|| Print ISSN: 2589-7837 || Online ISSN: 2581-3935 ||

International Journal of Medical Science and Diagnosis Research (IJMSDR)

Available Online at www.ijmsdr.com

Volume 3, Issue 2; February: 2019; Page No. 101-106

PREVALENCE OF GESTATIONAL DIABETES AND ITS RELATED RISK FACTORS AMONG RURAL PREGNANT WOMEN IN A TERTIARY CARE CENTRE IN NORTHERN INDIA

Preeti Tiwari[1], Arijit Datta[2]

[1]Senior Demonstrator, Department of Community Medicine, Government Medical College, Bharatpur

[2]Assistant Professor, Department of Forensic Medicine, Government Medical College, Bharatpur

Conflicts of Interest: Nil

ABSTRACT:

Introduction: The prevalence of diabetes mellitus (DM) is increasing worldwide and these numbers also incorporate women with gestational diabetes mellitus. The significant increase is seen more commonly in developing countries like India

Objective:

1. To find out the prevalence of GDM among the study population.
2. To study the associated risk factors.

Materials and Method: This cross sectional study was conducted at the antenatal out-patient clinic, at a tertiary care hospital located in Uttar Pradesh over the study duration of three months. Women with estimated duration of pregnancy between 24 and 28 weeks of gestation, attending the antenatal outdoor clinic were included in the study. The study was conducted after getting informed consent from all the participants. Data was collected from ante-natal register using Predesigned, pretested, validated and structured Performa.

Results: Gestational diabetes was found among 20 participants. Prevalence of gestational diabetes was 8.19%. In our study statistically significant association between across gestational diabetes mellitus and occupation (p=0.02), socioeconomic status (0.045), parity (p=0.019), BMI **(**p=0.023) and family history of diabtes (p=0.009)

Conclusion: GDM is associated with high BMI, occupation, socioeconomic status, parity and family history of DM. Thus close monitoring of the above mentioned factors and screening should be done in pregnant women for better maternal and foetal outcome.

Keywords: Gestational Diabetes, Diabetes mellitus, rural GDM

Introduction

The prevalence of diabetes mellitus (DM) is increasing worldwide and these numbers also incorporate women with gestational diabetes mellitus[1]. The significant increase is seen more commonly in developing countries like India. The prevalence of diabetes mellitus (DM) is increasing worldwide and more so in developing countries such as India[2]. Gestational Diabetes Mellitus (GDM) is defined as carbohydrate intolerance with recognition or onset during pregnancy', irrespective of the treatment with diet or insulin[3].

Diabetes has always been a huge public health concern in worldwide as well as in India. Approximately 135,000 cases of GDM, which means on average 3–8% of all pregnancies, are diagnosed with Gestational Diabetes Mellitus in one of the most developed countries like in United States of America[4]. While in India prevalence of gestational Diabetes Mellitus varies from state to state. Prevalence reported in Kashmir[5], Mysore[6], Western India[7], Tamil Nadu[8], Punjab[9] and Lucknow[10] was 3.8%, 6.2%, 9.5%, 17.9%, 35% and 41% respectively.

Gestational diabetes is a form of diabetes results during pregnancy due to hormonal changes and diabetes is a disease in which there is abrupt rise

Corresponding author: Arijit Datta

in the levels of glucose (in the blood, which can cause a range of health issues. Gestational diabetes is related with unfavorable maternal and perinatal outcomes, like increased risk of pre-eclampsia for mothers in the antepartum period and a higher risk for big baby, hypoglycemia, jaundice, respiratory distress syndrome, polycythemia, and hypocalcemia in infants[11]. This has been seen in various studies that even after the glucose levels return to normalcy in postpartum period, the mother is at a higher risk for Type 2 DM, and the child of a mother with GDM is at a higher risk for metabolic syndrome[12]

Materials and Methods

This cross sectional study was conducted at the antenatal out-patient clinic, at a tertiary care hospital located in Uttar Pradesh over the study duration of three months. Women with estimated duration of pregnancy between 24 and 28 weeks of gestation, attending the antenatal outdoor clinic were included in the study. Women having gestation period less than 24 weeks or more than 28 weeks of gestation, women with history of Diabetes Mellitus prior to the onset of pregnancy, multiple pregnancy and major chronic diseases including cancer were excluded from the study. The study was conducted after getting informed consent from all the participants. Data was collected from ante-natal register using Predesigned, pretested, validated and structured proforma. Data was analysed using the SPSS version 16 software. Descriptive statistics were reported as mean (SD) for continuous variables and frequency (percentage) for categorical variables**.** Pearson's Chi-square test was used to find association between two categorical variables. A p value< 0.05 was considered as statistically significant.

Result:

Total of 244 study participants was included in the study. Gestational diabetes was found among 20 participants. Prevalence of gestational diabetes was 8.19%.

Table 1: Baseline characteristics of the study population.

