



## Knowledge of TYPE-2 Diabetes Mellitus in students admitted to first year health care professional under graduate courses

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### Abstract

**Introduction:** Diabetes mellitus is a clinical syndrome characterized by hyperglycemia due to absolute or relative deficiency of insulin. The incidence of Diabetes has tremendously increased globally in the last 20–30 years. Knowledge forms a basis for the adoption of good health-related practices. Schools and colleges are some of the best places to implement programs which will increase knowledge and awareness about lifestyle-related diseases, healthy nutrition, and the importance of physical activity. Students admitted to health care graduate professional courses gain the knowledge of various diseases and disorders throughout their curriculum. Having knowledge of diseases and disorders like diabetes mellitus in the early phase of their curriculum may impact their behaviour in the entry level of their curriculum.

**Method:** A self-made questionnaire consisting of self-administered 14 questions was made. Content and face validity of the questionnaire was obtained. 121 participants were selected according to the selection criteria mentioned below. The data was analysed using MS Excel.

**Results:** Among total participants, 2% students gave Very Good response. 10% students gave Good response. 42% students gave satisfactory response. 36% students gave poor response and 10% gave extremely poor response.

**Conclusion:** This study concluded that the students admitted to 1<sup>st</sup> year health care professional courses has limited knowledge about Diabetes Mellitus.

**Keywords:** Diabetes Mellitus, Under graduate, Knowledge, Health care profession

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### Introduction

The youth are the future of a country and are considered dynamic human capital that plays a vital role in nation-building. If students adopt sedentary lifestyles and are inclined to fast food and irregular eating habits, then there is a lot of probability of suffering from being overweight, obese, and, consequently, Diabetes mellitus at a young age. Diabetes mellitus is a clinical syndrome characterized by hyperglycemia due to absolute or relative deficiency of insulin. The incidence of Diabetes has tremendously increased globally in the last 20–30 years. It is basically due to changes in people's lifestyle by introducing fast foods, carbonated and energy drinks, and reduced energy expenditure by manual hard work or regular exercise.<sup>[1]</sup> The two types of Diabetes Mellitus include Type-1 Diabetes Mellitus and Type-2 Diabetes Mellitus. In both of the common types of diabetes, environmental factors interact with genetic susceptibility to determine which people develop the clinical syndrome, and the timing of its onset. However, the underlying genes, precipitating environmental factors and pathophysiology differ substantially between type 1 and type 2 diabetes. Type 1 diabetes is invariably associated with profound insulin deficiency requiring replacement therapy. It is a T-cell mediated autoimmune disease leading to progressive destruction of the insulin secreting  $\beta$  cells. Type 2 diabetes is only diagnosed after excluding other causes of hyperglycemia, including type 1 diabetes. Patients retain some capacity to secrete insulin but there is a combination of resistance to the actions of insulin followed by impaired pancreatic  $\beta$  cell function, leading to 'relative' insulin deficiency<sup>[2]</sup>.

Diabetes is now increasingly diagnosed among adolescents and younger adults, but it is a potentially preventable disease if its risk factors are identified early and avoided [3, 4]. Hence, it is crucial that young people be well-informed about the risk factors for the development of Diabetes Mellitus, as well as preventive measures. The clinical features of the two main types of diabetes include thirst, polyuria, fatigue, blurred vision, nausea, hyperphagia, irritability, poor concentration, headache etc. Patients with type 2 diabetes may be asymptomatic or present with chronic fatigue or malaise. Uncontrolled diabetes is associated with increased susceptibility to infection and patients may present with skin infections [2].

Worldwide approximately 170 million humans are residing with diabetes. In addition, researchers have anticipated a 65% upward thrust in the superiority of diabetes owing to the population growth, price, age structure, urbanization, unfavourably modification of nutritional conduct and lifestyles, monetary and consequently the actual wide variety of diabetics will be as excessive as fifty-two million by way of 2025 [5, 6].

