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A STUDY TO ASSESS THE KNOWLEDGE AND ATTITUDE ON GESTATIONAL DIABETES MELLITUS (GDM) AMONG OBESE PREGNANT MOTHER ATTENDING ANTENATAL OPD IN SELECTED HOSPITAL, CHENNAI

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ABSTRACT

Background: GDM is defined as “glucose intolerance that is detected during pregnancy” (1) or “carbohydrate intolerance resulting in hyperglycaemia of variable severity with onset or first acknowledgment in the course of pregnancy. **Aim:** The main aim of the study to assess the knowledge and attitude on gestational diabetes mellitus (GDM) among obese pregnant mother. **Methods:** Cross sectional study design was used for the study. The study was conducted in a selected hospital at Chennai. Using the convenient sample technique method the 175 obese pregnant mothers were selected for the study. **Finding:** The study revealed that majority (70.86%) recognize a positive family history as a GDM risk factor, with nearly all (98.29%) aware of obesity-related discomforts during pregnancy, including dyspnea on exertion (81.14%), hypertension (80.57%), and diabetes (73.71%). Attitudes toward gestational diabetes mellitus (GDM) are highly proactive, with 90.6% viewing it as a serious condition and 91.6% believing its complications are preventable. There is unanimous support (100%) for routine screening and regular blood glucose testing, but only 71% are willing to exercise regularly due to fatigue (94.4%). **Conclusion:** The study concluded that the study indicates that the knowledge level about gestational diabetes mellitus (GDM) among obese antenatal mother having moderate knowledge. Despite this, obese antenatal mothers exhibit positive attitudes towards managing and preventing GDM.

Key words: Gestational Diabetes Mellitus, Knowledge, Attitude, Mothers

INTRODUCTION

Pregnancy is a unique, thrilling, and often joyful time in a woman's life, creating a bond between the mother and her unborn baby as she transitions to motherhood. However, it is also a critical period requiring proper care and attention to ensure the health of both the mother and the baby, with maternal nutrition playing a crucial role. Amid the worries and challenges of pregnancy, Gestational Diabetes Mellitus (GDM) stands out as a serious complication caused by abnormal metabolic activities in pregnant women. GDM is defined as “glucose intolerance that is detected during pregnancy” (1) or “carbohydrate intolerance resulting in hyperglycaemia of variable severity with onset or first acknowledgment in the course of pregnancy” (2).

The prevalence of GDM has notably increased across various races and ethnicities over the past 20 years (3). In southern India, the prevalence rates are 17.8% in urban areas, 13.8% in semi-urban areas, and 9.9% in rural areas (4). Understanding GDM is crucial for preventing complications. Although a mother's glucose levels typically return to normal after birth, she remains at high risk for developing Type 2 diabetes mellitus. Additionally, children born to mothers with GDM are at risk of developing metabolic syndromes (5). Therefore, a well-informed patient who manages her diet and follows medical advice can achieve positive pregnancy outcomes for both herself and her baby. The antenatal period provides an excellent opportunity to detect and prevent complications of GDM, protecting two generations from the adverse effects of diabetes mellitus. (6)

Many patients lack awareness about GDM. Even after diagnosis, they often do not understand the importance of adhering to a strict diet and medication, leading to complications later in pregnancy. This study aims to assess the knowledge, attitude, and practice regarding Gestational Diabetes Mellitus (GDM) and its control with medical nutritional therapy among antenatal patients in a tertiary care hospital in a semi-urban area.

AIM OF THE STUDY

The study aimed to assess the knowledge and attitude on gestational diabetes mellitus (GDM) among obese pregnant mother.

METHODOLOGY

The present study adopted cross sectional study design. The present study was conducted in selected hospital at Chennai. The required study sample size was calculated as 175. Using the convenient sample technique method the sample were selected for the study. Obese pregnant mother who are attending antenatal OPD in selected hospital were included in the study. Pregnant mother who are not obese and Pregnant mother who had other complication were excluded.

Tools:

A pretested semi-structured questionnaire was developed to include socio-demographic information and specific questions aimed at assessing the knowledge and attitude regarding Gestational Diabetes Mellitus and its control among antenatal patients. Esteemed professionals validated the questionnaire.

