# Assess The Level of Knowledge Regarding Diabetiogenic Complications Among Type 2 Diabetic Patient in Selected Hospital to Develop and Provide Self-Instructional Module

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***Abstract*—The prevalence of diabetes in India has notably increased, rising from 7.1% in 2009 to 8.9% by 2019. Diabetes mellitus is a chronic metabolic condition marked by high blood sugar levels. After eating, the rise in glucose triggers the pancreas to secrete insulin—a hormone that aids in the absorption of glucose by muscle and fat tissues and supports its breakdown in the liver, thereby helping to maintain normal glucose levels in the bloodstream.**

**This study set out to evaluate the level of awareness and attitudes among individuals diagnosed with Type 2 diabetes, specifically regarding the complications linked to the disease. A structured survey was conducted with 120 patients at Hospital in Ahilyanagar. Results showed that all participants (100%) had a poor level of knowledge, with no one falling into the good or average knowledge categories. Statistical analysis revealed a meaningful correlation between knowledge levels and certain demographic factors, including religion, income level, and dietary practices. These results highlight the critical importance of improving patient education, as most individuals had limited awareness of the complications associated with diabetes.**

***Index Terms*—Assess, Knowledge, Diabetic Patient, Diabetes Mellitus, Type II Diabetes Mellitus patients, Diabetogenic, Self-Instructional Module.**

## I. INTRODUCTION

Diabetes has surged into becoming one of the most significant global health challenges of the 21st century—now ranking among the top ten causes of death worldwide, alongside heart disease, respiratory disorders, and cancer. According to the 2025 IDF Diabetes Atlas, 11.1% of adults (20–79 years)—that is 1 in 9 people—live with diabetes, with this number projected to rise to 853 million by 2050, and over 40% remaining undiagnosed. The World Health Organization reports that by 2022, 14% of adults aged 18 and above were living with diabetes, a significant increase from 7% in 1990.

Historically, in 1936, Sir Harold Percival Himsworth distinguished between Type 1 and Type 2 diabetes, highlighting the pivotal role of insulin resistance in the latter. The earliest descriptions of the condition date back to 1552 B.C., with Apollonius of Memphis introducing the term "diabetes" around 250 B.C., and Thomas Willis adding "mellitus" in 1675 to indicate the sweetness of urine in affected individuals. Today, diabetes is recognized as a metabolic disorder characterized by elevated blood glucose levels, primarily categorized into Type 1, Type 2, and Gestational Diabetes Mellitus, and capable of causing severe damage to the kidneys, eyes, heart, nerves, and feet. Risk factors include family history, obesity, aging, sedentary lifestyle, and certain genetic predispositions.

The global prevalence of gestational diabetes mellitus (GDM) is also rising. Meta-analyses estimate that around 13% of pregnant women worldwide are affected, and according to the IDF, in 2024 approximately 15.6% of live births were complicated by hyperglycaemia in pregnancy, including GDM—affecting about 23.3 million births. Regionally, GDM prevalence is estimated at 14% globally, with notably

higher rates in South-East Asia (20.8%) and the Middle East & North Africa (27.6%).

In India—home to one in four of the world's diabetes cases—approximately 19.8% of adults aged 45 and older are affected, totalling nearly 50.4 million people. Among all adults, prevalence stands at 10.5%, equating to over 89 million individuals. The prevalence of GDM in India ranges from 4% to 18%, influenced by regional and demographic factors, with recent pooled estimates placing it at around 13%. In the state of Maharashtra, the prevalence of diabetes is around 8.4%, while certain districts, such as Ahilyanagar, report rates as high as 38.6% of the adult population.

## II. MATERIALS AND METHODOLOGY

A descriptive, non-experimental research design was utilized in this study to evaluate the level of knowledge regarding diabetogenic complications among patients. The research was carried out at Dr. Vithalrao Vikhe Patil Memorial Hospital, Ahilyanagar. The study specifically targeted individuals diagnosed with Type 2 diabetes who were experiencing diabetogenic complications. A total of 120 participants were selected using a convenient sampling technique. The primary focus of the investigation was to assess the participants' understanding of complications associated with diabetes.

Inclusion Criteria-

1. Patients diagnosed with Type 2 diabetes.
2. Individuals with Type 2 diabetes experiencing diabetogenic complications who were present during the data collection period and consented to participate.
3. Patients who were able to read and write in either English or Marathi

Exclusion Criteria-

1. Type 2 diabetic patients who were not present at the time of data collection.
2. Patients who were unable to read or write in Marathi.
3. Individuals who declined to participate in the study.

