



Frequency of Gestational Diabetes Mellitus and Pregnancy Induced Hypertension in Advanced Maternal Age

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ABSTRACT

Introduction: There is an increasing prevalence of women who tend to delay child birth until a very advanced age. However, there is sparse data regarding advanced maternal age and fetal and maternal outcomes.

Objective: To determine the frequency of maternal outcome, Gestational Diabetes Mellitus and Pregnancy Induced Hypertension in advanced maternal age >35 years.
Study design: Descriptive study.

Setting: Gynaecology and Obstetrics department, BMC/SPH Hospital, Quetta.

Duration of study: Six months.

Sampling Technique: Non-probability consecutive sampling.

Methodology: A total of 84 patients who fulfilled the inclusion and exclusion criteria were selected for this study informed consent was taken from the patients. Their details including age, parity, gravidity and Body Mass Index (BMI) were noted. They were followed up during pregnancy after every 4 weeks and we reassessed for maternal outcome during pregnancy. They were delivered as per obstetrical merits and mode of delivery was noted. All data was analyzed using SPSS version 24.

Results: A total of 84 patients were included in the study. The mean age of the patients was found to be 39.34 ± 2.73 years. Patients were further categorized according to age groups into 2 groups and most were in the age range of 35-40 years. Also, most of the patients had gestational age ≤ 37 weeks. The mean gestational age was 37.44 ± 2.16 weeks. The mean parity of patients was found as 3.1 ± 1.56 . The mean BMI was 29.59 ± 3.24 kg/m². The main outcome of the study was maternal Pregnancy Induced Hypertension which was found in 17 patients (20.23%), followed by gestational Diabetes Mellitus 14 patients (16.66%).

Conclusion: The frequency of maternal and fetal outcomes and complications i.e. Pregnancy Induced Hypertension which was found in 20.23%, followed by Gestational Diabetes Mellitus in 16.66% patients were quite higher among women with advanced age groups. Now we will be in a better position to educate and anticipate the outcomes of these patients.

Article History

*Volume 6, Issue 11, 2024**Received: 06 Sep 2024**Accepted: 13 Nov 2024**Published: 30 Nov 2024**doi:10.48047/AFJBS.6.11.2024.1977-1982***Keywords:** Maternal; Fetal; Outcome; Advanced maternal age; Gestational Diabetes Mellitus.**INTRODUCTION**

During the last 3 decades, there has been an increasing trend among women in the industrialized world to delay child bearing. It is a well-established fact that fecundity decreases and the risk for miscarriage increases with age¹. However, the enormous advances in reproductive medicine have compensated, to some extent, for this natural decrease in fecundity, and nowadays even postmenopausal women have become pregnant through oocyte donation².

It has been shown that pregnant women aged 35 years or older experience an increased risk of intrauterine fetal death, pregnancy-induced hypertension, gestational diabetes, and delivery by cesarean³⁻⁴.

Pregnant women aged over 40 are no longer uncommon, and the question is now whether advanced maternal age increases the risk of pregnancy and results in poorer obstetrical outcomes⁵. Several studies have tried to examine the relationship between maternal age and pregnancy outcome, but most studies have reported contradictory results with regard to advanced maternal age⁶⁻⁷.

In a study it was found that Gestational Diabetes Mellitus was observed in 15/100 patients (15%) and pregnancy induced hypertension was observed in 15/100 patients (15%) undergoing pregnancy after age of 35 years⁸.

In another study, regarding fetal outcome, low birth weight was observed in 168/1804 (9.8%) while 5-minute Apgar score <7 was observed in 62/1804 (3.6%) of patients undergoing pregnancy after age of 35 years⁹⁻¹⁰.

