



P-ISSN: 2349-8528

E-ISSN: 2321-4902

IJCS 2017; 5(5): 179-189

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Received: 26-05-2017

Accepted: 27-06-2017

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Knowledge and attitude regarding gestational diabetes mellitus (GDM) among obese pregnant women coming for antenatal checkup at a tertiary care hospital

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Abstract

The dissertation entitled “Knowledge and attitude regarding Gestational Diabetes Mellitus (GDM) among obese pregnant women coming for antenatal checkup at a tertiary care hospital” has been carried out to know the level of knowledge and attitude of GDM among obese pregnant women as they are potential candidate of GDM. The study is based on the primary data collected from the selected hospital. A total of 107 respondents were taken from OPD of Gynaecology at Holyfamily Redcrescent Medical college Hospital. The field survey was conducted during August, 2016 to March 31, 2017. The mean age of the respondents was 27.96 years with $SD \pm 5.15592$ years. Majority 41.1% completed H.S.C. Among the respondents majority 38.3% were at their third trimester of pregnancy and among the respondents (obese pregnant women) 52.3% have positive familial history. 10.3% have GDM in their current pregnancy and the prevalence of previous GDM was 12.3% among 65 multigravida. Majority 29.9% delivered baby through caesarian section. Among the respondents 6.5% have positive family history of Gestational Diabetes Mellitus. Out of 107 respondents, it was reported that 83.3 are familiar with GDM. Most respondents 50.5% got information through hospital or clinics. Among 107 respondents, the majority 60.7% have poor knowledge. But they showed positive attitude regarding GDM control, investigation and expressed positive responses for GDM education program. There is sparse literature on Knowledge and Attitude about GDM among obese pregnant women in Bangladesh, such type of studies are significant for the use of control and prevention of disease consequences strategies in resource poor countries, so more studies should be done. Improvement in the knowledge about a problem is the first step to reduce risk. We believe that national campaigns for GDM can also successfully increase the awareness regarding prevention and control of GDM in Bangladesh.

Keywords: obese pregnant women, antenatal checkup, gestational diabetes mellitus (GDM)

1. Introduction

Gestational diabetes mellitus (GDM) is defined as “carbohydrate intolerance resulting in hyperglycaemia of variable severity with onset or first recognition during pregnancy”^[1] or as “any degree of glucose intolerance with onset or first recognition during pregnancy”^[2]. It is one of the most common medical problems found in pregnancy. 1% to 14% of total pregnancies may be affected by it^[3]. Categorizing a woman having GDM with a glucose tolerance test (GTT) identifies were the top5–10% of a continuum of risk for certain adverse pregnancy outcomes. Women with GDM are themselves very likely to ultimately develop type 2 diabetes. In addition, the offspring of women with GDM have a greater risk of childhood obesity, glucose intolerance, and diabetes in early adulthood. The risk factors for the development of GDM are well established, but of the major ones, only maternal obesity is potentially preventable or reversible^[4].

Moreover recent data show that GDM prevalence has increased by ~10-100% in several race/ethnicity groups during the past 20 years^[5]. The prevalence of GDM varies from 9.3 to 25.5% according to Hyperglycemia and Adverse Pregnancy Outcomes (HAPO) study^[6]. The prevalence of GDM in UK was 5%. Moreover GDM complicated about 4-14% pregnancies in USA. A study reported prevalence of GDM in Malaysia was 18.3%. According to national obstetrics registry, Malaysia report of 2009, prevalence of GDM is 11.1% in Malaysia.

The trend of GDM also increased markedly in Southeast Asian countries during the last two decades [7].

A number of clinical risk factors have been demonstrated to be associated with increased likelihood of GDM, including age, ethnicity, obesity, family history of diabetes, gestational diabetes and past obstetric history [8]. The trend toward older maternal age, the epidemic of obesity and diabetes, the decrease in physical activity and the adoption of modern lifestyle in developing countries may all contribute to an increase in prevalence of GDM [9]. Although many factors that put a woman at risk for GDM are seen in pre-gestation, the condition appears most frequently in late gestation. Researchers have studied the short term and long term effects of glucose intolerance on the fetus and mother. Diet therapy and exercise is prescribed initially to maintain glucose tolerance in women suffering from GDM but often insulin therapy must be recommended [10].

A study in Bangladesh showed maternal obesity/over-weight and a family history of diabetes have statistically significant association with GDM. The ADA considers women to be at risk for GDM, unless they are younger than 25 years, has normal body weight (BMI < 25 kg/m²), are not a member of high-risk ethnic group, have no first-degree relatives with diabetes and have no personal history of glucose intolerance or poor obstetrical outcome [11].

GDM is a disorder with both immediate and long term complications. There is an increased risk of perinatal mortality and morbidity, an increased risk of obesity or impaired glucose tolerance in the offspring, and a very high risk of the mother converting to type 2 diabetes in later life [12]. Gestational diabetes mellitus (GDM) is associated with a 7-fold increased lifetime risk for developing type 2 diabetes mellitus. Uncontrolled GDM has severe maternal and neonatal outcomes. Maternal outcomes are miscarriages, cesarean section, increase in weight, and risk of type 2 diabetes mellitus increased in future life. Neonatal adverse events include macrosomia, neonatal hypoglycemia, respiratory disorders, elevated number of red blood cells, lower levels of calcium in neonate, jaundice, still birth, and even neonatal death. Early diagnosis of type 2 diabetes is crucial for preventing complications [13]. Screening for gestational diabetes mellitus (GDM) in pregnancy is important as it is associated with adverse fetal and maternal outcomes and because these women and their children are at risk of developing diabetes mellitus (DM) in future [9]. As Bangladeshis belong to high risk group, screening and diagnosis of GDM is important in this context [14].

