

Pregnancy in Women Aged 35 Years and Above: A Prospective Observational Study

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About the Author



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Abstract Pregnancy is affected by maternal age from conception till delivery. Various studies have been conducted globally to study this effect; few in developing countries. Maternal age is increasing in developing countries as well, so we have conducted this study.

Method This was a prospective observational study consisting of 1,263 women booked at Jehangir hospital during a period of 2 years, fulfilling inclusion criteria and consenting for the study. They were divided into two groups; women aged 35 years and above and women less than 35 years of age. Pregnancy outcomes were studied in terms

of antepartum, intrapartum and postpartum complications. Neonatal outcomes were studied in terms of birth weight and NICU admissions. Data was analyzed statistically using statistical package for social sciences version 17, by applying Chi square test and Fisher exact test. A p value below 0.05 was considered significant.

Results Women aged 35 years and above constituted 9.63 % of the total study population. Most were multi-gravidae. Rate of assisted conception was significantly higher among women aged 35 years and above; early pregnancy loss was also high in this group. Pre-eclampsia and abruption were significantly higher among them. Neonatal outcomes were comparable.

Conclusion Women with advanced maternal age are at higher risk of complications from conception till delivery and should be provided close supervision for better pregnancy outcome.

Keywords Advanced maternal age · Elderly gravida · Pregnancy above 35 years of age

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Introduction

Maternal age affects pregnancy from conception to delivery. Medical diseases, such as Diabetes Mellitus and hypertension which occur with the increasing age, add to the age-related risks of pregnancy [1, 2].

Fertility declines with age and the risk of miscarriages, ectopic pregnancies, chromosomal abnormalities, and increases of congenital anomalies. The latter half of pregnancy may be complicated by pre-eclampsia, gestational diabetes mellitus (GDM), intrauterine growth restriction (IUGR), and antepartum hemorrhage [3, 4]. There is higher incidence of instrumental deliveries, Cesarean section, and postpartum hemorrhage among these women [5, 6]. Neonates are affected due to prematurity, low birth weight, IUGR, and fetal distress, which increase rates of NICU admission [3, 7].

Studies have been conducted globally to analyze the effects of advanced maternal age on pregnancy outcome. As the number of women with advanced maternal age has also been increasing in developing countries like ours, we conducted a prospective observational study to evaluate the pregnancy outcomes in women aged 35 years and above. This has not been previously documented in our institute.

Materials and Methods

A prospective observational study was initiated after obtaining permission from the Ethics Committee; it consisted of 1,263 pregnant women booked at Jehangir Hospital during the study period of 2 years. They were divided into two groups: women aged less than 35 years of age, and women aged 35 years and above at the time of booking.

Women attending antenatal outpatient department at the hospital consenting for the study were included. Women with previous medical problems and who requested termination or refused consent were excluded.

At the initial visit, detailed history was obtained, and thorough examination was performed. Routine antenatal investigations were advised. Additional investigations were advised as per requirement, e.g., blood urea, serum creatinine, and serum uric acid in women with hypertensive disorder of pregnancy.

All women were advised follow up at monthly intervals till 28 weeks. Thereafter, fortnightly till 36 weeks, and then weekly. Follow ups were more frequent in the presence of any high risk factor. Women were advised admission, in case of complications or labor.

The course of the pregnancy was studied in the antepartum, intrapartum, and postpartum periods. Neonatal outcome was studied with respect to birth weight and NICU admission.

Data Analysis

The recorded data were analyzed statistically using statistical package for social sciences (SPSS) version 17, by applying Chi square test and Fisher exact test. A p value below 0.05 was considered significant.

Observations

Among 1,263 women enrolled, 679 women were followed till delivery as 143 had early-pregnancy losses either due to miscarriage or ectopic pregnancy; 327 women were lost to follow up, and 114 were ongoing pregnancies. A few parameters, i.e., gravidity, mode of conception, and early-pregnancy losses were studied in the entire study population (1,263 women). The rest of the parameters were studied among women who delivered during the study period (679 women).

111 women were of age 35 years and above (9.63 %). Most were multigravidae compared to women less than 35 years (91 vs 45.7 % with $p = 0.00$).

Out of 111 women of age 35 years and above, 14 required assisted conception compared to 41 out of 1,152 women aged less than 35 years (12.6 vs 3.5 % with $p = 0.00$). Also, early-pregnancy loss including miscarriages, and ectopic pregnancy were significantly higher in women aged 35 years and above (21 vs 122, i.e., 18.9 % vs 10.6 %; $p = 0.00$).

Following parameters were observed among 679 delivered women: 622 were below 35 years of age, and 57 were women aged 35 years and above. Table 1 shows the antenatal complication and Table 2 the intrapartum and postpartum complications.

Though the rate of cesarean section was higher in women aged 35 years and above (35.2% compared to 25.5%) the difference was not statistically significant.

