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AWARENESS, RISK FACTORS, PERCEIVED EFFECTS, AND LIFESTYLE PRACTICES RELATED TO GESTATIONAL DIABETES MELLITUS AMONG PREGNANT WOMEN IN HEALTH CARE SETTING

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ABSTRACT

Background: Higher use of preventive measures has been associated with the low incidence of harmful effects of GDM (gestational diabetes mellitus) which is attained via strong education and GDM exposure from workshops, conferences, and awareness campaigns. Existing literature data is scarce on awareness of antenatal females concerning GDM, both with or without GDM.

Aim: The present study was aimed to evaluate the awareness, risk factors, perceived effects, and lifestyle practices related to gestational diabetes mellitus among pregnant women in an Indian health care setting.

Methods: The present study assessed 488 antenatal females that visited the Institute within the defined study period with a self-administered questionnaire comprising of 5 sections focusing on demographics, GDM awareness, risk factors, its effects on pregnancy, and lifestyle modifications to prevent GDM. Data were assessed statistically to assess association in GDM awareness level and educational background.

Results: Among 488 subjects that had awareness for GDM, 89.6% (n=424) subjects had an understanding concerning what is GDM, risk factors of GDM were known to 89.6% (n=424) subjects, 93% (n=454) subjects were aware of its effects, and 78% (n=382) knew of lifestyle interventions. Despite positive responses, there were disparities in awareness level for each of the variable. A significant association was seen in awareness level of GDM and educational background of subjects with <0.0001.

Conclusion: The present study concludes that majority of antenatal females are aware of gestational diabetes mellitus, its effects, risk factors, and lifestyle interventions with variable degree and level. Effects of GDM on pregnancy and its risk factors are known to >50% of the antenatal females. Professional medical visits and regular health checkups are most vital lifestyle changes to prevent GDM. A significant association exist in awareness level of GDM and education in antenatal females. Hence, it is vital to incorporate policies to favor female education which strongly govern disease condition awareness.

Keywords: Awareness, Gestational diabetes, Risk factors, Lifestyle intervention

INTRODUCTION

The diabetes is a pandemic disease affecting the human race globally and is rapidly affecting the new subjects in the developing nations as India, however, another such condition is GDM (gestational diabetes mellitus) which is increasing gradually and pose a high threat to the public health. Gestational diabetes mellitus represents a form of diabetes which emerge only during pregnancy resulting from the glucose intolerance in antenatal females. GDM contribute significantly to both perinatal morbidity and mortality along with maternal morbidity. The prevalence for GDM has increased by 12% every year in high-risk subjects as seen from data of last 8 years.¹

There are various risks factors associated with gestational diabetes mellitus in the females that include obesity, pregestational body weight, family history of type 2 diabetes, history of the condition in the previous pregnancies, and old age. Untreated GDM has higher risk of metabolic complications, neonatal respiratory complications, fetal birth trauma, fetal organomegaly, neonatal hypoglycemia, shoulder dystocia, and large-gestational age fetuses. There is also a higher risk of congenital malformations and miscarriages if maternal hyperglycemia exists during organogenesis in subjects with pre-gestational diabetes.²

It is vital to identify the potential and changeable risk factors for prevention of GDM and to assess their potential effect on the overall condition. A low-risk gestational diabetes has been associated with various changeable risk factors and lifestyle modifications. Education for GDM has been considered as a powerful tool in raising the knowledge and awareness of the females for particular health-related conditions of pregnancy, particularly gestational diabetes mellitus.³

Additionally, using the preventive measures has been associated with the low incidence of harmful effects of GDM (gestational diabetes mellitus) which is attained via strong education and GDM exposure from workshops, conferences, and awareness campaigns. Existing literature data is scarce on awareness of antenatal females concerning GDM, both with or without GDM.⁴ Hence, the present study was aimed to evaluate the awareness, risk factors, perceived effects, and lifestyle practices related to gestational diabetes mellitus among pregnant women in an Indian health care setting.

MATERIALS AND METHODS

The present cross-sectional survey study was aimed to evaluate the awareness, risk factors, perceived effects, and lifestyle practices related to gestational diabetes mellitus among pregnant women in the health care setting. The study was conducted in Department of Community Medicine of the Institute. Verbal and written informed consent were taken from all the subjects before study participation.

The present study assessed 488 antenatal females that visited the Institute within the defined study period with a self-administered questionnaire comprising of 5 sections focusing on demographics, GDM awareness, risk factors, its effects on pregnancy, and lifestyle modifications to prevent GDM. The inclusion criteria for the study were subjects visiting the Institute within the defined study period, availability during study period, and willing to participate.

