

## “GESTATIONAL DIABETES MELLITUS: ANTENATAL WOMEN’S HEALTH AND KNOWLEDGE “

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### Abstract

**Introduction:** Antenatal women must be healthy to give birth to healthy newborn. Gestational Diabetes Mellitus among antenatal women can be managed by different ways to maintain normal blood sugar level and prevent complications. Health awareness, knowledge on life style modification and dietary sugar control helps to maintain blood sugar level within normal range. Gestational Diabetes Mellitus is one of the major health issue among antenatal women and so prevention is better than cure and controlling complications are primary goal. **Aims:** The aim of this study to evaluate the health status and knowledge levels of antenatal women regarding Gestational Diabetes Mellitus, its prevention and management of disease condition and associated complications. **Materials & Methods:** This study adopted quantitative approach and the research design was non experimental descriptive Survey. The sample of the study consists of 200 antenatal women who were between 24-38 weeks of pregnancy, aged between 21 to 35 years and diagnosed Gestational Diabetes Mellitus from selected hospitals and areas of Pune, Maharashtra. Participants were selected with non-probability purposive sampling techniques. Written consent from the participants was taken, made them comfortable and tool was administered, each participants were given 30-35 minutes and data collected by using semi structured interview technique. Data collection of the study was based on study objectives, demographic variables and health status assessment and knowledge-based tool. **Result:** 41 % of the participants were in their 30–33 gestational weeks followed by 39% in their 24–29 and 21% 34-38 gestational weeks and 54% of the participants were primipara, and the remaining 46% were multipara. The majority of antenatal women had good health status i.e. 69% where as 17% were had very good health and 14 % had poor health status. The knowledge levels among the participants varied, 82% of participants had average knowledge regarding Gestational Diabetes Mellitus, indicating a moderate understanding of the condition , 8.5% exhibited good knowledge showing strong awareness of Gestational Diabetes Mellitus management, dietary recommendations and blood glucose monitoring. 9.5% had poor knowledge highlighting gaps in understanding particularly in recognizing the complications and long-term risks associated with Gestational Diabetes Mellitus. **Conclusion:** The study concluded that antenatal mothers with Gestational Diabetes Mellitus had average physical health status. Majority of participants being primigravida had good knowledge on Gestational Diabetes Mellitus and its home management.

**Keywords** – Health status, knowledge, antenatal women, Gestational Diabetes Mellitus

## **INTRODUCTION**

According to world health organization, Diabetes is a chronic, metabolic disease characterized by elevated levels of blood glucose, which leads over time to serious damage to the heart, blood vessels, eyes, kidneys, and nerves.<sup>1</sup>

As we know the burden of diabetes is increasing day by day globally and in developing economies like India, mainly fueled by the increasing prevalence of obesity and unhealthy lifestyles. The estimates in 2019 showed that 77 million individuals had diabetes in India, which is expected to rise to over 134 million by 2045 and approximately 57% of these individuals remain undiagnosed.<sup>2,8</sup>

Gestational Diabetes Mellitus is defined as glucose intolerance with onset or first recognition during pregnancy. Gestational Diabetes Mellitus simply represents relatively high glucose levels at one point in the life of a young woman during her pregnancy. The women diagnosed with Gestational Diabetes Mellitus may develop a perinatal complications which directly - indirectly effect on development of fetus. Doubling the number of women diagnosed with Gestational Diabetes Mellitus will at least double the number of women who have the diagnosis without real perinatal risk.<sup>3</sup>

Effective management of gestational diabetes primarily focuses on regulating blood glucose levels to mitigate adverse outcomes. This typically involves dietary modifications, regular physical activity, and potentially insulin or other pharmacological interventions. Monitoring blood glucose levels is crucial to maintain appropriate control throughout the pregnancy. A collaborative approach involving obstetricians, endocrinologists, dieticians, and diabetes educators is often employed to ensure the provision of optimal care. Preventive measures are vital in reducing the risk of gestational diabetes and its associated complications. Preconception counselling for women with risk factors can aid in enhancing their health prior to pregnancy. During the gestational period, early screening and diagnosis of gestational diabetes, coupled with effective management strategies, can mitigate adverse outcomes for both the mother and the infant. Postpartum follow-up is crucial to monitor blood sugar levels and assess the risk of progressing to type II diabetes in the future.<sup>4</sup>