Three in view of the above information, global health organization has declared India because the 'diabetic capital' [7] International Diabetes Federation stated that people with diabetes is expected to increase from 171 million in 2000 to 578 million in 2030 globally. In July 2020, the number of people with diabetes is calculated to be almost 463 million worldwide [8]. Studies have shown that increasing patient knowledge regarding disease and its complications has significant benefits with regard to patient compliance to treatment and to decreasing complications associated with the disease [9].

The known major risk factors for the development of Diabetes include obesity, a family history of the disease, and a sedentary lifestyle [10]. Family history is a major non-modifiable risk factor that is closely linked to the expression of Diabetes Mellitus. Not only does it represent an inherited genetic susceptibility, but also represents shared environmental factors that include cultural values and practices, such as food choices and exercise habits. [11] Long-term treatment and prevention of obesity in adults includes healthy diet and exercise. Behavioural interventions designed to facilitate maintenance of these lifestyle changes throughout a person's life play a very important role in the control of obesity [12, 13]. Among the adult population, leisure time physical activity is a critical factor in the prevention and control of Diabetes Mellitus. [14, 15] Diabetes is confirmed by either plasma glucose in random sample or 2 hours after a 75-g glucose load  $\geq 11.1$  (200mg/dL) or Fasting plasma glucose  $\geq 7.0$ mmol/L(126mg/dL) [2]. Around 20% of people with Type-2 diabetes have established complications at the time of diagnosis. It may include Micro vascular complications such as Retinopathy, Cataract, Impaired vision, Nephropathy, Renal failure, Peripheral neuropathy, Sensory loss, Motor weakness, Foot disease, Ulceration etc OR Macro vascular complications such as Myocardial ischemia/infarction, Transient ischemic attack (TIA), Stroke, Claudication, Ischemia [2].

Knowledge forms a basis for the adoption of good health-related practices. Schools and colleges are some of the best places to implement programs which will increase knowledge and awareness about lifestyle-related diseases, healthy nutrition, and the importance of physical activity [16]. The practice of diabetes care has dramatically changed during the

past three decades. Knowledge regarding diabetes pathophysiology has rapidly accumulated and has led to the development of new medications. The current philosophy of diabetes care places emphasis on patient autonomy and optimal utilization of health care professionals' different specialties. [17] Efficient management of diabetes includes the patient developing an understanding of his or her disease and incorporation of such knowledge into an effective self-care program. [18, 19] Considering greater than 50% of Indian population is inside the age organization of 15-25 years, proper expertise and knowledge can be very helpful in early diagnosis and proper as well as adequate treatment [20, 21]. Younger human beings have a unique possibility to interact and impact other human's life [22]. Accordingly, it is essential that the knowledge they gain will definitely helpful for them as well as for the society. Properly knowledgeable empowered young people can help in decreasing severe complications and unnecessary disabilities resulting from diabetes; provide assist and encouragement for human beings dwelling with diabetes [23].

For this reason, this study is undertaken to assess the knowledge concerning different factors of diabetes mellitus among under graduate college students of Jalgaon city.

### Need for Study

Type-2 Diabetes Mellitus is now increasingly diagnosed among adolescents and young adults. Obtaining information about the prevalence, risk factors of Diabetes Mellitus is the first step in formulating a preventive program for the disease. Properly knowledgeable empowered young people can help in decreasing severe complications and unnecessary disabilities resulting from diabetes, provide assist and encouragement for human beings dwelling with diabetes. Students admitted to health care graduate professional courses gain the knowledge of various diseases and disorders throughout their curriculum. Having knowledge of diseases and disorders like diabetes mellitus in the early phase of their curriculum may impact their behaviour in the entry level of their curriculum. Also, there are insufficient studies available on diabetes knowledge in students in India and having such studies will produce a data which may be essential to plan health education policies. So, this study was undertaken to check the level of knowledge of students admitted to various health care professional graduate courses at their entry level.

