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Clinical and Epidemiological Profile of Diabetes Mellitus in Pregnancy: A Multi-Centric Hospital Based Descriptive Study

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[1]Dr Arumugaselvi B, [2]Dr Mercy Rodrigo R, [3]Dr Rajalakshmi

[1]Associate Professor, Department of Obstetrics and Gynaecology, Thoothukudi Medical College, Tamil Nadu, India
[2]Associate Professor, Department of Obstetrics and Gynaecology, Thoothukudi Medical College, Tamil Nadu, India
[3]Assistant Professor, Department of Obstetrics and Gynaecology, Thoothukudi Medical College, Tamil Nadu, India

Corresponding Author: Dr. Arumugaselvi B
draselvi@ gmail.com

Keywords
Diabetes mellitus,antenatal, glycaemic control,OGCT,obstetric outcome

Abstract
Introduction: Diabetes is a huge public health issue with a high mortality & morbidity rate. India is one of the key areas of focus . An increase in the prevalence of GDM reflects the present trends for rising diabetes and obesity which demands more attention and health implications . This study was undertaken to study the clinical and epidemiological profile of Diabetes mellitus in pregnancy .Objective: To study the clinical and epidemiological profile of Diabetes mellitus in pregnancy. Methods: A hospital based descriptive study was conducted among 300 subjects at a tertiary teaching hospital in Thoothukudi for a period of two years. The collected data was analysed using IBM-SPSS version 21.0 Results: Majority of the women were in the age group of 21 to 25 years followed by 26 to 30 years. 56% had family history of diabetes mellitus and 49.9% had previous history of GDM. 60% of mothers with high HbA1c levels had high blood sugars in OGCT whereas 16.8% with normal HbA1c had high OGCT values Conclusion: Regular antenatal care, routine screening of all pregnant women for carbohydrate intolerance and strict glycaemic control mandatory to improve obstetric outcome.

1. Introduction

Abnormalities of carbohydrate metabolism occur frequently during pregnancy and between 3 to 5% of all pregnant mothers will show glucose intolerance. Approximately 90% of these women have GDM.Approximately 50% of women with GDM will develop type II diabetes later in life. The International Federation of gynaecology and obstetrics recommends that hyperglycaemia/GDM be considered a global health priority. GDM is on the rise globally - 1 in 6 live births occur in women with some form of hyperglycaemia and 84% of which are due to GDM. GDM is associated with high incidence of maternal and perinatal morbidity and mortality.Two factors contribute to the development of diabetes which include genetic factors and environmental factors. Pregnancy offers a window of opportunity to future health by establishing services, improving health and preventing intergenerational transmission of noncommunicable diseases. The physiological changes of pregnancy is a natural stress test for the body. The link between hyperglycaemia in pregnancy and pregnancy outcome and future risk of diabetes in both mother and offspring focus on prevention, screening, early diagnosis and managing hyperglycemia in pregnancy which is needed globally

2. Materials and Methods

Study Area: The study was conducted among patients attending department of obstetrics and

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gynaecology of a tertiary teaching hospital, Tamil Nadu

Study Design: Hospital based descriptive study

Study Period: November 2019 to November 2021

Ethical approval: Institutional ethical committee approval was obtained prior to the initiation of the study

Study Population: Antenatal patients of the department of obstetrics and gynaecology (in and out patient) of Thoothukudi medical college Hospital.

Inclusion Criteria

1.Antenatal mothers of age 18 years & above

2.Gestational age - first and second trimester

3. History of GDM in previous pregnancy

4.Family history of Diabetes mellitus

5.History of IUD/congenitalanomalies/bigbaby in previous pregnancy

Exclusion Criteria

1.Overt Diabetes mellitus

2. Gestational age - third trimester

Sampling technique: Consecutive sampling

Study Tools: Pre-designed pre-tested questionnaire

Sample Size

All antenatal mothers with hyperglycemia without exclusion criteria attending Antenatal OPD during the study period were included in the study.