## **NEED OF STUDY**

Understanding Gestational Diabetes among pregnant women is vital for several factors. First, knowing about gestational diabetes helps expectant mothers make informed choices about their health and their baby's health. Gestational Diabetes Mellitus refers at any stage of glucose intolerance that begins during pregnancy. An exploratory study conducted by Manal Hussein Wafa et al. on Knowledge and Attitude regarding Gestational Diabetes Mellitus among 539 pregnant women in Tabuk City, Saudi Arabia of various age groups from under 20 to 40 years, with pregnancy occurrences ranging from one to four times. Majority of participants shown strong understanding, with 410 (76.1%) demonstrating awareness of Gestational Diabetes Mellitus and 382 (70.9%) having a clear grasp of its definition. Additionally, a majority displayed positive attitudes toward managing Gestational Diabetes Mellitus. This study gives insights that knowledge- awareness and early detection of Gestational Diabetes Mellitus and its management will help to control blood sugar level and prevent complications during pregnancy.<sup>4, 9</sup>

Similarly the research concept and study output given by Jose L Bartha et al. on early diagnosis of Gestational Diabetes Mellitus and prevention of diabetes-related complications. The

comparison rates of pregnancy complications commonly related to diabetes between 189 (later screening group) and 235 (earlier screening group) among women with gestational Diabetes Mellitus diagnosed pre and post blood sugar screening performed during antenatal visit at 24–28 weeks of gestation. Result shows that early glucose tolerance screening could avoid some diabetes-related complications among women with gestational diabetes.<sup>5</sup>

In addition, spreading awareness about gestational diabetes among pregnant women can mitigate stigma and misunderstandings about the disease. Some women might feel ashamed or embarrassed upon diagnosis, seeing it as a reflection of their lifestyle choices or their body's failure to maintain a healthy pregnancy by improving knowledge and empathy, healthcare providers can establish a supportive environment where pregnant women feel at ease seeking assistance and guidance for issues related to gestational diabetes. Complications of gestational diabetes can pose significant risks for both mother and child.<sup>6</sup>

### **AIM OF THE STUDY**

The aim of this study to evaluate the health status and knowledge levels of antenatal women regarding Gestational Diabetes Mellitus, its prevention and management of disease condition and associated complications.

### **MATERIALS & METHODS**

The present study aimed to evaluate the health status and knowledge levels of antenatal women regarding Gestational Diabetes Mellitus, its prevention and management of disease condition and associated complications.

The research employed a non-experimental, descriptive design and used a quantitative research approach to assess participants' understanding. The sample population for study included 200 antenatal women diagnosed as Gestational Diabetes Mellitus with varying educational and occupational backgrounds. The participants selected through a non-probability purposive sampling method from selected hospitals and areas in Pune.

Inclusion criteria were antenatal women aged between 21-35 years with 24-38 weeks of pregnancy either primigravida or Multipara, diagnosed with Gestational Diabetes Mellitus, who were on oral medication and Insulin therapy. The exclusion criteria were antenatal women who with other chronic diseases and critically ill. A structured knowledge questionnaire was developed to assess the understanding of Gestational Diabetes Mellitus among participants. The tool's reliability and validity were confirmed through expert review and a pilot study carried out to check feasibility of the study. Formal permission obtained from concern authority from hospitals and selected areas. Written consent from the participants was taken from whoever willing, made them comfortable and tool was administered, each participants were given 30-35 minutes and data collected by using semi structured interview technique through face-to-face interviews, focusing on demographic variables, assessment of health status and knowledge-related questions.

