

DOI: <http://dx.doi.org/10.18203/2320-1770.ijrcog20182506>

Original Research Article

# The frequency of gestational diabetes mellitus among pregnant mothers admitted in gynaecology/obstetrics ward of Sheikh Zayed Hospital Rahim Yar Khan, Pakistan

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**Received:** 26 May 2018

**Accepted:** 11 June 2018

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## ABSTRACT

**Background:** The gestational diabetes mellitus (GDM), defined as my degree of glucose intolerance with onset of first recognition during pregnancy, is poorly understood due to low socioeconomic dynamics among the pregnant mothers of Rahim Yar Khan. It results in many maternal and fetal complications. This study was carried out to determine the frequency and socio-demographic profile of pregnant mothers with gestational diabetes mellitus admitted in Gynecological Obstetrics wards of Sheikh Zayed Medical College Hospital Rahim Yar Khan.

**Methods:** The data for this cross-sectional study was collected during the period from 30-01-2017 to 30-06-2017. The data was collected from labor room and wards of gynecology Sheikh Zayed Hospital Rahim Yar Khan. This study was conducted among the 160 pregnant mothers in Labor room and gynecological wards of Sheikh Zayed Hospital Rahim Yar Khan, admitted during the study period. A predesigned questionnaire was filled by interviewing these mother shaving variables of age, education, residence, working status, BMI, family monthly income, total numbers of children, knowledge of Gestational diabetes mellitus and family history of GDM.

**Results:** The frequency of GDM in this study was significantly associated with reproductive age group 25-34 years (64%), Illiteracy in mothers (53.8 %) from rural area (>50%) housewives (83%), BMI (Mean = 22), Family Monthly income (> 10,000 Rs.), Average no. of Children (2-3), Diagnosed with Gestational Diabetes Mellitus (15.6%), Family history of D.M (>50%).

**Conclusions:** It is concluded that the frequency of Gestational Diabetes Mellitus was high. Early detection, constant supervision, delivery with intensive intra-partum monitoring, facilities of expert neonatologists, proper health care education to pregnant mothers can result in good maternal and fetal outcomes without much morbidity.

**Keywords:** Frequency, Gestational diabetes mellitus, Pregnant mothers

## INTRODUCTION

Gestational Diabetes Mellitus (GDM) refers to any degree of glucose intolerance with the onset of first recognition during pregnancy, gestational diabetes mellitus poses a threat to the adverse maternal and prenatal outcomes as a result of maternal hyperglycemia Women with GDM have a high risk of progression to type 2 Diabetes Mellitus. Gestational diabetes begins

during pregnancy and disappears after delivery. Including in risk factors, this is not a reliable indicator of development of gestational diabetes during pregnancy.

Women older than 25 years are at a greater risk than young individuals and risk increases if someone has previous history of gestational diabetes. The prevalence of gestational diabetes mellitus is known to vary widely depending on the region.<sup>1,2</sup>

In developed countries, according to the American diabetes association, 14% of the pregnancies were turns complicated due to gestational diabetes mellitus. It stood to be a potential reason for maternal mortality rate.<sup>3,4</sup> In developing and Asian countries, the prevalence of gestational diabetes mellitus in Asia was found to be 21.1% according to WHO 2013 criteria.<sup>5</sup> According to WHO, the prevalence of gestational diabetes mellitus among rural population is 31.9% and in urban areas is 38.8%.<sup>6</sup>

Gestational diabetes is a condition in which a woman develops high blood sugar level during pregnancy without having diabetes mellitus.<sup>7</sup> Gestational diabetes Mellitus can be defined by fasting plasma glucose >7mol/L (126 mg/dl) or 2-hour plasma glucose level after a 75g OGTT (oral glucose tolerance test) > 7.8 mmol/L (140mg/dl).<sup>8</sup>

The hallmark of Gestational diabetes Mellitus is increased insulin resistance pregnancy hormones and other factors are thought to interfere with action of insulin as it binds to the insulin receptors.<sup>9</sup> It is especially common during the 3<sup>rd</sup> trimester of pregnancy, and generally resolves once the baby is born but can cause complications during pregnancy and birth, Gestational diabetes mellitus is a well-established risk factor of adverse infant health outcomes, including fatal macrosomia, birth trauma, neonatal hypoglycemia and fetal death.<sup>10,11</sup>

Women who are obese, older age, having family history of diabetes and members of ethnic group with high prevalence of diabetes are at increased risk of developing gestational diabetes mellitus.<sup>12</sup> The objectives of this study were to determine the frequency of pregnant mothers and also to determine the socio-demographic profile of pregnant mothers with gestational diabetes mellitus.

## METHODS

The data for this cross-sectional study was collected during the period from 30-01-2017 to 30-06-2017. The data was collected from labor room and wards of gynecology Sheikh Zayed Hospital Rahim Yar Khan. This study was conducted among the 160 pregnant mothers in labor room and gynecological wards of Sheikh Zayed Hospital Rahim Yar Khan, admitted during the study period. A predesigned questionnaire was filled by interviewing these mother shaving variables of age, education, residence, working status, BMI, family monthly income, total numbers of children, and knowledge of gestational diabetes mellitus and family history of GDM.

### Inclusion criteria

- Pregnant mothers admitted for delivery
- Post-partum mothers within two hours after delivery

### Exclusion criteria

- Non-cooperative patient
- Mothers giving incomplete data
- Mothers not giving informed/verbal consent
- Known diabetic cases.

