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CORRELATION OF ADVANCED MATERNAL AGE AND OBSTETRIC OUTCOME: ANALYTICAL STUDY FROM NORTH INDIA

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Abstract:
Background: Maternal age is a key factor of pregnancy outcome in obstetric practise. Due to lifestyle changes such as the quest of higher education and career success, women have postponed childbearing in recent years. As a result, the maternal age rises, resulting in a slew of issues during pregnancy, labour, and delivery, as well as for the newborn.
Aims & objectives: The goal of this study was to look at the effects of advanced maternal age on the mode of conception as well as obstetric and perinatal outcomes in elderly primigravida.
Methods: This was a two-year prospective hospital-based study in 200 elderly primigravida admitted after meeting appropriate exclusion criteria in a medical college. Pregnant women over 35 years of age, both primigravida (delayed childbirth) and multiparous women, are eligible for inclusion (continued childbearing).
Results: Infertility was the most common cause of delayed conception (35 percent). The rate of miscarriage was 11%, and ectopic pregnancy was 4%. The number of caesarean sections performed was extremely high (70 percent). 65 percent of them experienced pregnancy problems, the most prevalent of which were gestational diabetes mellitus (22 percent), gestational hypertension (12 percent), and preterm labour (12 percent) (17 percent). Preterm (17%) and FGR (8%), respectively, were the most common problems among the babies delivered, and 64 babies required NICU care for various causes including preterm and respiratory distress. There were no cases of maternal or newborn death.
Conclusion: Pregnancy in women over the age of 35 is associated with a higher risk of perinatal and maternal morbidity and mortality. Individualize and perhaps reduce the risks for women of advanced maternal age with effective preconception counselling and comprehensive prenatal care assessment.
Keywords: Elderly primigravida; Pregnancy; Maternal complication

Introduction:

Over the last three decades, there has been a rising tendency of postponing childbirth - both before and after the age of 35. The rising use of reproductive technologies, as well as massive changes in work and society, such as higher levels of female employment (especially in high-level positions) and educational attainment, could explain this trend[1]. These societal trends, combined with better birth control and a wider range of infertility treatments, have resulted in a continually growing group of women who become pregnant after the age of 35, despite the hazards associated with the latter[2,3]. Pregnant ladies above the age of 40 are no longer unusual. Several stereotypical groupings of women who opt to become pregnant after the age of 35 have also been found in studies[4,5]. It is commonly known that a woman's fertility declines considerably as she gets older. Following that is a quick review of pertinent literature on the major risk variables[6]. The degrading nature of oocyte genetic material is well recognised to diminish conception success and increase aneuploidies in AMA (Advanced Maternal Age). Due to inadequate completion of the oocyte cell cycle, the risk of foetal chromosomal abnormalities is increased in older women. It's difficult to explore the role of the ageing oocyte in pregnancy difficulties because oocyte donation (as part of IVF or in vitro fertilisation) is a separate risk factor for poor pregnancy outcomes[7,8]. Furthermore, comparing the results of births produced using 'young' donor eggs in women of AMA against women of ideal reproductive age is complicated by the fact that the latter group of women has primary infertility concerns[9]. With increasing maternal age, the probability of aneuploidy increases considerably. The FASTER (First and Second Trimester Evaluation of Risk) research, which enrolled almost 30,000 women between 10 and 14 weeks of pregnancy in a prospective multicenter investigation of singleton pregnancies, found that as maternal age increased, so did the rates of threatening abortion and miscarriage[10,11]. Women over the age of 35 should expect to be admitted to the hospital twice as often as their younger counterparts. The probability of being diagnosed with hypertension is double higher in older women. Over the course of several decades, there has been a plethora of research on this subject[12,13]. Diabetes mellitus becomes more common as people get older. When compared to women aged 20-29 years, the rates of both pre-existing and gestational diabetes

