FOETOMATERNAL OUTCOME AMONG ELDERLY PREGNANT WOMEN ATTENDING A PERIPHERAL TEACHING INSTITUTION OF WEST BENGAL, INDIA- A PROSPECTIVE OBSERVATIONAL STUDY

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ABSTRACT

BACKGROUND

Advances in assisted reproductive technology, delayed marriage and increase in the rate of divorce followed by re-marriage all lead to an increased number of women giving birth for the first time at the age of 35 years or more resulting in adverse maternal and foetal outcomes.

Aims and Objective: To estimate various foetomaternal outcomes and their influencing factors among women aged 35 years or more.

MATERIALS AND METHODS

A prospective observational study was conducted in the Department of Gynaecology and Obstetrics of Bankura Sammilani Medical College and Hospital, Bankura from April 2014 to March 2015 involving total 100 elderly primi as study group and another 100 pregnant women below the age of 35 years as comparison group, selected randomly. Data was collected at the time of inclusion, during follow up visit in antenatal clinic and in the labour room, as well as post-natal ward and special neonatal care unit during and after delivery. Interview, clinical examination including anthropometry and record review were used for data collection via a predesigned questionnaire.

RESULTS

Significantly higher proportion of maternal and foetal mortality and morbidity was found among the participants belonging to the study group. Antenatal and intranatal complications were all increased in study group. Only, 3% maternal deaths were observed among study group.

CONCLUSION

The fact ‘delayed child bearing was associated with poor pregnancy outcome’ was reaffirmed even in this setting. These pregnancies need quality antenatal, intranatal, post-natal and perinatal care using sophisticated techniques like amniocentesis, chorionic villus biopsy and early and more frequent ultrasonography etc.

KEYWORDS

Elderly Primi, Foetomaternal Outcome, Antenatal, Intranatal, Perinatal, Preedampsia.


BACKGROUND

"When a child is born, there are two births; the birth of the child & the birth of the mother"- Laura Ramirez. The well-being of the society is directly linked to the health and survival of the mother and children. Advances in assisted reproductive technology (ART), delayed marriage and increase in the rate of divorce followed by re-marriage, all contribute to this upward trend in age at first pregnancy leading to an increased number of women giving birth for the first time at the age of 35 years or more.2

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The International Federation of Gynaecology & Obstetrics set the age limit of 35 in the year 1958. This age of 35 years have also been supported by other workers like Tuck et al.2 In recent years, ART has challenged the traditional age-related boundaries of reproduction, enabling even postmenopausal women to conceive and give birth.3 The reasons for the high rate of Caesarean section (CS) in older women include an increased prevalence of medical complications, fetal malposition, cephalopelvic disproportion (CPD), induction of labour, a failed trial of labour, and uterine rupture6-9. Due to associated complication in old age, these patients are at greater risk of: postpartum thrombotic complications, Postpartum haemorrhage (PPH), fever & wound sepsis.5 There is often difficulty in establishing breast feeding.10 Common foetal-neonatal complications which are increased in elderly primigravidae are: low birth weight (LBW), congenital anomalies like Down syndrome, anencephaly, hydrocephalus and macrosomia. Incidence of LBW varies from 8.2% to 17%.11 Overall, perinatal morbidity and mortality is shown to
be increased in elderly women. All these unfavourable outcomes of pregnancy at advanced age compelled the Obstetricians and health care manager to provide extra sophisticated care to this group of pregnant ladies. Keeping this in view, the present study was carried out in Bankura Sammilani Medical College and Hospital (BSMCH), one of the peripheral teaching institution situated in South-Western part of West Bengal catering a huge patient’s load attending from the district Bankura itself and adjoining districts like Purulia, Birbhum, Bardhaman as well as from the adjacent state Jharkhand. Most of these patients with nil or poor literacy level living in rural areas belonged to poor socioeconomic status (SES) and. Many of them had unfavourable awareness and practice towards contraceptive resulting in pregnancy at advance age.

The research hypothesis for this study was advanced maternal age is associated with unfavourable foetomaternal outcome necessitating arrangement for extra care.

Aims and Objectives
1. To estimate various unfavourable pregnancy outcomes among the women, 35 years and above, of age.
2. To find out correlates of unfavourable pregnancy outcomes, if any.

