Original Article

Knowledge about Gestational Diabetes Mellitus among Antenatal mother in a Tertiary Care Hospital, Dhaka

Julakha Sayma Sultana[1], Tufayel Ahmed Chowdhury[1], Nahid Yasmin[2], Shamima Sultana[3], Muhammad Abdur Rahim[4], Mehruba Alam Ananna[5]

Abstract:

Objective: The aim of this study is to evaluate the knowledge of gestational diabetes mellitus (GDM), including risk factors, screening and consequences, amongst pregnant women attending antenatal care in a tertiary care hospital, Dhaka, Bangladesh.

Methods: The study participants were recruited from Ad-din Medical College Hospital, who attended antenatal care and volunteered in this study. A self-administered questionnaire was used to obtain basic data regarding general awareness and knowledge about GDM and other issues related to screening, risk factors, monitoring, long-term consequences. The average score of mothers on knowledge of GDM and its risk factors, screening and treatment and consequences of GDM was calculated.

Results: A total of 1196 antenatal mothers were enrolled and all completed the questionnaire. Response rate was 100%.Regarding knowledge about GDM and risk factors, many of them had good knowledge about GDM and many of the risk factors. But many of the study population were unaware regarding gaining too much weight is a risk factor for GDM, also unaware about previously giving birth to an overweight baby or had a birth defect and previously having an unexplained still birth as a risk factor for GDM.Regarding screening and treatment about GDM, most of them (92.39%) were aware about necessity to test for diabetes in pregnancy, but a significant population (more than 33%) were unaware about treatment of GDM. Some of the study populationwere aware about the consequence of GDM to baby and mother herself.

Conclusion: Knowledge about GDM is good amongst pregnant women, with few exceptions regarding risk factors of GDM and their consequences. Awareness programme may be conducted to overcome this.

Keywords: Gestational diabetes mellitus, antenatal mother

Introduction:

Gestational diabetes mellitus (GDM) is diabetes that is first diagnosed in the second or third trimester of pregnancy that is not clearly either preexisting type 1 or type 2 diabetes[1]. Some population-based studies conducted in Bangladesh at different time points revealed an increasing trend of GDM prevalence ranging from 6% to 14% based on using different diagnostic criteria[2,3]. Higher prevalence was observed in the higher age group, higher gravidity, higher body mass index (BMI), and those with hypertension and family history of diabetes. The history of abortion, neonatal death and stillbirth were found higher among GDM mothers than non-GDM mothers[4]. In general, specific risks of uncontrolled diabetes in pregnancy include spontaneous abortion, fetal anomalies, preeclampsia, fetal demise, macrosomia, neonatal hypoglycemia, and neonatal hyperbilirubinaemiaamong others[5]. After delivery, though the glucose levels return to normalcy, the mother is at a higher risk for type 2 diabetes mellitus (T2 DM), and the child of a woman with GDM is at a higher risk for metabolic syndrome[6]. Observational studies show an increased risk of diabetic embryopathy, especially anencephaly, microcephaly, congenital heart disease, and caudal regressiondirectly proportional to elevations in glycated haemoglobin (HbA1C) during the

1. Consultant, Department of Gynaecology and Obstretics, Ad-din Medical College Hospital
1. Registrar, Department of Nephrology, BIRDEM General Hospital
2. Associate Professor, Department of Community Medicine and Director, Ad-din Medical College Hospital
3. Registrar, Department of Gynaecology and Obstretics, Ad-din Medical College Hospital
4. Professor, Department of Nephrology, BIRDEM General Hospital
5. Assistant Professor, Department of Nephrology, BIRDEM General Hospital

Correspondence: Dr. Julakha Sayma Sultana, dr_topu112yahoo.com, 01816629929

first 10 weeks of pregnancy[7]. It is 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[8]. Knowledge and awareness of GDM among antenatal woman may help in early diagnosis of the disease. This study was done to evaluate the knowledge and awareness of GDM among all the antenatal women who attended a tertiary care hospital.

Methods:

This cross-sectional study was conducted in the Department of Obstetrics and Gynaecology at Ad-din Medical College Hospital, to see knowledge about GDM among antenatal mothers. From all antenatal mothers who volunteered for the study, informed consent was obtained and then enrolled into the study. A self-administered pretested close-ended questionnaire was used to collect information on patients' knowledge about GDM. The questionnaire comprised of 15 questions[9] questions on knowledge about GDM and its risk factors, 3 questions about GDM screening and treatment and 3 questions about the consequences of GDM). 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. Score 9-15 was labeled as good, 5-8 was average and 0-4 was poor. The data was analyzed and results were entered using simple means and percentage. Statistical analysis was done by using Statistical Package for the Social Science (SPSS) software version-20.

