



RESEARCH ARTICLE

THE MATERNAL AND FETAL OUTCOMES IN ELDERLY GRAVIDA VERSUS YOUNG GRAVIDA
WOMEN: A COMPARATIVE OBSERVATIONAL STUDY

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ABSTRACT

Background: The health of the mother lays a strong foundation to the health of the nation in general. Pregnancy and child birth are normal physiological processes and outcomes of most pregnancies are good. But pregnancy in woman with advanced age is considered high risk. In obstetric practice, maternal age is an important determinant of the outcome of pregnancy. One such risk factor is an elderly pregnancy that leads to many complications during pregnancy, labor and also for the baby. In recent times women have changed their life style such as in the pursuit of higher education and entry into work forces and career advancement outside the home. Consequently, this has led to postponement of child bearing, resulting in an increasing maternal age and it contributes to this upward trend. This study was designed to assess both maternal and fetal outcomes in elderly gravida women. **Methods:** This study was a Prospective hospital based study done in 200 elderly gravid NICU admissions 13.5%. enrolled after exclusion criteria in RGGWCH, Pondicherry during Jan. 2017 to Dec. 2017. **Results:** This study showed increased risk of maternal complications like Gestational hypertension develop in 12% elderly gravida, Gestational diabetes mellitus in 14%, Caesarean section rate 75%, low birth weight baby 15%, NICU admissions 13.5%. **Conclusions:** In this present study it is found that, Advanced maternal age is risk factor for Gestational hypertension, Gestational diabetes mellitus, low birth weight baby, NICU admissions, caesarean sections. It is not a risk factor for APH, abnormal presentation, post term delivery, macrosomia, intra or post-op complications, pre-term delivery, need of blood transfusion, instrumental delivery, IUD, low APGAR score <7, neonatal deaths, instrumental delivery, MICU- admissions and maternal mortality.

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INTRODUCTION

Elderly gravida women (or advanced maternal age) is defined as maternal age of 35 years or greater at the time of delivery. It has important consequences for both mother and baby. These women frequently request information regarding the likely outcome of their pregnancy.

Risk to the mother: Increasing maternal age is known to be associated with increased rates of cardiovascular diseases, diabetes, obesity, uterine leiomyoma, multiparity and previous caesarean section. During pregnancy there is an increased risk of hypertensive disorders of pregnancy, gestational diabetes, placenta praevia, abruption, caesarean delivery and maternal mortality.

Risk to the baby

Premature delivery, low birth weight, increased risk of chromosomal abnormalities in fetus, intrauterine fetal demise, fetal macrosomia, need for NICU admission and increased perinatal and neonatal morbidity are primary concerns for the baby.

Aim and objectives of the study:

- A prospective observational study to compare the maternal and fetal outcomes in elderly gravida and young gravida women at our hospital with following objectives:-
- Evaluate the risk factors associated with advanced maternal age. Analyse the relationship between maternal age and pregnancy outcomes.

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MATERIALS AND METHODS

Data collection technique and tools

Inclusion Criteria

- Two groups, study group- 35 years and above, control group- 21 years to 34 years.
- Singleton pregnancy, irrespective of their parity status.
- With gestational age more than 28 weeks who delivered at our hospital irrespective of registration status.
- Patients delivering at our hospital were enrolled and eligible for participation.

Exclusion Criteria

- Patients with age less than 20 years.
- Patients with twin gestation.
- Patients with pre-existing medical, surgical risk factors not associated with advanced maternal age which can affect outcome are excluded such as, rheumatic heart disease, chronic liver disease, kidney disease, connective tissue disorder, major skeletal deformities.... Etc.

Study Design: Total 400 subjects participated in study, 200 in each group of elderly gravida and young gravida, fulfilling all inclusion criteria. It is observed that, When the age group of 35 years and above compared with age group of 21-34 years, 24 pregnant women (12%) out of 200 were found to have gestational hypertension as compared to 9 pregnant women (4.5%) out of 200 in present study. Statistical analysis was done by Chi-square tests and p value calculated was 0.005 showing significant relationship between advanced maternal age and gestational hypertension in our study. When the age group of 35 years and above compared with age group of 21-34 years, 16 pregnant women (8%) out of 200 were found to have gestational diabetes mellitus on diet as compared to 6 pregnant women (3%) out of 200 in present study. Statistical analysis was done by using chi-square tests and p value calculated was 0.023 showing significant relationship between advanced maternal age and gestational diabetes mellitus on diet in our study.