Data Collection Procedure:

After obtaining written consent from the pregnant mothers. Semi structured questionnaire was administered. The data was collected using excel spread sheet. SPSS version 26 software was used to analyse the data.

RESULTS:

The Figure 1 shows that majority of the pregnant women were aged 30-39 years (46.29%), followed by those aged 20-29 years (37.71%), with smaller proportions in the 18-19 years and over 40 years age groups (both 8.00%). Most women were multigravida (71.43%) rather than primigravida (28.57%). Regarding educational status, 36.00% were illiterate, 9.71% had secondary school education, 25.71% had higher secondary school education, and 28.57% were graduates. In terms of occupation, more than half were homemakers (54.29%), with professionals (19.43%), health care workers (9.71%), farmers (7.43%), and labour (9.71%) making up the rest. Socio-economically, 14.86% were from the upper class, 54.29% from the upper middle class, 24.57% from the middle class, 4.00% from the lower middle class, and 2.29% from the lower class.

The table 1 revealed that most respondents (70.86%) recognized a positive family history as a risk factor for GDM, but fewer were aware of other factors like having an overweight baby (19.43%) and unexplained perinatal loss (16.57%). Almost all respondents (98.29%) knew obesity

causes discomfort during pregnancy, with high awareness of dyspnea on exertion (81.14%), hypertension (80.57%), and diabetes (73.71%). However, fewer were aware of its impact on diagnosing presentations (32.00%) and the need for more sonography (32.00%). Regarding labor, 88.00% knew obesity leads to operative interference, but fewer knew about shoulder dystocia (45.71%) and anesthetic hazards (28.00%). Only 23.43% believed GDM could be transmitted through breast milk. While 74.86% knew GDM increases insulin requirements, awareness of other effects, such as infection (54.86%) and abortion (32.00%), was moderate. Knowledge about macrosomia in newborns of GDM mothers was 32.00%, but awareness of other issues like immaturity (8.57%) and birth trauma (10.29%) was limited. Most respondents understood the importance of diet patterns (94.29%) and regular investigations (97.71%) in controlling GDM, as well as maintaining sufficient food intake (94.29%) and balancing activity and rest (93.14%) for self-care. Walking was widely recognized (88.57%) as a less strenuous exercise during pregnancy, but knowledge of other exercises was lower.

