

## Original Research Article

# Study on knowledge about gestational diabetes mellitus and its risk factors among antenatal mothers attending care, urban Chidambaram

D. Lakshmi, A. John William Felix\*, R. Devi, M. Manobharathi

Department of Community Medicine, Rajah Muthiah Medical College, Chidambaram, Tamil Nadu, India

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### \*Correspondence:

Dr. A. John William Felix,

E-mail: amfelix@rediffmail.com

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## ABSTRACT

**Background:** Gestational diabetes mellitus (GDM) is a growing epidemiological problem. GDM is defined as the glucose intolerance during pregnancy. Treatment of GDM is important to avoid maternal and fetal complications. The objectives of this study was to assess the knowledge about GDM among antenatal mothers and to find out the association between knowledge and demographic factors.

**Methods:** A descriptive cross sectional study was done among 191 antenatal mothers in Maternity Health Centre and Government Hospital, Chidambaram during September 2017. A pre tested questionnaire was used to assess knowledge about GDM among all antenatal mothers attending OP.

**Results:** Among the participants, 49.2% were in the age group of 21–25 years, 93.7% of them were housewives, 56.0% of them have studied up to higher secondary level and 72.8% of them were living in rural areas. In this study it was found that 35.2% of the participants had adequate knowledge about GDM and 21.5% had adequate knowledge about its risk factors. Education and residence were found to be associated with knowledge and risk factors of GDM which is statistically significant ( $p < 0.05$ ).

**Conclusions:** The knowledge of antenatal women on GDM was just average. There is a need for training the physicians, paramedical people, and public regarding GDM. Health education programs must be conducted to improve the awareness among antenatal women for better utilization of health services. A regular screening of GDM among all pregnant women should be promoted in all health centres.

**Keywords:** GDM, Prevalence, Risk factors, Knowledge

## INTRODUCTION

GDM has appeared to be growing diagnostic and epidemiological problem in recent years.<sup>1</sup> As per WHO GDM is defined as any degree of glucose with onset or first recognition during pregnancy.<sup>2</sup>

The two types of GDM include G1-impaired glucose tolerance with normal blood sugar which required diet modification alone and G2-hyperglycemia on fasting and postprandial requiring diet and insulin treatment.<sup>3</sup> GDM arises because the action of insulin is diminished (insulin

resistance) due to hormone production by placenta.<sup>3</sup> Other risk factors include older age, overweight, obesity, excessive weight gain, a family history diabetes and history of still birth or giving birth to infant with congenital abnormality.<sup>4</sup>

GDM is a serious health concern because it not only pose immediate maternal (pre-eclampsia, cesarian delivery) and neonatal (macrosomia, shoulder dystocia, birth injuries, hypoglycemia, Respiratory distress syndrome) complications but also increase the risk of future type 2 diabetes in mother as well as the baby.<sup>5,6</sup>

The prevalence of GDM is on the rise globally. This global increase is occurring mostly in low and middle income countries like India where access to maternal care is often limited.<sup>7</sup>

Recently, prevalence of GDM was found to be 18% in HAPO study (hyperglycemia and adverse pregnancy outcome).<sup>8</sup> WHO estimated that prevalence of GDM in India was about 40.9 million in 2009 & is expected to rise to 69.9 million by 2025. Thus making it an important public health problem in India.<sup>4</sup>

Knowledge about GDM among an women will translate into adoption of healthy life style, better health seeking behaviour, better self-care and thus prevention and early diagnosis of the disease.<sup>9</sup>

Thus, this study was conducted to assess the knowledge about GDM and its risk factors among antenatal women who attend maternity centre and government taluk hospital, Chidambaram.

## **METHODS**

### ***Study design***

Descriptive cross sectional study.

### ***Study period***

Five days in the month of September 2017.

### ***Sample size***

Convenient sampling method was used to select the study participants.

191 pregnant women who attended antenatal clinics during the study period at Maternity health centre attached to Rajah Muthiah Medical College, Chidambaram and Government Taluk hospital, Chidambaram.

### ***Study area***

Maternity health centre attached to Rajah Muthiah Medical College, Chidambaram and Government Taluk hospital, Chidambaram.

### ***Inclusion criteria***

All pregnant women available during the data collection period and willing to participate were included in the study.

### ***Exclusion criteria***

Pregnant women who cannot give response like critically ill mothers, those unable to hear/ communicate; women

with mental health problem were excluded from the study.

### ***Data collection***

Data collection was done by administering pre tested proforma to the pregnant women. The proforma was translated into local language (Tamil) and was given to the participants. They were then asked to fill the proforma by themselves. Proforma consisted of two parts.