Characteristics	f	%
Age		
Below 20	8	3.3
21-25	78	31.8
26-30	97	39.6
31-35	51	20.8
above 35	10	4.1
Occupation		
PROFESSIONAL	4	1.6
SEMI PROFESSIONAL	9	3.7
CLERK,	2	0.8
SKILLED	22	9.0
SEMI SKILLED	30	12.2
UNSKILLED	39	15.9
UNEMPLOYED	138	56.3
Education		
PRIMARY	8	3.3
MIDDLE	17	6.9
HIGH	63	25.7
SECONDARY	99	40.4
GRAUDATE	55	22.4
POST GRADUATE	2	0.8
Socio-economic status		
Upper	2	0.8

UPPER MIDDLE	11	4.5
MIDDLE	57	23.3
LOWER MIDDLE	118	48.2
LOWER	56	22.9
BMI (kg/m^2)		
UNDERWEIGHT	94	38.5
NORMAL	126	51.7
OVERWEIGHT	24	9.8
Parity		
0	87	35.8
1	78	31.9
2	54	22.1
>3	25	10.2

Table 2: Association between education and GDM between participants (n=20)

EDUCATION	GDM		Chi square value	P value
	YES f(%)	NO f(%)		
PRIMARY (8)	2 (25)	6 (75)	5.85	0.436
MIDDLE (17)	4 (23.5)	13 (76.5)		
HIGH (63)	2 (3.2)	61 (96.8)		
SECONDARY (99)	5 (5.1)	94 (94.9)		
GRAUDATE (55)	7 (12.7)	48 (87.3)		
POST GRADUATE (2)	0 (0)	2 (0)		
(n=244)	20 (8.2)	224 (91.8)		

Table 2 shows association between education and GDM between participants. Majority of the participants who had GDM were graduate followed by secondary level. No statistically significant difference was seen across education and GDM.

Table 3: Association between occupation and GDM between participants (n=20)

OCCUPATION	GDM		Chi square value	P value
	YES	NO		
PROFESSIONAL (4)	0 (0)	4 (100)	13.26	0.02
SEMI PROFESSIONAL (9)	1 (11.2)	8 (99.8)		
CLERK (2)	1 (50)	1 (50)		
SKILLED (22)	9 (40.9)	13 (59.1)		
SEMI SKILLED (30)	1 (3.4)	29 (96.6)		
UNSKILLED (39)	2 (5.2)	37 (94.8)		
UNEMPLOYED (138)	6(4.4)	132 (95.6)		
(n=244)	20 (8.2)	224 (91.8)		

Table 3 shows that majority of the participants with GDM were employed in a skilled kind of work. Statistically significant association between occupation and GDM was seen with p=0.02

Table 4: Association between socioeconomic status and GDM between participants (n=244)

EDUCATION	GDM		Chi square value	P value
	YES	NO		
UPPER (2)	1 (50)	1 (50)	11.55	0.045
UPPER MIDDLE (11)	0 (0)	11(100)		
MIDDLE (57)	10 (15.8)	48 (84.2)		
LOWER MIDDLE (118)	7 (5.9)	108 (94.1)		
LOWER (56)	0 (0)	56 (100)		
(n=244)	20 (8.2)	224 (91.8)		

Table 4 shows that majority of the participants belonging to middle and lower middle class were found to have gestational diabetes Significant association was seen across socioeconomic status and GDM status of the participants with p value 0.045 ($p<0.05$).

Table 5 Association between parity and GDM between participants (n=20)

Variable		GDM		Chi square value	P value
		YES	NO		
PARITY	1 (78)	11 (14.1)	67 (85.9)	11.72	0.019
	2 (54)	8 (14.8)	46 (85.2)		
	>3 (25)	1 (4)	24 (96)		
	(n=244)	20 (8.2)	224 (91.8)		

Table 5 shows that majority of the participants with GDM had parity of one. Statistical significant association between between parity and GDM was seen with p=0.019.

Table 6: Association between BMI and GDM between participants (n=244)

Variable		GDM		Chi square value	P value
		YES	NO		
BMI	UNDERWEIGHT (94)	0 (0)	94 (100)	4.17	0.023
	NORMAL (126)	8 (6.4)	118 (93.6)		
	OVERWEIGHT (24)	12 (50)	12 (50)		
	(n=244)	20 (8.2)	224 (91.8)		

Table 6 shows that majority of the participants who were overweight had gestational diabtes. There was statistical significant association across BMI and GDM with p=0.023 ($p<0.05$).

Table 7: Association between family history and GDM between participants (n=244)

Variable		GDM		Chi square value	P value
		YES	NO		
FAMILYHISTORY	DM (85)	16 (18.8)	69 (81.2)	11.67	0.009
	HTN (59)	2 (3.4)	57 (96.6)		
	CAD (49)	0 (0)	49 (100)		
	OTHERS (51)	2 (3.9)	49 (96.1)		
	(n=244)	20 (8.2)	224 (91.8)		

It was seen that majority of the participants with GDM had family history of diabetes. The association between family history and GDM was statistically significant ($p<0.01$).