When the age group of 35 years and above compared with age group of 21-34 years, 30 pregnant women (15%) out of 200 were found to have gestational diabetes mellitus on insulin as compared to 6 pregnant women (3%) out of 200 in present study. Statistical analysis was done by using chi-square tests and p value calculated was 0.001 showing significant relationship between advanced maternal age and gestational diabetes mellitus on insulin in our study. When the age group of 35 years and above compared with age group of 21-34 years, 15 pregnant women (7.5%) out of 200 were found to have intra uterine growth restrictions as compared to 8 pregnant women (4%) out of 200 in present study. Statistical analysis was done by using chi-square tests and p value calculated was 0.098 showing no significant relationship between advanced maternal age and intra uterine growth restrictions in our study. When the age group of 35 years and above compared with age group of 21-34 years, 6 pregnant women (3%) out of 200 were found to have abnormal

presentation as compared to 5 pregnant women (2.5%) out of 200 in present study. Statistical analysis was done by using chi-square tests and p value calculated was 0.500 showing no significant relationship between advanced maternal age and abnormal presentation in our study. When the age group of 35 years and above compared with age group of 21-34 years, 7 pregnant women (3.5%) out of 200 were found to have pre-term delivery as compared to 3 pregnant women (1.5%) out of 200 in present study. Statistical analysis was done by using chi-square tests and p value calculated was 0.169 showing no significant relationship between advanced maternal age and pre-term delivery in our study. When the age group of 35 years and above compared with age group of 21-34 years, 0 pregnant women (0%) out of 200 were found to have post-term delivery as compared to 0 pregnant women (0%) out of 200 in present study. No statistics are computed as no post-term delivery in either groups.

When the age group of 35 years and above compared with age group of 21-34 years, 6 pregnant women (3%) out of 200 were found to have ante-partum haemorrhage as compared to 3 pregnant women (1.5%) out of 200 in present study. Statistical analysis was done by using chi-square tests and p value calculated was 0.251 showing no significant relationship between advanced maternal age and antepartum haemorrhage in our study. When the age group of 35 years and above compared with age group of 21-34 years, 115 pregnant women (57.5%) out of 200 were found to have LSCS as compared to 63 pregnant women (31.5%) out of 200 in present study. Statistical analysis was done by using chi-square tests and p value calculated was 0.0001 showing significant relationship between advanced maternal age and LSCS in our study. When the age group of 35 years and above compared with age group of 21-34 years, 3 pregnant women (1.5%) out of 200 were found to have need of blood transfusion as compared to 5 pregnant women (2.5%) out of 200 in present study. Statistical analysis was done by using chi-square tests and p value calculated was 0.362 showing no significant relationship between advanced maternal age and need of blood transfusion in our study. When the age group of 35 years and above compared with age group of 21-34 years, 1 pregnant women (0.5%) out of 200 were found to have instrumental delivery as compared to 1 pregnant women (0.5%) out of 200 in present study. Statistical analysis was done by using chi-square tests and p value calculated was 0.751 showing no significant relationship between advanced maternal age and instrumental delivery in our study.

When the age group of 35 years and above compared with age group of 21-34 years, 3 pregnant women (1.5%) out of 200 were found to have intra-op and post-op complications as compared to 0 pregnant women (0%) out of 200 in present study. Statistical analysis was done by using chi-square tests and p value calculated was 0.124 showing no significant relationship between advanced maternal age and intra-op and post-op complications in our study. When the age group of 35 years and above compared with age group of 21-34 years, 0 pregnant women (0%) out of 200 were found to have MICU admission as compared to 0 pregnant women (0%) out of 200 in present study. No statistics are computed as no MICU admission in either groups. When the age group of 35 years and above compared with age group of 21-34 years, 0 pregnant women (0%) out of 200 were found to have maternal mortality as compared to 0 pregnant women (0%) out of 200 in present study.

