

An assessment of knowledge for diagnosis & management of prediabetes among 2nd year medical undergraduate students: A cross-sectional study

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Abstract

Background: Prediabetes is a condition of impaired blood glucose regulation, significantly increases the risk of developing type-2 diabetes.¹ Prediabetes or Intermediate hyperglycaemia, based on glycaemic parameters above normal but below diabetes thresholds is a high risk state for diabetes with an annualized conversion rate of 5–10%. The prevalence of prediabetes is increasing worldwide and it is projected that >470 million people will have pre-diabetes in 2030.² The World Health Organization (WHO) and American Diabetes Association (ADA) defined prediabetes by using specific parameters like Impaired Fasting Glucose (IFG), Impaired Glucose Tolerance (IGT) and Hemoglobin A1c (HbA1c).

Aim & Objectives: To assess the knowledge of Prediabetes, its diagnosis and management among 2nd year Medical undergraduate students.

Methodology: This is a cross-sectional study conducted in Dr. PSIMS & RF, Vijayawada, A.P. with semi-structured questionnaire given to 2nd year medical undergraduate students through Google forms or paper version and asked them to answer and submit them.

Statistical Analysis: The statistical analysis will be carried out by using the software. The values will be expressed in percentages (%).

Keywords: Prediabetes; Students Knowledge; Diagnosis; Management

1. Introduction

Diabetes is a chronic, metabolic disease characterized by elevated levels of blood glucose (or blood sugar), which leads over time to serious damage to the heart, blood vessels, eyes, kidneys, and nerves. The most common is type 2 diabetes, usually in adults, which occurs when the body becomes resistant to insulin or doesn't make enough insulin ¹.

There are three main types of diabetes – Type 1, Type 2 and Gestational Diabetes

Prediabetes is an intermediate state of hyperglycemia with glycemic parameters above normal but below the diabetes threshold. It is a condition of impaired blood glucose regulation, significantly increases the risk of developing type-2 diabetes ². A low diabetic threshold is a high risk state with an annualized conversion rate of 5%–10%. The prevalence of pre-diabetes is increasing worldwide, >470 million people will have pre-diabetes in 2030³.

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- The World Health Organization (WHO) has defined Prediabetes as a state of intermediate hyperglycemia using two specific parameters,
 - Impaired fasting glucose (IFG) defined as fasting plasma glucose (FPG) of 6.1-6.9 mmol/L (110 to 125 mg/dl) and
 - Impaired glucose tolerance (IGT) defined as 2 h plasma glucose of 7.8-11.0 mmol/L (140-200 mg/dl) after ingestion of 75 g of oral glucose load or a combination of the two based on a 2 h oral glucose tolerance test (OGTT).⁴
- The American Diabetes Association (ADA), on the other hand has the same cut-off value for IGT (140-200 mg/dL), IFG (100-125 mg/dL) and in additional hemoglobin A1c (HbA1c) based criteria of a level of 5.7 to 6.4% for the definition of Prediabetes ^{5, 6}.

Currently, 5%–10% of people with pre-diabetes will meet the clinical criteria for diabetes annually, with up to 70% progressing to diabetes within their lifetime ^{7, 8}. The high prevalence of pre-diabetes is a fret, as these are potential needs for development for type 2 diabetes mellitus in the coming years. But however, there is still a silver lining for those who have prediabetes. Current evidence shows that lifestyle interventions to combat obesity and physical inactivity can effectively reduce the risk of progression from prediabetes to type 2 diabetes mellitus by up to 58% ^{9,10}.

Aim & Objectives

To assess the knowledge for diagnosis and management of prediabetes among Medical undergraduate students

2. Methodology

This is a cross-sectional study conducted in Dr. PSIMS & RF, Vijayawada, A.P. Prevalidated semi-structured questionnaire was given to 2nd year medical undergraduate students through Google forms or paper version and asked them to answer and submit them. The statistical analysis will be carried out by using the software. The values will be expressed in percentages (%).

2.1. Inclusion

2nd year Medical students who are willing to give the consent are included.

2.2. Exclusion

Students who are not interested in participating are excluded.

3. Result

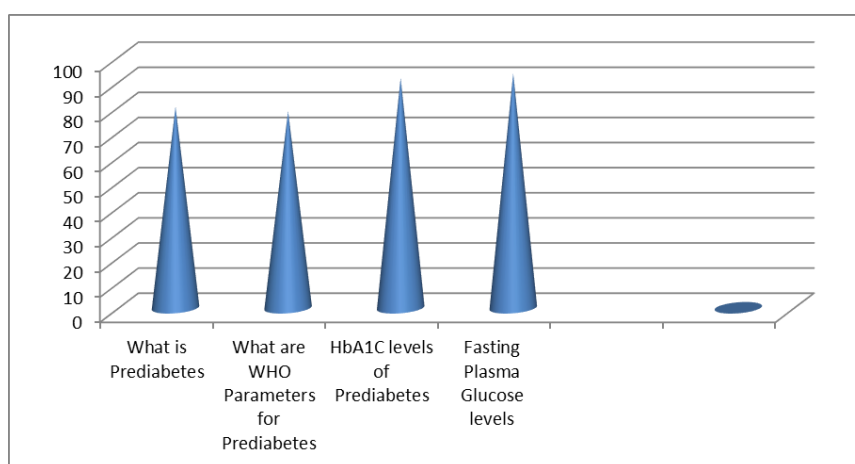


Figure 1 Knowledge of Prediabetes among 2nd Year Medical Students

- A total of 148 students participated in the study out of which 102 are Females and 46 are males students
- Almost 80.2% of students had good knowledge on prediabetes, 78.4% of them answered correctly regarding WHO parameters, 91.7% know the HbA1C levels and 93.5% of students the Fasting Plasma Glucose (FPG) values of prediabetes (see Fig 1).

- Among all the students only 63.2% have the knowledge of complete risk factors of prediabetes and only 58.1% aware of its management.
- Less than 60% of students aware of diabetes prevention programs and its importance in preventing the progression of diabetes.

4. Discussion

The overall knowledge of preclinical and clinical management of prediabetes among medical students is good. Based on this study there is some shortfall of knowledge for screening, diagnosing and management of prediabetes among students at various stages, but for some questions. But majority of student performance on the prediabetes questionnaire was good, but there is a minor difference on overall performance. According to the present study, there is a knowledge gap of the diagnosis, clinical implications and management of prediabetes among 2nd year students. So, this study highlights the need for more educational interventional to address the problem and suggest the need for increase the awareness of screening and management of prediabetes as well as benefits of life style modifications program in the colleges.

According to some studies, the overall knowledge among medical students is like 53.3% answered the prediabetes risk factors, 26.4% knows the HbA1c levels etc.,¹¹. And based on some studies among physicians and community based, still there is a knowledge gap about prediabetes and its awareness. We could not establish a solid comparison of this study with the existing literature due to the inadequate writings of this area.

This work is done as a part of my Ph.D. work under Dr. YSR University of Health Sciences, Vijayawada, Andhra Pradesh, India.

5. Conclusion

The finding of this study revealed that the knowledge and practice level among students have some shortfall and it need to be highlight at the education level for more assistance. Proper awareness programs may increase the practice and change the attitude of students and patients towards disease management, which will subsequently help for good and better practice.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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Author’s short biography



I am Lakshmi Deepika Patchva. I have done my M. Sc. Medical Pharmacology & now doing my Ph.D. on Prediabetes. I am also a Psychologist, Dietitian & Nutritionist. I would like to work on obesity, diabetes and counseling issues which impact the daily life of patients around me.