Results:

Total 1196 antenatal mothers were enrolled and all completed the questionnaire. Response rate was 100%. The mothers were in the age range of 18-38 years and mean age was 25.29± 4.61 years. Majority of the study population had undergone formal education (93.73%) and were house wives (90.72%). More than half (59.20%) were multiparous and only 6.52% of mothers had history of GDM either in present or previous pregnancy. The socio-demographic characteristics of participants are shown in Table I. The percentage of responses for the knowledge of antenatal mothers on GDM and its risk factors, screening and treatment and consequences of GDM are shown in Table II, Table III and Table IV respectively. Table V shows the percentage of women who had good, average and poor knowledge on GDM.

Table I : Socio-demographic profile of participants

Variable	Participants		Mean knowledge score
	n	%	
Education			
Formal education	1121	93.73	10.52
No formal education	75	6.27	9.63
Occupation			
House wife	1085	90.72	10.42
Employed	111	9.28	10.88
Parity			
Primi	488	40.80	10.54
Multi	708	59.20	10.42
GDM Status			
History of GDM in present or previous pregnancy	78	6.52	11.32
No history of GDM	1118	93.48	10.41

Table II : Knowledge about GDM and risk factors

Questions		Participants who answered "yes"		Participants who answered "no"	
		n	%	n	%
1	Have you heard about diabetes mellitus ?	1130	94.48	66	5.52
2	Can dibetes occur for the first time in pregnancy ?	757	63.29	439	36.71
3	Are elderly mother's a risk factor for GDM ?	816	68.23	380	31.77
4	Is family history (father/mother/brother/sister) of diabetes is a risk factor for GDM?	988	82.61	208	17.39
5	Is obesity before pregnancy is a risk factor for GDM ?	780	65.22	416	34.78
6	Is diabetes in previous pregnancy is a risk factor for GDM in subsequent pregnancy?	942	78.76	254	21.24
7	Is gaining too much weight rapidly during pregnancy is a risk for GDM?	598	50.00	598	50.00
8	Is previously giving birth to an overweight baby or had a birth defect is a risk for GDM?	544	45.48	652	54.52
9	Is previously having an unexplained still birth is a risk factor for GDM?	453	37.88	743	62.12

Table III: Knowledge about screening and treatment for GDM

Questions	Participants who answered "yes"		Participants who answered "no"	
	n	%	n	%
10 Is it necessary to test for diabetes in pregnancy?	1105	92.39	91	7.61
11 Can GDM be treated with diet and exercise only?	784	65.55	412	34.45
12 Is insulin required to treat GDM?	794	66.39	402	33.61

Table IV : Knowledge about consequence of GDM

Questions	Participants who answered "yes"		Participants who answered "no"	
	n	%	n	%
13 Will baby at risk, if GDM is not treated?	1087	90.89	109	9.11
14 Does GDM disappear after delivery of baby?	796	66.56	400	33.44
15 Are mothers with GDM at risk to develop overt diabetes?	945	79.01	251	20.99

Table V : Knowledge score of antenatal mothers on GDM

Score	Percentage
Good (Score 9-15)	77.59 %
Average (Score 5-8)	18.14 %
Poor (Score 0-4)	4.26 %

Discussion:

This study showed that 77.59% had good knowledge about GDM. Study population, who had formal education and who had history of GDM in present or previous pregnancy had slightly more mean knowledge score. Parity and employment did not show any influence on knowledge score.

Regarding knowledge about GDM and risk factors, many of them had good knowledge about GDM and many of the risk factors. But many of the study population were unaware regarding gaining too much weight is a risk factor for GDM, also unaware about previously giving birth to an overweight baby or had a birth defect and previously having an unexplained still birth as a risk factor for GDM.

In a study by Poth and Carolan reported that most women were unable to understand how lifestyle and diet can reduce the risk of GDM[9]. Results from a study by Rhoads-Baeza and Reis showed that majority of women did not understand the relationship between GDM, T2DM or familial risk factors[10].

