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Comparison of Obstetric and Perinatal Outcomes among Elderly and Young Pregnant Women

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Abstract

***Background**: Advanced maternal age signifies 35 years and above at the time of delivery causing decreased fertility and increased risk of maternal and neonatal complications. Pregnant women above 35 years get many complications like Pregnancy Induced Hypertension, preeclampsia, preterm, low birth weight babies, and NICU admissions. **Objective**: To evaluate and compare obstetric and perinatal outcome in elderly gravida above 35 years of age with younger women of 20 to 34 years. **Methods**: The study was carried out at the Department of Obstetrics and Gynecology, Topiwala National Medical College and BYL Nair Charitable Hospital, Mumbai, from 1st November 2014 to 31st October 2015. Data was collected from patient case history records from Out-Patient and Indoor records. Various complications and outcomes were studied. Statistical analyses were carried out using statistical package for SPSS-15. **Results**: The present study showed advanced maternal age is a risk factor for Pregnancy Induced Hypertension, preterm delivery, low birth weight babies, and NICU admissions. **Conclusions**: Advanced maternal age is high risk as compared to younger age group with respect to the reproductive outcome. Pregnancy at this age should be carefully supervised with both good maternal and fetal surveillance to achieve best maternal and fetal results.*

***Keywords**: Advanced age, Reproductive age, feto-maternal, obstetric, perinatal outcome*

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Introduction

As a result of rising education levels among women, effective birth control and an increasing number of women in the work force, birth rate has been dramatically reduced in recent years and proportion of older women motherhood has considerably increased in population. [1]

The diminished fertility with advancing age also contributes to this shift towards later childbearing age. Easy availability of assisted reproductive technology to young and older women allowed many to achieve pregnancy and childbearing. [2]

Advanced maternal age generally signifies 35 years and above at the time of delivery, implying decreased fertility and increased risk (maternal as well as neonatal and perinatal). FIGO council recommend 35yrs and above as the advanced maternal age.

In India, where relatively poor socioeconomic status, cultural practice of early marriage and concept of large family size predominate, we believe it is important to document the outcome for women of advanced maternal age in our care. This will enable us to provide better antenatal care and advice to women.

Aims and Objectives

1. To evaluate the Obstetric and Perinatal Outcomes in Elderly Gravida aged 35 Years and more.
2. To compare the Obstetric and Perinatal Outcomes between Elderly Gravida and their Younger Counterparts aged between 20-34 years.

Materials and Methods

Study Population with sample size

Study Group A: 75 (Elderly Gravida)
Control Group B: 75 (20 to 34 years old – Younger Age)

Sample Size Justification

As per data available at our hospital, there are about 90 to 140 elderly gravida patients who are admitted and delivered per year; hence the sample size has been kept at 75 keeping in mind potential exclusions due to refusal to participate and other confounding factors.

Study Place

Department of Obstetrics and Gynecology, Topiwala National Medical College and BYL Nair Charitable Hospital.

Study Design

Observational analytical study

Study Period

One year

Inclusion Criteria

1. All pregnant women with advanced maternal age 35 years or more admitted to Nair hospital for delivery and
2. Equal number of women aged between 20 and 34 years (Control group) admitted at Nair hospital for delivery
3. Women with PIH [Pregnancy Induced Hypertension], Gestational diabetes will be included.

Exclusion Criteria

1. Pregnant women with other medical disorders like diabetes, hypertension, thyroid conditions, cardiac disease etc.
2. Those who refuse consent to participate in the study.

Methodology

The study carried out in 2 parts,

Retrospective part – 1st November 2014 to 31st July 2015
Prospective part- 1st August 2015 to 31st October 2015

A] **In the Retrospective arm**, data like birth records, medical & obstetric history and outcome collected from the in-house confinement book, NICU data book & admission records. As only medical information related to study was collected, the investigators requested for a waiver of informed consent from the Ethics committee.