*I part:* Questions regarding participants' socio - demographic details like name, age, education, occupation, income, etc., and details about like no. of pregnancies, no. of live children.,etc.

*II part:* Questions to assess participants level of knowledge about Gestational diabetes mellitus

In the II part of the proforma, there was a set of 15 questions. Each correct response was given 1 mark.

According to the scores obtained, participants were considered to have:

- Inadequate knowledge: for those who scored 0-8,
- Moderately adequate: for those scored 8-12
- Adequate knowledge: for those who score more than 12

*III part:* Questions to assess participants level of knowledge about risk factors of GDM

In the III part of the proforma, there was a set of 10 questions. Each correct response was given 1 mark.

According to the scores obtained, participants were considered to have:

- Inadequate knowledge: for those who scored 0-5,
- Moderately adequate: for those scored 5-8,
- Adequate knowledge: for those who score more than 8.

For illiterate mothers, interview method was followed.

### ***Data analysis***

The collected data was entered in Microsoft excel and data was compiled and analysed using SPSS version 20. Frequencies and percentages well used to describe the data Kruskal Wallis test was used to determine association between means of each independent variable and knowledge about GDM and its risk factors. P value of <0.05 was considered to be statistically significant.

### ***Ethical consideration***

Institutional ethical clearance was obtained before commencing the study. The participants were explained

about the purpose of the study and their consent for participation was obtained.

## RESULTS

### *Socio demographic characteristics of respondents*

A total of 191 pregnant women participated in the study. Table 1 shows the socio-demographic characteristic of the study participants. 94 (49.2%) of the respondents were within the range of 21-25 years. Out of the total respondents 179 (93.7%) were house wires concerning education status 107 (56.0%) of antenatal woman were educated up to higher secondary level and 15 (7.9%) were illiterates. Occupationally (93.7%) were home makers and the house hold income for most of the antenatal women was between the range of Rs. 10,001-30,000/ month.

Most of them belonged to rural among the study participant 82.2% had family history of diabetics.

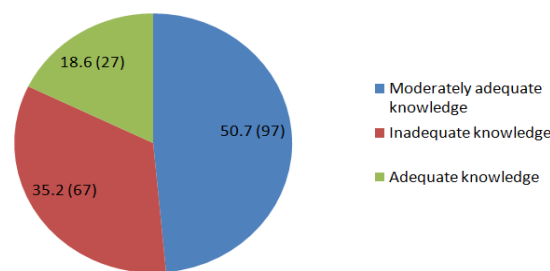
### *Knowledge about GDM*

Out of 191 respondents 18.6% had adequate knowledge about GDM 50.7% had moderately adequate knowledge. And 35.2% had inadequate knowledge about GDM.

### *Knowledge about risk factors of GDM*

Among the study participant 21.5% had adequate knowledge 49.2% had moderately adequate knowledge

and 31.2% had in adequate knowledge about risk factors of GDM.



**Figure 1: Level of knowledge of GDM among and antenatal mothers.**

### *Factors associated with knowledge of GDM and its risk factors*

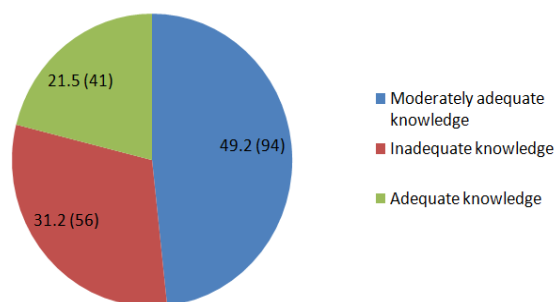
Among the participants socio-demographic characteristics, education was found to be associated with knowledge of participants about GDM with significant  $p < 0.05$ . As the level of education increases, knowledge of participants about GDM increases also residence of participants found to be associated significantly with participants knowledge about GDM participants to who were from urban areas had significantly higher knowledge when compared to those from rural areas with  $p = 0.043$ . Other socio-demographic characteristics of participants like age, occupation, family history of DM, income had no significant association with knowledge about GDM and its risk factors in this study.