Figure 1 : Demographic variables of the obese pregnant mother

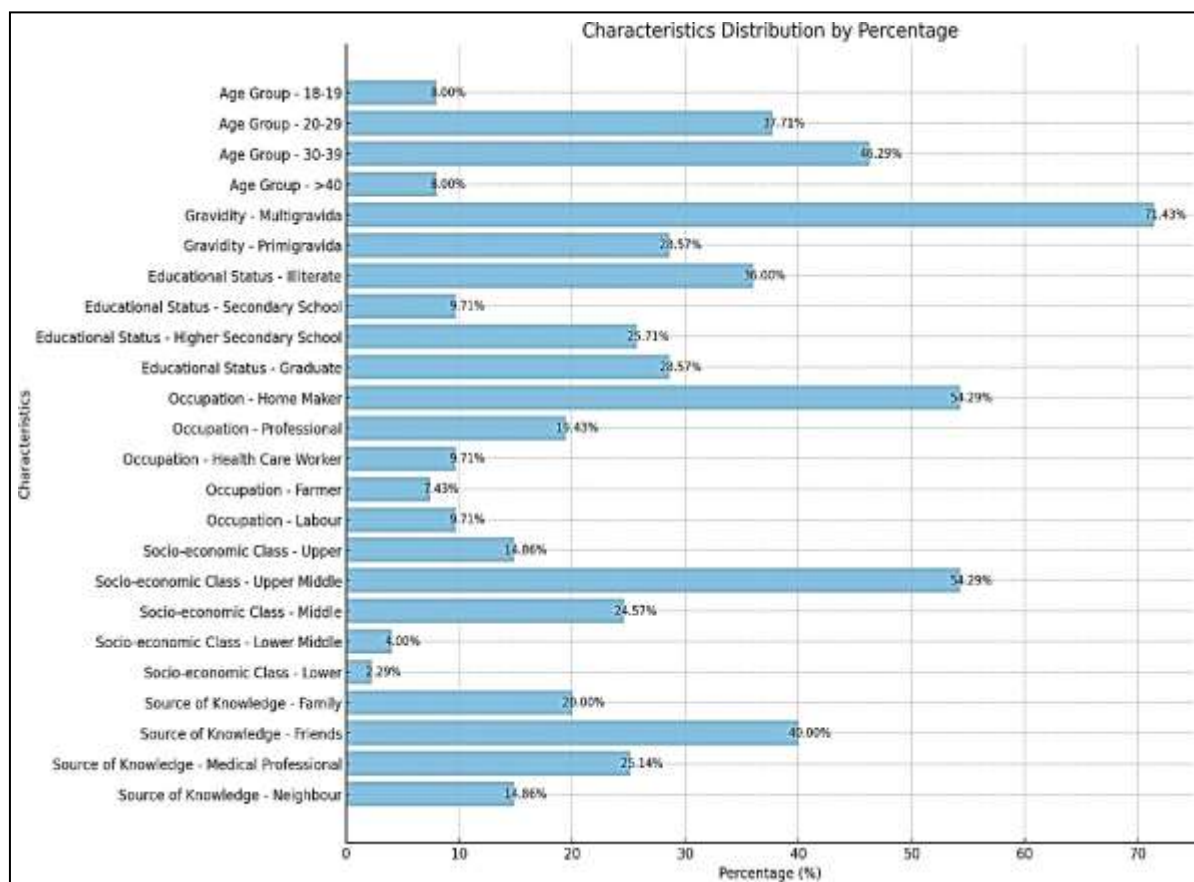


Table: 2 Distribution of the obese pregnant mother based on the response to knowledge questionnaires on GDM **N= 175**

Question	Yes	Percent (%)	No	Percent (%)
Knowledge on Potential Candidates of GDM				
Do you know if a positive family history is a potential candidate for GDM?	124	70.86	51	29.14
Do you know if having birth overweight baby is a potential candidate for GDM?	34	19.43	141	80.57
Do you know if unexplained perinatal loss is a potential candidate for GDM?	29	16.57	146	83.43
Do you know if being over 30 years old is a potential candidate for GDM?	44	25.14	131	74.86
Do you know if previous still birth is a potential candidate for GDM?	16	9.14	159	90.86
Do you know if obesity is a potential candidate for GDM?	100	57.14	75	42.86
Knowledge on Effects of Obesity on Pregnancy				
Do you know if obesity can cause discomfort during pregnancy?	172	98.29	3	1.71
Do you know if obesity can cause dyspnea on exertion during pregnancy?	142	81.14	33	18.86
Do you know if obesity can cause hypertension during pregnancy?	141	80.57	34	19.43
Do you know if obesity can lead to diabetes during pregnancy?	129	73.71	46	26.29
Do you know if obesity can make diagnosing presentation and FHS difficult during pregnancy?	56	32.00	119	68.00
Do you know if obesity can necessitate more sonography during pregnancy?	56	32.00	119	68.00
Do you know if obesity increases the risk of fetal malformation?	35	20.00	140	80.00
Knowledge on Effects of Obesity on Labour				
Do you know if obesity can cause abnormal uterine contractions during labor?	44	25.14	131	74.86
Do you know if obesity can prolong labor?	43	24.57	132	75.43
Do you know if obesity can lead to operative interference during labor?	154	88.00	21	12.00
Do you know if obesity can cause shoulder dystocia during labor?	80	45.71	95	54.29
Do you know if obesity increases anesthetic hazards during labor?	49	28.00	126	72.00