Table 1. The comparison of maternal & fetal outcomes in elderly versus young gravid

1 Study area	Department of Obstetrics and Gynaecology, Rajiv Gandhi Govt. Women and Children Hospital, Puducherry.
2 Study population	All Pregnant women with singleton pregnancy attending emergency in labour and all post-delivery (within period of discharge) patients at our Rajiv Gandhi Govt. Women and Child Hospital eligible to take part in the study fulfilling the inclusion criteria, except those exclusion criteria will be included in the study after obtaining written, informed and valid consent. Two age groups studied are, Group1:- Pregnant woman aged 35 years and above. Group2:- Pregnant women between 21 and 34 years of age.
3 Sample size	400 (200 in each groups). Sample size $n = [DEFF * Np(1-p)] / [(d^2 / Z^2_{1-\alpha/2} * (N-1) + p * (1-p)]$

Age Groups->	Study Group	>= 35yrs	Total	Control Group	21-34 Years	Total
	YES	NO		YES	NO	
Gdm on diet	16(8.0%)	184(92.0%)	200	6(3.0%)	194(97.0%)	200
Gdm on insulin	28 (14.0%)	172 (86.0%)	200	6 (3.0%)	194 (97.0%)	200
Gestational hypertension	24 (12.0%)	176 (88.0%)	200	10 (5.0%)	190 (95.0%)	200
Iugr	15(7.5%)	185(92.5%)	200	8(4.0%)	192(96.0%)	200
Preterm delivery	7 (3.5%)	193 (96.5%)	200	3 (1.5%)	197 (98.5%)	200
Post term delivery	0 (0%)	200 (100%)	200	0 (0%)	200 (100%)	200
Abnormal presentation	5 (2.5%)	195 (97.5%)	200	4 (2.0%)	196 (98.0%)	200
Aph	6 (3.0%)	194(97.0%)	200	3 (1.5%)	197(98.5%)	200
Need of blood transfusion	3 (1.5%)	197 (98.5%)	200	5 (2.5%)	195 (97.5%)	200
Lscs rate	115(57.5%)	85(42.5%)	200	70(35.0%)	130(65.0%)	200
Intra-op complications	2 (1.0%)	198 (99.0%)	200	0 (0%)	200 (100%)	200
Post-op complications	1 (0.5%)	199 (99.5%)	200	0 (0%)	200 (100%)	200
Instrumental delivery	1 (0.5%)	199 (99.5%)	200	1 (0.5%)	199 (99.5%)	200
Micu admission	0 (0%)	200(100%)	200	0 (0%)	200(100%)	200
Maternal mortality	0 (0%)	200 (100%)	200	0 (0%)	200 (100%)	200

Age Groups->	Study Group	>= 35yrs	total	Control group	21-34 years	total
	YES	NO		YES	NO	
Low birth weight <2.5kg	30 (15.0%)	170 (85.0%)	200	8 (4.0%)	192 (96.0%)	200
Macrosomia >4kg	3 (1.5%)	197 (98.5%)	200	1 (0.5%)	199(99.5%)	200
Apgar score =<7	5 (2.5%)	195 (97.5%)	200	2 (1.0%)	198 (99.0%)	200
Nicu observations	56 (28.0%)	144 (72.0%)	200	40(20.0%)	160 (80.0%)	200
Nicu admissions	27 (13.5%)	173 (86.5%)	200	9 (4.5%)	191 (95.5%)	200
Neonatal mortality	0 (0%)	200 (100%)	200	0 (0%)	200 (100%)	200
Iud	2(1.0%)	198(99.0%)	200	0 (0%)	200 (100%)	200

No statistics are computed as no maternal mortality in either groups. When the age group of 35 years and above compared with age group of 21-34 years, 30 (15%) neonates in study group out of 200 were found to have low birth weight(<2.5kg) as compared to 8 (4%) neonates in control group out of 200 in present study. Statistical analysis was done by using chi-square tests and p value calculated was 0.0001 showing significant relationship between advanced maternal age and low birth weight (<2.5kg) in our study. When the age group of 35 years and above compared with age group of 21-34 years, 3 (1.5%) neonates in study group out of 200 were found to have macrosomia (>4kg) as compared to 1 (0.5%) neonate in control group out of 200 in present study. Statistical analysis was done by using chi-square tests and p value calculated was 0.312 showing no significant relationship between advanced maternal age and macrosomia (>4kg) in our study. When the age group of 35 years and above compared with age group of 21-34 years, 57 (28.5%) neonates in study group out of 200 were found to have NICU observations as compared to 40 (20%) neonates in control group out of 200 in present study. Statistical analysis was done by using chi-square tests and p value calculated was 0.03 showing significant relationship between advanced maternal age and NICU observations in our study. When the age group of 35 years and above compared with age group of 21-34 years, 28 (14%) neonates in study group out of 200 were found to have NICU admission as compared to 9 (4.5%) neonates in control group out of 200 in present study.