## III. DATA COLLECTION TOOLS AND PROCEDURE

The tools designed for data collection aimed to obtain pertinent information from adult participants regarding their demographic characteristics and understanding of diabetogenic complications. The tools were structured into two distinct sections:

- Part I: Demographic Profile – This section included nine items focused on gathering socio-demographic data of the participants.
- Part II: Structured Interview Schedule – This consisted of 30 items designed to evaluate participants' knowledge about diabetogenic complications associated with Type 2 diabetes.

Data were collected through face-to-face interviews, during which investigators recorded responses by placing a check mark (√) in the corresponding column based on the participant's answer. Each correct response was awarded a score of '1', while incorrect answers were scored as '0'.

A pilot study conducted at Dr. Vithalrao Vikhe Patil Memorial Hospital, Ahilyanagar, revealed that 70% of participants had inadequate knowledge, 20% demonstrated a moderate level of knowledge, and only 10% possessed adequate knowledge about diabetogenic complications. These findings confirmed the practicality and feasibility of proceeding with the full-scale study.

The main data collection was carried out between June 8 and June 18, 2024. Participants diagnosed with Type 2 diabetes were selected using a non-probability convenience sampling technique from the hospital.

## IV. DATA ANALYSIS

The collected data were analysed using both descriptive and inferential statistical methods:

1. Frequencies and percentages were used to describe the demographic variables.
2. Means and standard deviations were calculated to assess and compare knowledge levels.
3. Karl Pearson's correlation coefficient was applied to determine the relationship between knowledge scores.
4. The Chi-square test was used to examine associations between knowledge and selected demographic variables.

5. The results were systematically presented in tables to facilitate clear and effective interpretation.

## V. RESULTS

The data collected for this study were analysed manually using IBM SPSS software version 22. The findings were categorized into two main sections.
Section A: This section presents the description of the baseline characteristics of 120 samples from selected hospitals in Ahilyanagar. The data were analysed using descriptive statistics and are summarized in terms of frequency and percentage, which are presented in tables and figures.

PART-I Table-1 Frequency distribution of demographic variable of regarding the Diabetogenic complication among type-2.

| Variable | Categories | Frequency (n=120) | Percentage (%) |
|---|---|---|---|
| 1. Age (in Years) | 31–40 | 5 | 4.2% |
| | 41–50 | 36 | 30.0% |
| | 51–60 | 67 | 55.8% |
| | 61 & above | 12 | 10.0% |
| 2. Gender | Male | 62 | 51.7% |
| | Female | 58 | 48.3% |
| 3. Religion | Hindu | 30 | 25.0% |
| | Christian | 34 | 28.3% |
| | Muslim | 39 | 32.5% |
| | Others | 17 | 14.2% |
| 4. Family History | Maternal | 17 | 14.2% |
| | Father | 49 | 40.8% |
| | Grandfather | 33 | 27.5% |
| | None | 21 | 17.5% |
| 5. Education | Illiterate | 10 | 8.3% |
| | Primary | 48 | 40.0% |
| | Secondary | 52 | 43.3% |
| | Pre-university | 10 | 8.3% |
| 6. Income (₹) | <3000 | 8 | 6.7% |
| | 3001–5000 | 46 | 38.3% |
| | 5001–10000 | 53 | 44.2% |
| | >10000 | 13 | 10.8% |
| 7.Occupation | Unemployed | 58 | 48.3% |
| | Employed | 62 | 51.7% |
| 8. Food Type | Vegetarian | 22 | 18.3% |
| | Non-Vegetarian | 12 | 10.0% |
| | Mixed | 86 | 71.7% |
| 9. Insulin Use | Self | 74 | 61.7% |
| | Assisted | 46 | 38.3% |

Part II –Assessments of knowledge on diabetogenic complication.
The findings of the present study conducted in selected hospitals revealed that the mean percentage of total knowledge was 12%, with a mean ± SD of 81.46. The results indicate that all (100%) of the participants had inadequate knowledge about diabetogenic complications among Type 2 diabetic patients from selected hospitals in Ahilyanagar.

Table 2: Distribution of subjects according to the grading of knowledge regarding diabetogenic complications among Type 2 diabetic patients.

| Level of Knowledge | Score Range (%) | Male (n = 62) | % | Female (n = 58) | % |
|---|---|---|---|---|---|
| Inadequate | <50% | 62 | 100% | 58 | 100 % |
| Moderate | 51–75% | 0 | 0% | 0 | 0% |
| Adequate | >76% | 0 | 0% | 0 | 0% |

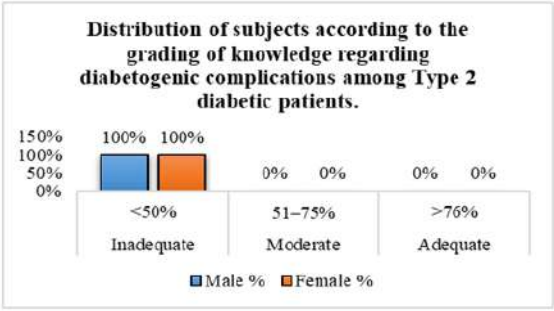


Figure No:1
Bar diagram showing percentagewise distribution of respondents according to the grading of knowledge regarding diabetogenic complications among Type 2 diabetic patients.