Knowledge on Transmission of GDM through Breast Milk				
Do you believe GDM can be transmitted through breast milk?	41	23.43	134	76.57
Knowledge on Effects of GDM on Mother				
Do you know if GDM increases insulin requirements?	131	74.86	44	25.14
Do you know if GDM can cause abortion?	56	32.00	119	68.00
Do you know if GDM increases the risk of infection?	96	54.86	79	45.14
Do you know if GDM can cause pre-eclampsia?	15	8.57	160	91.43
Do you know if GDM can cause pre-term labor?	38	21.71	137	78.29
Do you know if GDM can lead to operative delivery?	80	45.71	95	54.29
Do you know if GDM can cause retinopathy?	42	24.00	133	76.00
Do you know if GDM can cause vascular and renal complications?	41	23.43	134	76.57
Do you know if GDM can cause shoulder dystocia?	25	14.29	150	85.71
Do you know if GDM can cause maternal distress?	91	52.00	84	48.00
Do you know if GDM can cause ketoacidosis?	1	0.57	174	99.43
Knowledge on Common Problems for Newborn of GDM Mother				
Do you know if macrosomia is a common problem for newborns of GDM mothers?	56	32.00	119	68.00
Do you know if immaturity is a common problem for newborns of GDM mothers?	15	8.57	160	91.43
Do you know if birth trauma is a common problem for newborns of GDM mothers?	18	10.29	157	89.71
Do you know if congenital anomalies are common problems for newborns of GDM mothers?	46	26.29	129	73.71
Do you know if respiratory distress syndrome is a common problem for newborns of GDM mothers?	29	16.57	146	83.43
Knowledge on Control of GDM				
Do you know if diet patterns are necessary for controlling GDM?	165	94.29	10	5.71
Do you know if medications are necessary for controlling GDM?	159	90.86	16	9.14
Do you know if regular investigations are necessary for controlling GDM?	171	97.71	4	2.29
Do you know if exercise is necessary for controlling GDM?	129	73.71	46	26.29

Knowledge on Self-Care of GDM				
Do you know if maintaining sufficient food intake is important for self-care of GDM?	165	94.29	10	5.71
Do you know if balancing activity and rest is important for self-care of GDM?	163	93.14	12	6.86
Knowledge on Less Strenuous Exercise During Pregnancy				
Do you know if walking is a less strenuous exercise during pregnancy?	155	88.57	20	11.43
Do you know if swimming is a less strenuous exercise during pregnancy?	2	1.14	173	98.86
Do you know if upper body exercise is a less strenuous exercise during pregnancy?	46	26.29	129	73.71
Do you know if pelvic floor exercise is a less strenuous exercise during pregnancy?	54	30.86	121	69.14
Do you know if aerobic exercise is a less strenuous exercise during pregnancy?	18	10.29	157	89.71

Table: 2 Distribution of the obese pregnant mother based on the response to Attitude questionnaires on GDM

Attitude Item	Strongly Disagree N (%)	Disagree N (%)	Neutral N (%)	Agree N (%)	Strongly Agree N (%)
1. Gestational Diabetes Mellitus is a critical condition.	0	9 (8.4)	1 (0.9)	47 (43.9)	50 (46.7)
2. The complications of GDM are preventable.	0	0	9 (8.4)	37 (34.6)	61 (57)
3. Maternal obesity as a risk factor for GDM is preventable or reversible.	0	0	12 (11.2)	56 (52.3)	39 (36.4)
4. Early diagnosis of GDM is essential for preventing complications.	0	0	9 (8.4)	14 (13.1)	84 (78.5)
5. Routine screening for all pregnancies using a standardized national protocol is necessary.	0	0	2 (1.9)	3 (2.8)	102 (95.3)
6. All pregnant women should be screened for GDM regardless of their clinical risk status.	0	0	0	6 (5.6)	101 (94.4)
7. Women with GDM need regular blood glucose testing.	0	0	0	17 (15.9)	90 (84.1)