The study utilized a validated, preformed, and self-administered questionnaire used as a study tool. The questionnaire had 16 items aligned in the five sections where section I assessed demographics with 6 items, section II assessed GDM awareness using 4 items, section III assessed risk factors of GDM on 2 items, section IV assessed perceived effects of GDM on pregnancy using 2 items, and section V assessed knowledge on lifestyle interventions toward the prevention of GDM on 2 items making a total of 16 items.

The data gathered were analyzed statistically with chi-square test, Fisher's exact test, Mann Whitney U test, and SPSS (Statistical Package for the Social Sciences) software version 24.0 (IBM Corp., Armonk, NY, USA) using ANOVA, chi-square test, and student's t-test. The significance level was considered at a p-value of <0.05.

RESULTS

The present cross-sectional survey study was aimed to evaluate the awareness, risk factors, perceived effects, and lifestyle practices related to gestational diabetes mellitus among pregnant women in the health care setting. The questionnaire distributed for the study were 490, however, only 488 questionnaires were returned and assessed. The mean age of the study subjects was 27.6±7.3 years. Majority of the study subjects were married 79% (n=386) subjects. Education was till tertiary level in 58% (n=282) subjects and 52% (n=252) subjects had 2-3 pregnancies (Table 1).

It was seen that majority of study subjects were aware of GDM with 87% (n=424) subjects, whereas 95% (n=402) subjects were aware that GDM has characteristic of abnormally high blood sugar levels affecting the pregnant females. In majority of study females, 70% (n=298) reported their source of information as medical professionals. In 86% (n=418) study females reported that they are aware that diabetes can be presented itself as first time being pregnant (Table 2).

The study results showed that in majority of 87% (n=424) subjects were aware of risk factors linked with GDM. Among these 424, 33.6% (n=164) subjects selected options from 7-10 on the questionnaire depicting that few subjects were completely aware of GDM risk factors, 50% (n=244) subjects selected options 4-6 depicting only partial awareness (Table

3). In 93% (n=454) subjects, they reported awareness for effect of diabetes on pregnancy. In 48% (n=236) subjects reported full awareness and chose options 7-10 and 40.6% (n=198) depicted partial awareness and selected options 4-6 (Table 4).

It was also seen that in 78.3% (n=382) subjects were aware about lifestyle changes for prevention of gestational diabetes mellitus and their options were not exclusive mutually. Lifestyle interventions as regular education, exercise/regular physical activity, a good diet plan, regular blood sugar testing, and regular visit to a health/medical professional was known by 6% (n=22), 42% (n=162), 53% (n=202), 55% (n=210), and 63.4% (n=242) study females respectively (Table 5). Among 424 pregnant females that reported awareness for gestational diabetes mellitus, 63% (n=266) subjects had education till tertiary level where 13% (n=64) that reported unawareness 25% (n=16) had education till tertiary education. A significant association was seen in awareness level of GDM and educational background of subjects with <0.0001 (Table 6).

DISCUSSION

The present study assessed 488 antenatal females that visited the Institute within the defined study period with a self-administered questionnaire comprising of 5 sections focusing on demographics, GDM awareness, risk factors, its effects on pregnancy, and lifestyle modifications to prevent GDM. The questionnaire distributed for the study were 490, however, only 488 questionnaires were returned and assessed. The mean age of the study subjects was 27.6±7.3 years. Majority of the study subjects were married with 79% (n=386) subjects. Education was till tertiary level in 58% (n=282) subjects and 52% (n=252) subjects had 2-3 pregnancies. These data were comparable to the previous studies of Chikeme PC et al⁵ in 2024 and Azu TD et al⁶ in 2015 where study design and demographic data comparable to the present study were also reported by the authors.

The study results showed that majority of study subjects were aware of GDM with 87% (n=424) subjects, whereas 95% (n=402) subjects were aware that GDM has characteristic of abnormally high blood sugar levels affecting the pregnant females. In majority of study females, 70% (n=298) reported their source of information as medical professionals. In 86% (n=418) study females reported that they are aware that diabetes can be presented itself as first time being pregnant. These findings correlated with the results Byakwaga E et al⁷ in 2021 and Byakwaga E et al⁸ in 2020 where results reported by the authors for GDM awareness were comparable to the present study.

It was seen that in majority of 87% (n=424) subjects were aware of risk factors linked with GDM. Among these 424, 33.6% (n=164) subjects selected options from 7-10 on the questionnaire depicting that few subjects were completely aware of GDM risk factors, 50% (n=244) subjects selected options 4-6 depicting only partial awareness. In 93% (n=454) subjects, they reported awareness for effect of diabetes on pregnancy. In 48% (n=236) subjects reported full awareness and chose options 7-10 and 40.6% (n=198) depicted partial awareness and selected options 4-6. These results were consistent with the findings of George M et al⁹ in 2014 and Silva-Zolezzi I et al¹⁰ in 2017 where awareness for risk factors of GDM comparable to the present study were also reported by the authors.

