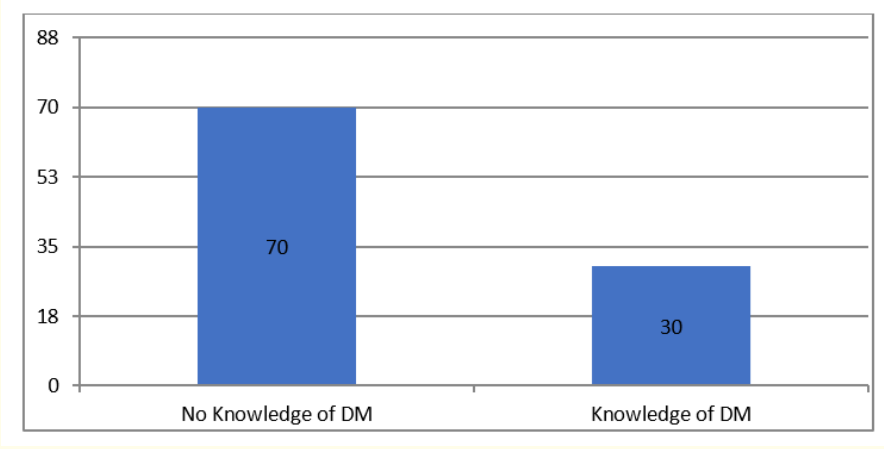
An unhealthful diet has been considered a major contributor to diabetes development for a long time, only in the past two decades. The global scenario of diabetes is in the vertical rise. Pandemic spread of diabetes can be seen all over the globe. The number of people with diabetes has risen from 108 million in 1980 to 422 million in 2014. The global prevalence of diabetes among adults over 18 years of age has risen from 4.7% in 1980 to 8.5% in 2014.

Methods

About 100 patients of newly diagnosed and old cases of diabetes were taken in Adesh Institute of Medical Sciences and Research, Ambala, in this study after taking verbal and written consent. They were subjected to oral and written questionnaire about what they know about diabetes and what are their preferences regarding various treatment modalities about diabetes. The data was subjected to standard statistical analysis and we found following results.

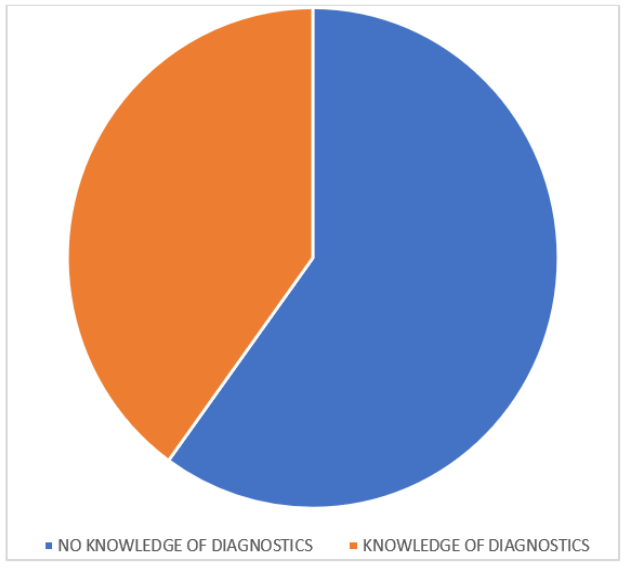
Results

Out of 100 patients 70% were not having knowledge of diabetes like what are the signs and symptoms of diabetes as shown in graph 1.