### Statistical analysis

Data was entered and analyzed by using Computer Program SPSS version 16. The frequencies and percentages were calculated on categorical variables i.e., education status, residence (Urban/Rural), Working status etc. Means and standard deviations were calculated on numerical variables i.e. age, BMI, etc.

## RESULTS

The collected data reveals that 53.8% of pregnant mothers were illiterate and 83.1 % pregnant mothers were house wives (Tables 1 and 2). Mean BMI of pregnant women was 22.170, the median was 21.500, the mode was 25.0 and the standard deviation was 3.97. This table 3 shows that most of the ladies had BMI within normal range because the mean BMI was 22.17±3.974.

**Table 1: Distribution of pregnant mothers according to their education status.**

Education status	Frequency	Percent
Illiterate	86	53.8
Primary	16	10.0
Middle	12	7.5
Matric	20	12.5
Above matric	26	16.2
Total	160	100.0

**Table 2: Distribution of according to the working status pregnant mothers.**

Working status of the pregnant mother	Frequency	Percent
House wife	133	83.1
Working	27	16.9
Total	160	100.0

**Table 3: Distribution of pregnant mothers according to their BMI.**

Statistics	BMI of pregnant mother
Mean	22.170
Median	21.500
Mode	25.0
Std. deviation	3.9748

Mean of total number of children was 2.3, median was 2.00 while mode was 3. The standard deviation was 1.984.

This represents average number of children a woman carries, which is not so high (Table 4).

The results also showed that 15.6 % of the pregnant mothers were diagnosed with GDM whereas rests of the pregnant mothers were free of any signs and symptoms of GDM (Table 5).

**Table 4: Distribution of pregnant mothers according to their number of children.**

Statistics	Total no. of children
Mean	2.51
Median	2.00
Mode	3
Std. deviation	1.984

**Table 5: Distribution of pregnant mothers who are diagnosed with GDM.**

GDM diagnosed in pregnant mothers	Frequency	Percent
No	135	84.4
Yes	25	15.6
Total	160	100.0

Gestational diabetes was mostly diagnosed in reproductive age group (25-34 years of age) pregnant mothers, followed by 35-44 years age group.

It is pertinent to mention here that it is the age during which a person is prone to develop type 2 diabetes mellitus as well (Table 6).

**Table 6: Age distribution of pregnant mothers diagnosed with gestational diabetes.**

Age group (years)	Frequency	No. of pregnant mother diagnosed with GDM	%
15-24	36	00	0
25-34	100	16	64
35-44	24	09	36
Total	160	25	160

**Table 7: Age of frequency mothers with age range 16-40 years.**

Age interval (years)	Frequency	Percent
15-24	36	22.5
25-34	100	62.5
35-44	24	15.0
Total	160	100.0

Most of the pregnant mothers (62%) were with age interval 25-34 years. This age group has a link with number of children carries which quiet low with mean 2.3 (Table 7).

## DISCUSSION

This study demonstrates that increasing maternal age is an important risk factor for the GDM in the obstetric population. Mean age of pregnant mother was 27 years, which is in congruent to study conducted at Khyber Teaching Hospital Peshawar, more GDM cases were seen in women of age greater than 35 years.<sup>13</sup> The same age pattern was seen in other studies in Louisiana and Bakai universities.<sup>14,15</sup> This study showed strong association of pregnant mothers with GDM from rural areas. According to a study in Tanzania, prevalence of GDM was higher in urban areas.<sup>16</sup> The explanation behind this finding is that rural women are less educated or illiterate. In this study, most of pregnant mothers (38%) were house wives and the percentage of working mothers was 17%. Another study conducted in India, 78.4% study subjects were house wives. This also favours present study result.<sup>17</sup> Present study showed that mean BMI of pregnant mother was 22.170 with standard deviation 3.97. Thus, those with higher BMI, were at increased risk of GDM. This dissimilarity might have been arisen from selection of sample in respective studies also as we know that diabetes mellitus type 2 is more prevalent in high income group which might be the fact in our study that we found higher prevalence of GDM in high income group. Authors observed that prevalence of GDM increased with the increase of gravidity from primi to multi. This affirms the result of study conducted by Randhawa that frequency of GDM was higher in (80%) in multiparuos. Possible explanation of this is that gravidity increases with increase in age. Increasing maternal age which might be influenced the relationship of gravidity with GDM in descriptive analysis. In this study frequency of GDM was 25(15.6%) and of non GDM was 135(84.4%) as compared to Bahawalpur study, where prevalence of GDM among 124 studied women was 14.51% in 2010.<sup>18</sup> It is comparable to present study.

## CONCLUSION

This study concluded that more than one in every 10 pregnant mothers has gestational diabetes mellitus. Almost half of the pregnant mothers had the history of diabetes mellitus. It is mainly due to low socio-economic status and illiteracy. It is suggested that all the pregnant mothers must be screened for gestational diabetes mellitus during pregnancy. There must be health awareness among population.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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**Cite this article as:** Faisal M, Bakar MA, Hussain Z, Abbas K. The frequency of gestational diabetes mellitus among pregnant mothers admitted in gynaecology/obstetrics ward of Sheikh Zayed Hospital Rahim Yar Khan, Pakistan. *Int J Reprod Contracept Obstet Gynecol* 2018;7:2608-11.