B] **In the Prospective arm, p**atients who fulfill the inclusion criteria and are admitted for delivery first be consented for participation in the study by signing the written informed consent document. Then a detailed medical & obstetric history with regard to their present condition like maternal age, gravida, parity, gestational age based on LMP and past relevant medical & obstetric history documented. History of development of symptoms of hypertension and diabetes documented.
Women classified as Gestational diabetes mellitus during the pregnancy (i.e. at least two abnormal values on glucose tolerance tests).
Women who have hypertension after 20 weeks of gestation with proteinuria or edema or both labeled as having pregnancy induced hypertension**.**

Study assessment parameters

Study of obstetric complications like preterm labor (When delivery occurred before 37 completed weeks of gestation, it was considered preterm), intrauterine growth restriction (weight is less than 10th percentile. Birth weight less than 2500 gms will be designated as low birth weight). 5-min Apgar scores ≤7, instrumental vaginal delivery (forceps or vacuum-assisted delivery), and caesarean delivery were studied, antepartum hemorrhage, mal-presentation, anemia was observed. Intrapartum mode of delivery and postpartum complication were observed. Obstetrics complications to mother were noted. Perinatal outcome and complications noted like low birth weight, congenital malformation, still birth.
We also studied the risk of advanced maternal age with respect to maternal outcomes, which included need for blood transfusion, postoperative/post-delivery complications, need

for medical intensive care unit admission (MICU), and maternal mortality.

Statistical Analysis

Descriptive statistics used to depict the data of the groups. Analysis and comparison between the two groups done using statistical tests like qualitative data, analyzed using Chi square test (example – comparison of maternal & perinatal outcomes & complications between the 2 groups). A p value < 0.05 was considered as statistically significant.

Approximately matched ANC counterparts of control group with study group analyzed. Fetal and neonatal complication like low birth weight, congenital malformation, still birth, APGAR score and also mode of delivery will be analyzed using Chi-Square test.

Results

Total number of deliveries at our institute - 4038
Total number of elderly gravida delivered during our study period - 141
Total Incidence of Advanced Maternal Age Pregnancy was - 3.49%.
We divided Groups into two, each group contain 75 pregnant women.
Study group (A): Elderly Gravida
Control group (B): Young Gravida.

Table 1: Socio economic status in group

		Group A	Group B
Age in years	<29	-	59(79)
	30.34	-	16(21)
	35 to 40	71 (95)	-
	>40	4(5)	-
Parity	Primi	15(20)	26(34.67)
	G2to5	55(73.33)	49(65.33)
	G5	5(6.67)	0
Period of gestation	<37	28(37)	12(16)
	37	45(16)	61(81)
	>42	2(3)	2(3)
ANC	Registered	66(88)	70(93.33)
	Referred	9(12)	5(6.67)
Socio economic status	Upper	0	0
	Middle	62(82.67)	67(89.33)
	lower	13(17.33)	8(10.67)

Table 2**:** Maternal age and mode of delivery

	Group A	Group B
mode of delivery		
FTLSCS	20(26.67%)	22(29.33%)
FTND	26(34.67%)	40(53.33%)
Instrumental	2(2.67%)	1(1.33%)
PTD	13(17.33%)	7(9.33%)
PTLSCS	14(18.67%)	5(6.67%)

Table 3: Maternal age related fetomaternal outcomes.

	Group A	Group B	P Value	Significance
Antepartum hemorrhage	3 (4.00%)	3 (4.00%)	1	Not Significant
Abnormal presentation	3 (4.00%)	2 (2.67%)	0.649	Not Significant
IUGR	8 (10.67%)	2 (2.67%)	0.05	Not Significant
Preterm delivery	23 (30.67%)	9 (12.00%)	0.05	Significant
Posterm delivery	2 (2.67%)	2 (2.67%)	1	Not Significant
Weight in kg				
<1.5 Kg	9 (12.00%)	5 (6.67%)		
1.5 to 2.5 Kg	30 (40.00%)	18 (24.00%)		
More than 2.5 Kg	36 (48.00%)	52 (69.33%)	0.029	Significant
IUFD	6 (8.00%)	4 (5.33%)	0.513	Not Significant
Malformations	1 (1.45%)	0.00	0.481	Not Significant
APGAR at 5 min				
≤7	8 (11.59%)	4 (5.63%)		
≥8	61 (88.41%)	67 (94.37%)	0.08	1 (1.33%)
NICU admission	31 (44.93%)	20 (28.17%)	0.039	Significant

Table 4: Age related maternal comorbidites

	Group A	Group B	P Value	Significance
GDM	1 (1.33%)	1 (1.33%)	1	Not Significant
PIH	14(18.67)	4(5.33)	0.012	Significant
MICU/Recovery	4 (5.33%)	1 (1.33%)	0.172	Not Significant

