

# Study of fetal and maternal outcome and associated risk factors in elderly primigravida pregnant women at tertiary care center in Western Rajasthan



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## ABSTRACT

**Background:** Elderly primigravida is one aged 35 or more at first delivery. Elderly primigravida combines the concerns of advanced maternal age with those of obstetrically untested primigravida. While the risks related to multiple pregnancy and previous pregnancy are not applicable, there is an added dimension of precious pregnancy reflecting concern this pregnancy maybe the one and only opportunity to have a child. **Aims and Objectives:** The aims and objectives of the study are to determine antenatal complications among elderly primigravida woman and maternal and fetal outcome associated with pregnancy in elderly primigravida women. **Materials and Methods:** A prospective observational study was conducted in the Department of Obstetrics and Gynaecology at Umaid Hospital, Jodhpur, on 90 patients during the period of February 2024–July 2024 at Umaid Hospital, Jodhpur, in primigravida females of age 35 or more having their first delivery at Umaid hospital. Patients who gave consent and satisfied inclusion criteria were included in study. **Results:** Mean age of patient was 36.7 years and mean gestational age of delivery was 37.1 weeks. Major cause of delayed conception was infertility (58.9%) followed by late marriage (40%) and career preference (1.1%). Common antenatal obstetric complications in elderly primigravida were HDOP (28.8%), oligohydramnios (17%), gestational diabetes mellitus (14.4%), and preterm labor (11%). Twin pregnancies were significantly higher in patients aged 40 and above (58.3%) compared to younger patients. **Conclusion:** The study shown that advanced maternal age pregnancy is a high risk pregnancy which needs special care and more careful antenatal monitoring. Significantly higher incidence of hypertensive diseases in pregnancy and twin gestation was seen with increasing maternal age.

**Key words:** Elderly primigravida; Complications; High-risk pregnancy

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## INTRODUCTION

Pregnancy and childbirth are normal physiological processes and outcomes of most of the pregnancies are normal. Outcome of a pregnancy depends upon multiple factors such as age, nutrition status before conception, and previous obstetric and medical history. The first

birth is often a significant event in woman's life and has a relationship with subsequent childbearing and other lifetime events such as education and socio-political status. It also has implications on nation population dynamics, the infant, and mother status.<sup>1</sup> Age is one of the important determining factors of the outcome of pregnancy. As the age increases risk of fetal and maternal complications

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risks. The age of woman at the time of birth of her first child is influenced by religious, social, and cultural variables, which varies from nation to nation. In 1958, the council of the International Federation of Obstetricians and Gynaecologists adopted a definition that elderly primigravida is one aged 35 or more at first delivery.<sup>2</sup> This age cutoff was selected based on evidence of declining fertility and concern surrounding increasing risk of genetic abnormalities identified in offsprings of pregnant women older than 35 years.

In the 1960s and 1970s, there was a decrease in the number of live births and a decrease in the proportion of mothers aged 35 years and older. However, in the last three decades, trends have changed leading to deferred and delayed childbearing. This change is because of improvements in women education, career preferences, delay in the marriage, access to contraception, and encouragement from the side of male partner. A Centers for Disease Control and Prevention (CDC) report documented an increased birth rate among females in advance maternal age group. Analysis of data from last decade shows an increase in the birth rate for women aged 35–39 years from 45.9/1000 women in 2010 to 52.7 in 2019. Similar increase in birth rate from 10.2 to 12/1000 has been shown for the age group of 40–44 years.<sup>3,4</sup> A CDC report documented first birth age in 35-year-old women was 7.5% in 2009 and became 9.1% in 2014. In 2020, 19% of all pregnancies and 11% of all first pregnancies in USA were in women of age 35 years or older. Mean age of women having first birth in 1970 was 21.4 as compared to 27.1 in 2020.<sup>5</sup>

Pregnancies at the age of 35 years or above are termed as advanced maternal-age pregnancy. Beyond that, maternal age above 40 years is considered very advanced maternal age and above 45, very late maternal age/extremely advanced maternal age.<sup>6,7</sup>

Elderly primigravida combines the concerns of advanced maternal age with those of obstetrically untested primigravida. While the risks related to multiple pregnancies and previous pregnancy are not applicable, there is an added dimension of precious pregnancy reflecting concern this pregnancy maybe the one and only opportunity to have a child. Advanced maternal-age pregnancies are associated with more complications and difficulty in conception compared to younger age groups. Fertility and oocyte quality decreases with advancing age making it a precious and high-risk pregnancy.

Complications are hypertension, diabetes, subfertility, spontaneous abortion, ectopic pregnancy, anemia, antepartum hemorrhage, malpresentations, postpartum hemorrhage (PPH), and increased likelihood of C-section.