### Aims

To assess knowledge of Diabetes Mellitus among 1st year students admitted to health care professional under graduate courses.

### Objectives

To find out knowledge of Diabetes Mellitus among 1st year students admitted to health care professional under graduate courses.

### Review of Literature

1. Abdullah Mousa khamaisehl, Mohammed Nazzal Alshloul (2019) - conducted a study on "Diabetes knowledge among Health Sciences Students in Saudi Arabia and Jordan". Total 982 undergraduate students was enrolled for this cross sectional study. The study was conducted between 2016/2017 academic year at three universities, namely: Mutah University (MU) in Al-Karak/ Jordan, AL- Ghad International College (GIC) in Abha/Saudi Arabia, and King

Khalid University (KU) in Abha/Saudi Arabia. The Basic Information Questionnaire (BIQ) has been designed to satisfy the purpose of this study. This questionnaire about the definition, causes and symptoms of DM has been administered to the participants. In conclusion, the study illustrated that students have adequate background knowledge concerning DM diagnosis, symptoms, risk factors and treatment.

2. Asim M. Zowgar, MBBS, Muhammad I. Siddiqui, FCPS, MPhil, Khalid M. Alattas, Medical student. (2018) – conducted a study on “Level of diabetes knowledge among adult patients with diabetes using diabetes knowledge test”. The study was conducted in all governmental primary healthcare centers and hospitals in Makkah City, Saudi Arabia between November 2016 and February 2017. A self-administered Diabetes Knowledge Test 2 (DKT2), was used in this study. Diabetes Knowledge Test 2 is a quick and low-cost method of assessing general diabetes and diabetes self-care knowledge. The DKT2 contains 2 parts with a total of 23 questions. The first part is a general knowledge part (GKP) consists of 14 questions, and the second part is insulin use part (IUP) with 9 questions. 942 patients with diabetes were enrolled. All the questionnaires, where the answers given was 21 or more of DKT2 (out of 23), were included in the study. It was concluded that patients’ knowledge regarding diabetes was poor in this study.

3. Immanuel Amissah, Nana Ama Barnes, Joshua Panyin Craymah, Sebastian Eliason. (2017)-conducted study on “Knowledge of Diabetes Mellitus and Management Practices among Senior High School Teachers in Ghana” A cross-sectional descriptive study was carried out among 215 randomly sampled Senior High School teachers in the Central and Western Regions of Ghana during the period of August, 2015 to February, 2016. A self-administered structured questionnaire was used for data collection. The questionnaire was grouped into three sections. The first section included data about socio demographic characteristics, teaching experience, subject taught, their position in school, knowledge of any child with diabetes in their class. The second section consisted of questions to assess teachers’ knowledge on diabetes, which comprises of 19 YES/NO items entailing types of DM, causes, signs and symptoms of hypoglycemia and hyperglycemia, risk factors, effects of diet and exercise on blood sugar. In conclusion, the results reveal that teachers have inadequate knowledge of the basic facts of diabetes and management of children with diabetes in school.

4. Ying Xu, Dongdong Zhang, Kaiqian Liu, Yanfang Guo, Yi Yang. Conducted study on “Self-reported knowledge on diabetes and its related factors among Chinese college students: a cross-sectional study”. This study is to assess the level of knowledge on type 2 diabetes among Chinese college students. This cross-sectional survey was conducted among college students in Guangzhou, China, from September to November 2013. A total of 521 students participated in this study. Self-reported knowledge on diabetes and its main sources were measured by a self-designed questionnaire. This study indicated that, the college students had limited knowledge about type 2 diabetes.