A study at a Brazilian research and community service center, which investigated the knowledge and attitudes of 82 adult DM patients who participated in an educative program for Diabetes self-care, showed that 78.05% scored more than 8 on Diabetes knowledge, indicating adequate knowledge and understanding of the disease. As for attitudes, scores ranged between 25 and 71 points, suggesting difficulties to cope with the illness. The study appointed that, despite participants' high scores on knowledge, they did not change their attitude with a view to more adequate coping with the disease [12]. In DM treatment management in particular, this trend, translated into positive attitudes, enhances disease-associated stress reduction, greater treatment receptiveness, trust in the multiprofessional team, improved self-esteem, sense of self-efficacy, a more positive perception on health and social acceptance [15].

Appropriate knowledge and positive attitude with reference to disease, is highly related to prevent the complications of

disease by proper management of disease, which permits people to live better with their offspring. Attitude is a key construct to understand an individual's trend to adopt and maintain certain behavioral standards. Knowledge is conceptualized as a set of information individuals need to master to administer their health condition. Only knowledge is not enough, however, to promote behavioral change, which also involves other variables, including: education, diagnosis time, health and disease-related beliefs, family support, easy access to health services, among other dimensions. Although knowledge is a pre-requisite for self-care, it cannot be the sole and main factor involved in the educative process. Knowledge combined with decision making shared with patients, according to their values, in addition to perceived self-care barriers, motivation and proposed targets, can lead to the adoption of positive attitudes towards treatment. Thus, it is perceived that low knowledge levels and negative attitudes towards the disease are factors that still interfere in metabolic control and treatment adherence.

Gestational diabetes mellitus (GDM) is a perfect window of opportunity for the prevention of DM in two generations, and its incidence is increasing in our country. Awareness of the condition among antenatal women will translate into prevention and early diagnosis of the disease. A lifestyle which includes healthy eating habits, weight control and regular exercise has been associated with preventing or delaying the onset of diabetes mellitus during pregnancy and its associated complications. To care for themselves women require education about and knowledge of strategies that have been associated with preventing gestational diabetes mellitus. An essential part of education is knowledge assessment. We hope that this study can offer support for Nursing actions, particularly the importance of considering demographic and clinical variables for knowledge acquisition and self-care readiness in planning Gestational Diabetes Mellitus education programs. In view of the above, this study aimed to assess the knowledge and attitudes regarding GDM among obese pregnant women coming for antenatal checkup at a tertiary care hospital.

Materials & Method

Descriptive cross sectional study was out patient department (OPD) of Gynaecology at Holyfamily Redcrescent Medical College Hospital. Study Period was 8 months starting from August, 2016 to March 31, 2017. The study populations were obese pregnant women coming for antenatal checkup at OPD of Gynaecology at Holyfamily Redcrescent Medical College Hospital. The sample size for this study was determined by $n = pqz^2/d^2$. Where, n = Desired sample size, z = Standard normal variation = 1.96, d = Standard error, the prevalence of GDM patient in urban Bangladesh is about 7.5%. [27] $p = 0.075$, $q = 1 - p = 0.925$. Putting the value in the early mentioned equation the sample size was estimated 107. Samples were taken purposively from Holyfamily Redcrescent Medical College Hospital. (Only obese pregnant women present in the OPD of Gynaecology). Inclusion Criteria were all obese pregnant women other than non-pregnant and other diseased women who will be present during the time of data collection. Data were collected by an interviewer administered semi-structured questionnaire. Data collection procedure was involved face to face interview. Data management plan were pre tested before going to actual study population. All questionnaires were checked for its completeness and correctness. Data analysis was done using SPSS (Statistical Package for Social Science). Sample

frequency distribution, percentage, mean, standard deviation & appropriate statistical tools were used.

Results Socio-Economic and Demographic Characteristics

Table 1: Distribution of respondents according to age group (n = 107)

Age	Frequency(n)	Percent (%)
20-24 years	31	29
25-29 years	27	25.2
30-34 years	33	30.8
35-39 years	16	15
Total	107	100.0

Mean age = 27.96±5.15592 years

This table shows majority of the respondent 30.8% were age 30-34 years followed by 20-24 years old 29%, 30-34 years

old 25.2% and 35-39 years old 15%. Maximum age of the respondent is 38 years and minimum age is 20 years.

