



RISK BASED SCREENING FOR GESTATIONAL DIABETES MELLITUS AND ITS FETOMATERNAL OUTCOME.

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INTRODUCTION

Gestational diabetes mellitus (GDM) is formally defined as "any degree of glucose intolerance with its onset or first recognition during pregnancy.¹ It is seen in 1-14% of pregnancies but the prevalence in Pakistan depend upon the characteristics of the population screened.² The prevalence of GDM in Pakistan varies from 3.2% to 3.5% in different parts of country depending upon the geographical locations and diagnostic methods used. GDM has been found to be more prevalent in urban areas than in rural areas.^{3,4}

Screening with risk factor alone has sensitivity of 63% and specificity of 56%. Risk factors for GDM include age more than 35 years, history of poor obstetric outcome, higher parity, history

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ABSTRACT... To determine the frequency of factors leading to gestational diabetes mellitus and fetomaternal outcomes. **Setting:** Department of Obstetrics and Gynaecology Unit-II at Liaquat University Hospital Hyderabad. **Study Design:** Cross sectional study. **Period:** Six months (1st July 2017 to 31st December 2017). **Materials and Methods:** A total of 86 Women with GDM included in the study by identification of risk factors from history an examination. A sample of capillary blood was tested with glucometer for random blood sugar level. GDM was diagnosed 2 hours blood glucose more than 126 mg/dl. Women with GDM was evaluated and followed to see the maternal outcome i.e. preterm delivery, pre-eclampsia and operative delivery and fetal outcome i.e. congenital anomalies, live birth, still birth, early neonatal death and macrosomia. All the data was entered on a pre-designed proforma attached at the end of synopsis. **Results:** The average age of the women was 26.23 ± 4.03 years. Frequency of factors leading to gestational diabetes mellitus was previous history of previous GDM; 66.3%, Previous history of macrosomia 54.7%, Polyhydramnios in current pregnancy 51.2%, macrosomia in current pregnancy 44.2%, previous history of shoulder dystosia 41.9%, and women with BMI $>25\text{kg/m}^2$ was observed in 32.6% cases. GDM causes significant maternal and fetal complications including preeclampsia 51.2%, preterm 23.3%, and operative delivery 29.1% as well as fetal death was observed in 21 (24.4%) in which 17.44% still birth (15/86) and 6.98 (6/86) were neonatal death. **Conclusion:** Gestational Diabetes Mellitus is associated with increased morbidity in mothers and fetus. Early detection and intervention is important because it improves pregnancy outcome.

Key words: Gestational Diabetes Mellitus, Macrosomia, Polyhydramnios, Preeclampsia.

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of polyhydramnios in previous and current pregnancy, women with BMI $>25\text{Kg/m}^2$, history of prior neonatal death or macorosomic baby. GDM causes significant maternal and fetal complications including preeclampsia, poly hydramnios, fetal macrosomia, birth trauma, operative delivery, neonatal metabolic complications and perinatal death. During childhood development of obesity and diabetes, so subsequent development of mother diabetes mellitus is related to GDM.⁵

Risk-based assessment is at least the minimum number of women and reduce the burden on health care systems, while increasing the number of missed diagnosis. Contrary to the fact, association of adverse maternal and fetal outcome in an untreated woman with GDM and

medico-legal consequence of a missed diagnosis prompts most clinicians to follow universal screening, despite differential guidelines.^{6,7}

The rationale behind my study was that as women with GDM are carrying high risk pregnancies, a planned and vigilant care be provided to such women, in order to minimize the complications and hence optimize outcome.

METHOD

This Cross sectional study consisted of 86 patients, conducted at Obstetrics and Gynaecology Unit-II at Liaquat University Hospital Hyderabad.

Women with age (20-35) with parity up to 5, with GDM were included in this study. Patients with pre-existing diabetes and those who are not giving consent, were excluded from the study. The Women GDM included in the study by identification of risk factors from history an examination including obesity (BMI >25Kg/m²), past obstetrical history of macrosomia, polyhydramnios, shoulder dystocia, gestational diabetes, still birth or early neonatal death and/or macrosomia and polyhydramnios (AFI>25cm) in current pregnancy (uterus large for dates on examination and confirmed on ultrasound) and family history of diabetes in first degree relatives.

