

# What do Mothers know about gestational diabetes: knowledge and awareness

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## Abstract

**Introduction:** Prevalence of diabetes including gestational diabetes mellitus has been increasing recently due to wide differences in living conditions, socio-economic levels and dietary habits. Hyperglycemia during organogenesis negatively influences fetal development leading to adverse perinatal outcome. Hence this study was planned to study the awareness about GDM among antenatal mothers.

**Methods:** Total of 200 antenatal mothers were included in the study, who filled in a close-ended questionnaire. The questionnaire comprised of 13 questions (6 on knowledge about GDM and its risk factors, 4 about GDM screening and treatment and 3 about the consequences of GDM). All questions were given categorical responses (yes and no) and were applied with an item score of '1', '0' respectively for positive knowledge. The data was analyzed and results were entered using simple means and percentage.

**Results:** 100% response rate was present. Mean age was 28±3.2 years. 44.5% of mothers were primigravida and 15.5% of mothers had history of GDM either in present or previous pregnancy. The total knowledge score about gestational diabetes was 7.72. The score for knowledge on GDM and its risk factors was 4.65. The knowledge score for awareness on screening and treatment was 1.78 and a consequence of GDM was 1.29.

**Conclusion:** The knowledge of our women on GDM was just average. Health education and awareness programs should be conducted to improve knowledge of antenatal mothers for better utilization of health services.

**Keywords:** Gestational diabetes, Antenatal mothers, Awareness

## Introduction

India is no exception to the increase in prevalence of diabetes. The 1997 WHO estimates of the prevalence of diabetes in adults showed an expected total rise of > 120% from 135 million in 1995 to 300 million in 2025. With the overall increase in prevalence of diabetes, the prevalence of gestational diabetes mellitus (GDM) has also raised and hence health care providers should give special attention to this subset of people.<sup>(1)</sup> The raising trend can be brought to a halt by only focusing on primary prevention.

Gestational diabetes is glucose intolerance either onset or occurrence first time during pregnancy.<sup>(2)</sup> Prevalence of GDM varies widely, based on the type of population studied and the diagnostic method used. Wide differences in living conditions, socio-economic levels and dietary habits, vastly affects the prevalence rate in India.<sup>(3)</sup> In India, GDM prevalence varies from 3.8 to 21% and is more prevalent in urban areas than in rural areas.<sup>(4)</sup> In Tamil Nadu, GDM was detected in 17.8 per cent women in urban, 13.8 per cent women in semi-urban and 9.9 per cent women in rural areas.<sup>(5)</sup>

Intrauterine exposure to hyperglycemia during the period of organogenesis negatively influences the Beta cells of pancreas and the insulin secretory function.<sup>(6)</sup> Its now recommended to carry out universal screening for GDM in contrast to selective screening due to high prevalence of GDM. Universal screening has increased detection rate of GDM and has also improved maternal and neonatal prognosis.<sup>(7)</sup> The concept of universal screening needs to be adopted to Indian women also as

ethnic Indians and women of Asian origin are at high risk of developing GDM and subsequent type 2 diabetes.<sup>(8)</sup>

Reduction in GDM prevalence can be achieved by proper formulation of preventive strategies, rational planning and allocation of resources. But the success of any preventive strategy will depend on adequate participation of affected population. Hence this study was planned to study the awareness about GDM among antenatal mothers.

## Methodology

A cross-sectional descriptive study was conducted in the department of obstetrics and gynecology at Indira Gandhi Medical College and Research Institute, to analyze the awareness about gestational diabetes among antenatal mothers. From all antenatal mothers who volunteered for the study, informed consent was obtained and then enrolled into the study.

All participants were enrolled on voluntary basis with emphasis on their anonymity and confidentiality of responses. A self-administered pretested close-ended questionnaire was used to collect information on patient's knowledge and awareness of GDM. The questionnaire comprised of 13 questions (6 questions on knowledge about GDM and its risk factors, 4 questions about GDM screening and treatment and 3 questions about the consequences of GDM). The questionnaire is shown in Table 1. All questions were given categorical responses (yes and no) and were applied with an item score of '1', '0' respectively for positive knowledge.

All participants who answered 'Yes' were given score of '1' and those who answered 'No' were given a score of '0'. The average score of mothers on knowledge of GDM and its risk factors, screening and treatment and consequences of GDM was calculated.

**Table 1: Questionnaire**

Knowledge about GDM and its risk factors		
1	Have you heard about diabetes mellitus?	(Yes/No)
2	Can diabetes occur for the first time in pregnancy?	(Yes/No)
3	Is family history of diabetes a risk factor for diabetes in pregnancy?	(Yes/No)
4	Is pre-pregnancy obesity a risk factor for diabetes in pregnancy?	(Yes/No)
5	Is diabetes in previous pregnancy a risk factor for diabetes in pregnancy?	(Yes/No)
6	Is rapid weight gain in pregnancy a risk factor for diabetes in pregnancy?	(Yes/No)
Awareness about screening and treatment for GDM		
7	Have you heard about Blood test for diabetes after glucose load?	(Yes/No)
8	Is testing for diabetes in pregnancy is necessary?	(Yes/No)
9	Even diet and exercises can treat GDM	(Yes/No)
10	Insulin or drugs are required to treat GDM	(Yes/No)
Awareness about GDM consequences		
11	Does GDM disappear after pregnancy?	(Yes/No)
12	Is baby at risk if GDM is not treated?	(Yes/No)
13	Mothers with GDM are at risk for overt diabetes	(Yes/No)
Source of information on GDM		
14	Mass media Newspaper/ magazine Friends and family Doctors or health professionals	

The data was analyzed and results were entered using simple means and percentage. Statistical analysis was done using SPSS software version 20 (*IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp*).