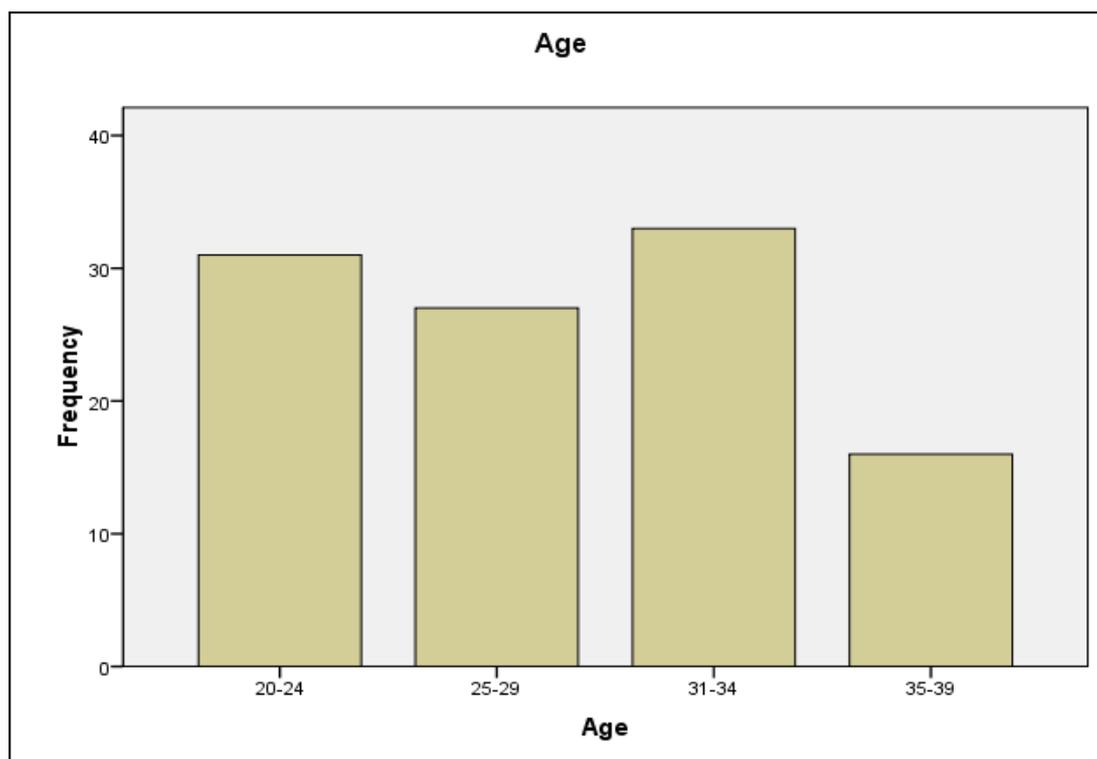


Fig 2: Distribution of respondents according to age group

Table 2: Distribution of respondent according to education (n=107)

Education	Frequency(n)	Percent (%)
School	91	85
Madrasha	14	13.1
No	2	1.9
Total	107	100.0

This table shows that 85% respondents had gone to School, 13.1% to Madrasha and 1.9% had never gone to School or

Madrasha.

Table 3: Distribution of respondent according to educational qualification (n=107)

Educational qualification	Frequency(n)	Percent (%)
Primary	15	14
Secondary	8	7.5
Higher secondary	44	41.1
Graduation	13	12.1
Masters	25	23.4
Illiterate	2	1.9
Total	107	100.0

This table illustrates that 14% of the respondents had completed Primary level, 7.5% had completed S.S.C, 41.1%

had completed H.S.C, 12.1% had completed graduation, 23.4% had completed Masters and 1.9% were illiterate.

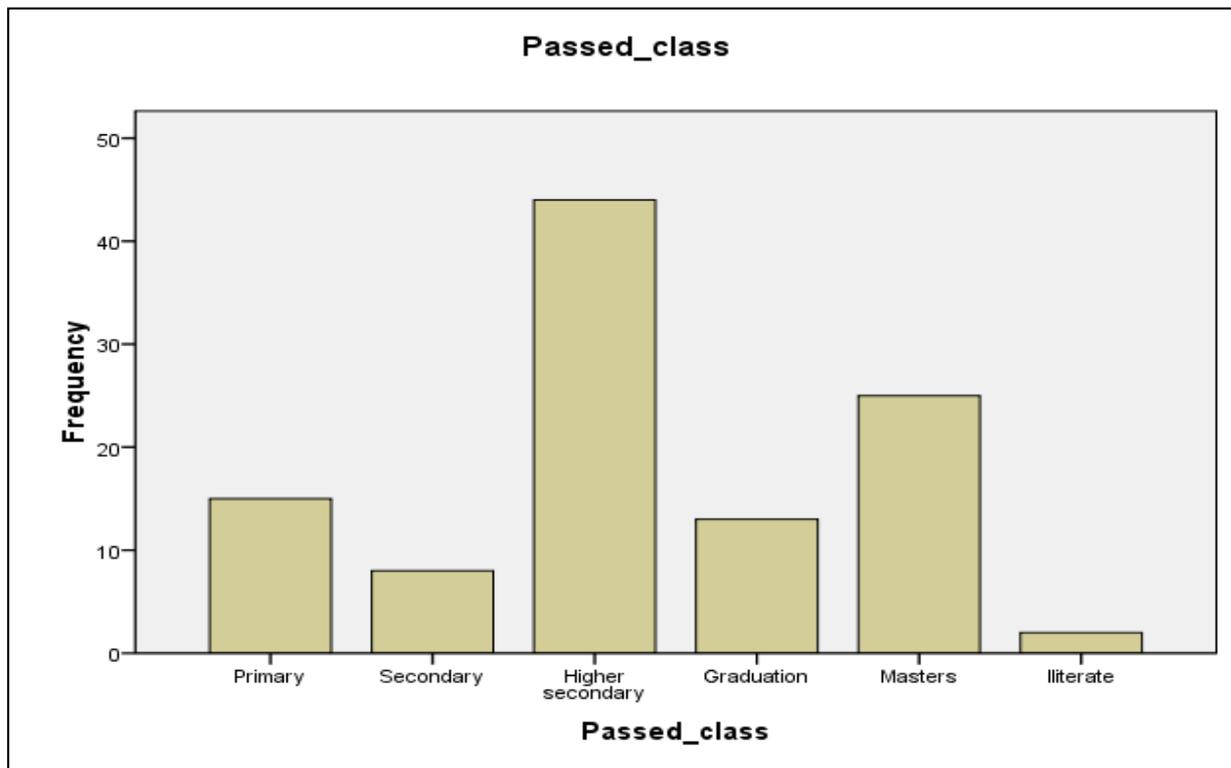


Fig 3: Distribution of respondent according to educational qualification

Table 4: Distribution of respondent according to occupation (n=107)

Marital status	Frequency(n)	Percent (%)
Housewife	58	54.2
Employee	21	19.6
Student	20	18.7
Garments worker	3	2.8
Maid	1	.9
Boutique	4	3.7
Total	107	100.0

This table shows majority of the respondent 54.2% were housewife followed by 19.6% were employee and 18.7% were student.