### **Ethical consideration:**

This study received ethical approval from the institutional research cell of college of Nursing, Bharati Vidyapeeth (Deemed to be University), Pune. Oral information provided to the participants and after willingness written consent was taken, made them comfortable, each participants were given 30-35 minutes and tool was administered. Data collection done by assessment of health status and using semi structured interview technique through face-to-face

interviews, focusing on demographic variables, assessment of health status and knowledge-related questions. Data were collected from participants while preserving their anonymity, considering importance of ethical concerns, privacy and confidentiality throughout the study.

### Statistical analysis:

The data analysis highlighted on demographic variables, which were computed by using descriptive and inferential statistics. Excel and IBM SPSS Statistics for Window, version 28.0 (IBM Corp, Armonk, NY,US) was used for the data analysis. Frequency percentage distribution was used for analysis of the demographic data and item analysis.

The mean and standard deviation were used to assess the health status and knowledge level of antenatal women on Gestational Diabetes Mellitus.

## RESULTS

### 1) Baseline Demographic Data: Frequency and percentage of demographic variables

Table No: 1

n=200

| Sr. No.  | Items                 | Frequency | Percentage |
|----------|-----------------------|-----------|------------|
| <b>1</b> | AGE:-                 |           |            |
| <b>a</b> | 18-23 year            | 60        | 30%        |
| <b>b</b> | 24-29 year            | 102       | 51%        |
| <b>c</b> | 30-35 year            | 33        | 17%        |
| <b>2</b> | EDUCATIONAL STATUS: - |           |            |
| <b>a</b> | Primary Education     | 24        | 12%        |
| <b>b</b> | Secondary Education   | 68        | 34%        |
| <b>c</b> | Graduation            | 104       | 52%        |
| <b>d</b> | Illiterate            | 4         | 2%         |
| <b>3</b> | OCCUPATION: -         |           |            |
| <b>a</b> | House Wife            | 91        | 46%        |
| <b>b</b> | Job                   | 98        | 49%        |
| <b>c</b> | Business              | 11        | 6%         |
| <b>4</b> | GESTATIONAL WEEKS: -  |           |            |
| <b>a</b> | 24-29 Weeks           | 77        | 39%        |
| <b>b</b> | 30-33 Weeks           | 82        | 41%        |
| <b>c</b> | 34-38 Weeks           | 41        | 21%        |
| <b>5</b> | GRAVIDA:-             |           |            |
| <b>a</b> | Primipara             | 108       | 54%        |
| <b>b</b> | Multipara             | 92        | 46%        |

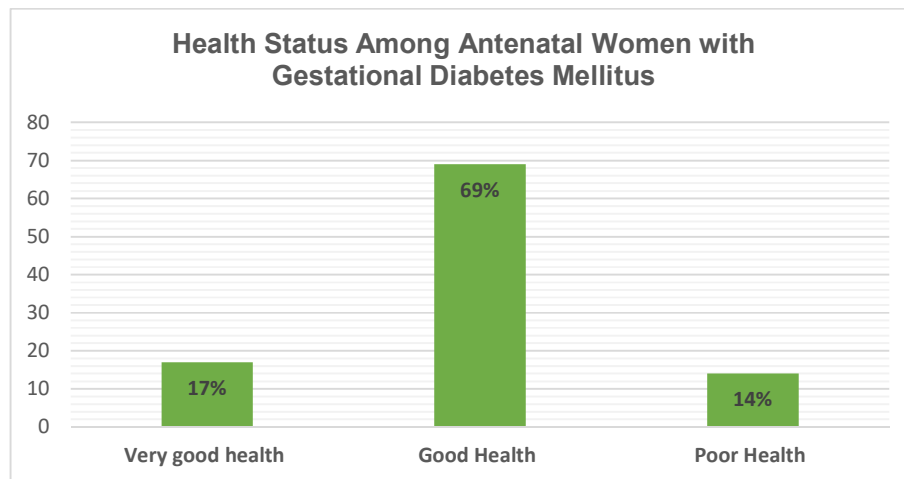
**Table No. 1** shows in terms of age, the largest proportion of participants (51%) belonged to the 24-29 years age group, followed by 30% in the 18–23 years age group. A smaller percentage (17%) of participants were in the 30-35 years age group. Regarding educational qualifications, the majority (52%) of participants had completed graduation, while 34% had completed secondary education. A smaller portion (12%) had primary education, and only 2% of the participants were illiterate. With respect to occupation, nearly half (49%) of the participants were employed, 45% were housewives, and 6% were engaged in business.