Fetal and neonatal risk are also increased due to increased rates of chromosomal abnormalities, multiple pregnancies, three intrauterine growth restriction, prematurity, and higher number of neonatal intensive care unit (NICU) admissions.<sup>8</sup> Anticipating, promptly diagnosing and effectively treating complications significantly improves outcomes, underscoring the critical role of quality prenatal care.

### Aim

The aim of the study is to describe the fetal and maternal outcome and associated risk factors in the elderly primigravida pregnant women.

### Objectives

To determine antenatal complications among elderly primigravida pregnant woman.

To describe the maternal and fetal outcome associated with pregnancy in elderly primigravida women.

## MATERIALS AND METHODS

### Study design

The current study was a prospective observational study. The duration of study was from February 2024 to July 2024.

### Inclusion criteria

All primigravida females of age  $\geq 35$  years who are having their first delivery in Umaid Hospital.

### Exclusion criteria

Pregnant woman who had delivery outside of Umaid hospital.

### Sample size

Sample size was calculated at 95% confidence interval and 10% relative allowable error using the formula for sample size for estimation of a single sample proportion.

$$n = (Z_{1-\alpha/2})^2 P (1-P) / E^2$$

Where,

$Z_{1-\alpha/2}$  = Standard normal deviate for 95% confidence interval (taken as 1.96).

P = Expected proportion of antenatal complications in pregnancy in elderly primigravida women (taken as 33% as reported by Thatal et al.).

E = Relative allowable error (taken as 10% of P). Sample size was calculated to be 85 elderly primigravida woman, which was enhanced and round to 90 subjects.

### Method of collection of data

All the pregnant women of age  $\geq 35$  years who are having their first delivery were studied and those who were

willing to participate in the study were included. After informed consent, careful history taking, general physical examination, per abdomen examination, and per vaginal examination were done. Detailed history was taken from all pregnant women about their demographic profile, mode of conception, past medical history, married life, and associated conditions. Gestational age was calculated by detailed obstetric history. Detailed questions were asked about married life, cause of delay, history of infertility, and treatment. A thorough general physical examination and obstetric examination was conducted. Any obstetric complication associated with pregnancy like leaking placental volume (PV) signifying premature rupture of membranes or preterm ROM, bleeding PV signifying placental abruption, or low-lying placenta was noted. Mode for delivery, baby birth weight, condition of baby at birth, need for NICU admission was noted after delivery. Any other maternal postpartum complication like PPH or retained placenta, maternal morbidity and mortality was looked for. Perinatal complications such as NICU admission, prematurity, low birth weight baby were monitored for 1 week. All the data were collected compiled and statistically analyzed.

### Statistics

The collected data were checked for consistency and completeness and entered into Microsoft Excel data sheet and analyzed with the statistical program Statistical Package for the Social Sciences (IBM SPSS version 22) software. Data were organized and presented using the principles of descriptive and inferential statistics. The data were

categorized and presented in proportions. The data were graphically presented in the form of tables, vertical bar, horizontal bar, and pie chart. Where analytical statistics were performed,  $P < 0.05$  was considered significant for the purpose of study. For analytical statistics, Chi-square test was used for categorical data and student t-test was used for continuous data.

### Ethical approval

The goal and methodology of the study were described to all patients after approval from Institutional ethical committee. Both verbal and written consent was taken from the patients. The potential benefits and inconvenience of all aspects of the study were clearly stated to the patients. Ethical approval was given on 6 February 2024 vide IEC no.-SNMC/IEC/2024/2389-90.

## RESULTS

Majority of population belong to 35-36 years age group and only 6.7% of population comes the group very elderly primigravida. Married life of majority population is >1 year and most of the women are homemaker which points towards career not being the main reason behind advanced age in pregnancy (Table 1).

Infertility and late marriage both are important reasons forming 58.9% and 40% of the study group (Table 2).

Hypertensive disorders of pregnancy and PROM are more common problems in elderly primigravida (Table 3).

**Table 1: Sociodemographic profile**

Age	Frequency	Percentage	Booking status	Freq	Percentage
35–36	59	62.2	Booked	75	83.3
37–38	18	20	Unbooked	15	16.7
39–40	10	11.1	SES		
>40	6	6.7	Lower	1	1.1
Education status			Lower middle	19	21.1
Illiterate	28	31.1	Upper middle	34	37.8
Secondary	17	18.9	upper	36	40
Higher secondary	18	20	Married life		
Graduate	12	13.3	<1	10	12
Occupation			1–10	51	56
Homemaker	70	77.8	>10	29	32
Working women	20	22.3			

**Table 2: Mode of conception and period of gestation of present pregnancy**

Mode of conception	Frequency	Percentage	Cause of delay	Frequency	Percentage
IVF	28	31.1	Career preference	1	1.1
Ovulation induction	14	15.6	infertility	53	58.9
spontaneous	48	53.3	Late marriage	36	40
Gestational age					
<32 weeks	4	4.4			
32–37 week	42	46.7			
>37 week	44	48.2			