Table 5: Distribution of respondent according to monthly income (n=107)

Monthly income (Taka)	Frequency(n)	Percent (%)
No income	72	67.3
1000-5000	4	3.7
6000-10000	5	4.7
11000-15000	5	4.7
16000-20000	1	.9
21000-25000	11	10.3
26000-30000	9	8.4
Total	107	100.0

This table shows 67.3% respondents have no monthly income as they were housewife.

Table 6: Distribution of respondent according to family income (n=107)

Monthly income (Taka)	Frequency(n)	Percent (%)
≤ 20000	22	20.6
21000-40000	31	28.9
41000-60000	28	26.2
61000-80000	5	4.7
81000-100000	15	14
>100000	06	5.6
Total	107	100

This table shows that majority 28.9% have family income of 21000-40000 taka, lowest income was 10000tk and highest income was 300000tk.

Table 7: Distribution of respondent according to religion (n=107)

Religion	Frequency(n)	Percent (%)
Islam	91	85
Hindu	14	13.1
Christian	2	1.9
Total	120	100.0

This table shows that most of the respondents were Muslim (85%).

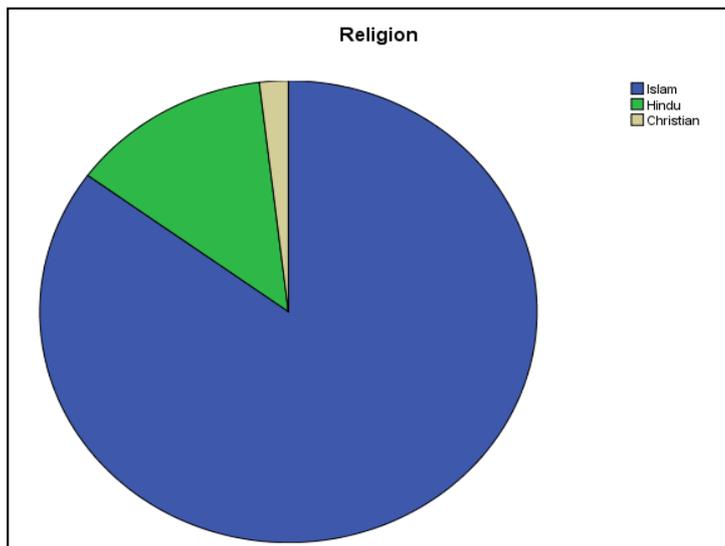


Fig 4: Distribution of respondent according to religion

4.2. GDM related

Table 8: Distribution of respondent according to previous conception (n=107)

Gravidity	Frequency(n)	Percent (%)
Multigravida	65	60.7
Primigravida	42	39.3
Total	107	100.0

This table shows that among the respondents 39.3% were primigravida and 60.7% were multigravida.

Table 9: Distribution of respondent according to age at first pregnancy (n=107)

Age at first pregnancy	Frequency(n)	Percent (%)
16-20	12	11.2
21-25	30	28.0
26-30	23	21.5
Primigravida	42	39.3
Total	107	100.0

This table shows that, majority 28% were pregnant for the first time at the age between 21 and 25. Lowest age at first pregnancy was 17 years old.

Table 10: Distribution of respondent according to mode of delivery (n=107)

Mode of delivery	Frequency(n)	Percent (%)
Normal	5	4.7
CS	32	29.9
Both	11	10.3
Not delivered	17	15.9
Primigravida	42	39.3
Total	107	100.0

This table illustrates that Majority 29.9% delivered baby through caesarian section.

Table 11: Distribution of respondent according to living children (n=107)

Living children	Frequency(n)	Percent (%)
No live child	59	55.1
1	18	16.8
2	30	28.0
Total	107	100.0

This table shows that majority 55.1% have no living child, as 39.3% among the respondents were primigravida.

Table 12: Distribution of respondent according to outcome of previous pregnancy (abortion/still birth/dead birth/premature birth/macrosomic baby/ectopic pregnancy) (n=65 multigravida)

Living children	Frequency(n)	Percent (%)
Abortion	34	52.3
Still birth	1	1.5
Dead birth	6	9.2
Premature birth	9	13.8
Macrosomic baby	1	1.5
Ectopic pregnancy	9	13.8
No abnormality	5	7.7
Total	65	100

This table shows that majority 52.3% among 65 multigravida experienced abortion in their previous pregnancy.

Table 13: Distribution of respondent according to gestational age (n=107)

Gestational age	Frequency(n)	Percent (%)
1-12	16	15.0
13-24	19	17.8
25-36	41	38.3
37	31	29.0
Total	107	100.0

Among the respondents majority 38.3% were at their third trimester of pregnancy.

Table 14: Distribution of respondent according to BMI (n=107)

BMI	Frequency(n)	Percent (%)
30-32.9	84	78.5
33-35.9	13	12.1
36-38.9	10	9.3
Total	107	100.0

This table illustrates that among the respondents majority 78.5% were with BMI 30-32.9.

Table 15: Distribution of respondent according to family history of Diabetes (n=107)

Family History of Diabetes	Frequency(n)	Percent (%)
Yes	56	52.3
No	51	47.7
Total	107	100.0

This table shows that among the respondents (obese pregnant women) 52.3% have positive familial history.