MATERIALS AND METHODS
The present study was a prospective observational study conducted in the department of Gynaecology and Obstetrics (G&O), BSMCH, Bankura, West Bengal from April 2014 to March 2015 with prior permission from the ‘Institutional Ethics Committee’ and hospital authority after fulfilling all other requirements. Participants were selected randomly from antenatal (AN) clinic of G & O department and divided in to two groups i.e. study group comprising of pregnant women aged 35 years and above & comparison group containing pregnant women of <35 years of age. One hundred pregnant women of 35 years & above and 100 pregnant women of <35 years selected based on a formula,

\[ n = \frac{Z^2 \times p \times q + Z^2 \times (p_1 \times q_1 + p_2 \times q_2)}{(p_1 - p_2)^2}, \]

where \( Z = 1.96 \) (two tailed) at 95% confidence interval with 5% precision, \( Z_\alpha = 0.84 \) for 80% power of test, \( p \) & \( p_1 \) = incidence (s) of event of interest e. g. proportion of newborns requires care in special newborn care unit (SNCU) in study & control group, \( q = q_1 = \text{complements of } p \) & \( q_1 = \text{complements of } p_1 \). Subjects belonged to the study and comparison groups were selected @ 1:1 basis. Here, \( p_2 \) & \( p_1 \) were considered to be 1.93% and 13.33%, respectively as per the existing literature. Estimated sample size was revised assuming 20% drop out and finally, it became 100 for each group.

Data collection was done via twice a week ‘Schedule sampling’ e. g. either Monday-Thursday or Tuesday-Friday or Wednesday-Saturday for a period of 17 weeks. The pair of the days was selected randomly for each week of data collection. As per record 5-6 elderly pregnant women out of total 100 new attendance visited per day in the AN clinic, G & O. Daily three participants for each group were selected via systematic random sampling followed on each day of data of collection i.e. starting unbiasedly following simple random sampling every alternate participant for elderly group and every 30th for the <35 years age group was selected for the purpose of study. As it was a prospective study involving two dynamic cohorts i.e. study cohort and comparison (Control) cohort, the participants were selected in such a way that the pregnancy outcome of last participant of both the groups could occur within the study period. They were included minimum 6 months before their expected date of delivery (EDD) as the AN booking is done usually within 1st trimester.

Only those who were willing to attend for follow up as per physicians’ instruction and had AN booking within 1st trimester were included in the study at their first visit in the AN clinic, BSMCH. Baseline data were collected at the time of inclusion in the study via interview using a predesigned and pretested interviewer administered questionnaire after obtaining informed consent of each participants. Data related to progress of the pregnancy, compliance to AN services and advices, pregnancy complications etc. were collected prospectively in follow up AN visits via detailed history taking (interview) and clinical examinations including anthropometry. Information about outcome(s) of pregnancy was collected from labour room as well as postnatal ward and SNCU through interview, observation as well as clinical examination including anthropometry.

Collected data were gathered in micro-soft (MS) excel spread sheet and analysed using SPSS software, version 20.0. Data were described by parameters e.g. mean and standard deviation (SD) for continuous variables and proportion for categorical variables. Displaying of data was done by tables. The inference regarding the relationship between the variables was drawn based on the statistical tests like Chi-square (\( \chi^2 \)) / Fisher exact test, Relative risk (RR) and Odds ratio (OR) with their 95% confidence interval (CI). P value of ≤0.05 was considered to be significant with 95% confidence interval (CI) at 5% precision.

RESULTS
The participants of both the groups were comparable in respect of their religion, SES, overall nutritional status. [Table-1] Higher proportion of cases with history of primary infertility was observed in study group but no statistically significant difference could be revealed to exist in contrast to comparison group. Multiparity was found significantly more in study group.

Average gestational age in the study group was 35± 0.04 (Mean±SD) and in comparison group, it was 37.06 ± 5.80 years. The difference was revealed to be significant (t=2.08 at df 198, p<0.05).

It was observed that 40%, 56.66%, 1.1% and 2.2% women of the study group were delivered by normal vaginal delivery, CS, forceps delivery and assisted breech delivery, respectively with respective figures of 55.2%, 40.62%, 2% and 2% in comparison group. Rate of delivery by CS was high in both the groups but it was significantly more among the participants of study group compared to their counterpart. Operative vaginal delivery was comparatively less.