Vaginal trauma was seen in significantly higher number of women with advanced age, while postpartum hemorrhage was not significantly different.

Neonatal outcome was studied in the form of Birth weight and NICU admissions. There was no significant difference in birth weights of babies in both groups or in the rates of NICU admission.

Discussion

Pregnancy at advanced maternal age is associated with increased maternal and fetal risks. Various studies have analyzed this effect. Our study was conducted to evaluate the perinatal outcome in this group of women at our hospital.

Table 1 Antenatal complications

Outcome	Women <35 years of age (n = 622)	Women ≥35 years of age (n = 57)	p value*
Hypertensive disorder of pregnancy	45(7.23 %)	10 (17.54 %)	0.01
Gestational diabetes mellitus	40 (6.43 %)	6 (10.52 %)	0.24
Placenta previa	5 (0.80 %)	1 (1.75 %)	0.46
Abruptio placenta	3 (0.48 %)	2 (3.5 %)	0.01
Preterm delivery	64 (10.3 %)	10 (17.5 %)	0.09
Induced labor	71(11.5 %)	6 (10.5 %)	0.86

* p value below 0.05 is significant

Table 2 Intrapartum and Postpartum complications

Parameter studied	Women <35 years of age (n = 622)	Women ≥35 years of age (n = 57)	p value
Vaginal trauma	6 (0.97 %)	3 (5.26 %)	0.01
Postpartum Hemorrhage	16 (2.5 %)	4 (7 %)	0.06

Among 1,263 pregnant women included, 111 women were aged 35 years and above (9.63 %); most were multigravidae (91 %). It appears that, the majority of them had their first child before the age of 35 years, delaying the second and subsequent pregnancies.

Women of age group 35 years and above were found to have higher assisted conception rates: 12.6 %, compared to 3.5 % women less than 35 years of age ($p = 0.00$). These women had responded to ovulation induction alone (either with clomiphene citrate or letrozole) and had not required further options such as IUI/ IVF ET. This observation may be due to the small study population in our study.

Early-pregnancy losses were significantly higher in women 35 years and above, i.e., about 18.9 % compared to 10.5 % in women less than 35 years of age ($p = 0.00$). However, it could not be attributed to any specific cause such as aneuploidy, as karyotyping was sent only for few women. Many of the studies have found a higher rate of aneuploidy among miscarriages in women with advanced maternal age [7–9].

The overall rate of congenital anomalies was low (0.95 %); only two congenital anomalies were seen in women 35 years and above: one was a congenital diaphragmatic hernia, and another was open spina bifida. This rate of congenital anomalies is much lower than the reported data [7]. This again may be due to the smaller study population. Both the babies underwent surgery in the early neonatal period.

In our study, hypertensive disorders of pregnancy were significantly higher in women 35 years and above. Among

those ten elderly gravidae who had gestational hypertension, only two women required early induction due to severe pre-eclampsia. One of them delivered vaginally, while the other required a Cesarean section. Two women had intrauterine growth restriction (IUGR) as a complication of pre-eclampsia. None developed eclampsia in the study group, while one patient among women below 35 years developed eclampsia.

A higher incidence of hypertensive disorders of pregnancy in older women was reported in various studies [10, 11]. Our incidence of 17.5 % was higher than that observed, i.e., 10.1 % in a study conducted at Lucknow and 6.4 % in Saudi Arabia among Asian population [12, 13]. Though the incidence of gestational hypertension was high, there were very few complications due to the close surveillance and early delivery, when indicated.

Abruptio placenta was seen as a cause of antepartum hemorrhage in a higher percentage in women with advanced maternal age. This higher rate of abruptio could not be explained by other causes such as pre-eclampsia. Jolly et al. in their study found an increased risk of placenta previa with advancing maternal age [6].

Although literature has reported other complications such as GDM, preterm deliveries and placenta previa among women with advanced age, they were not statistically significant in our study [6, 11].

The rate of induction of labour was similar in both age groups in our study; higher rates have been reported in few studies. However, no specific cause was found [11, 12]. Post-dated pregnancy was the commonest cause for induction of labor in women with advanced maternal age (3 out of 6). The Cesarean section rate was not significantly higher in older women (35.1 vs 25.5 %). This was in contrast to most of the literature where higher Cesarean section rates were noted [1, 2]. However, the reason for this observation was not established. Association of antepartum complications, lower threshold of doctors as well as patients were thought to be contributory factors, but none was proven.

The most common indication for Cesarean section in our study was previous Cesarean section, in 12 out of 20 cases. Many of them were associated with other obstetrical complications such as gestational diabetes mellitus and pre-eclampsia. Other reasons were failure to progress and fetal distress.

5.26 % of women 35 years and above had intrapartum complications such as perineal tears, lacerations, and extension of episiotomies compared to 0.9 % in younger women which was significant; only one had instrumental delivery, and the remaining two had no other risk factor. The rate of postpartum hemorrhage was not significantly different. A few studies have found higher rates of postpartum hemorrhage in women with advanced maternal age [14].