**Table 3: Antenatal complications**

Antenatal complication	Age <40	Age 40 and above	Chi-square value	P-value
Antepartum hemorrhage	4 (5.1)	0 (0)	0.644	0.422
Anemia	1 (1.3)	0 (0)	0.156	0.693
Oligohydramnios	14 (17.9)	1 (8.3)	0.692	0.405
Bilobed placenta	2 (2.6)	1 (8.3)	1.074	0.300
Breech pregnancy	6 (7.7)	0 (0)	0.989	0.320
Fetal growth restriction	4 (5.1)	0 (0)	0.644	0.422
Hypertensive disorder of pregnancy	21 (26.9)	5 (41.7)	1.100	0.294
Gestational diabetes mellitus	12 (15.4)	1 (8.3)	0.418	0.518
Premature rupture of membrane	8 (10.3)	2 (16.7)	0.433	0.511
Total	78 (100)	12 (100)	-	-

**Table 4: Fetal and maternal outcome**

Mode of delivery	Frequency in <40 year	Frequency in >40 year	Chi-square value	P-value
Normal vaginal	22	2	0.708	0.400
LSCS	56	10		
No. of fetus			12.716	<0.001
Singleton	67	5		
Twin	11	7		
Postpartum complications			2.490	0.288
Retained placenta	1	1		
PPH	11	2		
None	66	9		
Outcome			17.557	0.041
Anomaly	0	1		
IUGR	5	1		
Respiratory distress	3	0		
Preterm	0	1		
Well	79	13		

LSCS: Lower segment cesarean section, IUGR: Intrauterine growth restriction, PPH: Postpartum hemorrhage

A significant proportion of babies (20.6%) required NICU admission, indicating prevalent neonatal complications necessitating specialized care. The majority of babies (78.6%) did not require NICU admission (Table 4).

## DISCUSSION

An elderly primigravida is always considered as a high-risk pregnancy as it is associated with morbidities with advancing age along with maternal and fetal complications. This study has comprehensively examined the fetal and maternal outcomes associated with elderly primigravida pregnancies, alongside the prevalent antenatal complications and other risk factors. Advanced maternal age not only increases the likelihood of gestational complications but also necessitates vigilant monitoring throughout the antenatal period to promptly identify and manage risks. The findings underscore that advanced maternal age significantly impacts both maternal and fetal health, with increased risk of complications such as hypertensive disease of pregnancy, gestational diabetes mellitus, oligohydramnios, preterm labor, placental abnormalities, and congenital anomalies. These findings emphasize the necessity for enhanced prenatal

surveillance and tailored management strategies for elderly primigravidae. A deeper understanding of the specific risk factors in this population can guide healthcare professionals in implementing preventive measures and improve care protocols. The impact on maternal health extends beyond gestational period, to address such challenges we require a holistic approach that integrates medical expertise with psychosocial support to optimize outcomes. Preconception counseling should be done to educate women on the risks associated with delayed childbearing.

Future research should focus on developing targeted interventions to mitigate risks and enhance outcomes for elderly primigravidae. A multidisciplinary approach use should be promoted in managing such high risk pregnancies for achieving favorable outcomes for both mother and newborn. By advancing our understanding through more research and with better clinical management strategies, we can enhance the safety and health outcomes for both mothers and their infants.

### Limitations of the study

In this study we have no control group, so we weren't able to compare our results.

We had a small sample size so we can't generalise the same data for whole population.

For fetal outcome we have followed children at delivery and for 1 week after delivery we haven't followed children for a longer period. Thus, we can't comment of long-term fetal outcome.

## CONCLUSION

An elderly primigravida is always considered as a high risk pregnancy as it is associated with morbidities with advancing age along with maternal and fetal complications. This study has comprehensively examined the fetal and maternal outcomes associated with elderly primigravida pregnancies, alongside the prevalent antenatal complications and other risk factors.

Advanced maternal age not only increases the likelihood of gestational complications but also necessitates vigilant monitoring throughout the antenatal period to promptly identify and manage risks. The findings underscore that advanced maternal age significantly impacts both maternal and fetal health, with increased risk of complications like hypertensive disease of pregnancy, gestational diabetes mellitus, oligohydramnios, preterm labor, placental abnormalities and congenital anomalies. These findings emphasize the necessity for enhanced prenatal surveillance and tailored management strategies for elderly primigravidae. A deeper understanding of the specific risk factors in this population can guide healthcare professionals in implementing preventive measures and improve care protocols. The impact on maternal health extends beyond gestational period, to address such challenges we require a holistic approach that integrates medical expertise with psychosocial support to optimize outcomes. Preconception counselling should be done to educate women on the risks associated with delayed childbearing.

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SS, SS, RS, AA, NG ,KG- All authors contributed to the study conception and design. Material preparation, Data collection and analysis were performed.

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