5. Maryam Al-Hussainia, Seham Mustafa. (2015) – conducted study on “Adolescents’ knowledge and awareness of Diabetes Mellitus in Kuwait”. A cross-sectional survey was introduced to the students of secondary public and private schools in Kuwait. The survey included 4333 secondary school students (2120 males and 2193 females). A

total of 30 secondary schools were involved in this study. The questionnaire was distributed to all students in level 11 and 12 in the selected schools. In conclusion, study showed that the students had an average level of knowledge of diabetes. Their knowledge about symptoms and complications of diabetes and management of diabetes is inadequate.

6. Nelofer Khan,<sup>1</sup> Kadayam G Gomathi,<sup>1</sup> Syed Ilyas Shehnaz,<sup>2</sup> Jayakumary Muttappallymyalil (2012) – conducted study on “Diabetes Mellitus-Related Knowledge among University Students in Ajman, United Arab Emirates”. A cross-sectional survey using a pre-tested, self-administered, structured questionnaire was conducted in March 2011. The questionnaire was administered to students enrolled in non-health care related professional courses in a university in Ajman, UAE. Data on 168 university students (47 males and 121 females) were included in the analysis. . Of the participants, 25% were overweight or obese and only 27% exercised regularly. Regarding their knowledge of DM, 70% knew that it is characterised by high blood sugar levels and identified family history as a major risk factor. In conclusion, study revealed that in spite of exposure to various sources of information, the participants’ level of DM-related knowledge was not adequate.

### Methodology

**Materials:** Diabetes Mellitus Questionnaire.

**Study design:** Observational study

**Study population:** Students admitted to 1st year health care professional courses.

**Type of Sampling:** Purposive Sampling

**Sample size:** 121

$$n = Z^2 pq / d^2$$

$$n = (1.96)^2 (0.81) (0.19) / (0.07)^2$$

p = your guess of population P (any value < 1) q = 1-p

1-alpha = Confidence level set by you

Z = Z value associated with confidence

d = Absolute precision

n = Minimum sample size

**Study duration:** 6 months

**Place of study:** Private institutions offering health care professional graduate level courses in Jalgaon City.

### Inclusion criteria

- Students admitted to 1st year health care professional courses such as MBBS, BHMS, BPTH, BSC Nursing, etc.
- Both males and females.

### Exclusion criteria

- Those who are not willing to participate.

**Outcome Measures:** Diabetes Mellitus Questionnaire

### Procedure

Ethical clearance was taken from the ethical committee of Dr. Ulhas Patil College of Physiotherapy, Jalgaon prior to the commencement of study. A brief demographic data of all participants was obtained and a written consent was taken from all participants. First, the nature and purpose of study was explained to the participants. Then the participants were given all the information about the self-made questionnaire and how to fill the questionnaire. Then he/she was provided with the questionnaire which was validated and asked to fill

the desired information according to their knowledge. The collected data was analysed statistically and results was generated.

### Results

This study was conducted to assess knowledge of Diabetes Mellitus in students admitted to 1st year health care under

graduate courses.

A self-made questionnaire consisting of self-administered 14 questions was made. Content and face validity of the questionnaire was obtained. 121 participants were selected according to the selection criteria mentioned above. Among 121 participants, 46 (38%) students were male and 75 (62%) students were female.

**Table 1:** Among 121 participants

Male	46
Female	75

Also from total 121 students, 20 (16.5%) students were from BHMS, 20 (16.5%) from MBBS, 54 (45%) from BPTH and 27 (22%) from BSc Nursing.