Adverse perinatal outcome with advancing maternal age has been attributed to a higher rate of antenatal complications seen in this group. Most of the studies have looked at perinatal outcomes in terms of birth weight, NICU admissions, still birth, and perinatal mortality [15].

In our study, 14 % of babies born to mothers aged 35 years and above had a birth weight less than 2,500 g, and 12.28 % babies had birth weight less than 2,000 g, while in women aged less than 35 years of age, they were 18.34 and 7 %, respectively. This shows that elderly gravidae had a higher percentage of babies with very low birth weight, i.e., less than 2,000 g. This may be due to a higher percentage of women with other complications such as pre-eclampsia and intrauterine growth restriction. Chan et al. had observed 4.5 % of low birth weight babies among women aged 40 years and above versus 7.2 % among women aged less than 40 years [15]. Neonatal outcome was also studied by us in terms of NICU admissions; the rates were similar in both the groups (8.7 vs 8.68 %). The reason for NICU admission in women aged 35 years and above was low birth weight.

Although antenatal complications, such as pre-eclampsia and abruptio placenta (which are common reasons for adverse perinatal outcome), were higher in our study, in the elderly group, NICU admissions were similar among both the groups. This may be due to timely intervention. There were no birth injuries, but there were two neonatal deaths in older women.

Conclusion

Increasing maternal age is associated with elevated risks for pregnancy complications. Not only is spontaneous conception difficult, but also various other antenatal and postnatal complications such as miscarriage, pre-eclampsia, gestational diabetes mellitus, antepartum hemorrhage, and low birth weight babies, are more common during the pregnancy.

Since these women are at higher risk of complications compared to the younger group, they should be advised to adhere to frequent antenatal visits and should be kept under the close supervision of a senior Obstetrician. Increased maternal and fetal surveillance will ensure a better perinatal outcome.

However, to study these outcomes better in women with advanced maternal age, a larger sample size with women of different age groups is required.

Compliance with ethical requirements and Conflict of interest All procedures followed were in accordance with the ethical standards of institutional Ethical Committee and with the Helsinki Declaration of 1975, as revised in 2008 (5). Informed consent was obtained from all patients for being included in the study. Anuya A Pawde, Manjiri P Kulkarni, and Jyothi Unni declare that they have no conflict of interest.

References

1. Luke B, Brown MB. Elevated risk of pregnancy complications and adverse outcomes with increasing maternal age. *Hum Repro*. 2007;22:1264–72
2. Carloan MC, Davey M, Biro M, et al. Very advanced maternal age and morbidity in Victoria, Australia: a population based study. *BMC Pregnancy and Childbirth*. 2013;13:80–9.
3. Shimrit SY, Amalia I, Arnon W, et al. A significant linear association exists between advanced maternal age and adverse perinatal outcome. *Arch Gynecol Obstet*. 2011;283 (4):755–59.
4. Yogev Y, Melamed N, Haroush B. Pregnancy outcome at extremely advanced maternal age. *Am J Obstet Gynecol* 2010; 203: 558:e1–7.
5. Hsieh TT, Liou JD, Hsu JJ, et al. Advanced maternal age and adverse perinatal outcomes in Asian population. *Ejog* 2010; 148 (1):21–6.
6. Jolly M, Sebire N, Harris J, et al. The risk associated with pregnancy in women aged 35 years and older. *Hum Reprod*. 2000;15:2433–7.
7. Cleary-Goldman J, Malone FD, Vidaver J, et al. Impact of maternal age on obstetric outcome. *Obstet Gynecol*. 2005;105:983–90.
8. Leridon H. Can assisted reproductive technology compensate for the natural decline in fertility with age? A model assessment. *Hum reprod*. 2004;19:1548–53.
9. Delbaere I, Verstraelen H, Goetgeluk S, et al. Pregnancy outcome in primiparae of advanced maternal age. *Ejog*. 2007;135:41–6.
10. Jacobsson B, Ladfors L, Milsom I. Advanced maternal age and adverse perinatal outcome. *Obstet Gynecol*. 2004;104:727–33.
11. Weerasekera DS, Udugama SG. Pregnancy outcome at 40 and over: a case control study in a developing country. *J Obstet Gynecol*. 2003;23:625–7.
12. Sahu TM, Agarwal A, Das V. Advanced maternal age and obstetric outcome. *J Obstet Gynecol India*. 2007;57:320–3.
13. Chibber R. Problems of older maternal age and pregnancy outcome. *Bahrain Med Bull*. 2004; 26 (4).
14. Larbi RKT, Buchmann EJ, Matshidze PR, et al. Pregnancy outcome in urban black South African women aged 35 years and older. *J Obstet Gynaecol*. 2000;20:259–62.
15. Chan BCP, Lao TT. Influence of parity on the obstetric performance of mothers aged 40 years and above. *Hum Reprod*. 1999;14(3):833–7.