The gestational week-wise distribution revealed that 41 % of the participants were in their 30–33 gestational weeks followed by 39% in their 24–29. The remaining 21% of participants were in their 34-38 gestational weeks of pregnancy .Finally, in terms of Gravida, 54% of the participants were primipara, and the remaining 46% were multipara.

This distribution highlights the diversity of the sample in terms of age, education, occupation, gestational age, and obstetric status, which can provide a comprehensive basis for further analysis.

## 2) Analysis of Health status among antenatal women with Gestational Diabetes Mellitus n=200

**Figure 1** highlights majority antenatal women good health status i.e. where as were had



**No.** that of had 69% 17% very

good health and 14 % had poor health status.

Health status assessed with eight key health domains like physical functioning, role limitations due to physical health body pain general health perception, vitality, social functioning, role limitations due to emotional problems and mental health.

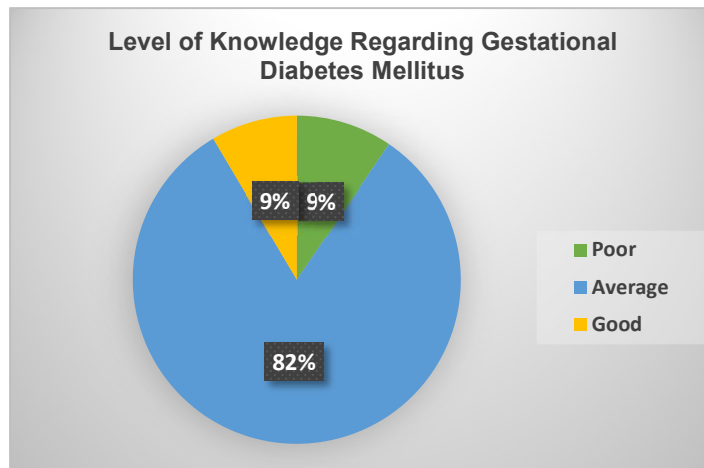
## **Table No: 2 Analysis of the knowledge regarding Gestational Diabetes Mellitus among antenatal women**

**n=200**

| Level of knowledge | Frequency | Percentage | Mean  | SD   |
|--------------------|-----------|------------|-------|------|
| Poor knowledge     | 19        | 9.5%       | 10.86 | 2.62 |
| Average knowledge  | 164       | 82%        |       |      |
| Good knowledge     | 17        | 8.5        |       |      |

**Table No – 2** show that, majority 82% of samples had average knowledge regarding Gestational diabetes, 8.5% of samples had good knowledge regarding Gestational diabetes and 9.5% sample having poor knowledge.

