



Research Article

Prevalence of Gestational Diabetes Mellitus among Cohort of Pregnant Women Registered in Primary Health Center

Authors

A.Arulmani¹, I.K.Annie², A.J.W.Felix³

Dept of Community Medicine, Rajah Muthiah Medical College, Annamalai University

*Corresponding Author

Dr A.Arulmani

Department of Community Medicine, Rajah Muthiah Medical College,
Annamalai University, Tamilnadu

Email: am638052@gmail.com, Phone No.: +919443214326

ABSTRACT

Background: Gestational Diabetes Mellitus (GDM) is an important public health problem in India. The prevalence of GDM is constantly on the rise, globally. Women with GDM are at increased risk for adverse obstetric and perinatal outcome, necessitating universal screening.

The aim of the study was 1) to find out the prevalence of GDM among women attending the antenatal clinic in the primary health Centre (PHC). 2) to find out the association of GDM with known factors (age, family history, BMI, parity)

Methods: A prospective study was conducted among pregnant women attending PHC, in which all the pregnant women without past history of diabetes was included and registered after informed consent. They were screened for GDM by Glucose challenge test with 75 grams of glucose, between 24 – 28 weeks of gestation. Structured questionnaire was used to gather information on demographic, obstetric, diabetes mellitus history. Data were analyzed by using SPSS Version 20.

Results: A total 526 women participated in this study and the overall prevalence of GDM was found to be 3.8% and the prevalence of GDM was significantly high among the elderly pregnant women, Women with Gravida > 3, obese women and those with a positive family history of diabetes mellitus.

Conclusions: The prevalence of GDM was 3.8%, and Screening for GDM should be promoted in all health centers.

Keywords: Gestational diabetes mellitus, Glucose challenging test, prevalence.

INTRODUCTION

The prevalence of gestational diabetes mellitus is on the rise globally. It's prevalence is alarmingly high in India. Gestational diabetes mellitus is defined by the World Health Organization (WHO) as being "any degree of glucose intolerance with

onset or first recognition during pregnancy"⁽¹⁾. Gestational diabetes mellitus is a common condition during pregnancy which is associated with negative short-term and long-term outcomes both for mother and the off spring. It is estimated by international diabetic federation (IDF) that 20.9

million or 16.2% of live births to women in 2015 had some form of hyperglycemia in pregnancy. Estimates on the prevalence of gestational diabetes mellitus in India vary greatly from low figures in the northern region of Jammu, to higher figures in the southern state of Tamil Nadu ⁽²⁾. Gestational diabetes mellitus has been found to be more prevalent in urban areas than in rural areas ⁽²⁾. The present study was done to find out the prevalence of gestational diabetes mellitus among pregnant women registered in primary health center, situated in a rural area of Southern India.

METHODS

This prospective study was carried out among the women attending the antenatal clinic at PHC. All pregnant women attending the antenatal clinic, before 24 weeks were enrolled in this study irrespective of the number of conceptions. The study was conducted during the months of February 2015 – January 2016.

In the antenatal clinic, detailed history and preliminary clinical examination of the enrolled women were carried out. Women between 24th to 28th week of gestation were evaluated for the presence of gestational diabetes mellitus. Pregnant Women were given 75gm oral glucose dissolved in 200ml of water irrespective of their last meal timing. They were asked to drink it within 5 to 10 minutes, time was noted and women were asked to take rest avoiding physical activity for 2 hours. Venous blood sample was drawn at 2 hours and plasma glucose was estimated in the laboratory by the glucose oxidase – peroxidase (GOD-POD) method. GDM is diagnosed if 2 hr plasma glucose is more than 140 mg/dl.

Data Analysis

The data collected was entered in Microsoft excel and analysis was done using SPSS version 20. Statistical methods applied were descriptive statistics, chi-square test, and P value < 0.05 was considered statistically significant.

RESULTS

A total of 526 subjects were enrolled during the study period, the baseline characteristics are shown in table 1.

Table 1 shows the Baseline characteristics of the study population. Majority of study participants (59.5%) belonged to age group 21-25 years. Among the study participants 56.5% were in normal weight, while 17.9% were overweight. 41.4% of the subjects were primigravida, 37.1% were second gravida and 21.5% were multigravida. Among women aged more than 35 years all 5(100%), was found to be having GDM, and 12 (8.5%) were GDM positive among age group 25-35 years compared to 129 (91.5%) women without GDM and this observation was found to be statistically significant (P < 0.05). Among women with positive family history of Diabetes mellitus 12(14%) were having GDM and this observation was found to be statistically significant (P < 0.05). Among study participants, 18(19.4%) of obese women had GDM, compared to 75(80.6%) women who were Non – GDM. Among study population, 10 (8.8%) multi gravida women had GDM compared to 103 (91.2%) women without GDM and this finding was statistically significant.