Table 16: Distribution of respondent according to family member with Diabetes (n=56)

Family history of Diabetes	Frequency(n)	Percent (%)
Father	12	21
Mother	37	66
Brother	1	1.7
Sister	6	10.7
Paternal Grandparents	11	19.6
Maternal Grandparents	21	37.5
Paternal Uncle-Aunt	2	3.6
Maternal Uncle-Aunt	19	33.9

*Multiple responses

This table illustrates that respondents those have positive family history of diabetes, among them majority 66% were with positive diabetes history of their mother. Here it is necessary to mention that among the respondents having positive family history of Diabetes, many of them have more than one family member with positive DM status.

Table 17: Distribution of respondent according to family history of Gestational Diabetes Mellitus (n=107)

GDM Family History	Frequency(n)	Percent(%)
Yes	7	6.5
No	100	93.5
Total	107	100.0

Among the respondents 6.5% have positive family history of Gestational Diabetes Mellitus.

Table 18: Distribution of respondent according to family history of Gestational Diabetes Mellitus (n=7)

GDM Family History	Frequency(n)	Percent (%)
Sister	6	85.7
Maternal Aunt	1	14.3

This table illustrates that respondents 7 have positive family history of GDM, among them 85.7% were with positive diabetes history of their sister.

Table 19: Distribution of respondent according to Gestational Diabetes Mellitus status (n=107)

GDM status	Frequency(n)	Percent (%)
Positive	11	10.3
Negative	96	89.7
Total	107	100.0

This table illustrates that among the respondents 10.3% have GDM in their current pregnancy.

Table 20: Distribution of respondent according to Gestational Diabetes Mellitus status during previous pregnancy (n=65 multigravida)

Previous GDM status	Frequency(n)	Percent (%)
Yes	8	12.3
No	57	87.7
Total	65	100.0

Among the respondents 65 were multigravida and 12.3% have positive GDM status during their previous pregnancy.

4.3. Knowledge on GDM

Table 21: Distribution of respondent according to familiarity with GDM (n=107)

Familiar with GDM	Frequency(n)	Percent(%)
Yes	89	83.2
No	18	16.8
Total	107	100.0

This table shows that 83.2% are familiar with GDM whereas 16.8% are not familiar with GDM.

Table 22: Distribution of respondent according to source of information on GDM (n=107)

Source of information	Frequency (n)	Percent (%)
Friends	1	.9
Family	22	20.6
Hospital/Clinic	54	50.5
Other patients	20	18.7
Television	17	15.9
Peer	32	29.9
Internet	6	5.6

*Multiple responses

This table shows that majority 50.5% got information about GDM through hospital/clinic. It has been notified that many have found information from multiple sources.

Table 23: Distribution of respondent according to knowledge on meaning of GDM (n=107)

GDM Meaning	Frequency (n)	Percent (%)
Blood glucose level normal	9	8.4
Increased	61	57.0
Decreased	1	.9
Don't know	36	33.6
Total	107	100.0

This table shows 57% respondents knows about the meaning of GDM.

Table 24: Distribution of respondent according to knowledge on blood glucose level (n=107)

Blood Glucose Level	Frequency(n)	Percent (%)
4-8 mmol/dl	1	.9
7-15 mmol/dl	8	7.5
2-10 mmol/dl	5	4.7
Don't know	93	86.9
Total	107	100.0

This table illustrates that majority 86.9% don't know the normal blood glucose level.

Table 25: Distribution of respondent according to knowledge on potential candidates of GDM (n=107)

Potential candidates of GDM	Yes		No		Don't know	
	Frequency (n)	Percent (%)	Frequency (n)	Percent (%)	Frequency (n)	Percent (%)
Positive family history	76	71	0	0	31	29
Having birth overweight baby	21	19.6	0	0	86	80.4
Unexplained perinatal loss	18	16.8	6	5.6	83	77.6
Age over 30	27	25.2	6	5.6	74	69.2
Previous still birth	10	9.3	14	13.1	83	77.6
Obesity	61	57	0	0	46	43

***Multiple responses**

This table shows that most of the respondents know that having positive family is a risk factor for GDM but they don't

have good knowledge about other risk factors. It has been notified that some respondents gave multiple answers.

Table 26: Distribution of respondent according to effects of obesity on pregnancy (n=107)

Effects of obesity	Yes		No		Don't know	
	Frequency (n)	Percent (%)	Frequency (n)	Percent (%)	Frequency (n)	Percent (%)
Feel uncomfortable	105	98.1	0	0	2	1.9
Become dyspnoeic on exertion	87	81.3	9	8.4	11	10.3
Hypertension	86	80.4	8	7.5	13	12.1
Diabetes	79	73.8	0	0	28	26.8
Difficulty in diagnosing presentation & FHS	34	31.8	8	7.5	65	60.7
Need more sonography	34	31.8	7	6.5	66	61.7
Risk offeotal malformation	20	18.7	8	7.5	79	73.8

***Multiple responses**

This table shows that almost every respondent knows that obesity causes feel uncomfortable, 80.4% and 73.8% knows that obesity causes hypertension and diabetes respectively.

But they little (18.7%) know about obesity causes foetal malformation. It is mentioned that some respondents gave multiple answers.

Table 27: Distribution of respondent according to effects of obesity on labour (n=107)

Effects of obesity on labour	Yes		No		Don't know	
	Frequency (n)	Percent (%)	Frequency (n)	Percent (%)	Frequency (n)	Percent (%)
Abnormal uterine contraction	27	25.2	0	0	80	74.8
Prolonged labour	26	24.3	0	0	81	75.7
Operative interference	94	87.9	0	0	13	12.1
Shoulder dystocia	49	45.8	0	0	58	54.2
Anesthetic hazards	30	28	8	7.5	69	64.5

***Multiple responses**

This table shows that they have poor knowledge about effects of obesity on labour. The majority 94% only told about

operative interference. It has been notified that some respondents gave multiple answers.