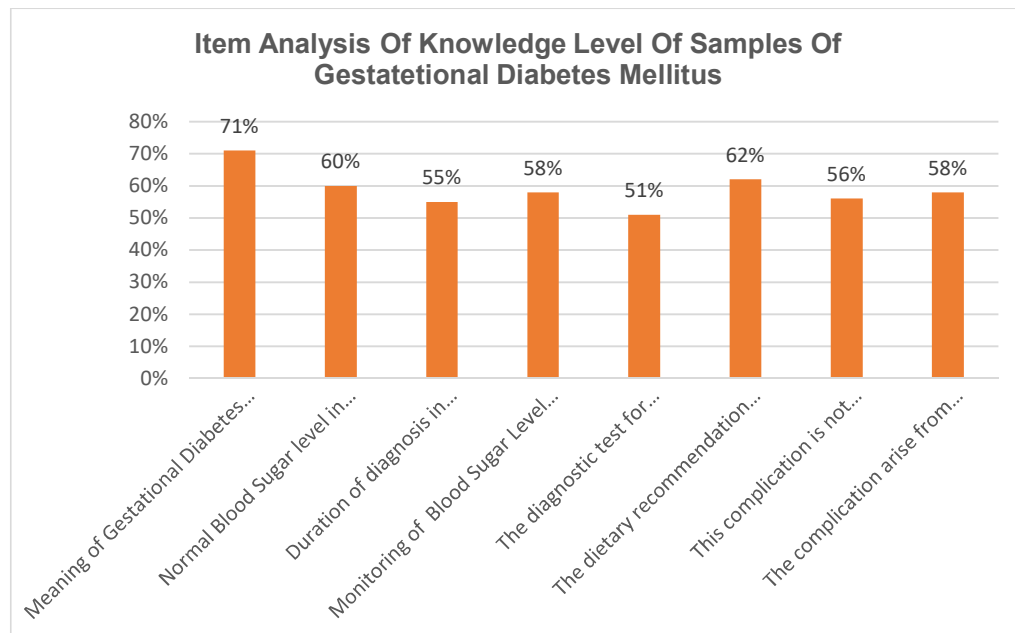
**n = 200**



**Figure No. 2**

The pie diagram showing percentage wise distribution of knowledge on Gestational Diabetes Mellitus among antenatal women

**4) Item analysis of knowledge regarding Gestational Diabetes Mellitus among antenatal women**



**Figure No. 3** depicts item analysis of knowledge regarding Gestational Diabetes Mellitus among antenatal women. 71% of samples had knowledge on meaning of Gestational Diabetes Mellitus, 60% of samples were aware about normal Blood Sugar level in Gestational Diabetes Mellitus and 55% samples had knowledge on duration of diagnosis in Gestational Diabetes Mellitus. 58% of samples were knowing monitoring of Blood Sugar Level, 51% had acknowledged that the diagnostic tests were important to diagnose Gestational Diabetes Mellitus, 62% had knowledge about dietary recommendation for Gestational Diabetes Mellitus, 56% of samples were aware that this complication is not a complication of Gestational Diabetes Mellitus and 58% of samples were aware that this complication arises from Gestational Diabetes Mellitus.

Mellitus. More than 50% of samples aware about the dietary recommendation, complications and these were associated with poorly controlled Gestational Diabetes Mellitus.

The study found no statistically significant association between participants' demographic variables (age, education, occupation, gestational weeks, and gravida) and their level of knowledge about Gestational Diabetes Mellitus. This suggests that factors such as education level or age did not strongly influence knowledge outcomes.

The study highlights the varying levels of knowledge about Gestational Diabetes Mellitus among antenatal women in Pune. Despite an overall moderate awareness, specific hospitals require further educational focus to enhance understanding and prevent complications. The absence of demographic influences on knowledge levels suggests that educational interventions should be inclusive and widespread. Nurses and healthcare providers play a crucial role in educating pregnant women and mitigating the risks associated with Gestational Diabetes Mellitus through better awareness.

## **DISCUSSION OF THE STUDY**

The main purpose of this study was to assess the health status and knowledge regarding Gestational Diabetes Mellitus among Antenatal Women. The Researchers Decided to use a quantitative research approach for this study. They chose a non-experimental, descriptive design to assess women's health status and knowledge about Gestational Diabetes Mellitus in specific hospitals and areas. The researchers selected a sample size of 200 antenatal women using non-probability purposive sampling.

