



ORIGINAL ARTICLE

Comparison of Knowledge of Women with Gestational Diabetes Mellitus and Healthy Pregnant Women Attending at Hospital in Bangladesh

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[Received on: 2 July 2018; Reviewed on: 12 July 2018; Accepted on: 1 August 2018; Published on: 1 January 2019]

Abstract

Background: A very common medical condition during pregnancy is Gestational Diabetes Mellitus (GDM) which has become a global health concern, not only for its higher prevalence, but also because it can be a predisposing factor for type 2 DM and causes other increased health risk for both mother and their offspring in later life. **Objective:** The objective of the study was to compare knowledge of GDM including source of knowledge, treatment, awareness about GDM and impact of GDM on the baby among mothers with GDM and healthy pregnant mothers. **Methodology:** The study was a cross-sectional study conducted in Cumilla city from May to October 2016. Eighty-nine participants attending the outpatient department of two hospitals and one antenatal clinic in Cumilla city were selected. A structured questionnaire and in-depth interview method was used to obtain data. **Result:** Significant difference has been found in knowledge between GDM patients and normal pregnant women regarding source of knowledge ($p=0.01$), treatment of GDM ($p=0.000$), risk factors of GDM ($p=0.01$), problems in managing GDM ($p=0.003$), nutrition maintenance ($p=0.006$) and physical exercise ($p=0.000$). No significant difference has been found in GDM awareness ($p=0.83$) and its impact on the baby ($p=0.28$) in two groups. Awareness of GDM is found to be associated with higher education ($p=0.000$), family history of DM ($p=0.05$), meal plan ($p=0.03$) and maintaining nutrition ($p=0.01$). **Conclusion:** Knowledge about GDM is poor among pregnant women, especially among normal pregnant women. [*Journal of Current and Advance Medical Research 2019;6(1):32-37*]

Keywords: Gestational diabetes mellitus; knowledge; awareness

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Cite this article as: Monir N, Zeba Z, Rahman A. Comparison of Knowledge of Women with Gestational Diabetes Mellitus and Healthy Pregnant Women Attending at Hospital in Bangladesh. J Curr Adv Med Res 2019;6(1):32-37

Funding: This study has been performed without any funding from outside else.

Conflict of Interest: There was no conflict of interest to any of the authors.

Contributions to authors: Nowshin Monir and Zebunnesa Zeba have involved in protocol preparation, data collection= Nowshin Monir, statistical analysis= Nowshin Monir, Zebunnesa Zeba and Azizur Rahman; Nowshin Monir and Zebunnesa Zeba= manuscript writing & revision of the manuscript.

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Introduction

Gestational Diabetes Mellitus (GDM) is a form of diabetes, which is first recognized, or onset during pregnancy. The increasing prevalence of GDM, in the current decades, has become a growing public health concern globally. An estimated 21.3 million (16.2%) live births had hyperglycaemia during pregnancy in 2017, of which GDM contribution was 85.1%¹.

Depending on the diagnostic criteria and ethnicity, 14.0% of all pregnancies are affected by GDM² and ranges from <1.0% in Germany to 28.0% in Nepal³. In US, the prevalence of GDM is 4.0 to 10.0% whereas in UK it is 5%^{4,5}. Nonwhite population has higher incidence of GDM compared to Caucasian⁶ and Asians especially among Indian Asians has highest GDM prevalence⁷. Bangladesh like other South East Asian (SEA) countries also has progressively increase prevalence of GDM⁸. Although the exact prevalence of GDM in Bangladesh is not known, based on some population-based studies at different time points it is known that there is an increasing trend of GDM prevalence which ranges from 6.0% to 14.0%, using different diagnostic criteria^{9,10}.

The increasing rate of obesity and diabetes mellitus is found to be associated with increased prevalence of GDM¹¹. Other observed risk factors include higher maternal age, family history of diabetes, Asian ethnicity with caesarean section history, macrocosmic baby and still birth¹²⁻¹³.