increase 3- to 6-fold in women 40 years and older. Diabetes during pregnancy can cause serious difficulties for both the mother and the unborn child[14,15]. Diabetes was found to be 4.1 percent in primigravidas aged 35 years or older, compared to 1.7 percent in multiparous controls of a younger age range. Although the absolute incidence of placenta praevia in nulliparous women 40 years or older was minor, Gilbert W.M et al. did identify a 10-fold greater risk of placenta praevia in nulliparous women 40 years or older when compared to women 20-29 years (0.25 percent vs 0.03 percent). Preterm birth was also shown to be more common in older moms (19 percent vs 5 percent). There was a definite trend of breech births increasing with age, with the lowest prevalence in the 15-19 year age group and over 7 times the frequency in the 35 and above age group. Conception with assisted reproductive technologies (ART) and ovulation inducement are currently the most common causes of multiple pregnancies in older women (OI). According to a 2002 study by the Centers for Disease Control and Prevention (CDC), these procedures were responsible for 0.7 percent of all 3.9 million births in the United States in 1998. Because a woman's risk of Leiomyoma rises with age, she has more time to acquire gynaecological abnormalities, the most frequent of which are fibroids. Low birth weight and preterm birth were substantially linked with maternal age below 20 years and over 30 years. A significant amount of the recent increase in the rate of low birth weight (LBW) and preterm (PTD) delivery can be attributed to advanced mother age. Lethal congenital and chromosomal anomalies were responsible for a considerable fraction of perinatal deaths in older women. Maternal mortality is higher in women over the age of 35, however better medical treatment may reduce the risk. This is exacerbated by the fact that many women in developing nations lack access to maternity hospitals or qualified specialists to deliver their babies. Women over the age of 35 are more likely to have preexisting medical disorders such as heart disease, diabetes, and hypertension. This cohort also had other lifestyle variables such maternal obesity, which are all risk factors for poor pregnancy outcomes like SGA (small for gestational age), FGR (foetal growth restriction), LGA (big for gestational age), premature birth, and stillbirth. The increased rates of intrapartum caesarean sections have been linked to AMA. Dystocia - a protracted and difficult labour – can also affect AMA women. According to another study, 40-45 percent of moms over the age of 35 had a prolonged second stage of labour, compared to only 16 percent of mothers aged 20-24. The lower uterine contractility associated with AMA could explain the greater rates of dysfunctional labour. Several studies have attempted to investigate the association between maternal age and pregnancy outcome, but most investigations have revealed inconsistent results when it comes to advanced maternal age, as indicated by the above studies.

Aims & objectives:

The goal of this study was to look at pregnancy and delivery outcomes in a group of women in their forties and fifties, as well as the complicated impact of medical and obstetrical factors on birth results. Other risk factors and causes were studied and compared to those found in the literature whenever possible.

MATERIALS AND METHODS

A prospective observational study was carried out in the department of Obstetrics and Gynaecology of a medical college in North India. The research was place over a two-year period. Pregnant women over the age of 35 were included in the study, including primigravida (women who haven't had children yet) and multiparous women (continued childbearing). For the sample size calculation, hospital data from the previous three years were evaluated, and the average prevalence of advanced maternal age was set at 10%. A total of 72 advanced maternal age pregnancies were included in the study. As a result, the study's sample size was set at 80. The sample size was raised to 200 instances to account for any potential dropouts. This study involved pregnant women who were admitted for delivery throughout the study period and met the inclusion criteria. After receiving verbal consent, the women were enrolled in the study from the labour ward. These women's demographic information, as well as their gestational age at the time of delivery and pregnancy problems, were recorded. They were tracked until discharge and birth method was determined; perinatal outcomes, as well as any intrapartum and postpartum problems, were recorded on a specifically created study proforma. The hospital's ethics committee gave its approval to the trial.

RESULTS

It's important to remember that the goal of this research is to offer an update on our current understanding of the effects of advanced maternal age on pregnancy outcomes. Demographics, maternal outcomes, and newborn outcomes were evaluated in three major categories in the current study's sample. The results in each category are presented, discussed, and contrasted with earlier works from literature in the sections that follow.