The rationale of the study is that like all over the world, in Pakistan also, the age of marriage is increasing and hence the child birth in advanced age is also on rise¹¹. Therefore, it is important to know the exact fetal and maternal outcome among these advanced age mothers. This study will help us to educate our potential mothers willing to get pregnant at advanced age regarding fetal and maternal outcome. Although foreign and previous studies are immense on this topic, however, in last 5 years minimal studies are conducted on this topic from Pakistan.

Objective

To determine the frequency of maternal outcome, Gestational Diabetes Mellitus and Pregnancy Induced Hypertension in advanced maternal age >35 years.

MATERIAL AND METHODS

Study Design: This was a Descriptive study.

Setting: Study was conducted in Gynaecology and Obstetrics department, BMC/SPH Hospital, Quetta.

Duration of Study: Six months duration from 5th December 2019 to 5th June 2020.

Sample Size: A sample size of 84 patients is calculated taking the confidence level as 95%, precision of study as 4%, expected percentage of 5- minute Apgar score < 7 as 3.8%.

Sampling Technique: Non-probability, consecutive sampling.

Inclusion Criteria

- 1- All the pregnant women with advanced age presenting at gestational age <15 weeks.
- 2- Age greater than 35 years and less than 45 years.
- 3- All para and gravida were included.

Exclusion Criteria

- 1-Patients with known case of hypertension or diabetes mellitus.
- 2-Women with multiple pregnancies (on ultrasound if more than one fetus is identified).
- 3-Women having intra-uterine demise at any stage.

Data Collection

After approval from ethical review board and CPSP, all patients fulfilling the inclusion criteria were enrolled in the study. Written informed consent for inclusion in the study was taken from each patient. Their details including age, parity, gravidity and Body Mass Index (BMI) was noted. They were followed up during pregnancy after every 4 weeks and were assessed for maternal outcome (operational definitions) during pregnancy. They were delivered as per obstetrical merits and mode of delivery were noted. After birth, fetal outcome (operational definitions) was assessed. All data was recorded on the proforma (attached).

Data Analysis Procedure

The collected data was entered and analyzed using SPSS version 20. Mean and standard deviation was calculated for quantitative values like age, gravidity, BMI and parity. Frequencies and percentages were calculated for qualitative variables like mode of delivery, maternal outcome (Gestational Diabetes Mellitus and pregnancy induced hypertension). Data was stratified for effect modifiers including age, parity, gravidity, BMI and mode of delivery. Post-stratification, chi-square test was applied and $P < 0.05$ was considered significant.

RESULT

A total of 84 patients were included in the study. The mean age of the patients was found to be 39.34 ± 2.73 years. Patients were further categorized according to age groups in to 2 groups and most were in the age range of 35-40 years. Also, most of the patients had gestational age >37 weeks. The mean gestational age was 37.44 ± 2.16 weeks. The mean parity of patients was found as 3.1 ± 1.56 . The mean gravidity of patients was found as 5.02 ± 5.85 .

Table 1: Demographic details of patients (n=84)

Variable	N(%)
Age	
35-40 years	54 (64.28%)
40.1-45 years	30 (35.71%)
Mean $\pm$ SD	39.34 $\pm$ 2.73 years
Gestational age	
≤ 37 weeks	25 (29.76%)
>37 weeks	59 (70.23%)
Mean $\pm$ SD	37.44 $\pm$ 2.16 weeks
Parity	
≤ 2	38 (45.23%)
>2	46 (54.76%)
Mean $\pm$ SD	3.1 $\pm$ 1.56
Gravidity	
≤ 4	44 (52.38%)
>4	40 (47.61%)
Mean $\pm$ SD	5.02 $\pm$ 5.85

The main outcome of the study was maternal and fetal outcome. Most frequent outcome was Pregnancy Induced Hypertension which was found in 17 patients (20.2%).

Table 2: Frequency of Maternal outcome (n=84)

Variable	N(%)
Maternal Outcome	
Gestational Diabetes Mellitus	14 (16.66%)

Pregnancy induced Hypertension	17 (20.23%)
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Also, stratification of maternal and fetal outcome with respect to age, gestational age, parity, BMI and mode of delivery was done.