Table 28: Distribution of respondent according to transmission of GDM through breast milk (n= 107)

Transmitted through breast milk	Frequency (n)	Percent (%)
Yes	25	23.4
No	81	75.7
Don't know	1	.9
Total	107	100.0

This table shows that majority 75.7% opinioned that GDM

cannot be transmitted through breast milk.

Table 29: Distribution of respondent according to effects of GDM on mother (n=107)

Effects of GDM on mother	Yes		No		Don't know	
	Frequency (n)	Percent (%)	Frequency (n)	Percent (%)	Frequency (n)	Percent (%)
Insulin requirement	80	74.8	0	0	27	25.2
Abortion	34	31.8	9	8.4	64	59.8
Infection	59	55.1	17	15.9	31	29
Pre-eclampsia	9	8.4	9	8.4	89	83.2
Pre-term labour	23	21.5	0	0	84	78.5

Operative delivery	49	45.8	0	0	58	54.2
Retinopathy	24	22.4	0	0	83	77.6
Vascular & renal complications	25	23.4	0	0	82	76.6
Shoulder dystocia	14	13.1	0	0	93	86.9
Maternal distress	56	52.3	0	0	51	47.7
Ketoacidosis	1	.9	0	0	106	99.1

***Multiple responses**

This table shows that the respondents (74.8%) have knowledge about insulin requirement. They have more or less

idea about GDM which effects on mother. It has been notified that some respondents gave multiple answers.

Table 30: Distribution of respondent according to knowledge on common problems for newborn of GDM mother (n=107)

Common problems of newborn of GDM mother	Yes		No		Don't know	
	Frequency (n)	Percent (%)	Frequency (n)	Percent (%)	Frequency (n)	Percent (%)
Macrosomia	34	31.8	0	0	73	68.2
Immaturity	9	8.4	0	0	98	91.6
Birth trauma	10	7.4	0	0	97	90.6
Congenital anomalies	28	26.2	0	0	79	73.8
Respiratory distress syndrome	18	16.8	0	0	89	83.2

***Multiple responses**

This table shows that respondents (34%) only know about macrosomic baby and other effects are little known to them. It

is also mentioned here that some respondents gave multiple answers.

Table 31: Distribution of respondent according to knowledge on control of GDM (n=107)

Control of GDM	Yes		No		Don't know	
	Frequency (n)	Percent (%)	Frequency (n)	Percent (%)	Frequency (n)	Percent (%)
Diet patterns	101	94.4	0	0	6	5.6
Medications	97	90.7	0	0	10	9.3
Investigations	105	98.1	0	0	2	1.9
Exercise	79	73.8	3	2.8	25	23.4

***Multiple responses**

This table illustrates that respondents majority 94.4% and 90.7% knows that diet pattern and regular investigations are

necessary for controlling GDM. It is also mentioned here that some respondents gave multiple answers.

Table 32: Distribution of respondent according to knowledge on self-care of GDM(n=107)

Self-care of GDM	Yes		No		Don't know	
	Frequency (n)	Percent (%)	Frequency (n)	Percent (%)	Frequency (n)	Percent (%)
Maintenance of sufficient food intake	101	94.4	0	0	6	5.6
Balance of activity and rest	100	93.5	0	0	7	6.5

***Multiple responses**

This table shows that respondents have good knowledge about self-care of GDM. 94.4% and 93.5% said accordingly

maintenance of sufficient food intake and balance of activity and rest for self-care of GDM. It is also mentioned here that some respondents gave multiple answers.

Table 33: Distribution of respondent according to knowledge on less strenuous exercise during pregnancy (n=107)

Less strenuous exercise during pregnancy	Yes		No		Don't know	
	Frequency (n)	Percent (%)	Frequency (n)	Percent (%)	Frequency (n)	Percent (%)
Walking	95	88.8	0	0	12	11.2
Swimming	1	.9	15	14	91	85
Upper body exercise	28	26.2	13	12.1	66	61.7
Pelvic floor exercise	33	30.8	10	9.3	64	59.8
Aerobic	10	9.3	0	0	97	90.7

***Multiple responses**

This table shows that majority 95% knows about walking as

less strenuous exercise during pregnancy. It is also mentioned here that some respondents gave multiple answers.

Table 34: Distribution of respondents according to level of knowledge on GDM (n=107)

Level of knowledge	Frequency (n)	Percent (%)
Very poor	21	19.6
Poor	65	60.7
Average	19	17.8
Good	2	1.9
Excellent	0	0
Total	107	100

This table shows that majority 60.7% have poor knowledge.