8. Willingness to monitor blood glucose levels regularly after pregnancy.	0	10 (9.3)	6 (5.6)	58 (54.2)	33 (30.8)
9. Antenatal exercise helps prevent excessive weight gain and glucose intolerance during pregnancy.	0	0	9 (8.4)	52 (48.6)	46 (43)
10. Willingness to maintain a healthy dietary pattern.	2 (1.9)	5 (4.7)	10 (9.3)	44 (41.1)	46 (43)
11. Willingness to engage in regular exercise.	0	14 (13.1)	17 (15.9)	46 (43)	30 (28)
12. Feeling tired after exercising.	0	0	6 (5.6)	41 (38.3)	60 (56.1)
13. Difficulty in changing dietary habits.	27 (25.2)	10 (9.3)	20 (18.7)	24 (22.4)	26 (24.3)
14. Special care is necessary for pregnant mothers with GDM.	0	0	0	1 (0.9)	106 (99.1)
15. A comprehensive nationwide GDM education program is needed to improve information access.	0	0	0	6 (5.6)	101 (94.4)
16. Special training is required for healthcare providers to deliver GDM care.	0	0	0	0	107 (100)

The table 2 provides an overview of respondents' attitudes towards Gestational Diabetes Mellitus (GDM). A significant majority, 90.6%, consider GDM a serious condition, and 91.6% believe its complications can be prevented. Regarding maternal obesity, 88.7% agree that it is a preventable or reversible risk factor for GDM. Early diagnosis is deemed crucial by 91.6% of respondents for preventing complications. Routine screening for all pregnancies using a standardized national protocol is supported by 98.1%, while 100% agree that all pregnant women should be screened for GDM, regardless of their clinical risk status. Regular blood glucose testing for women with GDM is endorsed by 100% of respondents, and 85% are willing to continue monitoring their blood glucose levels post-pregnancy. Additionally, 91.6% acknowledge that antenatal exercise helps prevent excessive weight gain and glucose intolerance, and 84.1% are willing to maintain a healthy dietary pattern. However, only 71% are willing to engage in regular exercise, with 94.4% reporting feeling tired after exercising. Changing dietary habits poses a challenge for 43.9% of respondents. There is strong consensus (99.1%) on the necessity of special care for pregnant mothers with GDM, and 94.4% support a comprehensive nationwide GDM

education program. Finally, 100% agree that healthcare providers need special training to deliver effective GDM care. Overall, the findings indicate a high level of awareness and proactive attitude towards managing and preventing GDM among the respondents.