Table 3: Stratification of Pregnancy induced Hypertension for age, gestational age, parity, gravidity, BMI and mode of delivery

		Pregnancy induced Hypertension		P-value
		Yes	No	
Age groups	35-40 years	11	43	0.808
	40.1-45 years	6	24	
Gestational age	≤37weeks	6	19	0.793
	>37 weeks	11	48	
Parity	≤2	8	30	0.917
	>2	9	37	
Gravidity	≤4	10	34	0.861
	>4	7	33	
BMI	≤30kg/m ²	10	38	0.906
	>30 kg/m ²	7	29	
Mode of delivery	Vaginal delivery	12	45	0.983
	Cesarean section	5	22	

Table 4: Stratification of Gestational Diabetes Mellitus for age, gestational age, parity, gravidity, BMI and mode of delivery

		Gestational Diabetes Mellitus		P-value
		Yes	No	
Age groups	35-40 years	9	45	0.759
	40.1-45 years	5	25	
Gestational age	≤37weeks	4	21	0.830
	>37 weeks	10	49	
Parity	≤2	6	32	0.921
	>2	8	38	
Gravidity	≤4	8	36	0.871
	>4	6	34	
BMI	≤30kg/m ²	9	39	0.767
	>30 kg/m ²	5	31	
Mode of delivery	Vaginaldelivery	8	49	0.530
	Cesareansection	6	21	

DISCUSSION

Advanced maternal age is known as an independent risk factor for delivery via cesarean section. Several hypotheses for the increased need for cesarean sections among women at advanced maternal age were proposed, including atherosclerotic changes in uterine arteries, lower contraction potential and decreased oxytocin receptor level as well as generally longer labor duration. There is a persistent negative relationship between the age of pregnant women and the function of the uterus¹².

Other reasons for such a high proportion of cesarean sections among older patients might be an increased occurrence of medical conditions (both pre-existing and gestational), induction of labor, fetal malposition and maternal request for cesarean section¹³⁻¹⁴.

Complications during pregnancy and birth at an advanced maternal age (either defined as 35 years and older or 40 years or older) have also been evaluated in high- income countries. Advanced maternal age at birth has been found to be associated with gestational diabetes, preeclampsia, placenta previa, caesarean section (CS), placental abruption, pre term delivery, low birth weight, intra uterine fetal death and increased

perinatal mortality¹⁵. The difference in obstetric and neonatal outcomes between teen agers and women at advanced age seemed to be lower risks for several unwanted and threatening outcomes in the teenage group; thus, there were no obvious advantages concerning obstetric and neonatal outcomes at advanced maternal ages¹⁶. The earlier published studies concerning the impact of maternal age on perinatal outcome differ in many aspects methodologically as well as in the sociodemographic characteristics of the populations and health care systems. All these factors make interpretation of comparisons between data sets difficult¹⁷⁻¹⁸. Sweden has, during several decades, actively developed strategies in social care, education and health care in order to improve antenatal care and parenthood. In a Swedish state-of-the-art conference held in 1990, the scientific basis of the routine antenatal programme was critically evaluated. It was concluded that the scientific evidence to support the timing and contents of routine visits was unsatisfactory¹⁹. Consequently, there is a constant need for evaluation both of single diagnostic procedures and intervention and of outcomes. An analysis of perinatal outcomes in relation to maternal age in the Swedish population will provide important knowledge that may be used to further improve social, antenatal, obstetric and neonatal care and reveals risk groups that in particular may need more attention in antenatal care²⁰.

CONCLUSION

The frequency of maternal and fetal outcomes and complications i.e. Pregnancy induced Hypertension which was found in 20.23%, followed by Gestational Diabetes Mellitus in 16.66% patients were quite higher among women with advanced age groups. Now we will be in a better position to educate and anticipate the outcomes of these patients.

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