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*Original Research Article.*

# A Prospective Study on Prevalence and Percentage of Undiagnosed Type 2 Diabetics Patients Undergoing Elective Surgery

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## ABSTRACT

**Introduction:** The major form of diabetes mellitus is Type 2 diabetes. It accounts for 90 percent of the diabetic population. Patients with diabetes mellitus (DM) are prone to adverse outcomes. It is observed that one fifth of the patients undergoing surgery are diabetic.

**Methodology:** This study was conducted in the Department of Surgery in the Department of General Surgery, Ananta Institute of Medical Sciences and Research Centre, Rajsamand. 289 total numbers of cases were included in this study. Each case has Type 2 DM.

**Results:** In our study, 289 total numbers of cases were included. Among the 289 cases 53.9% were male & 46.1% were female. Incidence of Diabetic Mellitus in undiagnosed & diagnosed cases was found 41.5% & 58.5% respectively.

**Conclusion:** This study concludes that there is a strong need of awareness about diabetes and early diagnosis of diabetes to reduce its various complications.

**Keywords:** Diabetes Mellitus, Metabolic Disorder, Undiagnosed Cases, Diagnosed Cases.

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## INTRODUCTION

Diabetes mellitus (DM) is a metabolic disorder. It results from a defect in insulin secretion or insulin action.[1-4] It was estimated that worldwide, more than 200 million people had DM in 2010, and 300 million will subsequently have the disease by 2025.[5-7] it has been reported that India had 32 million diabetic subjects in 2000 and by the year 2030, it will be 80 million.[8] The incidence of diabetes is rising all over the world at an alarming rate.[9] India is termed as the "Diabetes capital of the world", due to the highest number of diabetic patients in the world. The major form of diabetes mellitus is Type 2 diabetes. It accounts for 90 percent of the diabetic population. Patients with diabetes mellitus (DM) are prone to adverse outcomes. [10,11] It is observed that one fifth of the patients undergoing surgery are diabetic. However, several treatment strategies are employed to get rid of it globally. But in developing countries where resources are limited, needs to be reviewed. Over the past thirty years, the status of diabetes has changed from mild disorder to one of the major causes of morbidity and mortality.[8] It has been reported that there is a difference in percentage of urban-rural prevalence in type 2 DM in all parts of the globe including India. Hence, due to alarming rate of diabetes it was necessary to study the incidence of prevalence and percentage of undiagnosed type 2 diabetics admitted for elective surgery.

## MATERIALS & METHODS

### Study Area

This study was conducted in the Department of General Surgery, Ananta Institute of Medical Sciences and Research Centre, Rajsamand, Rajasthan, India.

### Study Population

289 total numbers of cases were included in this study. Each case has Type 2 DM.

### Study Duration

The duration of study was over a period of 2 year.

### Data Collection

On enrolling the patients, routine investigation of fasting, random and post prandial blood glucose profile was done twice for confirmation by employing the glucose oxidation test for estimation of blood glucose.

The history and duration of diabetes in addition to epidemiological characteristic profile was noted. After being educated on diet, importance of insulin with special emphasis on need to adhere to treatment, the patients were allocated to different treatment groups for metabolic control.

### Data Analysis

Data were analyzed by using Microsoft excel.

## RESULTS

In our study, 289 total numbers of cases were included. Among the 289 cases 53.9% were male & 46.1% were female. Among all cases we were found that, 33.9% cases belong to 31-40 age group followed by other. In this study we suggested that, 43.59% cases were found from rural area & rest were belongs to urban area. In the suggestive study associated disease were found such as hormonal disease, hypertension, liver disease which showed in table no. 4. Incidence of Diabetic Mellitus in undiagnosed & diagnosed cases was found 41.5% & 58.5% respectively.

**Table 1: Distribution of cases according to gender**

| Gender | n | % |
|---|---|---|
| **Male** | 156 | 53.9% |
| **Female** | 133 | 46.1% |
| **Total** | 289 | 100% |

**Table 2: Distribution of cases according to Age**

| Age group | n | % |
|---|---|---|
| **21-30** | 15 | 5.1% |
| **31-40** | 98 | 33.9% |
| **41-50** | 97 | 33.5% |
| **51-60** | 79 | 27.3% |
| **TOTAL** | 289 | 100% |

**Table 3: Distribution of cases according to Sector**

| Sector | n | % |
|---|---|---|
| **Rural** | 126 | 43.59% |
| **Urban** | 163 | 56.41% |
| **Total** | 289 | 100% |

**Table 4: Distribution of cases according to associated disease**

| Associated disease | n | % |
|---|---|---|
| **Hormonal disease** | 42 | 14.53% |
| **Hypertension** | 166 | 57.43% |
| **Liver disease** | 8 | 2.70% |
| **Other** | 7 | 2.43% |
| **Total** | 223 | 100% |

**Table 5: Distribution of cases according to incidence of Diabetic Mellitus**

| Incidence of DM | n | % |
|---|---|---|
| **Undiagnosed** | 120 | 41.5% |
| **Diagnosed** | 169 | 58.5% |
| **Total** | 289 | 100% |

## DISCUSSION

In India, the incidence of undiagnosed type 2 diabetes mellitus is more than diagnosed type 2 diabetics. This study examined the incidence of undiagnosed type 2 DM in patients admitted in surgical wards for different surgical procedures as the diabetics are more prone to adverse events than their non-diabetic counterpart.

It has been found that more percentage of undiagnosed than diagnosed DM patients is found when they come with complaint of some other ailment and are suddenly diagnosed as diabetic after clinical investigations.

In the present study, the total percentage of diabetic patients was estimated who were admitted in different surgical wards. Results of this study showed that there was no significant difference ($p>0.05$) in mean age of the diagnosed and undiagnosed patients in different treatment groups. It was also observed that there were more incidences (56.41%) of type 2 DM in urban population than rural population (43.59%). Furthermore, a significant difference ($p<0.001$) was found in mean BMI of the male and female patient population. “Asian Indian Phenotype” refers to certain unique clinical and biochemical abnormalities in Indian population. It comprises increased insulin resistance and greater abdominal adiposity which makes Asian Indians more susceptible to diabetes and premature coronary artery disease.[12, 13] In a study by WHO-ICMR found that the prevalence rate of self-reported diabetes was 7.3% in urban, 3.2% in semi-urban, and 3.1% in rural areas.[14] According to PODIS, the prevalence of diabetes was 4.7 per cent in the urban compared to the 2.0 percent in rural population. This study has found 41.5% of the patients as newly detected (undiagnosed) type 2 diabetics which are equal to the diagnosed type 2 diabetics. Additionally, the associated disease in type 2 DM were also observed and compared among the groups. There was a significant difference ($p<0.001$) in percentage of associated diseases among patient population. Hormonal diseases were noted in 14.53% and hypertension in 57.43% patients. However, liver disease had found in 2.70% patients and 2.43% some other ailments. This study revealed mostly equal incidence of undiagnosed and diagnosed type 2 DM in patients.

## CONCLUSION

This study concludes that there is a strong need of awareness about diabetes and early diagnosis of diabetes to reduce its various complications.

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