Regarding screening and treatment about GDM, most of them (92.39%) were aware about necessity to test for diabetes in pregnancy. but a significant population (more than 33%) were unaware about treatment of GDM. Some of the study population were aware about the consequence of GDM to baby and mother herself.

Study done by Sujindra Elamurugan *et al*.[11]on antenatal mothers had good knowledge about GDM and its risk factors. But awareness on screening, treatment and consequences of GDM was poor. Many did not know about the consequences of GDM after pregnancy and the increased risk for development of Type 2 diabetes in future.

In a study by Vanishree[12], 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.

Most of the participants were aware regarding consequence of GDM to the baby but more than twenty percent of participants were unaware about the consequence of GDM on the mother. A study done by Kaptein *et al*. showed that many of the women considered GDM as a signal to adapt a healthy lifestyle, and a majority of them had a high perception of diabetes risk in future[13].The rate of progression of GDM to T2DM is increasing. Earlier studies reported that women with GDM developed T2DM within 9 years post partum[14].Data from our recent study showed that as many as 20% convert to T2DM within a year after

delivery[15]. Therefore, it is necessary that healthcare providers counselled antenatal women about the long-term diabetes prevention strategies.

Conclusion:

In conclusion, we can say that most of our antenatal women had good knowledge about GDM, but still they are unaware about some of the risk factors and consequences of GDM. Awareness programme may be conducted more in community level to overcome this. In that way we can contribute to reduce burden of GDM, as well as diabetes in our community.

References:

1. American Diabetes Association. Standards of Medical Care in Diabetes-2018. Diabetes Care 2018;41(Suppl. 1):S21.
2. Sayeed MA, Mahtab H, Khanam PA, Begum R, Banu A, Khan AKA. Diabetes and hypertension in pregnancy in a rural community of Bangladesh: a population-based study. Diabet Med. 2005; 22: 1267-271.
3. Jesmin S, Akter S, Akashi H, Al-Mamun A, Rahman MA, Islam MM, et al. Screening for gestational diabetes mellitus and its prevalence in Bangladesh. Diabetes Res Clin Pract. 2014; 103: 57-62.
4. Mahtab H, Bhowmik B. Gestational Diabetes Mellitus – Global and Bangladesh Perspectives. Austin J Endocrinol Diabetes. 2016; 3(2): 1041.
5. American Diabetes Association. Standards of Medical Care in Diabetes-2018. Diabetes Care 2018;41(Suppl. 1):S137
6. Kjos SL, Buchanan TA. Gestational diabetes mellitus. N Engl J Med1999;341:1749–56.
7. American Diabetes Association. Standards of Medical Care in Diabetes-2018. Diabetes Care 2018;41(Suppl. 1):S138
8. Cosson E. Screening and insulin sensitivity in gestational diabetes. Abstract volume of the 40th Annual Meeting of the EASD, September 2004;A 350.
9. Poth M, Carolan M. Pregnant women's knowledge about the prevention of gestational diabetes mellitus: A qualitative study. Br J Midwifery 2013;21: 692-700.
10. Rhoads-Baeza ME, Reis J. An exploratory mixed method assessment of low income, pregnant Hispanic women's understanding of gestational diabetes and dietary change. Health Educ J 2012;71:80-9.
11. Sujindra Elamurugan, BupathyArounassalame. What do Mothers know about gestational diabetes: knowledge and awareness, Indian Journal of Obstetrics and Gynecology Research 2016;3(4):393-96
12. Vanishree S, Anitha Rani M, Sathiyasekaran BWC, Shriraam M. Awareness of gestational diabetes mellitus among antenatal women in a primary health center in South India. Indian J Endocrinol Metab2013;17:146–48.
13. Kaptein S, Evans M, McTavish S, Banerjee AT, Feig DS, Lowe J, et al. The subjective impact of a diagnosis of gestational diabetes among ethnically diverse pregnant women: A qualitative study. Can J Diabetes 2015;39:117-22.
14. Feig DS, Zinman B, Wang X, Hux JE. Risk of development of diabetes mellitus after diagnosis of gestational diabetes. CMAJ 2008;179:229-34.
15. Bhavadharini B, Anjana RM, Mahalakshmi MM, Maheswari K, Kayal A, Unnikrishnan R, et al. Glucose tolerance status of Asian Indian women with gestational diabetes at 6 weeks to 1 year postpartum (WINGS-7). Diabetes Res Clin Pract 2016;117: 22-7.