**Table 1: Classification of the respondents on the basis of socio demographic variables.**

Variables	Frequency	Percentage (%)
Age (in years)	16-20	12.6
	21-25	49.2
	26-30	34.6
	31-35	2.6
	36-40	1.0
Occupation	Housewife	93.7
	Employed	6.3
Education	Illiterate	7.9
	Primary	7.9
	Higher secondary	56.0
	Graduate	82.2
Income	Less than 10,000	42.9
	10,001 – 30,000	48.7
	30,001-50,000	7.9
	More than 50,000	0.5
Residence	Urban	27.2
	Rural	72.8
Family history of DM	Yes	17.8
	No	82.2

**Table2: Association between knowledge of gestational diabetes and its risk factors with socio-demographic characteristics of participants.**

Variables	Frequency	Knowledge			Knowledge about risk factors			
		Mean	SD	P value	Mean	SD	P value	
<b>Occupation</b>	Housewife	179	6.14	2.23	0.626	7.80	30.2	0.427
	Employed	12	6.58	2.87		7.33	3.31	
<b>Education</b>	Illiterate	15	5.60	2.79	0.00	6.53	3.15	0.277
	Primary	15	5.26	1.62		7.46	2.13	
	Higher Secondary	107	5.83	2.30		7.70	3.18	
	Graduate	54	7.25	1.80		8.35	2.83	
<b>Income</b>	Less than 10,000	82	6.09	2.43	0.689	7.75	3.22	0.997
	10,001-30,000	93	6.32	2.08		7.81	2.87	
	30,001-50,000	16	5.68	2.44		7.62	3.15	
<b>Residence</b>	Urban	52	6.67	2.32	0.043	8.13	2.96	0.335
	Rural	139	5.98	2.22		7.64	3.05	
<b>Family History of DM</b>	Yes	34	6.32	2.56	0.439	7.94	2.85	0.683
	No	157	6.14	1.86		7.73	2.56	

**Figure 2: Level of knowledge and risk factors of GDM among antenatal women.**

## DISCUSSION

Prevalence of GDM is increasing throughout the world along with type 2 diabetes mellitus.<sup>10</sup> GDM if left untreated leads to serious maternal and neonatal complications.<sup>11</sup> Knowledge about GDM along with proper diagnosis and treatment of GDM will help to prevent it and its complication.<sup>10</sup>

In the sample 191 antenatal women, 35.2% had adequate knowledge about GDM and 21.5% had adequate knowledge about risk factors of GDM.

Shreeram et al, in their study in south India found that only 17.5% of women had good knowledge about GDM which was slightly lower when compared to this study.<sup>9</sup> Similarly, in a Bangladesh study 26.3% of study paths had good knowledge about GDM.<sup>10</sup>

In the present study, educational of a mother was found to have statistically significant association with their knowledge about GDM with  $p < 0.05$ .

Similarly, Bhowmik et al, reported that participants with higher educational status were found to have significant higher mean knowledge Score than their counterparts.<sup>10</sup>

The reason for this association may because educated women might have greater access to gain knowledge from health-related articles or literatures.<sup>10</sup> Also they can better understand the health information given by the health personnel during antenatal visits.

Knowledge about GDM and its risk factors was found to be significantly associated with residence of the participants AN mother those who are residing in urban area had adequate knowledge when compared to those from rural areas.

Bhowmik et al also reported similarly that those who were from urban areas had significantly higher knowledge about GDM than those from rural areas.<sup>10</sup> Though no statistical significance Balaji et al reported that knowledge about GDM and its risk factors was poor among rural women when compared to urban women.<sup>12</sup>

This may be due to that women from urban areas when compared to rural areas have better exposure to mass media like TV, Radio, Internet through which they can gain health information and knowledge.

Piere et al, Bhowmik et al, reported that younger age group (<30 years) greater awareness/ knowledge about GDM when compared to those who were aged above 30 years with statistically significant p value of  $< 0.05$ .<sup>5,10</sup>

Whereas in our study there was no such association found between age and knowledge score.

In some studies, it was reported that antenatal women who were employed showed. Significantly high

knowledge score when compared to housewife or unemployed women.<sup>10,13</sup> This may be because those employed mothers gain knowledge by interaction with others at their work place and also because of their own experience.<sup>13</sup> However, there was no such significant association found between occupation and knowledge about GDM in this study.

Considering the limitations of the present study, sample size calculation was not done. And as this study was based on self-report of the participants, the information obtained might had less validity and there might be chance for recall bias.

## CONCLUSION

Since the prevalence of GDM is growing higher a good knowledge and awareness about the same is mandatory. The knowledge of antenatal women on GDM was just average. There is a need for training physicians paramedical people, and public regarding GDM. Early education before pregnancy can also be done. Health education sessions can be conducted in antenatal clinics, in villages by mobile medical units and social gatherings will create more awareness about GDM and its complications. Health education posters can be displayed in public places and information leaflets can be distributed.

Health awareness programs must be conducted to improve the knowledge of antenatal women for better utilization of health services. Future and ongoing monitoring of diabetes prevalence in pregnancy, information on pregnancy outcomes and epidemiological data on diabetes in pregnancy among other indigenous population will be necessary. There are ideal groups for targeting lifestyle modification to delay the development of DM in future. Therefore a regular screening of GDM among all pregnant women should be promoted in all health centres.

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