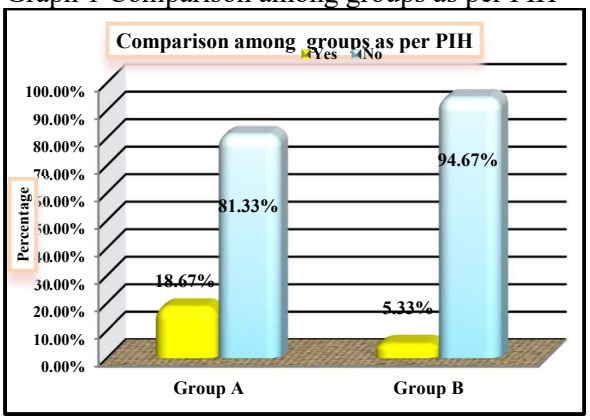
Result

1. Group A had (14) 18.67 % compared Group B (4)5.33 % is had statistically significant p value of 0.012 (<0.05), a relationship between advanced maternal age and pregnancy induced hypertension is seen.
2. The group A had 23 (30.67%) preterm delivery as compared to Group B young gravida 9 (12.00%) Group A had 7 neonatal deaths and Group B had 3 neonatal deaths. Statistical analysis done and P value calculated was 0.005 (<0.05) showing significant relationship between advanced maternal age and preterm delivery in the present study.
3. Distribution of group as per birth weight: Very low birth weight 9 (12.00%) in Group A and 5(6.67%) in Group B women There were 4 Neonatal death in Group A and 3 in Group B low birth weight 30 (40.00%) in Group A and 18 (24.00%) in Group B women had baby birth weight of 1.5 to 2.5 kg

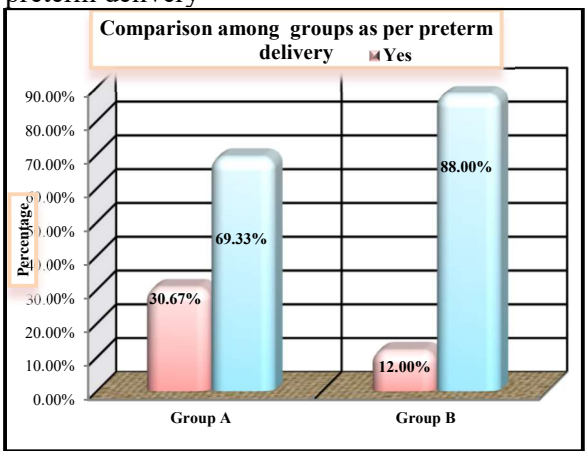
Out of 75 in the present study 36 (48.00%) in Group A and 52 (69.33%) in Group B women had baby birth weight more than 2.5 kg Statistical analysis p value 0.029 (<0.05) showing significant relationship between advanced maternal age and baby birth weight

4. Group A had 31 (44.93%) as compared to Group B 20 (28.17%) NICU admission P value 0.039(<0.05) show significant relationship maternal age and neonatatal intensive care unit admission. Out of 31 in Group A 8 had neonatal death and 3 in Group B.

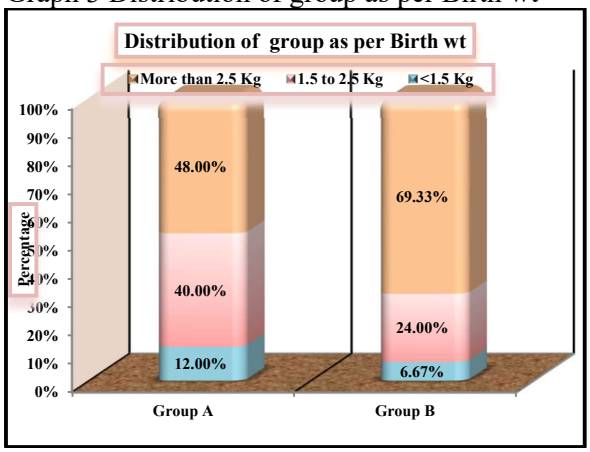
Graph 1 Comparison among groups as per PIH