Overall, medical complications were found more in study group in contrast to comparison group (48% vs 26%) and the difference was statistically significant (\( \chi^2=10.38 \) with \( p=0.001 \) at df 1).
Regarding associated individual medical complications, a statistically significant higher proportion of participants in the study group was revealed to have preeclampsia (p=0.035), anaemia (p=0.014) and other overall associated medical complications (p=0.051) like hypothyroidism, gall bladder stone, fever, thalassaemia, asthma, epilepsy, jaundice etc.

However, no such between group difference was found in this study regarding pregnancy induced hypertension (PIH) [p=0.228], eclampsia (p=1.00), heart disease (p=0.081) or gestational diabetes mellitus (GDM) [p=0.497]. The present study showed overall obstetric complications of 76% in the study group and 54% in comparison group with statistical difference (χ²=10.64 at df 1 with p=0.001) difference.

Among all the obstetric complications, intrauterine growth retardation (IUGR) [p=0.00016], scanty liquor (p=0.018), post CS pregnancy (p=0.0079) and premature rupture of membrane (PROM) [p=0.014] were found to have statistically significant difference across the groups.

But no such statistically robust difference could be found among study and comparison groups in regard to post-dated pregnancy (p=0.476), preterm labour (p=0.144), foetal distress (p=1.0), malpresentation (p=1.0), non-progress of labour (p=0.721), intrauterine foetal death (IUFD) [p=1.0] and ante-partum haemorrhage (APH) [p=0.128].

Incidence of twin pregnancies (p=0.516), miscarriages (p=0.194) and ectopic pregnancies (p=1.0) were also found more in study group, but there was no statistically significant between group differences. [Table-2]