## Results

200 antenatal mothers were enrolled and all completed the questionnaire. Response rate was 100%. The mothers were in the age range of 18-38 years with a mean age of 28±3.2 years. Majority of the study population had undergone formal education (61%) and were house wives (73.5%). 44.5% of mothers were primigravida and 15.5% of mothers had history of GDM either in present or previous pregnancy. The socio-demographic characteristics of participants are depicted in Table 2. The percentage of positive responses for the knowledge of antenatal mothers on GDM and its risk factors, screening and treatment and consequences of GDM are depicted in Table 3, Table 4 and Table 5 respectively.

**Table 2: Socio-demographic profile of Participants**

Variable	Participants		Mean Knowledge score	p-value
	n	%		
Education				
Formal education	122	61	9.2	0.04
No formal education	78	39	5.4	

Occupation				
House wife	147	73.5	5.9	<0.01
Employed	53	26.5	11.8	
Parity				
Primi	89	44.5	6.7	0.48
Multi	111	55.5	8.5	
GDM status				
H/o GDM in present or previous pregnancy	31	15.5	11.2	<0.01
No H/o GDM	169	84.5	7.1	

**Table 3: Knowledge about GDM and its risk factors**

Questions	Participants who answered "yes"	
	n	%
Have you heard about diabetes mellitus?	200	100
Can diabetes occur for the first time in pregnancy?	163	81.5
Is family history of diabetes a risk factor for diabetes in pregnancy?	168	84
Is pre-pregnancy obesity a risk factor for diabetes in pregnancy?	121	60.5
Is diabetes in previous pregnancy a risk factor for diabetes in pregnancy?	159	79.5
Is rapid weight gain in pregnancy a risk factor for diabetes in pregnancy?	119	59.5

**Table 4: Awareness about screening and treatment for GDM**

Questions	Participants who answered "yes"	
	n	%
Have you heard about Blood test for diabetes after glucose load?	63	31.5
Is testing for diabetes in pregnancy is necessary?	93	46.5
Even diet and exercises can treat GDM	55	27.5
Insulin or drugs are required to treat GDM	145	72.5

**Table 5: Awareness about GDM consequences**

Questions	Participants who answered "yes"	
	n	%
Does GDM disappear after pregnancy?	62	31
Is baby at risk if GDM is not treated?	142	71
Mothers with GDM are at risk for overt diabetes	54	27

Table 6 shows the sources of information on GDM for antenatal mothers. For 52% of antenatal mothers the source of information was doctors or some category of health professionals. The Mean knowledge score about gestational diabetes was 7.72. Table 7 shows the percentage of women who had good, average and poor knowledge on GDM.

**Table 6: Source of information on GDM**

Source	Participants who answered "yes"	
	n	%
Mass media	27	13.5
Newspaper/ magazine	32	16
Friends and family	37	18.5
Doctors or health professionals	104	52

**Table 7: Knowledge score of antenatal mothers on GDM**

Score	Percentage
Good (Score 9-13)	13%
Average (Score 5-8)	67%
Poor (Score 0-4)	20%

## Discussion

This study showed that the mean knowledge score of antenatal mothers on GDM was just average with a total score of 7.72 (just above 50%). Education and parity did not show any significant influence on

knowledge score. Mothers who were employed showed significantly high knowledge score. Similarly mothers with history of GDM in previous or present pregnancy were significantly more knowledgeable. This can be attributed to the fact that these mothers have more interaction at their work place and have also gained awareness because of their own experience.

Our antenatal mothers had good knowledge about GDM and its risk factors. But awareness on screening, treatment and consequences of GDM was poor. Especially our mothers were not aware of what exactly should be done to detect GDM. Many did not know about the consequences of GDM after pregnancy and the increased risk for development of Type 2 diabetes in future. For proper utilization of antenatal services and for adapting lifestyle modifications in high risk population, antenatal mothers should have good knowledge about the risk factors and complications possible if GDM is not diagnosed and treated at the right time.

The main source of information on GDM for antenatal mothers was through doctors or other paramedical staff. This is welcoming information but the health-care providers have failed to impart adequate knowledge to the mothers. Mere information on existence of GDM is definitely not enough to improve pregnancy and neonatal outcome. All paramedical staff should be updated on GDM and both physicians and the health-care workers should attribute to creating awareness among antenatal mothers. GDM should become a part of the routine health-care awareness programs organized for antenatal women.

In a study by Vanishree,<sup>(9)</sup> done on antenatal women in a rural setting the mean knowledge score was 7, 17.5% women had good knowledge, 56.7% had fair knowledge, and 25.8% women had poor knowledge about GDM. The main source of information in their study was mass media.

Adequate and good knowledge about GDM in antenatal women will lead to changes to adopt healthy lifestyle, better healthcare-seeking pattern, better self-care, and thus prevention and early diagnosis of the disease, thereby reducing the prevalence of GDM, improving pregnancy and neonatal outcomes and also the economy of the country.

## Conclusion

The knowledge of our women on GDM was just average. Health awareness programs should be conducted to improve awareness of antenatal mothers for better utilization of health services.

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