RESULTS

A total of 86 Women with GDM attending OPD for antenatal care at tertiary care hospital Hyderabad were included in this study. Most of the women were 21 to 30 years of age as shown in Table-I. The average age of the women was 26.23±4.03 years similarly mean parity and gestational age of the women is also given in Table-II. There were 17(19.77%) women had primipara (parity=1) and 69(80.23%) had multipara (parity 2 to 5) as presented in table 1. Most of the women belonged to urban area as shown in Table-I. Forty eight (55.81%) were un-booked cases and 38(44.19%) booked cases (Table-I).

Frequency of factors leading to gestational diabetes mellitus is previous history of previous GDM; 66.3%, Previous history of macrosomia 54.7%, Polyhydramnios in current pregnancy

51.2%, macrosomia in current pregnancy 44.2%, previous history of shoulder dystocia 41.9%, and women with BMI >25kg/m² was observed in 32.6% cases.

GDM causes significant maternal and fetal complications including preeclampsia 51.2%, preterm 23.3%, and operative delivery 29.1%, as well as fetal death was observed in 21(24.4%) in which 17.44% still birth (15/86) and 6.98 (6/86) were neonatal death.

Rate of previous history of previous GDM factor was significantly high in 31 to 35 years of age women while women with BMI >25kg/m² and poly hydramnios in current pregnancy was significantly high in 18 to 20 years of age. Factors leading to GDM like previous history of macrosomia, previous history of shoulder dystocia and macrosomia in current pregnancy were not significant among different age groups in this study as presented in Table-III. Similarly fetomaternal outcomes were also not significant among different age groups of the women as shown in Table-IV.

Factors leading to GDM and fetomaternal outcomes were also observed with respect to parity but insignificant difference was observed as presented in Table-V.

Variable	No. Patients	Percentage
Age		
18-20 years	7	8.14%
21-30 years	65	75.56%
31-35 years	14	16.28%
Parity Distribution		
Primipara	17	19.77%
Multipara	69	80.23%
Locality of the Women		
Rural	33	38.37%
Urban	53	61.63%
Booking Status		
Unbooked	48	55.81%
Booked	38	44.19%

Table-I. Patients variables N=86

Descriptive Statistics		Age (Years)	Parity	Gestational Age (Weeks)
Mean		26.23	2.47	37.65
Std. Deviation		4.03	1.07	1.35
95% Confidence Interval for Mean	Lower Bound	25.37	2.24	37.36
	Upper Bound	27.10	2.69	37.94
Median		27	2	37.50
Inter quartile Range		7	1	2
Minimum		20	1	35
Maximum		35	5	40

Table-II. Descriptive statistics of the women (n=86)

Risk factor for GDM	Age Groups (Years)			P-Value
	18 to 20 (n=7)	21 to 30 (n=65)	31 to 35 (n=14)	
Previous history of macrosomia	5(71.4%)	33(50.8%)	9(64.3%)	0.42
Previous history of shoulder dystosia	3(42.9%)	27(41.5%)	6(42.9%)	0.99
Previous history of previous GDM	1(14.3%)	45(69.3%)	11(78.6%)	0.008*
Women with BMI >25kg/m ²	7(100%)	15(23.1%)	6(42.9%)	0.0005*
Macrosomia in current Pregnancy	4(57.1%)	28(43.1%)	6(42.9%)	0.77
Polyhydramnios in current Pregnancy	6(85.7%)	35(53.8%)	3(21.4%)	0.01*

Table-III. Frequency of factors leading to gestational diabetes mellitus with respect to age groups
Chi-Square test applied for each factor separately. *Significant

Outcome	Age Groups (Years)			P-Values
	18 to 20 (n=7)	21 to 30 (n=65)	31 to 35 (n=14)	
Fetal Outcome				
Alive	6(85.7%)	46(70.8%)	13(92.9%)	0.17
Still Birth	0(0%)	15(23.1%)	0(0%)	
Neonatal Death	1(14.3%)	4(6.2%)	1(7.1%)	
Maternal Outcome				
Preterm delivery	1(14.3%)	13(20%)	6(42.9%)	0.15
Preeclampsia	5(71.4%)	29(44.6%)	10(71.4%)	0.10
Operative delivery	2(28.6%)	21(32.3%)	2(14.3%)	0.40

Table-IV. Comparison for fetomaternal outcome in gestational diabetes mellitus among age groups
Chi-Square test applied for each outcome separately

Risk Factor for GDM	Primipara (n=17)	Multi parity (n=69)	P-Value
Previous history of macrosomia (Weight >4kg)	6(52.9%)	38(55.1%)	0.87
Previous history of shoulder dystosia	9(52.9%)	27(39.1%)	0.30
Previous history of previous GDM	10(58.8%)	47(68.1%)	0.46
Women with BMI >25kg/m ²	8(47.1%)	20(29%)	0.15
Macrosomia in current Pregnancy	7(41.2%)	31(44.9%)	0.78
Polyhydramnios in current Pregnancy	10(58.8%)	34(49.3%)	0.48

Table-V. Comparison of frequency of factors leading to gestational diabetes mellitus between primipara and multipara groups women
Chi-Square test applied for each factor separately.