<table>
<thead>
<tr>
<th>Variables</th>
<th>Attributes</th>
<th>Study group [n1=100] No. (%)</th>
<th>Control group [n2=100] No. (%)</th>
<th>χ² at df 1, P</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Religion</strong></td>
<td>Hindu</td>
<td>88 (48.89)</td>
<td>92 (51.11)</td>
<td>0.889, 0.346</td>
<td>0.64 (0.23-1.78)</td>
</tr>
<tr>
<td></td>
<td>Muslim</td>
<td>12 (6.0)</td>
<td>8 (4.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SES</strong></td>
<td>Average</td>
<td>57 (54.28)</td>
<td>48 (45.71)</td>
<td>1.624, 0.202</td>
<td>1.44 (0.79-2.61)</td>
</tr>
<tr>
<td></td>
<td>Poor</td>
<td>43 (45.26)</td>
<td>52 (54.73)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Nutritional status</strong></td>
<td>Good</td>
<td>24 (37.50)</td>
<td>35/60 (62.50)</td>
<td>2.91, 0.88</td>
<td>0.59 (0.30-1.13)</td>
</tr>
<tr>
<td></td>
<td>Average or poor</td>
<td>76 (58.00)</td>
<td>65/60 (44.11)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BMI†</strong></td>
<td>Normal (18.5-24.9)</td>
<td>62 (46.61)</td>
<td>71 (53.38)</td>
<td>1.818, 0.177</td>
<td>0.67 (0.35-1.25)</td>
</tr>
<tr>
<td></td>
<td>Under/over weight</td>
<td>38 (56.71)</td>
<td>29 (43.28)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gravidity</strong></td>
<td>Primi</td>
<td>22 (30.55)</td>
<td>50 (69.44)</td>
<td>17.02, 0.0001</td>
<td>0.28 (0.15-0.54)</td>
</tr>
<tr>
<td></td>
<td>Multi</td>
<td>78 (60.93)</td>
<td>50 (39.06)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>History of Infertility</strong></td>
<td>Present</td>
<td>6 (85.71)</td>
<td>1 (14.28)</td>
<td>3.701, 0.054</td>
<td>6.32 (0.73-41.91)</td>
</tr>
<tr>
<td></td>
<td>Absent</td>
<td>94 (48.70)</td>
<td>99 (51.29)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables</th>
<th>Attributes</th>
<th>Study No. (%)</th>
<th>Comparison No. (%)</th>
<th>χ² at df 1, P</th>
<th>RR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No. of foetus [n1=91, n2=96]</strong></td>
<td>Single tone</td>
<td>85 (48.02)</td>
<td>92 (51.97)</td>
<td>0.54, 0.461</td>
<td>0.80 (0.47-1.36)</td>
</tr>
<tr>
<td></td>
<td>Multiple</td>
<td>6 (60.0)</td>
<td>4 (40.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gestational age at termination [n1=110]</strong></td>
<td>Term</td>
<td>67 (44.96)</td>
<td>82 (55.03)</td>
<td>5.921, 0.014</td>
<td>0.69 (0.53-0.91)</td>
</tr>
<tr>
<td></td>
<td>Preterm</td>
<td>33 (64.70)</td>
<td>18 (35.29)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Miscarriages [n1=200]</strong></td>
<td>Present</td>
<td>7 (70.0)</td>
<td>3 (30.0)</td>
<td>1.68, 0.194</td>
<td>1.43 (0.93-2.20)</td>
</tr>
<tr>
<td></td>
<td>Absent</td>
<td>93 (48.68)</td>
<td>97 (51.32)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ectopic pregnancy [n1=200]</strong></td>
<td>Present</td>
<td>2 (66.66)</td>
<td>1 (33.33)</td>
<td>1.00*</td>
<td>1.34 (0.59-3.02)</td>
</tr>
<tr>
<td></td>
<td>Absent</td>
<td>98 (49.74)</td>
<td>99 (50.25)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mode of delivery [n1=91, n2=96]</strong></td>
<td>Vaginal</td>
<td>40 (41.24)</td>
<td>57 (58.76)</td>
<td>4.357, 0.035</td>
<td>0.73 (0.54-0.98)</td>
</tr>
<tr>
<td></td>
<td>CS</td>
<td>51 (56.7)</td>
<td>39 (43.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Duration of labour [1=40, n2=57]</strong></td>
<td>&lt;12 hrs</td>
<td>26 (46.42)</td>
<td>30 (53.57)</td>
<td>1.473, 0.224</td>
<td>1.36 (0.82-2.26)</td>
</tr>
<tr>
<td></td>
<td>≥12 hrs</td>
<td>14 (34.14)</td>
<td>27 (65.86)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Induction/ Augmentation [n1=81, n2=88]</strong></td>
<td>Given</td>
<td>12 (21.42)</td>
<td>44 (78.57)</td>
<td>23.57, 0.000</td>
<td>0.35 (0.21-0.59)</td>
</tr>
<tr>
<td></td>
<td>Not given</td>
<td>69 (61.06)</td>
<td>44 (38.94)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p for Fisher exact test (Two tailed).

Regarding the indications of CS, significant differences existed between the groups in respect to PROM, preterm labour, post CS, IUGR, scanty liquor and hypertensive disorders in pregnancy. Among these, hypertensive disorders (31.37%), post CS (27.45%), post-dated pregnancy (27.45%) and IUGR (25.49%) ranked on the top.

Increased incidence of different postpartum complications like PPH, retained placenta, eclampsia, ruptured uterus and subtotal hysterectomy, shock, fever and postpartum maternal death was observed in elderly mothers. Among all of these complications, PPH had significantly higher incidence among elderly pregnant mothers (20% vs 4%, p=0.001) and it had concurrence other studies. Overall complication rates were significantly higher in the study group.
group (p=0.051). Subtotal hysterectomy had to be done in one case in the study group.

Present study revealed increased incidence of LBW babies among study group compared to the comparison group (40.20% vs 24%) leaving the difference significant (p=0.014). It might partly be considered as the impact of low gestational age among women belonged to study group on foetal birth weight.

Analysis reflected that the still birth rate in study group was 7.21% versus 3% in comparison group (p=0.172), severely asphyxiated babies (Apgar score at 5 minute=0-3) was 10.30% in study subjects compared to 4% in comparison group. These differences across the groups weren’t statistically significant.

Regarding extra special care to the newborn, it was found that 26% of babies in study group versus 20% of comparison group had admission in SNCU for different reasons among which perinatal asphyxia was most common. The groups didn’t differ in regard to the admission in SNCU (p=0.388). Among those admitted in SNCU 61.8% and 30% died in study and comparison group, respectively, however, leaving no statistically significant difference in between (p=0.284). Analysis revealed 3.61% and 1.0% newborns with congenital malformation among the study and comparison group, respectively but this difference wasn’t established to be statistically significant (p=0.297).