Figure: 1 Level of knowledge towards GDM

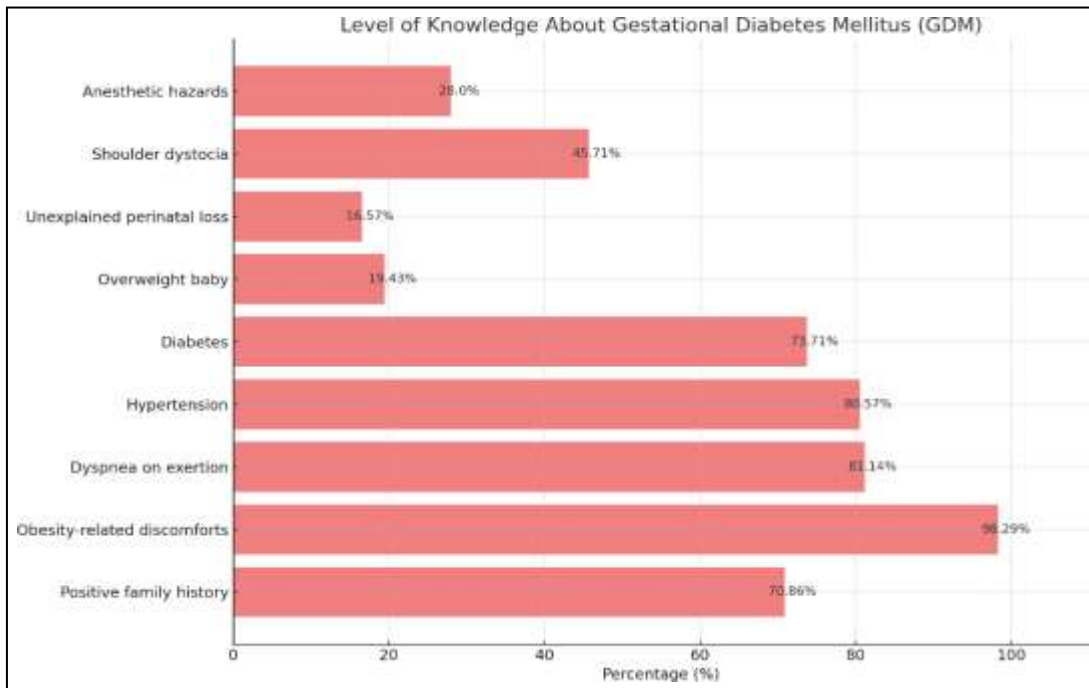
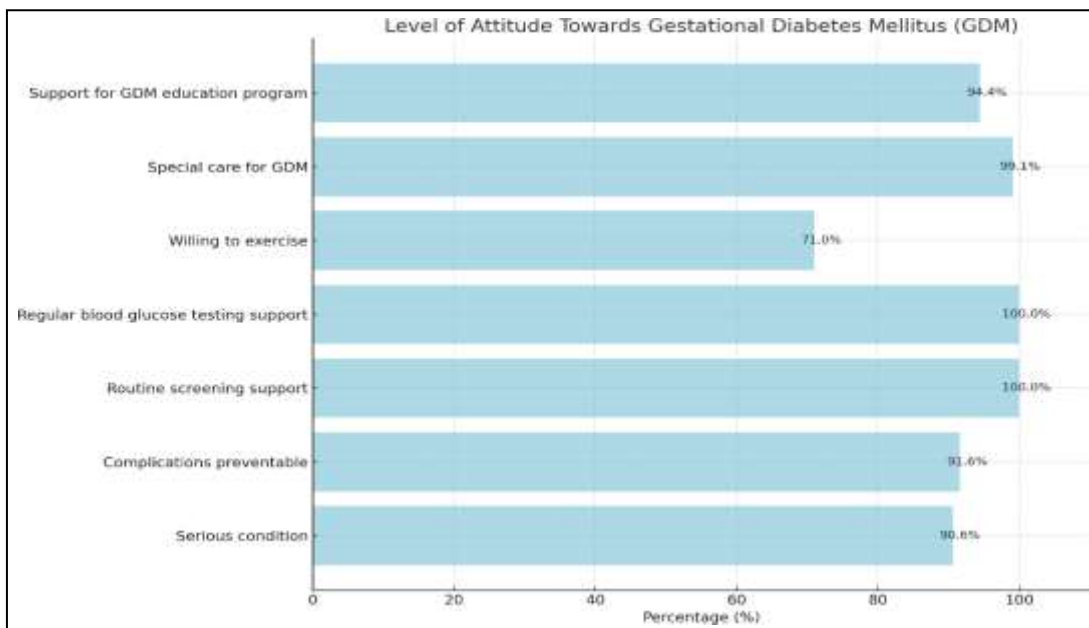


Figure: 2 Level of attitude towards GDM



DISCUSSION

The study was aimed to assess the knowledge and attitude on gestational diabetes mellitus (GDM) among obese pregnant mother. The study targeted the obese pregnant mother who are attending antenatal OPD in selected hospital.

The data reveals a high level of knowledge and proactive attitudes towards gestational diabetes mellitus (GDM) among respondents. Most (70.86%) recognize a positive family history as a GDM risk factor, with nearly all (98.29%) aware of obesity-related discomforts during pregnancy, including dyspnea on exertion (81.14%), hypertension (80.57%), and diabetes (73.71%). However, there is moderate awareness of less recognized risk factors, such as having an overweight baby (19.43%) and unexplained perinatal loss (16.57%), and lower awareness of specific labor complications like shoulder dystocia (45.71%) and aesthetic hazards (28.00%).

Attitudes toward gestational diabetes mellitus (GDM) are highly proactive, with 90.6% viewing it as a serious condition and 91.6% believing its complications are preventable. There is unanimous support (100%) for routine screening and regular blood glucose testing, but only 71% are willing to exercise regularly due to fatigue (94.4%). Additionally, 99.1% agree that special care is essential for pregnant mothers with GDM, and 94.4% endorse a nationwide GDM education program. Overall, respondents exhibit strong knowledge and positive attitudes, although targeted educational efforts could enhance awareness of specific complications and risk factors.