Statistical analysis was done by using chi-square tests and p value calculated was 0.001 showing significant relationship between advanced maternal age and NICU admissions in our study. When the age group of 35 years and above compared with age group of 21-34 years, 5 (2.5%) neonates in study group out of 200 were found to have APGAR score <7 as compared to 2 (1%) neonates in control group out of 200 in present study. Statistical analysis was done by using chi-square tests and p value calculated was 0.224 showing no significant relationship between advanced maternal age and APGAR score <7 in our study. When the age group of 35 years and above compared with age group of 21-34 years, 2 (1%) women in study group out of 200 were found to have intrauterine foetal death as compared to 0 (0%) women in control group out of 200 in present study. Statistical analysis was done by using chi-square tests and p value calculated was 0.249 showing no significant relationship between advanced maternal age and intrauterine foetal death in our study. When the age group of 35 years and above compared with age group of 21-34 years, 1 (0.5%) neonate in study group out of 200 were found to have neonatal mortality as compared to 0 (0%) neonate in control group out of 200 in present study. Statistical analysis was done by using chi-square tests and p value calculated was 0.500 showing no significant relationship between advanced maternal age and neonatal mortality in our study.

RESULTS

The comparison of maternal outcomes in elderly gravida versus young gravida in present study. In this present study it

is found that, Advanced maternal age is risk factor for Gestational hypertension, Gestational diabetes mellitus, low birth weight baby, NICU admissions, caesarean sections. It is not a risk factor for APH, abnormal presentation, post term delivery, macrosomia, intra or post-op complications, pre-term delivery, need of blood transfusion, instrumental delivery, IUD, low APGAR score <7, neonatal deaths, instrumental delivery, MICU- admissions and maternal mortality.

Conclusions

Maternal age should be combined with other maternal characteristics and obstetrics history when calculating an individualized adjusted risk for adverse pregnancy complications. Advanced maternal age is risk factor for Gestational hypertension, Gestational diabetes mellitus, low birth weight baby, NICU admissions, caesarean sections. It is not a risk factor for APH, abnormal presentation, post term delivery, macrosomia, intra or post-op complications, pre-term delivery, need of blood transfusion, instrumental delivery, IUD, low APGAR score <7, neonatal deaths, instrumental delivery, MICU- admissions and maternal mortality. It is also observed that, from present study that more number of woman in study group with elderly gravida required higher doses Insulin to control sugar levels in cases of GDM, while young women in control group are well managed with diet alone and required less doses of insulin. It also observed that women in study group with elderly gravida required multiple number of anti-hypertensive drugs with multiple doses in cases of gestational hypertension when compared with control group with young gravida women. As advanced maternal age is associated with obstetrics complications, woman must be counselled to conceive early to ensure a healthy maternal and foetal outcomes. Advanced maternal age predisposes women to adverse pregnancy outcomes. The findings of this study would facilitate pre-conceptional, antenatal counselling and management of these pregnant women.

REFERENCES

Bell AG. 1918. The duration of life and conditions associated with longevity. A study of the hyde gynecology. Washington, DC: gynecological record office.

Berkowitz GS, Skovron ML, Lapinski RH, Berkowitz RL. Delayed childbearing and outcomes of pregnancy. The New England journal of medicine. 1990;322(10): 659-64.

Callaway LK., Lust K., McIntyre HD. 2005. Pregnancy outcomes in woman of very advanced maternal age. *The Australian and new Zealand journal of obstetrics and gynecology*, 45(1):12-6.

Cnattingius S., Forman MR., Berendes HW., Isotalo L. 1992. Delayed childbearing and risk of adverse perinatal outcome. *A population-based study*, 268(7):886-90.

Delbaere I., Verstraelan H., Goetgeluk S., Martens G., De Backer G., Temmerman M. 2007. Pregnancy outcomes in primiparae of advanced maternal age. *European journal of obstetrics and gynecology and reproductive biology*, 135 (1):41-6.

Flenady V, Koopmans L, Middleton P, Froen JF, Smith GC, Gibbons K, et al. 2011. Major risks factors for still birth in high-income countries: a systematic review and meta analysis *Lancet*; 377(9774):1331-40.

Giri A, Srivastav VR, Suwal A, Tuladhar AS. 2013. Advanced maternal age and obstetrics outcome. *Nepal Medical College Journal.*, 15(2): 87-90.