The impediment of effective pregnancy outcomes for women diagnosed with GDM possibly are lower socio-economic condition, social discrimination, inadequate nutritional knowledge, myths and misbeliefs related to GDM and lack of knowledge related to proper pregnancy planning and care¹⁴. If GDM is left untreated, it carries a risk for both the mother and child and will result in serious short and long-term consequences¹⁵⁻¹⁷ which include neonatal and obstetric complications during pregnancy and childbirth such as miscarriages, lengthened labour pain, cesarean section, macrosomia, shoulder dystocia, neonatal hypoglycaemia, still birth and neonatal death^{11, 18-23}. It also increases the risk of obesity and diabetes mellitus (DM) in the mother and offspring in later life²⁴⁻²⁶.

Unfavorable outcomes can be reduced by well-controlled GDM²⁷. Proper GDM management is a prerequisite for better health outcomes^{28, 29}. One of the important components of health literacy is

Knowledge³⁰. According to studies, inadequate knowledge about the disease causes poor understanding of medical information, which in turn leads to limited adherence to management strategies and results in unfavorable pregnancy outcome³¹. However, in Bangladesh context, pregnant women have poor knowledge about GDM but have positive attitude to control GDM and response positively toward education program on GDM³². There is a lack of available study on GDM knowledge among general pregnant women in Bangladesh.

To prevent DM in two generations, GDM is a perfect window of opportunity. With appropriate knowledge and positive attitude including healthy eating habits, weight control and regular exercise, the complications of GDM can be prevented which permits mothers to live a better life with their offspring. To care for themselves all pregnant women require education and knowledge associated with preventing gestational diabetes mellitus. This study was aimed at evaluate and compare the knowledge of GDM among mothers diagnosed with GDM and general pregnant mothers³².

Methodology

The present study was a cross sectional study and the study design was purely quantitative and observational. The study participants were recruited from outpatient department (OPD) of Gynaecology of Cumilla Diabetic Hospital, Comilla Sadar Hospital and Nagar Matrisadan (Nababbari Choumuhani branch) at Cumilla city in Bangladesh. The study technique was nonprobability and purposive sampling. Study Period was May to October 2016 and the study populations were pregnant women with GDM and without GDM. A pretested structured questionnaire was used to obtain data. Data collection method was face to face interview. Knowledge was assessed on the variables including previous knowledge on GDM, source of knowledge, treatment of GDM, impact of GDM on the baby and nutritional management. Statistical analysis was done using SPSS version 20. The data obtained were compared against knowledge and practices using chi-square, logistic regression.

Results

A total of 89 pregnant women were interviewed, of whom 43 were diagnosed with GDM and the rest were normal pregnant women. Table 1 represents the demographic characteristics of the participants.

The mean age of the participants was 27.79±5.37 years ranging from 18 to 43 years where the mean age was 29.12±4.5 years for the GDM patients and 26.54±5.85 years for normal pregnant women. Almost 35% GDM participants and 28.3% normal pregnant women belonged to 23 to 27 years age group. GDM prevalence increased with age, where the highest prevalence was found in 23 to 27 years age group (34.9%) which is closely followed by 28-32 years age group (30.2%) and >33 years age group (25.6%) compared to women aged 18 to 22 years (9.3%).

Most of the participants (44.2%) had GDM in their third pregnancy while most of the normal pregnant women (39.1%) had their second parity. Majority of the participants both GDM (51.2%) and normal pregnant women (50%) had secondary level of education. Around 74.4% GDM patients had family history of diabetes mellitus whereas it was 39.1% among normal pregnant women.

Table 1: Demographic Characteristics (n = 89)

Variables	GDM patients	Normal Pregnant Women
Age of participants		
18 to 22 Years	4(9.3%)	13(28.3%)
23 to 27 Years	15(34.9%)	13(28.3%)
28 to 32 Years	13(30.2%)	12(26.1%)
>33 Years	11(25.6%)	8(17.4%)
Mean Age±SD	29.12±4.5	26.54±5.85
Parity		
1	6(14.0%)	17(37.0%)
2	14(32.6%)	18(39.1%)
3	19(44.2%)	8(17.4%)
4	4(9.3%)	3(6.5%)
Educational level		
Illiterate	1(2.3%)	2(4.3%)
<JSC	6(14.0%)	8(17.4%)
Secondary	22(51.2%)	23(50.0%)
Graduate or above	14(32.6%)	13(28.3%)
Family H/O diabetes	32(74.4)	18(39.1)

Table 2 shows participants source of knowledge about GDM. Majority of the participants both with (53.5%) and without (56.5%) GDM did not have any knowledge on GDM and there is significant difference (p=0.01) between participants about GDM source of knowledge.