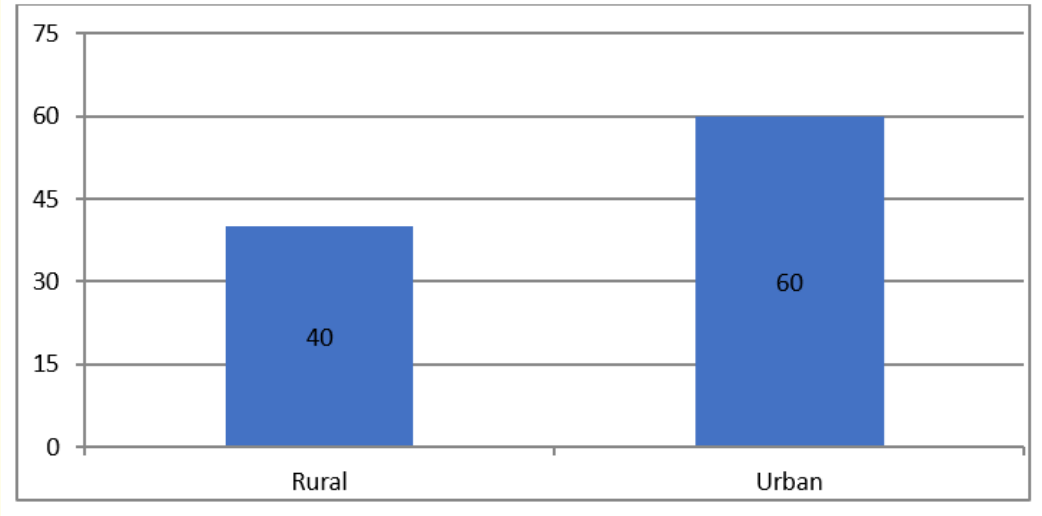


Graph 1

Moreover 60% patients did not have the knowledge of diagnosis of diabetes, like fasting blood sugar, postprandial blood sugar, HbA1c and urine test as shown in graph 2. 60% patients were from urban area and 40% from rural area as shown in graph 3.