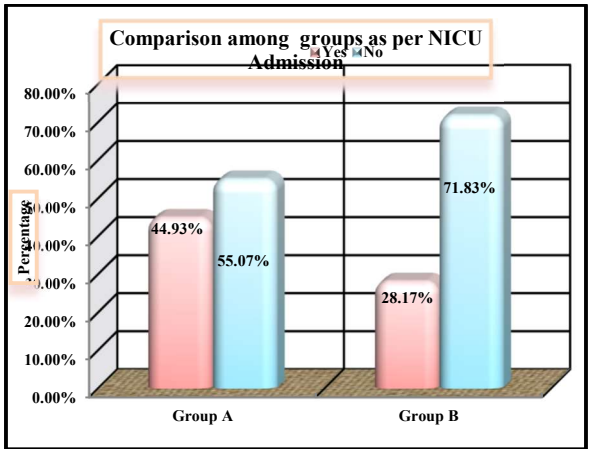
Graph 2 Comparison among groups as per preterm delivery



Graph 3 Distribution of group as per Birth wt



Graph 4 Comparison among groups as per NICU Admission



Discussion

In our study most of the patients 62 (82.67%) in Group A and 67 (89.33%) in Group B were from average economic status, in Group A 13 (17.33%) and in Group B 8 (10.67%) were from low socioeconomic status. In developed societies, mothers of advanced maternal age group are more likely to be healthy, demonstrate thoughtful health choices for diet and exercise have more education, have greater psychosocial support and higher socioeconomic status. Sarka Lisonkova, et al [3] conducted a retrospective cohort study of singleton births in British Columbia over a period of 5 year. Study concluded that older women were at elevated risk of stillbirth, preterm birth, and NICU

admission regardless of parity. Parity modified the effect of maternal age on preterm birth and SGA. Older primiparas were at elevated risk for SGA, but no association between age and SGA was found in multiparas. Older primiparas were at higher risk of preterm birth than older multiparas compared with younger women. The presence of comorbidities like PIH is seen in our study. Rajmohan L et al., [4] conducted a Prospective cohort study showed Treatment for infertility, Bad obstetric history, Hypertensive disorders of pregnancy, Gestational Diabetes. Preterm delivery, Intrauterine growth restriction, Fetal distress, still births, Caesarian section rate, and Co morbidities like leiomyoma and maternal mortality rates were more and statistically significant in Advanced maternal age compared to the younger counter parts. These parameters do not match our study. Suchita Pandit et al., [5] the study concluded that the older women may have problems like difficulty in conception and hence there is higher incidence of resorting to assisted techniques of reproduction, thereby increasing their chances of multiple pregnancies. These elderly patients have slightly higher proportion of preterm delivery because of iatrogenic interventions. These interventions were necessary due to preeclampsia, gestational diabetes, and intrauterine growth restriction. The rising trends of obstetric complications was observed in patients > 35 years of age so this group of patients considered as one of the obstetric high-risk categories and they need special attention and vigilant care. Only PIH parameter matches with our study. Sahu, Meenakshi T. et al [6] Mean parity was significantly high in study group (P<0.001). Bad obstetric history, history of infertility, and diabetes were significantly present in the study group (p<0.02). Preterm labor and APGAR less than 7 at 5 min were significant in study group. Concluded, increased maternal age is a high-risk group with lots of maternal perinatal complications. On comparing neonatal outcome, low APGAR parameter did not match with our study. Sarka Lisonkova, et al, Ngowa JD et al., [7] suggest an association between NICU admission and advanced maternal age. Similarly, in the present study this association was found to be significant.

Conclusion

We studied 150 pregnant women 75 elderly gravida and counterparts 75 young pregnant women. Advanced maternal age is a risk factor for PIH, preterm delivery, low birth weight baby and NICU admission. It is not a risk factor for GDM, antepartum hemorrhage, abnormal presentation, IUGR, post term delivery, intrauterine fetal death, Apgar at 5 minutes < 7, instrumental delivery, anemia, blood transfusion, caesarean section, and MICU admission, post-delivery or post-operative complications and maternal mortality. As advanced maternal age is associated with obstetric complications, women must be counseled to conceive early to ensure a healthy maternal and fetal outcome. In antenatal care, plan to reduce complications for both mother and fetus during pregnancy, delivery and postpartum period must be implemented. These results also imply that there is need for individualizing antenatal surveillance programs and obstetric care, to improve the outcomes in the elderly age groups with less favorable obstetric and neonatal outcomes.

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***Conflict of Interest*: None**
***Source of support*: Nil**
***Ethical Permission*: Obtained**

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