Although majority of the parameters of perinatal outcomes did not give significant results in terms of p values, their incidence was found clearly higher in study group compared to that of the comparison group. Three maternal deaths occurred in the study group caused by cardio-vascular accident (CVA), sudden respiratory distress and congestive cardiac failure (CCF) in a severely anaemic with rheumatic heart disease (RHD) compared to no death in comparison group and the difference was insignificant.

**DISCUSSION**

Age of the pregnant mother has great impact on foetomaternal outcome(s). Very low age group of conceiving, as well as elderly group, both have deleterious effects on antenatal, intranatal and postnatal period as well as on perinatal outcome and it always remains a challenge to the obstetrician to get rid of the complications arises out of the older age group. In this study 35 years was considered as a cut off value for the purpose of international comparison.

Multiparity was found significantly more in study group. As it is an established fact that pregnancy complication was more for primiparous women. Here, the proportion of primiparous was more in the control group expecting its confounding effects on the elderly pregnant women would be low. A study conducted by Pattnaik L et al. also involved 16% primiparous and 84% multiparous in the study group whereas 50.19% primiparous and 49.81% multiparous in control group. It might partly be due the lacuna in implementation of family planning programme.

CS delivery was revealed to be higher in advanced age group which had concurrence with observation made by Katwijk C V et al. in their review that the older graviida also has a higher chance of being delivered by CS.

The present study didn’t reveal any significant difference between the groups in regard to PH, eclampsia but preeclampsia contrary to the findings of Pattnaik L et al. Liux et al and Khaelwad P S et al., who reported higher incidence of hypertensive disorders was lower.

This study reported no significant higher incidence of GDM among the mothers belonging to advanced age group. It is not in concurrence with what was found in the study carried out by Pattnaik L et al. as well as Lamminpaa R et al. It also agrees with the study of Carolon M et al.

Analysis of this study revealed an increased incidence of hypothyroidism in advanced age mothers consistent with the observation made by Pattnaik L et al. The possible reason might be an increased incidence of autoimmune thyroiditis with advanced age. However, Pandit S et al. observed no such trend.

Oligohydramnios was present in significantly higher proportion of advanced age women as was also reported by Pattnaik L et al. Khaelwad P S et al. in January 2016 and Antsaklis A et al. However, contrary to the findings of Pattnaik L et al., malpresentation wasn’t found more among the elderly group of pregnant women.

Pattnaik L et al. reported no difference between groups in gestational age at delivery, but this study revealed significant difference in gestational age at termination of pregnancy irrespective of foetal viability.

There was no statistically robust difference in Apgar scores across the groups, but there was an increased incidence of IUGR babies in the study group, which is similar to those reported by Pattnaik L et al., Khaelwad P S et al., Li-Chun Liu et al. and Odibo A O et al. and partically a large study done by I-Jan Hu.

Contrary to the findings of this study, an increased number of SNCU admissions in older women was observed by Pattnaik L et al., Bathtiar M O et al., Jacobson B et al. and particularly a large study done by I-Jan Hu.

The present study revealed no difference between groups in regard to still birth rate, however, as reported by Pattnaik L et al. and by a large study done by I Jan Hu et al., the still birth percentage was significantly higher in the older women due to increased incidence of medical and obstetrical conditions complicating the pregnancy.

**CONCLUSION**

Delayed child bearing is associated with increased risk of poor pregnancy outcome. It may demand extra inputs in the form of special A N care like amniocentesis, chorionic vilus biopsy and early and more frequent ultrasonography.Labour should preferable be conducted in a well-equipped institution where skilled obstetrician, anaesthesiologist, neonatologist are available. No doubt, advances in prenatal diagnosis, early detection and management of pregnancy complications, antenatal and intranatal foetal monitoring and modern perinatology have reduced the problems associated with advanced maternal age. Now, healthy elderly women who receive appropriate pre-pregnancy counselling and up to date perinatal care can achieve results comparable to those achieved by younger women. But in a resource poor country like India the role of prevention of delayed pregnancy, especially in multigravida via effective implementation of family welfare programme may not be overemphasized.

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REFERENCES