Table 1: Age Distribution

Age (years)	Number	Percentage (%)
35 – 36	86	43
37 – 38	64	32
38 – 39	24	12
> 40	26	13

Maximum study population was in the age group of 35 to 36 years followed by 37 to 38 years.

Table 2: BMI

BMI	Number	Percentage (%)
20 – 25	38	19
25 – 30	122	61
> 30	40	20

Maximum study subjects were in the BMI range of 25 to 30 years.

Table 3: Marital Life

Marital Life (years)	Number	Percentage (%)
< 5	46	23
5 – 10	58	29
10 – 15	66	33
> 15	30	15

Maximum study subjects were having married life in the range of 10 to 15 years.

Table 4: Educational Status

Educational Status	Number	Percentage (%)
Primary School	20	10
High School	60	30
Higher Secondary	56	28
Graduate / Post-graduate	64	32

Maximum study subjects were highly educated with graduation or postgraduation.

Table 5: Reasons for Late Childbearing

Cause	Number	Percentage (%)
Idea of Large Family	8	4
Remarriage	30	15
History of Subfertility	70	35
Failure of contraception	10	5
Desire for Male Child	24	12
Late Marriage	34	17
Pursuit of Career	20	10
Bad Obstetric History	4	2

Maximum study subjects who were having late child bearing were having history of subfertility.

Table 6: Parity

Parity	Number	Percentage (%)
Primiparous	68	34
Multipara	132	66

Age, BMI, educational status, marital status, parity, and reasons for late childbirth were all used to analyse the demographics of the study population. Tables 1 through 6 show the outcomes. In this study, the average age group was 37.6 years. Overweight was found to be the most common BMI category in the population (61 percent). The majority of them had been married for a longer period of time; this distribution might be explained by either a history of infertility or the pursuit of their career. The majority of pregnant women over the age of 35 were multipara (66 percent). This could be due to a rise in divorce and remarriage rates, as well as a desire to have a large family.

Table 7: Mode of Conception

Conception	Number	Percentage (%)
Spontaneous	140	70
ART		
IVF	16	8
Donor Egg	32	16
Donor Sperm	4	2
Ovulation Induction	8	4

Table 8: Number of Fetus

Number of Fetus	Number	Percentage (%)
Singleton	172	86
Multiple	28	14

Table 9: Medical and Surgical Disorders

Maternal Diseases	Number
Overt Diabetes Mellitus	12
Chronic Hypertension	16
Rheumatoid Arthritis	2
Fibroid Uterus	4
Colloid Hyperplastic Goiter	2
Mild Concentric LVH* with mild TR and mild LR	2

Table 10: Pregnancy Losses

Pregnancy Losses	Number
Miscarriage	22
Ectopic Pregnancy	8

Table 11: Second and Third Trimester Complication

Complications Percentage (%)	Number
Severe Oligo	4
Fetal Anomalies	2
Preterm Labor	34
Abruption	6
Placenta Previa	8
Preeclampsia	9
Eclampsia	0
Gestational Hypertension	24
Gestational Diabetes Mellitus	44

Tables 7-11 show the variables utilised to investigate the following category, namely maternal outcomes. 70% of the participants in the study conceived naturally, whereas 30% used assisted reproductive technology. The bulk of the pregnancies in the study group were singletons (86%) and 14 percent were multiple pregnancies (twins 12%) and triplets 2%), which is significant. Hypertension (8 percent) and overt diabetes were the most frequent pre-existing medical disorders in our study population (6 percent). Out of the 170 patients who eventually gave birth, 44 had a normal vaginal delivery, 6 had an instrumental delivery, and 120 had a caesarean section.