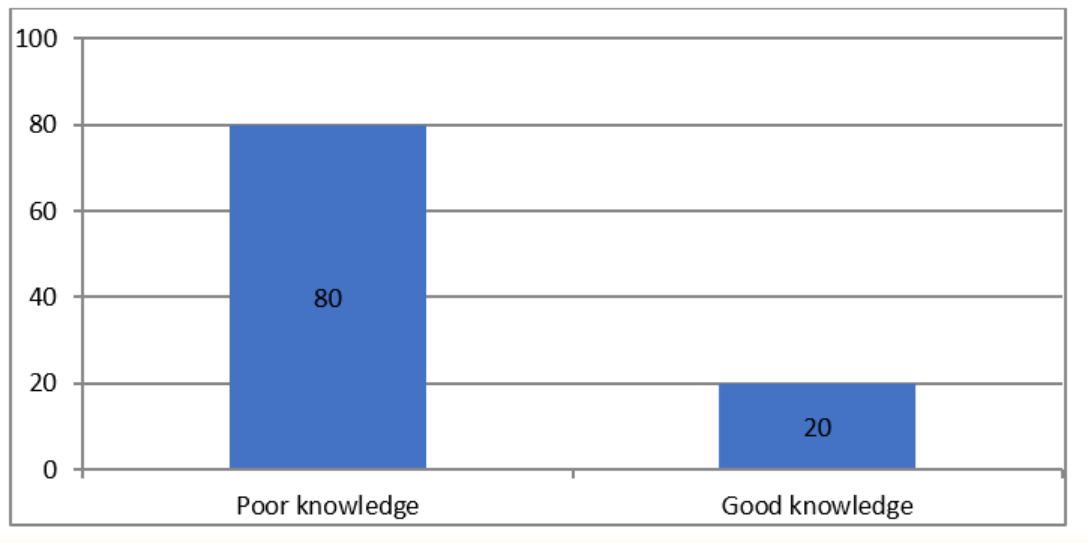


Graph 2

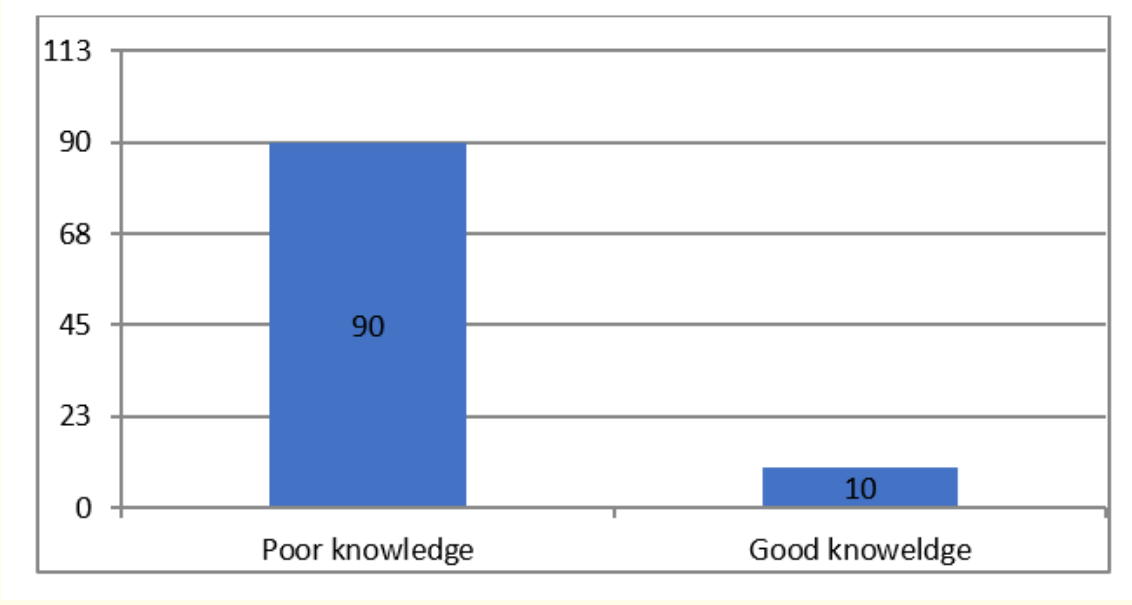


Graph 3

Out of 100 patients, 80% patients do not know about acute and chronic complications, that is diabetes ketoacidosis, hyperosmolar coma, hypoglycemia and diabetic retinopathy as shown in graph 4. About the knowledge of treatment, 90% did not know about treatment options and dietary restrictions and what to do in case of diabetes as shown in graph 5.



Graph 4



Graph 5

This is a small study, a large study/national program is required to sensitize the patients towards the diabetes because India is a big country with large population moreover with urbanization and life style changes, prevalence and incidence of diabetes are on the rise.

Discussion

The review of studies suggests that T2DM patients require reinforcement of DM education including dietary management through stakeholders (health-care providers, health facilities, etc.) to encourage them to understand the disease management better, for more appropriate self-care and better quality of life.

The risk of diabetes is more in people who smoke, who are obese, more in persons with sedentary lifestyle and taking more foods with high glycaemic index [5].

A meta-analysis by Gabriela Vazquez., *et al*. has suggested that Body Mass index (BMI), waist circumference and Waist/Hip ration have similar associations with risk of developing diabetes [6]. The overall purpose of treating T2DM is to help the patients from developing early end-organ complications which can be achieved through proper dietary management.

The success of dietary management requires that the health professionals should have an orientation about the cultural beliefs, thoughts, family, and communal networks of the patients. Lifestyle changes and treatment with metformin both reduced the incidence of diabetes in persons at high risk. The lifestyle intervention was more effective than metformin [7].

Persons with impaired glucose tolerance are at increased risk of developing diabetes. The incidence of development of diabetes can be decreased by modifications in diets and lifestyle changes in both men and women [8]. So, an effective approach is to recommend dietary changes and adopt lifestyle modifications like doing regular exercise and avoiding sedentary lifestyle among patients with diabetes and with impaired glucose tolerance.

As diabetes is a disease which continues for the lifetime, proper therapy methods with special emphasis on diet should be given by the health care providers in a way to control the disease, reduce the symptoms and prevent the appearance of the complications.

The progression of impaired glucose tolerance to diabetes is more frequent among Asian Indian population. The life style modifications and metformin both can help to reduce the progression of patients with impaired glucose tolerance to frank diabetes as suggested by this Indian study [9].

The people in various parts of world usually have limited knowledge about diabetes and its complications and treatment options. A study conducted by Kassahun CW showed that study population has limited knowledge about diabetes and its risk factors [10].

The patients should also have good knowledge about the disease and diet, for this purpose, the health-care providers must inform the patients to make changes in their nutritional habits and food preparations. Alhaik S., *et al*. also observed that diabetic patients have a moderate level of knowledge regarding the disease process and its complications. They also emphasized the need of educational programs for diabetic patients based on their learning needs and patient characteristics [11]. Active and effective dietary education may prevent the onset of diabetes and its complications.

Conclusion

Awareness and knowledge about the signs and symptoms of diabetes, would go a long way in preventing new cases of diabetes. It is important to educate not only urban but also rural population about how improvements in physical activity and diet habits can help preventing diabetes. Such strategies will also prevent development of diabetic complications to a great extent. Patient empowerment is vital in diabetes management. This can be done through patient education and sharing information on management and preventive aspects of diabetes.

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