Hoffman MC., Jeffers S., Carter J., Duthely L., Cotter A., Gonzalez-Quintero VH. 2007. Pregnancy at or beyond age 40 years is associated with an increased risks of fetal death and adverse outcomes. *American journal of obstetrics andgynecology*, 196(5):e11-3.

Hsieh Ts.Ts, Liou J.D., Hsu J.J., Lo LM., Chen S.F., Hung T.H. 2010. Advanced maternal age and adverse perinatal outcomes in an Asian population. *European journal of Obstetrics and Gynecology and Reproductive Biology*, 148 (1): 21-6.

Hubbard RE, Andrew MK, Rockwood K. 2009. Effect of parental age at birth on the accumulations of deficits, frailty and survival in older adults. *Age and ageing*, 38 (4): 380-5.

Jacobsson B, Ladfors L, Milsom I. 2004. Advanced maternal age and adverse perinatal outcome. *Obstetrics and gynecology*, 104(4):727-33.

Janssens, S., Wallace, K.L., Chang, AM.. 2008. Prepartum and intrapartum caesarean section rates at Mater Mothers' hospital Brisbane 1997-2005. *The Australian and New Zealand journal of obstetrics and gynecology*, 48(6):564-9.

Jolly M., Sebire N., Harris J., Robbinson S., Regan L. 2000. The risk associated with pregnancy in women aged 35 years or older. *Human reproduction*, 15 (1): 2433-7.

Joseph KS., Allen AC., Turner LA., Scott H., Listen R. 2005. The perinatal effects of delayed childbearing. *Obstetrics and gynecology*. 105:1410-8.

Lansing AI. 1947. A transmissible, cumulative and reversible factor in aging. *Journal of gerontology*, 2(3): 228-39.

Lansing AI. 1948. Evidence for aging as a consequence of growth cessation. *Proceedings of the national academy of sciences of the United States of America.*, 34(6):304-10.

Laopaiboon M, Lumbiganon P, Intarut N, Mori R, Ganchimeg T, Vogel JP, et al. 2014. Advanced maternal age and pregnancy outcome: a multicountry assessment. *BJOG: An International Journal of Obstetrics and Gynecology*, 121 suppl 1:49-56.

Liu Y, Zhi M, Li X. 2011. Parental age and characteristics of the off springs. *Ageing research reviews.*, 10 (1): 115-23.

Nassar AH, Usta IM. 2009. Advanced maternal age. Part 2: long term consequences. *American journal of perinatology*, 26 (2) : 107-12.

Nybo Andersen AM, Wohlfahrt J, Christens P, Olsen J, Melbye M. 2000. Maternal age and fetal loss: population based register linkage study. *BMJ*320 (7251):1708-12.

O'Leary CM., Bower C., Knuiman M., Stanley FJ. 2007. Changing risk of stillbirth and neonatal mortality associated with maternal age in western Australia 1984-2003. *Paediatrics and perinatal epidemiology*, 21(6):541-9.

Pawde A, Kulkarni M, Unni J. 2014. Pregnancy in woman aged 35 years and above: a prospective observational study. *J obstet gynecol India*:1-4.

Priest NK, Mackowiak B, Promislow DE. 2002. The role of parental age effects on the evolution of aging. *Evolution ; International journal of organic evolution.*, 56 (5):927-35.

Robine JM, Cournil A, Henon N, Allard M. 2003. Have centenarians had younger parents than the others? *Experimental gerontology.*, 38 (4): 361-5.

Rocca WA, van Duijin CM, Clayton V, Fratiglioni L, Graves AB, et al. 1991. Maternal age and alzheimers disease: a collaborative re-anlysis of case control studies. EURODEM RISK FACTORS REASEARCH GROUP. *International journal of epidemiology*, 20 suppl 2: S 21-7.

Salihu HM., Shumpert MN., Slay M., Kirby R S., Alexander GR. 2003. Childbearing beyond maternal age 50and fetal

- outcomes in united states. *Obstretiics and gyanecology* 102:1006-14.
- Van Katwijk C, Peeters LL. 1998. Clinical aspects of pregnancy after the the age of 35 years: a review of the the literature. *Human reproduction update*, 4 (2): 185-94.
- Wang S, Gao Z, Lu Y, Li Y, Jiang S, Wang L, et al. 2014. Detection of fetal chromosomal aneuploidy in pregnant women at advanced maternal age during the first trimester. *Journal of southern medical university*, 34(5): 655-8.