4.3. Attitude on GDM

Table 35: Distribution of respondents according to attitude on GDM

Attitudinal item	Strongly disagree; N (%)	Disagree; N (%)	Neutral; N (%)	Agree; N (%)	Strongly agree; N (%)
1. Gestational Diabetes Mellitus is a very serious condition.	0	9(8.4)	1(.9)	47(43.9)	50(46.7)
2. Complications of GDM can be prevented.	0	0	9(8.4)	37(34.6)	61(57)
3. Among the risk factors of GDM, maternal obesity is potentially preventable or reversible.	0	0	12(11.2)	56(52.3)	39(36.4)
4. Early diagnosis is crucial for preventing complications.	0	0	9(8.4)	14(13.1)	84(78.5)
5. All pregnancies should be screened routinely with a standardized national protocol.	0	0	2(1.9)	3(2.8)	102(95.3)
6. All pregnant women irrespective of their clinically risk status, should be screened for GDM.	0	0	0	6(5.6)	101(94.4)
7. Regular blood glucose testing is needed for women with GDM.	0	0	0	17(15.9)	90(84.1)
8. Willing to do regular blood glucose monitoring after the pregnancy.	0	10(9.3)	6(5.6)	58(54.2)	33(30.8)
9. Antenatal exercise is prevention of excessive gestational weight gain & glucose intolerance.	0	0	9(8.4)	52(48.6)	46(43)
10. Willing to maintain dietary pattern.	2(1.9)	5(4.7)	10(9.3)	44(41.1)	46(43)
11. Willing to take regular exercise.	0	14(13.1)	17(15.9)	46(43)	30(28)
12. Feel tired after exercise.	0	0	6(5.6)	41(38.3)	60(56.1)
13. Feel difficulties in dietary change.	27(25.2)	10(9.3)	20(18.7)	24(22.4)	26(24.3)
14. It is necessary to take special care of a pregnant mother with GDM.	0	0	0	1(.9)	106(99.1)
15. Comprehensive nationwide GDM education programme is needed for improving access to information.	0	0	0	6(5.6)	101(94.4)
16. Special training to provide GDM care is needed for the health care providers.	0	0	0	0	107(100)

All obese pregnant women had shown positive responses towards GDM. The majority 99.1%, 94.4% and 100% were strongly agreed accordingly for special care of GDM mother, nationwide GSM education programme and special training for health care providers.

Discussion

The study was designed to assess the knowledge, attitude of obese pregnant women regarding GDM. This study was descriptive cross sectional in nature, conducted in selected hospital of Dhaka city of Bangladesh. The target respondents were obese pregnant women who were present in OPD of Gynaecology of the selected hospital. This chapter specially deals with the discussion over the result findings in chapter four and their relation with various literatures.

Majority of the respondent 85% were Muslim. Majority of the respondent 30.8% were age between 30-34 years. Majority of the respondent 54.2% were housewife and majority 41.1% were higher secondary level education. Majority of the respondent 67.3% had no income as most of them are housewife.

Among the respondents 60.7% were multigravida, frequency of caesarean section in previous pregnancy is the majority

29.9%. The majority 78.5% BMI was 30-32.9 and the majority 38.3% were at their third trimester of pregnancy.

52.3% respondents were with positive familial history of diabetes, the prevalence of GDM in current pregnancy was 10.3% and the prevalence of previous GDM was 12.3% among 65 multigravida.

A study was conducted during the months of September and October 2008 in Kanchipuram district in the state of Tamil Nadu to determine the awareness of GDM among all the antenatal women who attend a Primary Health Center (PHC) for antenatal care showed that 17.5% women had good knowledge, 56.7% had fair knowledge, and 25.8% women had poor knowledge about GDM,^[17] whereas in our study 19.6% had very poor knowledge, 60.7% had poor knowledge, 17.8% had average knowledge, 1.9% had good knowledge and no excellent knowledge. In the above mentioned study the major sources of awareness of GDM were reported to be

television/radio (40%), neighbors/friends (34.2%), and family members (29.2%). Doctors (13.3%), health-care workers (20.8%), or hospital charts/boards (18.3%) were sources of information among a lesser proportion of women. But in our study the major sources of knowledge regarding GDM was reported to be hospital/clinic (50.5%), peer (29.9%) and family (20.6%) where friends (.9%), internet (5.6%), television (15.9%) and other patients (18.7%) were sources of information among a lesser proportion of women.

A Study assessed knowledge and attitude of pregnant women towards antenatal exercises. The cross-sectional study recruited 189 pregnant women from six selected antenatal clinics in Ile-Ife, South-West, Nigeria. Respondents had knowledge of pelvic floor exercise (37.0%), muscle strengthening exercise (51.3%), back care exercise (51.3%), and relaxation and breathing exercise (59.8%), respectively, as types of antenatal exercise (ANEx). However, Aerobics (31.2%), swimming (21.7%) and cycling (20.6%) were the least known types of exercises in pregnancy^[18]. In our study respondents had knowledge of walking (88.8%), upper body exercise (26.2%), pelvic floor exercise (30.8%). Aerobics (9.3%) and swimming (.9%) were least known types of exercise to them same as the above mentioned study.

A qualitative study aimed to determine attitudes and health behaviours of pregnant women with GDM in Vietnam conducted in Ho Chi Minh City from December 2010 to February 2011 using focus group methodology aged over 18 years found that women felt confusion, anxiety and guilt about GDM. Many perceived their baby to be at increased risk of death. They were concerned about transmission of GDM through breast milk. Several women planned not to breastfeed^[19]. In our study 25 women (23.4%) also thought that GDM transmission can occur through breastfeeding like Vietnam study.

A descriptive cross-sectional study conducted during the period of month July 2013 at Penang General Hospital, Penang, Malaysia to evaluate the knowledge, attitude, and treatment satisfaction of GDM patients toward their disease. The study showed that of 30 patients, 23 patients (76.6%) had adequate knowledge. Only, 7 (23.3%) patients had inadequate knowledge. For attitude, 23 (76.66%) of patients had a negative attitude toward disease and only 7 (23.3%) had a positive attitude. In terms of satisfaction, 25 (83.33%) patients were satisfied with the given treatment and 5 (16.66%) were unsatisfied. The study concluded that although participants obtained good score on knowledge and treatment satisfaction, their attitude did not change so as to more effectively cope with their disease^[13]. In our study the majority 60.7% have poor knowledge. But they showed positive attitude regarding GDM control, investigation and expressed positive responses for GDM education program.

All pregnant women had shown positive responses towards GDM. All felt they needed more information like Vietnam study.