Discussion

This study was conducted among at the antenatal out-patient clinic, at a tertiary care hospital located in Uttar Pradesh over the study duration of three months. Prevalence of GDM in the study was found to be 8.19%. Majority of the participants belonged to age group of 26-30 years (approx 40%), followed by 21-25 years. Majority of the participants were not employed among the study participants (56%), followed by unskilled (15.9%) and semi skilled (12.2%). 40% of the participants were educated till secondary level, followed by high school (25.7%) and graduate (22.4%). Among the study participants 48% belonged to lower middle class, 23% belonged to middle class, 22.9% belonged to lower class. BMI of the study participants showed that majority of our participants were having normal BMI, only 9.8% of the participants were overweight. Majority of the participants had parity of one.

Varma K etal[13] found that in his study out of total of 506 respondents, 389 (76.88%) Hindus, 98(19.37%) Muslim and 19(3.75%) belonged to other religion respectively where as 296 (58.50%) respondents were from rural background. Seshiah V etal[14] found that the mean age of these pregnant women was 23+/-4 years. There was a significant increase in the prevalence of GDM in relation to gravida.

In our study statistically significant association between across gestational diabetes mellitus with occupation (p=0.02), socioeconomic status (0.045), parity (p=0.019), BMI **(**p=0.023) and family history of diabtes (p=0.009). Similar association was seen in the study conducted by Varma k etal[13.]

Conclusion

This study concludes that prevalence of GDM in the study was found to be 8.19%. In our study statistically significant association between across gestational diabetes mellitus with occupation (p=0.02), socioeconomic status (0.045), parity (p=0.019), BMI **(**p=0.023) and family history of diabtes (p=0.009). Hence these factors should be screened in all pregnant women to reduce the complications in pregnancy.

References

1. O'Sullivan JB. Gestational diabetes and its significance. In: Camerini – Davalos R, Cole HS (eds) Early Diabetes. New York: Academic Press; 1970:339-44.
2. Interrnational diabetes federation.IDF diabetes Atlas. 6th ed. Brussels,Belgium: International Diabetes Federation 2013.
3. Seshiah V, Balaji V, Balaji MS, Paneerselvam A, Arthi T, Thamizhaarasi M et al. Prevalence of geatational diabetes mellitus in South India (Tamil Nadu) a community based study. J.Assoc Physicians India 2008;56:329-33.
4. American College of Obstetricians and Gynecologists: ACOG Practice Bulletin: Assessment of risk factors for preterm birth: clinical management guidelines for obstetrician-gynecologists. *Obstet Gynecol* .2001;**98**:709–716,
5. Raja MW, Baba TA, Hanga AJ, Bilquees S, Rasheed, Haq IU, et al. A study to estimate the prevalence of gestational diabetes mellites in an urban block of Kashmir valley (North India) Int J Med Sci Public Health. 2014;3:191–5.
6. Swami SR, Mehetre R, Shivane V, Bandgar TR, Menon PS, Shah NS. Prevalence of carbohydrate intolerance of varying degrees in pregnant females in western India (Maharashtra) – A hospital-based study. J Indian Med Assoc. 2008; 106:712–4, 735.
7. Bhatt AA, Dhore PB, Purandare VB, Sayyad MG, Mandal MK, Unnikrishnan AG. Gestational diabetes mellitus in rural population of Western India-Results of a community survey. Indian J Endocrinol Metab. 2015;19:507–10
8. Jenum AK, Morkrid K, Sletner L, Vange S, Torper JL, Nakstad B, Voldner N, Rognerud-Jensen OH, Berntsen S, Mosdol A, Skrivarhaug T. Impact of ethnicity on gestational diabetes identified with the WHO and the modified International Association of Diabetes and Pregnancy Study Groups criteria: a population-based cohort study. European journal of endocrinology. 2012 Feb 1; 166(2):317-24.
9. Arora GP, Thaman RG, Prasad RB, Almgren P, Brøns C, Groop LC, et al. Prevalence and

risk factors of gestational diabetes in Punjab, North India: Results from a population screening program. Eur J Endocrinol. 2015; 173:257–67.

10. Gopalakrishnan V, Singh R, Pradeep Y, Kapoor D, Rani AK, Pradhan S, Bhatia E, Yadav SB. Evaluation of the prevalence of gestational diabetes mellitus in North Indians using the International Association of Diabetes and Pregnancy Study groups (IADPSG) criteria. Journal of postgraduate medicine. 2015 Jul;61(3):155.

11. Kjos SL, Buchanan TA. Gestational diabetes mellitus. N Engl J Med 1999;341:1749-56

12. DeSisto CL, Kim SY, Sharma AJ. Peer reviewed: Prevalence estimates of gestational diabetes mellitus in the United States, pregnancy risk assessment monitoring system (prams), 2007–2010. Preventing chronic disease. 2014; 11.

13. Varma K ,Surwade VM, Sinha V, Kachhawa Poonam. Prevalence of Gestational Diabetes And Risk Factors Among Women Visiting Antenatal Clinic of A Tertiary Health Care Hospital. IOSR Journal of Dental and Medical Sciences 2017; 16(9):1-4.

14. Seshiah V, Balaji V, Balaji MS, Sanjeevi CB, Green A. Gestational diabetes mellitus in India. J Assoc Physicians India. 2004; 52:707–11.