DISCUSSION

During pregnancy period, first detected or develops of intolerance of carbohydrates is called Gestational diabetes mellitus (GDM).⁸

Perinatal morbidity and mortality were increased in Gestational diabetes mellitus, as well as more prone to complications in the mother and baby, results that deserve proper identification and

treatment.⁹ However, the growing population of diabetes is 21 million people (7% of the population) have some form of diagnosed diabetes¹⁰ another 6 million people may be undiagnosed.¹¹

The variations in GDM prevalence depending on the strata of maternal risk factors observed in our study are largely in agreement with earlier studies.^{121,122} In our study frequency of factors leading to gestational diabetes mellitus are previous history of previous GDM; 66.3%, Previous history of macrosomia 54.7%, Polyhydramnios in current pregnancy 51.2%, macrosomia in current pregnancy 44.2%, previous history of shoulder dystocia 41.9%, and women with BMI >25kg/m² was observed in 32.6%. GDM's biggest difference is for early pregnancy, obesity and illness symptoms in mode high. Relationship between obesity, high pressure and blood safety is well documented, and continues in pregnancy. Regarding relation of increased BMI, an international study conducted by O'Reilly et al and reported that gestational elevated body mass index (BMI) was associated factor with persistent hyperglycemia in women who have had gestational diabetes mellitus. Study also concluded that breastfeeding may be beneficial to provide metabolic effects in women with diabetes mellitus.¹² A large body of data shows that maternal obesity is a significant risk factor for the development of GDM. High BMI before pregnancy is three- fold risk for obese women compared to non –obese women. Another study reported maternal obesity is increased three-fold risk factor and more prone to three-fold risk developed GDM.¹³ Family history of type 2 diabetes of GDM more relevant in multiparous then the parous women¹⁴ Kabiru et al concluded that as maternal weight increases, the likelihood of GDM also increase.¹⁵

Our study reported women associated with GDM have more developed complications like pregnancy-induced hypertension and pre-eclampsia 51.2%, cesarean section 29.1% and preterm delivery 23.3%, while and international study also supported.¹⁶ A case-control study reported gestational diabetes is also linked with hypertension before conceive or during initial

phase of pregnancy.¹⁷

One Study conducted on 381 women associated with hypertension or prehypertension (the latter being defined in the study as 120-139/80-89 mmHg) compared with control 942 subjects, the results of this study showed controlled group is slightly increased risk while other group known case of hypertension was associated with a twofold increase in risk of gestational diabetes.”

A large study by Xionget *a*⁸ detected preeclampsia in 2.7% of 2755 patients with GDM compared with only 1.1% of 108 664 patients with normal pregnancy (adjusted OR = 1.3; 95% CI 1.20, 1.41). Similar results were observed for gestational hypertension.

In our study, fetal death was observed in 21(24.4%) in which 17.44% still birth (15/86) and 6.98 (6/86) were neonatal death. While compare with study of Casey et al reported increased risk of stillbirth is not associated with the GDM.¹⁹ The principal pregnancy complication attributable to GDM is excessive fetal size or macrosomia.²⁰ Fetal macrosomia is the result of fetal hyperinsulinemia which resulted in the transfer of in glucose and other nutrients.²¹

CONCLUSION

Gestational Diabetes Mellitus is associated with increased morbidity in mothers and fetus. Early detection and intervention is important because it improves pregnancy outcome. We found that previous GDM, Macrosomia and polyhydrominois was highly significant to the risk of GMD. It is recommended that pregnant women over the age of 30 and high BMI screened for GDM. As women with GDM are carrying high risk pregnancies, a planned and vigilant care be provided to such women, in order to minimize the complications and hence optimize outcome.




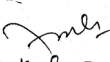
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2	Irfan Ahmed	Drafting of the article.	
3	Ashok Kumar Lohano	Data collection critical revision fo the article for important intellectual content.	
4	Farah Afroz	Drafting of the article	
5	Khawer Hussain	Data collection	