It was also noted that in 78.3% (n=382) subjects were aware about lifestyle changes for prevention of gestational diabetes mellitus and their options were not exclusive mutually. Lifestyle interventions as regular education, exercise/regular physical activity, a good diet plan, regular blood sugar testing, and regular visit to a health/medical professional was known by 6% (n=22), 42% (n=162), 53% (n=202), 55% (n=210), and 63.4% (n=242) study females respectively (Table 5). Among 424 pregnant females that reported awareness for gestational diabetes mellitus, 63% (n=266) subjects had education till tertiary level where 13% (n=64) that reported unawareness 25% (n=16) had education till tertiary education. A significant association was seen in awareness level of GDM and educational background of subjects with <0.0001. These findings were in line with the results of Chukwunyere CF et al¹¹ in 2015 and Sayed Y et al¹² in 2016 where awareness about lifestyle changes for prevention of gestational diabetes mellitus and educational status results reported by the authors were comparable to the present study.

CONCLUSION

Considering its limitations, the present study concludes that majority of antenatal females are aware of gestational diabetes mellitus, its effects, risk factors, and lifestyle interventions with variable degree and level. Effects of GDM on pregnancy and its risk factors are known to >50% of the antenatal females. Professional medical visits and regular health checkups are most vital lifestyle changes to prevent GDM. A significant association exist in awareness level of GDM and education in antenatal females. Hence, it is vital to incorporate policies to favor female education which strongly govern disease condition awareness.

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S. No	Characteristics	Number (n)	Percentage (%)
1.	Mean age (years)	27.6±7.3	
2.	Age range (years)		
a)	18-23	120	24.6
b)	24-29	204	42
c)	30-35	102	21
d)	36-41	62	12.7
3.	Education		
a)	Tertiary	282	58
b)	Secondary	164	33.6
c)	Primary	42	8.6
4.	Number of pregnancies		
a)	1	130	27
b)	2-3	252	51.6
c)	4-5	78	16
d)	>5	28	5.7

Table 1: Sociodemographic data in study subjects

S. No	Awareness	Number (n)	Percentage (%)
1.	Aware of GDM		
a)	Yes	424	87
b)	No	64	13
2.	What is GDM (if yes) n=424		
a)	High blood sugar in females after delivery	10	2.4
b)	High blood sugar in females before delivery	4	1
c)	High blood sugar in females during delivery	402	95

d)	None of the above	0	-
e)	All of the above	8	2
3.	Source of information (if yes) n=424		
a)	Friends/relatives	98	23
b)	Social media	22	5
c)	Mass media	6	1.4
d)	Health professionals	298	70
4.	Aware that diabetes can present for first time in pregnancy		
a)	Yes	418	86
b)	No	70	14

Table 2: Awareness about GDM in study subjects

S. No	Awareness of GDM risk factors	Number (n)	Percentage (%)
1.	Aware		
a)	Yes	424	87
b)	No	64	13
2.	Responses and options		
a)	Fully aware (7-10)	164	34
b)	Partially aware (4-6)	244	50
c)	Unaware (0-3)	80	16

Table 3: Risk factors and their awareness in study subjects

S. No	Awareness of effects of GDM	Number (n)	Percentage (%)
3.	Aware		
c)	Yes	454	93
d)	No	34	7
4.	Responses and options		
d)	Fully aware (7-10)	236	48
e)	Partially aware (4-6)	198	41
f)	Unaware (0-3)	54	11

Table 4: Awareness of study subjects for awareness of perceived GDM effects on pregnancy

S. No	Awareness of lifestyle prevention for prevention of GDM	Number (n)	Percentage (%)
1.	Aware		
a)	Yes	382	78
b)	No	106	22
2.	Lifestyle interventions known		
a)	Regular visit to medical/healthcare professional	242	63
b)	Regular sugar blood test	210	55
c)	Good diet	202	53
d)	Physical activity/exercise	162	42
e)	Others	22	6

Table 5: Lifestyle interventions for preventing GDM in study subjects

S. No	Education	GDM awareness				Total	p-value
		Yes		No			
		n	%	n	%		
1.	Primary	16	4	26	41	42	0.0001
2.	Secondary	142	33	22	34	164	
3.	Tertiary	266	63	16	25	282	
4.	Total	424		64		488	

Table 6: Association between awareness level of GDM and educational background of study subjects