The majority of antenatal women had good health status i.e. 69% where as 17% were had very good health and 14 % had poor health status. The knowledge levels among the participants varied 82% of participants had average knowledge regarding Gestational Diabetes Mellitus, indicating a moderate understanding of the condition 8.5% exhibited good knowledge, showing strong awareness of Gestational Diabetes Mellitus management, dietary recommendations, and blood glucose monitoring. 9.5% had poor knowledge, highlighting gaps in understanding, particularly in recognizing the complications and long-term risks associated with Gestational Diabetes Mellitus.

The present study provides valuable insights into the understanding Of Gestational Diabetes Mellitus among antenatal women. While the overall knowledge scores were relatively high, the findings indicate that specific hospitals, such as dietary management, blood sugar monitoring, and comprehension of complications, require more attention and emphasis. The lack of significant associations between demographic factors and the level of knowledge suggests that awareness campaigns and educational initiatives should be designed to be inclusive, catering to women across diverse age groups, educational backgrounds, and occupations. This comprehensive approach is essential to ensure that the necessary information and support reach all antenatal women, addressing the existing gaps in knowledge and empowering them to manage Gestational Diabetes Mellitus effectively.

A similar study support the findings of this study, A cross- sectional study conducted by Karthiga Prabhu et al.on Knowledge of gestational diabetes mellitus among pregnant women in a semiurban hospital among 200 study participants, only 92 (46%) knew that diabetes can occur for the first time during pregnancy. Good knowledge about Gestational Diabetes Mellitus was present in 103 (51.5%), fair knowledge in 68 (34%) and poor knowledge in 29 (14.5%).

Among the knowledge about risk factors of Gestational Diabetes Mellitus, family history of diabetes was considered as a major risk factor (84.5%) followed by obesity (53.5%). Only 34.5% of patients were aware that Gestational Diabetes Mellitus screening should be done for all antenatal women. Knowledge about fetal and neonatal complications was seen in only 30–50% of participants. Education and family history of diabetes were found to be significantly associated with better knowledge score ( $p = 0.0002$ ,  $p = 0.03$  respectively)<sup>7, 10</sup>

The findings indicate that while most of participants had a basic understanding of Gestational Diabetes Mellitus, critical gaps in knowledge remain. This underscores the need for more comprehensive educational programs tailored to pregnant women, particularly in hospitals like dietary management, blood sugar monitoring, and understanding the potential risks of Gestational Diabetes Mellitus.<sup>11,12</sup>

The study emphasizes that healthcare professionals, including nurses, should prioritize patient education, offering consistent information across demographic groups to ensure all women, regardless of background, receive adequate support<sup>13</sup>.

### **CONCLUSION**

In conclusion, the majority of antenatal women had good health status while the knowledge levels among the participants varied 82% of participants had average knowledge regarding Gestational Diabetes Mellitus, indicating a moderate understanding of the condition 8.5% exhibited good knowledge, showing strong awareness of Gestational Diabetes Mellitus management. 9.5% poor knowledge highlighting gaps in understanding, particularly in recognizing the complications and long-term risks associated with Gestational Diabetes Mellitus. The majority of antenatal women possess an average understanding of Gestational Diabetes Mellitus, there remains a need to bridge the knowledge gap to enhance maternal and child health outcomes. The absence of a significant relationship between demographic factors and knowledge indicates that education programs should target all antenatal women, regardless of their demographic background, to ensure equitable and comprehensive awareness of Gestational Diabetes Mellitus.

### **Recommendation for Future Research:**

- The study can be done in different hospitals.
- Study can be conducted on larger population.
- Information booklet or video on Home management Gestational Diabetes should be developed.

**Funding:** This project was not funded by any of agency.

### **Conflict of Interest**

We researchers, understand that conflict of interest refers to situations in which financial or other personal considerations may compromise our judgment in evaluating, conducting, or reporting research. We hereby declare that we do not have any personal conflict of interest that may arise from our application and submission of our research proposal.

### **Acknowledgement:**

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