Family (42.9%) and neighbor (47.6%) were source of knowledge for participants with GDM whereas both medical professionals and neighbors (30%) provided knowledge among normal pregnant women.

Table 2: Knowledge of Participants about GDM

Variables	GDM patients	Normal Pregnant Women	P-Value
Source of Knowledge (n=31)			
Family	9(42.9%)	5(25.0%)	0.01 ^a
Book	2(9.5%)	3(15.0%)	
Neighbor	10(47.6%)	6(30.0%)	
Medical professionals	0(0.0%)	6(30.0%)	
Treatment of GDM^b with			
Diet	26(24.1%)	17(23.9%)	0.000
Insulin	41(38.0%)	21(29.6%)	
Maintaining Weight	9(8.3%)	3(4.2%)	
Exercise	32(29.6%)	13(18.3%)	
Do not Know	0(0.0%)	17(23.9%)	
Risk factors of GDM^b			
Family History	22(41.5%)	16(31.4%)	0.01
Obesity	5(9.4%)	5(9.8%)	
Previous History	6(11.3%)	0(0.0%)	
Don't Know	20(37.7%)	30(58.8%)	
Problems to Manage GDM			
Lack of financial support	7(16.3%)	14(30.4%)	0.003 ^a
Unsupportive attitude of family	2(4.7%)	1(2.2%)	
Not ready to stick to the meal plan	3(7.0%)	11(23.9%)	
Unwilling to continue the treatment	0(0.0%)	3(6.5%)	
No problem	31(72.1%)	17(37.0%)	
Aware of GDM	20(46.5%)	20(43.5%)	0.83
Aware o of GDM impact on the baby	27(62.8%)	23(50%)	0.28

In all the analysis, P value of <0.05 was considered as significant; ^aChi-Square test; ^aLikelihood Ratio; ^bMultiple responses

Knowledge about GDM treatment shows that, all of the GDM patients had knowledge about treatment where 38% knew about insulin therapy and 29.6% about exercise.

Among normal pregnant women around 24% did not know about GDM treatment and around 29.6% knew about insulin treatment.

Significant difference (p=0.000) has been seen between GDM patients and normal pregnant women's knowledge regarding treatment of GDM.

Table 3: Attitude of Participants regarding Nutrition and Physical activity

Variables	GDM patients	Normal Pregnant Women	P-Value*
Meal plan during Pregnancy	30(69.8%)	28(60.9%)	0.50
Maintaining Nutrition	16(37.2%)	31(67.4%)	0.006
Physical Exercise	36(83.7%)	21(45.7%)	0.000
Daily physical activity			
Light	12(27.9%)	14(30.4%)	0.49
Moderate	18(41.9%)	23(50.0%)	
Heavy	13(30.2%)	9(19.6%)	

*Chi-Square test

Majority (58.8%) of the normal pregnant women were unaware about risk factors of GDM, which was 37.7% among GDM participants. Family history was known as a risk factor for GDM by 41.5% and 31.4% with and without GDM participants respectively. There is significant difference (p=0.01) between GDM patients and normal pregnant women’s knowledge about risk factors of GDM.

When GDM patients were asked about the problems they faced to manage GDM, majority (72.1%) answered they did not face any problem. While 37% normal pregnant women also felt there would not be any problem to manage GDM, financial support (30.4%) and not ready to stick to the meal plan (24%) were identified as problems to manage GDM.

Attitude of participants about nutrition and physical activity is given in table 4. While around 70% of GDM patient had meal plan during pregnancy, only 37.2% were maintaining nutrition. Among normal pregnant women, 60.9% had plan during pregnancy, but 67.4% were maintaining nutrition. Majority (83.7%) of patients with GDM have done physical exercise, which was 45.7% among normal pregnant women. Moderate physical activity was done by most of the participants both with (41.9%) and without (50%) GDM. Positive difference has been found between GDM patients and normal pregnant women’s attitude regarding maintaining nutrition (p=0.006) and physical exercise (p=0.000).