The study was supported by **Vanishree Shriraam et al. (2013)** which was to determine the awareness of gestational diabetes mellitus (GDM) among antenatal women attending a Primary Health Center (PHC) for antenatal care. The findings showed that 17.5% of the women had good knowledge, 56.7% had fair knowledge, and 25.8% had poor knowledge about GDM. In contrast, our study revealed that 19.6% had very poor knowledge, 60.7% had poor knowledge, 17.8% had average knowledge, 1.9% had good knowledge, and none had excellent knowledge. In the aforementioned study, the major sources of awareness about GDM were television/radio (40%), neighbors/friends (34.2%), and family members (29.2%). Fewer women reported obtaining information from doctors (13.3%), health-care workers (20.8%), or hospital charts/boards (18.3%).(7)

The study, supported by **Bijoya Islam et al. (2017)**, found that among 107 respondents, the majority (60.7%) have poor knowledge about gestational diabetes mellitus (GDM). However, they exhibit a positive attitude toward GDM control and investigation and express support for GDM education programs. There is limited research on knowledge and attitudes about GDM among obese pregnant women in Bangladesh. Such studies are crucial for developing disease control and prevention strategies in resource-poor countries, highlighting the need for more research. Enhancing knowledge about GDM is the first step toward reducing risk.

CONCLUSION

In conclusion, the study indicates that the knowledge level about gestational diabetes mellitus (GDM) among obese antenatal mother having moderate knowledge. Despite this, obese antenatal mothers exhibit positive attitudes towards managing and preventing GDM. The limited literature on the knowledge and attitudes about GDM among obese pregnant women highlights the importance of such studies in developing effective strategies for controlling and preventing the disease in resource-poor settings. The findings of this study can aid healthcare providers in successfully implementing GDM programs and formulating appropriate techniques to improve awareness and prevention of GDM in selected hospitals.

REFERENCE:

1. Metzger, B. E., Buchanan, T. A., Coustan, D. R., De Leiva, A., Dunger, D. B., Hadden, D. R., Hod, M., Kitzmiller, J. L., Kjos, S. L., Oats, J. N., & Pettitt, D. J. (2007). Summary and recommendations of the fifth international workshop-conference on gestational diabetes mellitus. *Diabetes Care*, 30(Supplement 2), S251-S260.
2. World Health Organization. (1999). Definition, diagnosis and classification of diabetes mellitus and its complications: report of a WHO consultation. Part 1, Diagnosis and classification of diabetes mellitus. World Health Organization.
3. Islam, B., Islam, M. F., Nyeem, M. A., Mannan, M. A., & Neaz, A. A. (2021). Knowledge and attitude regarding gestational diabetes mellitus (GDM) among obese pregnant women coming for antenatal checkup at a tertiary care hospital. *Journal of Pharmaceutical Research International*, 33(47B), 497-505.

4. Seshiah, V., Balaji, V., Balaji, M. S., Paneerselvam, A., Arthi, T., Thamizharasi, M., & Datta, M. (2008). Prevalence of gestational diabetes mellitus in South India (Tamil Nadu): a community based study. *Journal of the Association of Physicians of India*, 56, 329-333.
5. Kjos, S. L., & Buchanan, T. A. (1999). Gestational diabetes mellitus. *New England Journal of Medicine*, 341(23), 1749-1756.
6. Buchanan, T. A., Xiang, A. H., & Page, K. A. (2012). Gestational diabetes mellitus: risks and management during and after pregnancy. *Nature reviews. Endocrinology*, 8(11), 639–649. <https://doi.org/10.1038/nrendo.2012.96>
7. Shriram, V., Rani, M. A., Sathiyasekaran, B. W., & Mahadevan, S. (2013). Awareness of gestational diabetes mellitus among antenatal women in a primary health center in South India. *Indian journal of endocrinology and metabolism*, 17(1), 146–148. <https://doi.org/10.4103/2230-8210.107861>
8. Bada BM, Ojewale LY, Akingbade O. Knowledge, Attitude and Perception Towards Gestational Diabetes Mellitus Among Pregnant Women Attending Antenatal Clinic in University College Hospital, Ibadan. *Nursing & Midwifery Research Journal*. 2024;20(1):5-20. doi:10.1177/0974150X241235480