This study shows that only a small proportion of antenatal women (1.9%) had good knowledge about GDM. A greater proportion of the women were unaware of GDM. Knowledge about the risk factors for GDM, the effects of GDM, exercise as a treatment option for GDM, about the probability of untreated GDM posing a risk to the unborn child and that the women diagnosed with GDM are at an increased risk for future Type 2 diabetes was also poor among the study women. For women to take proper precautions and self-care, it is important that they have a good knowledge about the risk factors and the consequences that they may face if they have

untreated GDM. Though it is encouraging to see the role played by the health-care provider in creating awareness about the condition, it is of great concern that the mass media was quoted as a source of information by only a sixth of the women. The doctors have to educate the health-care workers and both the doctors and the health-care workers as well as mass media have to play a greater role in creating awareness among antenatal women. Routine health-care education programs should be organized for antenatal women and the topic of GDM should be included as a part and all pregnant women irrespective of clinically risk status should be screened for GDM. Along with screening, more efforts are necessary at the program level to improve the awareness about risk factors, effects, consequences and control of GDM on the woman, as a higher level of awareness will certainly improve pregnancy outcomes.

Conclusions

In conclusion, obese pregnant knowledge level about GDM is poor (60.7%). All women had shown positive responses towards GDM. There is sparse literature on Knowledge and Attitude about GDM among obese pregnant women in Bangladesh, such type of studies are significant for the use of control and prevention of disease consequences strategies in resource poor countries. The findings of this study can help the health care providers in successful implementation of activities of GDM programs and in formulating appropriate techniques to improve awareness for the prevention of GDM in Bangladesh.

References

1. WHO, Definition, Diagnosis and Classification of Diabetes Mellitus and its Complications, Report of a WHO Consultation, Department of Noncommunicable Disease Surveillance, Geneva, 1999.
2. American Diabetes Association. Gestational diabetes mellitus. *Diabetes care*, 2004; 27:S88,
3. American Diabetes Association. Gestational Diabetes Mellitus. *Diabetes Care*, 2002; 25(Supplement 1):94-96. <http://dx.doi.org/10.2337/diacare.25.2007.S94>.
4. Robert G Moses, Jennie C Brand-Miller. Dietary Risk Factors for Gestational Diabetes Mellitus Are sugar-sweetened soft drinks culpable or guilty by association? *Diabetes care*, 2009, 32.
5. Ferrara A. Increasing prevalence of gestational diabetes mellitus. *Diabetes Care* 2007; 30:141-146
6. Suzie Daniells, Msc1 Brin FS, Grenyer, Warren S Davis, Fracog3 Keith J. Coleman, Fracog3 Julie-Anne P. Burgess, Msc1 Robert G. Moses. Gestational Diabetes Mellitus Is a diagnosis associated with an increase in maternal anxiety and stress in the short and intermediate term? *Diabetes Care*. 2003; 26:385-389.
7. Rodrigues FF, Zanetti ML, Santos MA, Martins TA, Souza VD, Teixeira CR. Knowledge and attitude: important components in diabetes education. *Rev Latinoam Enferm*. 2009; 17(4):468-73.
8. Sahu L, Satyakala R, Rani R. Comparison of American diabetes association and world health organization criteria for gestational diabetes mellitus and the outcomes of pregnancy. *Obstet Med*. 2009; 2:16
9. ACOG. Screening and diagnosis of gestational diabetes mellitus. Committee opinion, 2011. (online)
10. <https://www.papermasters.com/gestational-diabetes.html>

11. International Journal of Biology; 2014; 6(3). ISSN 1916-9671 E-ISSN 1916-968X Published by Canadian Center of Science and Education
12. Ifat Ara Begum. Gestational Diabetes Mellitus in PrimiGravida of Bangladesh in Different Trimesters Diabetes Care 2003; 26:385-389.
13. Gestational diabetes mellitus: Pilot study on patient's related aspects APP (Archive of pharmacy practice)
14. Nusrat-Sultana, Hasanat MA, Sharmin-Jahan, Mashfiqul-Hasan, Sandesh-Panthi, Yasmin-Aktar, Fariduddin M. Alarming Frequency of Gestational Diabetes Mellitus (GDM) Attending a Tertiary Care Hospital in Bangladesh. JCD 2016 2(4).
15. Steed L, Cooke D, Newman S. A systematic review of psychosocial outcomes following education, self-management and psychological interventions in diabetes mellitus. Patient Educ Couns. 2003; 51(1):5-15.
16. Jane E Hirst, Thach Son Tran, MyAnThi Do, Forsyth Rowena, Jonathan M Morris, Heather E Jeffery Hirst. Women with gestational diabetes in Vietnam: a qualitative study to determine attitudes and health behaviours. BMC Pregnancy and Childbirth 2012; 12:81 <http://www.biomedcentral.com/1471-2393/12/81>
17. Chidozie E Mbada, Olubukayomi E Adebayo, Adebajo B Adeyemi, Olujide O Arije, Olumide O Dada. Knowledge and Attitude of Nigerian Pregnant Women towards Antenatal Exercise: A Cross-Sectional Survey. ISRN Obstetrics and Gynecology, 2014. Article ID 260539, <http://dx.doi.org/10.1155/2014/260539>
18. Jane E Hirst, Thach Son Tran, MyAnThi Do, Forsyth Rowena, Jonathan M Morris, Heather E Jeffery Hirst. Women with gestational diabetes in Vietnam: a qualitative study to determine attitudes and health behaviours. BMC Pregnancy and Childbirth 2012; 12:81 <http://www.biomedcentral.com/1471-2393/12/81>
19. Mannan Ma, Rahman Mh, Ara I, Afroz H. Prevalence and Pregnancy Outcome of Gestational Diabetes Mellitus Among Bangladeshi Urban Pregnant Women. J Medicine. 2012; 13:147-151