Odds ratios were calculated using logistic regression for variables influencing awareness of GDM and statistically significant association

(p=0.05) was found with education, family history of DM, meal plan and maintaining nutrition (Table 5).

Table 4: Association between variables and Awareness of GDM

Variables	OR (95% CI)	P-Value*
Education		
<JSC	11.50(0.833-158.721)	0.06
Secondary	34.50(5.505-216.207)	0.000
Graduate or above	12.73(3.702-43.786)	0.000
Family H/O DM	2.35(0.986-5.590)	0.05
Meal plan	0.356(0.140-0.904)	0.03
Maintaining nutrition	0.332(0.139-0.795)	0.01

* Logistic Regression; OR= Odds ratio; CI=Confidence Interval

Discussion

The overall findings of this study show that there are significant difference in knowledge between GDM patients and normal pregnant women concerning major aspects of GDM. According to the study, pregnant women of 23-27 age group has highest GDM rate. A study of Bangladesh reported that, with increasing age, the prevalence of GDM also increase significantly and the odds of a woman >25 years to develop GDM were 3.8 times than a woman 25 years of age³³. Study conducted in India by Seshiah et al³⁴ found the odds ratio was 2.1 for women aged >25 years.

The study found that there was significant difference (p=0.014) between GDM patients and normal pregnant women regarding source of knowledge on GDM. Main source of knowledge was family (42.9%) and neighbor (47.6%) for GDM patient and both medical professionals and neighbors (30%) for the rest. None of the participants reported electronic media as their source of knowledge. But a Bangladeshi study reported that, hospital/clinic (50.5%), peer (29.9%) and family (20.6%) was the major and friends (.9%), internet (5.6%), television (15.9%) and other patients (18.7%) were the other source of knowledge³². A study of India conveyed among all the antenatal women attending a Primary Health Center (PHC) for antenatal care, found that major sources of knowledge on GDM were television/radio (40%), neighbors/friends (34.2%), and family members (29.2%) while doctors (13.3%), health-care workers (20.8%), or hospital charts/boards (18.3%) were less common sources³⁵.

The study revealed there are significant difference ($p=0.000$) in knowledge between GDM patients and normal pregnant women about treatment of GDM. All the GDM patients knew about GDM treatment and 38% knew about insulin therapy while it was 29.6% among normal pregnant women. The above mentioned study of India³⁵ found that, 64% participants knew about diet and exercise while 17.5% about insulin therapy.

The study exhibits that most of the GDM patients knew about family history (41.5%) as a risk factor whereas majority of the normal participants did not know about risk factors of GDM. Significant difference ($p=0.014$) has been found between GDM patients and normal pregnant women knowledge about risk factors of GDM. Bhavadharini et al³⁶ also revealed that majority of rural women were not aware about any risk factor of GDM like obesity and family history of T2DM. Similar results were also published by Poth and Carolan³⁷ in a qualitative study, which disclosed that most women were unaware of GDM and other related factors.

According to the study, 46.5% and 43.5% with and without GDM respectively knew about GDM while 62.8% and 50% with and without GDM respectively were aware about its impact on the baby and pregnancy. Shriram et al³⁵ found that 68.3% participants knew about GDM. While 75.8% were aware about the risk on unborn child if the mother is untreated, 52.5% were aware that women diagnosed with GDM have an increased risk of type 2 DM in future.

The study revealed majority of the participants had meal plan during pregnancy but significant difference ($p=0.006$) have been found between GDM patient and normal pregnant women in maintaining nutrition and physical exercise. But a case-control study in Iran³⁸ found that control group had higher energy intake and physical activity.

Other findings of the study exhibit significant association among education, family history of DM ($P= 0.05$), meal plan ($P= 0.03$) and maintaining nutrition ($P= 0.01$) with awareness of GDM. These findings are consistent with study conducted in Malaysia³⁹ where patients with higher education, family history of DM had better knowledge about GDM.

There are some limitations of the study. The sample size was not very large so the results cannot be generalized.

Conclusion

The study has revealed that knowledge about GDM is poor among pregnant women, especially among normal pregnant women. Normal pregnant women lack knowledge of GDM in every aspect, which leads to limited awareness. This highlights the need of more necessary efforts at the program level to improve women knowledge on GDM because higher knowledge will certainly leads to improve pregnancy outcomes.

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