**Table 2:** Total 121 students

BHMS	20
MBBS	20
BPTH	54
BSc NURSING	27

**Data Analysis:** The data was collected and results were generated. The data was analysed using MS Excel.

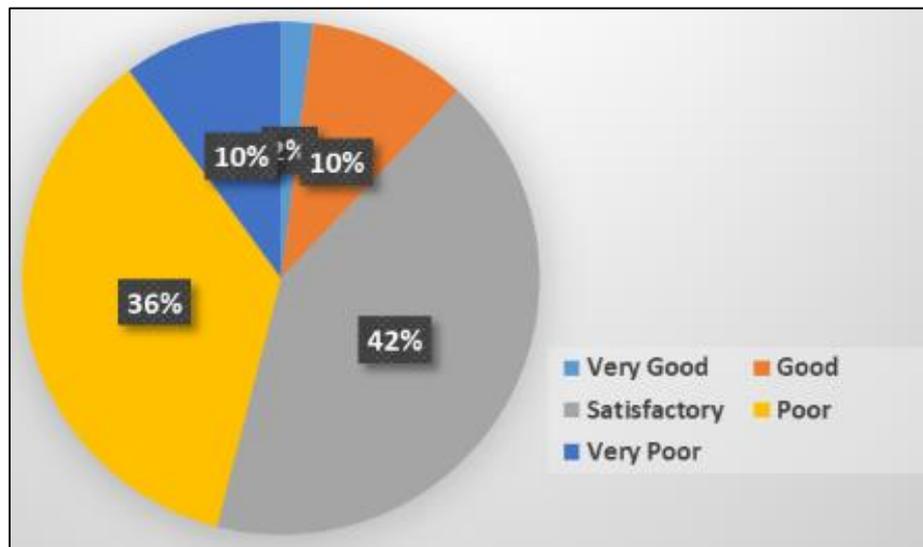
**Table 3:** Final generated result

Sr. No.	Questions	Correct Answer	Total no. of students
1.	There is only one type of Diabetes Mellitus.	79%	121
2.	Diabetes Mellitus is a condition of high blood sugar level.	88%	
3.	Diabetes Mellitus is a condition of inadequate insulin action.	63%	
4.	Type-2 Diabetes Mellitus is contagious.	54%	
5.	Diabetes Mellitus is a disease affecting the pancreas.	61%	
6.	Type-2 Diabetes Mellitus can be prevented.	43%	
7.	Type-2 Diabetes Mellitus is inherited from parents	41%	
8.	Type-2 Diabetes Mellitus is related to lifestyle.	41%	
9.	Obese individuals are more prone to Diabetes Mellitus.	28%	
10.	Decreased physical activity increases the risk to Diabetes Mellitus.	38%	
11.	Slow healing of cuts and wounds is a symptom of Type-2 Diabetes Mellitus.	36%	
12.	Type-2 Diabetes Mellitus affect Heart, Kidneys, Brain, Eyes, etc.	33%	
13.	Increased thirst is a symptom of Type-2 Diabetes Mellitus.	37%	
14.	Physical Activity has a role in the management of Type-2 Diabetes Mellitus.	34%	

The results shows that only 2% participants has knowledge about Diabetes Mellitus. This study shows that slow healing of cuts and wounds and increased thirst were mentioned as symptoms of diabetes by 36% and 37% subjects respectively. 79% people stated that there are two types of diabetes mellitus. 88% people were sure that Diabetes mellitus is a condition of high blood sugar level. Disease affects heart, kidneys, brain and eyes are mentioned by 33% participants and 61% participants mentioned that it affects pancreas. As much as 38% subjects stated that Decreased physical activity increases risk to diabetes mellitus. Only 41% people were

aware that genetic factors are reason for the causation of diabetes. Only 34% people were aware that physical activity has a role in the management of Diabetes Mellitus. According to the results, we interpreted the response of the questionnaire as,

0 - 20%	Extremely poor
20% - 40%	Poor
40% - 60%	Satisfactory
60% - 80%	Good
80% - 100%	Very Good



**Fig 1:** Responses

The above pie chart shows, among total participants, 2% students gave Very Good response. 10% students gave Good response. 42% students gave satisfactory response. 36% students gave poor response and 10% gave extremely poor response. By which we concluded that the participants have poor knowledge about Diabetes Mellitus.

### Conclusion

This study concluded that the students admitted to 1st year health care professional courses have limited knowledge about Diabetes Mellitus.

### Future Scope

This study can be done in students admitted to 1st year non health care professional courses.

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