Data collection

The subjects were included in the study after their consent. Socio-demographic details were noted. History was taken from patients and attenders. Detailed clinical assessment, routine basic investigations like CBC, RBS, RFT, LFT,blood grouping & typing,urine routine, OGCT, HbA1c were done. OGCT is done by DIPSI method where 75 g of oral glucose is administered irrespective of fasting/ meal status, intake of glucose solution to be completed within 5 to 10 minutes and venous blood sugar measured after two hours.The cutoff is 140 mg/dL. HbA1c levels were checked from a random sample measured using immunoassay

Data analysis

The collected data was collected, coded, entered into Microsoft excel work sheet and exported to SPSS. Data was analysed using SPSS version 21. Data is presented as percentage in categories and then presented as tables. Independent test was used for tests of significance.

3. Results

Among 300 women studied 45% belong to the age group of 21 to 25 years, 34% belong to 26 to 30 years , 13% belong to less than 20 years and 8% belong to more than 31 years.

Table 1: AGE DISTRIBUTION

Age group (years)	Frequency	Percentage %
< 20	39	13.0
21 - 25	135	45.0
26 - 30	102	34.0
> 31	24	8.0
Total	300	100.0

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Table 2: BMI distribution

BMI	Frequency	Percentage %
<18.5	12	4.0
18.6 -24.9	135	45.0
25 - 29.9	153	51.0
Total	300	100.0

Table 3: Distribution accoring to gestational age

GA(weeks)	Frequency	Percentage %
<20	120	40.0
20 - 24	138	46.0
24 - 28	42	14.0
Total	300	100%

Table 4: Family history of DM in study population

Family history of DM	Frequency	Percentage %
Positive	168	56.0
Negative	132	44.0
Total	300	100%

Table 5: Distribution according to obstetric code

Obstetric code	Frequency	Percentage %
Primi	138	46.0
Multigravida	162	54.0
Total	300	100%

Table 6: Association between previous history of GDM and hyperglycaemia in present pregnancy

Previous history of GDM	Frequency	percentage %	OGCT POSITIVE
Yes	105	49.9	48 (45.7 %)
No	108	50	9 (8.3 %)

Table 7: Association between previous history of delivery of big baby and hyperglycaemia in present pregnancy

Previous history of delivery of big baby	Frequency	percentage %	OGCT POSITIVE
Yes	84	51.86	42 (50.0%)
No	78	48.14	3 (4.1%)

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Table 8: Association between previous history of IUD and hyperglycaemia in present pregnancy

Previous history of IUD	**Frequency**	**percentage %**	**OGCT POSITIVE**
Yes	27	16.6	15(55.54 %)
No	135	83.33	30(85.7 %)

Table 9: Distribution of HBA1C levels

HBA1C levels	**Frequency**	**percentage %**
< 5.8	285	95.0
> 5.8	15	5.0

Table 10: Distribution of OGCT levels

OGCT levels	**Frequency**	**percentage %**
< 140	207	69.0
> 140	93	31.0

4. Discussion

Gestational diabetes mellitus being the most common metabolic condition in pregnancy is associated with increased maternal and perinatal morbidity and mortality and increased risk of type II diabetes in both mother and child later in life. A previous study conducted by Pastakia etal the mean age of GDM was 25.8 years.Regarding BMI majority belonged to over- weight category. In our study 36% belonged to gestational age of 20 to 24 weeks and 57% had a family history of diabetes mellitus out of whom 26% were diagnosed as GDM by OGCT. In our study the sensitivity of OGCT is 84.21% similar to the study conducted by Nalla Perumal et al the sensitivity was found to be 90%.In a study conducted by Anjalakshi et al OGCT combined with OGTT has a better sensitivity of 84% in diagnosing GDM**.**

5. Conclusion

Critical risk assessment, systematic screening,early diagnosis,compliant dietary modifications, effective glycaemic control, antepartum surveillance and timely delivery will have a positive impact on obstetric outcome. Postpartum monitoring of hyperglycaemia will prevent morbidity and reduce the burden of non communicable disease globally.

Conflict of interest: Nil

Source of funding: Nil

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