Discussion:

Maternal age is a key factor of pregnancy outcome in obstetric practise. Due to lifestyle changes such as the quest of higher education and career success, women have postponed childbearing in recent years. As a result, the maternal age rises, resulting in a slew of issues during pregnancy, labour, and delivery, as well as for the newborn. Parity, obstetric complication (antepartum haemorrhage and premature rupture of membranes), medical illness related with pregnancy (hypertension in pregnancy and gestational diabetes), and mode of delivery were the most important obstetric characteristics (normal vaginal delivery, instrumental delivery and caesarean section). Birth weight, NICU (neonatal intensive care unit) hospitalizations, and other perinatal data were compared. Any vaginal bleeding after 28 weeks of pregnancy and before the baby's birth was referred to as antepartum haemorrhage (APH). Women with pre-existing hypertension were classified as having chronic hypertension, whereas those with new onset hypertension after 20 weeks of pregnancy with or without proteinuria were classified as having preeclampsia and pregnancy induced hypertension, respectively. Eclampsia is a type of convulsion that occurs in hypertensive women. The term "hypertensive condition of pregnancy" was coined to describe all of these different kinds of hypertension. If a woman had a history of diabetes or was diagnosed for the first time during pregnancy (GDM – carbohydrate intolerance of variable severity first noticed during pregnancy), she was classed as diabetic. Preterm birth refers to the termination of a pregnancy before 37 weeks of gestation. Normal vaginal delivery or caesarean section are the two options for delivery. Low birth weight was defined as a birth weight of less than 2500 grammes. Birth weights of less than 1500 g were considered very low, while birth weights of more than 4000 g were considered macrosomia. At 11–13 (+6) weeks of pregnancy, a nuchal translucency (NT) scan was performed to determine the amount of fluid collected in the nape of the foetal neck cut-off: 2.5 or 3.0 mm. TIFFA is a procedure that involves a comprehensive scan and assessment of the foetus for any anomalies between 18 and 23 weeks of pregnancy. At 32 weeks'

gestation, the Triple Marker Test for Alpha Fetoprotein rises from 0.20 ng/ml to 250 ng/ml in females of all ages, hCG is 4,060 - 165400 mIU/ml, and Estriol is 14.60 ng/ml (Pregnancy Third Trimester). The information is gathered through interviewing the individuals. Using univariate and bivariate analysis, the observations were then inferred. The statistical analysis was carried out using SPSS and Microsoft Excel. Women under the age of 35 should be screened for foetal aneuploidy since they have a higher risk of chromosomal abnormalities. The necessity for invasive treatments can be considerably decreased with the availability of non-invasive, sensitive biochemical assays in combination with nuchal scan. Due to an increased incidence of pregnancies following ARTs, numerous pregnancies, pregnancy complicated by medical problems, and the physician's attitude, there is a rising trend of caesarean section in advanced maternal age. Older women have a higher rate of caesarean births because they are assumed to be at more danger or that their pregnancies are more valuable. For these reasons, it is recommended that women do not delay conception and that they become pregnant as soon as possible to minimise age-related difficulties. When compared to Palival V et al (74%) and Giri A et al (30%), Kalewad P et al (40%), Chan BC et al., and Moses V et al., the incidence of caesarean section was lower (34%) and higher (50%) among mothers who delivered (66 percent). In addition, when compared to Giri A et al., the incidence of instrumental delivery is lower (6.6 percent). In the second and third trimesters, just 27% of the 170 births were free of problems. The most common problems were gestational diabetes mellitus (25.88 percent), preterm labour (20 percent), and gestational hypertension (10 percent) (14.11 percent). When compared to Moses V. et al (10%), the incidence of oligohydramnios among the moms who delivered is lower, but higher when compared to Kalewad P et al (2 percent).

Conclusions

This research has provided critical information on maternal and newborn outcomes as a result of the global trend of increased maternal age. Obstetricians and gynaecologists have a responsibility to treat the growing epidemic of elderly motherhood and the challenges that come with it, as well as to educate women about the hazards of postponing childbearing. For women seeking a pregnancy at any age, a good preconception consultation and intensive antenatal care assessment can individualise and perhaps reduce the risks. Patients over the age of 35 have seen an increase in obstetric difficulties, therefore this group of patients should be regarded a high-risk category for obstetrics, requiring special attention and careful treatment in a multidisciplinary tertiary care institution.

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