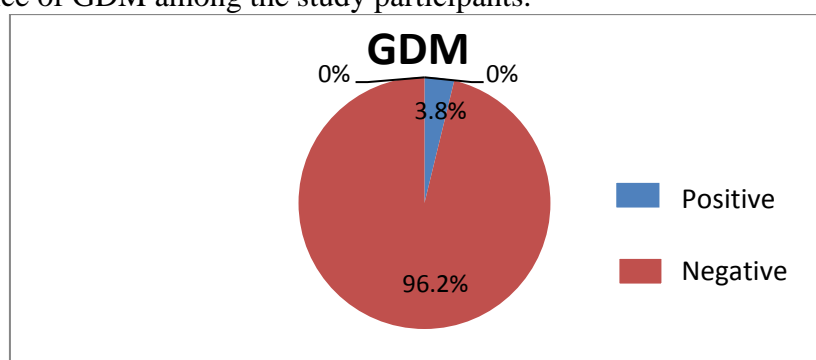
Table 1: Baseline characteristics of the study population

VARIABLES	CHARACTERISTIC	NO OF PARTICIPANTS	PERCENT AGE
AGE IN YEARS	16 – 20	67	12.7
	21 – 25	313	59.5
	26 – 30	125	23.8
	31 – 35	16	3.0
	36 – 40	5	1.0
BMI	UNDER WEIGHT	136	25.8
	NORMAL	297	56.5
	OVER WEIGHT	93	17.7
PARITY	PRIMI GRAVIDA	218	41.4
	SECONDGRAVIDA	195	37.1
	MULTIGRAVIDA	113	21.5

Table 2: Association of various features and GDM

VARIABLES	CHARACTERISTICS	GDM (n = 20)	%	NON – GDM (n = 506)	%	P value
AGE	< 25 YEARS	3	0.8%	377	99.2%	
	25 – 35 YEARS	12	8.5%	129	91.5%	
	> 35 YEARS	5	100%	0	0 %	< 0.05
FAMILY H/O DM	PRESENT	12	14%	73	86 %	<0.05
	ABSENT	8	1.8%	433	98.2	
BMI	UNDER WEIGHT	0	0%	136	100%	
	NORMAL WEIGHT	2	0.7%	295	99.3%	
	OBESE	18	19.4%	75	80.6%	<0.05
PARITY	PRIMI	2	0.9%	216	99.1%	
	SECOND	8	4.1%	187	95.9%	
	MULTI	10	8.8%	103	91.2%	<0.05

FIGURE 1: Prevalence of GDM among the study participants.



Among 526 subjects GDM was diagnosed in 20 (3.8%) women.

DISCUSSION

A prospective study was conducted in the rural area of Tamilnadu, to find out the prevalence of GDM among pregnant women registered in primary health center. The prevalence of GDM in our study was found to be 3.8% which was similar to that of a study done by Zargar et al in Kashmir where the prevalence was 3.8%⁽³⁾. Similarly in another study by Viswanathan Mohan et al by using DIPSI criteria reported 4.2% prevalence of GDM in rural primary health centers in Kanchipuram District in Tamilnadu⁽⁴⁾. Similar results like our study were found by Wieslaw Maciej Kanadys⁽⁵⁾, Cihangir Erem et al⁽⁶⁾, Abdullatif D Ali et al⁽⁷⁾. In contrast to our study higher prevalence was reported by Nayak P K et al 27%⁽⁸⁾, and Ramaya Neelakandan et al 23.3% in Tiruchirappalli, Tamilnadu, India⁽⁹⁾. Another study conducted by Seshiah et al in South India, showed that the prevalence of GDM among rural population as 9.9%⁽¹⁰⁾.

Our study has shown that the risk of GDM increases with age which is statistically significant ($p < 0.05$). Similar results were found in the studies done by Meena Rajput et al⁽¹¹⁾ Kanika. R. Kalyani et al⁽¹²⁾, Shridevi AS et al⁽¹³⁾, and V.Seshiah et al in Tamilnadu, South India⁽¹⁰⁾. In an another study conducted by Nilofer AR Raju et al reported that 7 out of 9 patients with GDM (77.7%) were above the age of 30 years⁽¹⁴⁾. Our study revealed that GDM is more prevalent in women with family history of Diabetes mellitus. Similar findings were reported by Shridevi AS et al⁽¹³⁾ and Ramyaneelakandan et al⁽⁹⁾. A study done in Bangladesh by Subrina Jesmin et al have shown that parental history of Diabetes mellitus was associated with GDM⁽¹⁵⁾. Gestational diabetes mellitus was found to be significantly higher in women with higher BMI. Several other studies in India have shown consistent increase in the prevalence of GDM with increase in BMI, which were statistically

significant. ^{(16),(17)}. A statistically significant association was found between Gravida and GDM in our study. Women with gravida > 3 had significantly higher prevalence of GDM. Similar finding were found in studies done by Meena Rajput et al ⁽¹¹⁾, Kanika.R.Kalyaniet al ⁽¹²⁾.

CONCLUSION

This study documents the overall prevalence of GDM as 3.8%. Statistically significant association was found between GDM and variables such as age, gravida, BMI and family history of DM. They are the ideal group for targeting life style modification to delay the development of type 2 Diabetes mellitus in the future. Therefore a regular screening for GDM among all pregnant women should be promoted in all health centres.

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Conflict of interest: None declared

Ethical approval: the study was approved by the Institutional Ethics committee.

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