## VI. CONCLUSION AND INTERPRETATION

1. 100% of both male and female participants had inadequate knowledge.
2. No participant scored in moderate or adequate ranges.

3. Indicates urgent need for structured teaching interventions and patient education modules.

## VII. DISCUSSION

Section A: Observation of Demographic Variables

The study assessed 120 Type-2 diabetic patients in selected hospitals of Ahilyanagar to evaluate their knowledge regarding diabetogenic complications.

Age

Most of the participants (55.8%) were between 51–60 years, followed by 30% in the 41–50 years age group.

This age-related prevalence aligns with the findings of Ramachandran et al. (2019) who noted that the incidence of Type-2 diabetes increases significantly after age 45, peaking around 55–60 years in India.

Similarly, a study by Mohan et al. (2019) emphasized that middle-aged and elderly populations are at higher risk due to cumulative exposure to risk factors like sedentary lifestyle and poor dietary habits.

Gender

The sample had a nearly equal gender distribution: 51.7% male and 48.3% female.

This is consistent with the study by Deepa et al. (2021) which reported similar gender-based prevalence in urban Indian populations.

No significant gender disparity was noted in diabetes knowledge, reflecting a general lack of awareness regardless of sex.

Religion

The highest proportion of respondents were Muslim (32.5%), followed by Christians (28.3%) and Hindus (25%).

Though religion itself may not directly influence diabetes prevalence, lifestyle, and dietary patterns, often influenced by cultural and religious norms, can affect glycaemic control and awareness.

This aligns with Ali et al. (2021), who highlighted the need for culturally tailored diabetic education in multi-religious communities.

◇ Family History

A large percentage (40.8%) had a paternal history of diabetes, suggesting a strong hereditary component, followed by 27.5% with a grandfather's history.

According to American Diabetes Association (2020), individuals with first-degree relatives having diabetes have a significantly increased risk.

The finding is consistent with Rema et al. (2020), who found that a positive family history is one of the most consistent risk factors for Type-2 diabetes.

Education

Most patients had primary (40%) or secondary education (43.3%), with only 8.3% illiterate.

Despite moderate educational status, all participants showed poor knowledge, suggesting health-specific literacy is lacking.

This reflects findings from Chandalia et al. (2018), which found that general education does not always equate to health literacy among diabetic patients.

Income

Most participants had monthly income between ₹3001–10000, indicating a low to lower-middle economic class.

WHO (2016) notes that economic constraints often limit access to quality healthcare and diabetes education.

Low income is often correlated with poor disease management and complications, as supported by Shrivastava et al. (2023).

Occupation

Slightly more than half (51.7%) were employed, and 48.3% unemployed.

Occupational status may influence stress levels, access to information, and ability to afford medications and follow-up visits.

In contrast, Kumar et al. (2023) found that unemployed individuals had lower awareness and compliance, reinforcing the need for community-based outreach.

Food Type

A majority (71.7%) consumed a mixed diet, which may contribute to poor glycaemic control if not balanced properly.

Studies by Shetty et al. (2021) report that mixed diets, especially high in saturated fats and refined sugars, increase the risk of complications in diabetic patients.

Insulin Use

61.7% were self-administering insulin, and 38.3% required assistance.

This indicates moderate self-care competence but also reflects potential gaps in technique, storage, or knowledge, as supported by Rao et al. (2022), who highlighted the need for repeated demonstrations and follow-ups for insulin users.

## VIII. RECOMMENDATIONS

1. A similar study may be conducted on a larger sample to allow for generalization of findings to a broader population.
2. A comparative study can be carried out focusing specifically on male participants.
3. A comparative study can be undertaken to assess the quality of life among diabetic patients.
4. A study may be conducted to assess the attitude of Type 2 diabetic patients toward diabetogenic complications.

## IX. SUGGESTIONS

1. The findings of this study can be utilized by healthcare professionals, including nursing, medical, and allied health science personnel, especially in the medical-surgical field.
2. Nursing staff working in medical-surgical units can be provided with specialized training and guidance related to diabetes education and patient support.

## X. CONCLUSION

The aim of the present study was to assess the knowledge regarding diabetogenic complications among Type 2 diabetic patients. Through this research, valuable insights were gained into the level of awareness among patients. Knowledge levels were categorized into three groups: poor, average, and good.

The results revealed that 100% of participants had poor knowledge, while 0% had average knowledge and 0% had good knowledge regarding diabetogenic complications. The mean, median, and mode of the knowledge scores were 81.46 and 12, respectively.

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