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Original Research Article

Assessment of maternal and foetal outcome in elderly primigravida: a prospective observational study

Pothula Sudheshna Devi[1]*, Rakhi Sachdev[2], Madhu Shishodiya[3], Amrita S. Bhadouriya[4], Rakhi Basu[5], Roshan Hussain[6]

[1]Department of Obstetrics and Gynecology, Great Eastern Medical School and Hospital, Srikakulam, Andhra Pradesh, India
[2]Department of Obstetrics and Gynaecology, Chhattisgarh Institute of Medical Sciences (CIMS), Bilaspur, Chhattisgarh, India
[3]Department of Obstetrics and Gynaecology, Mahatma Gandhi Institute of Medical Sciences (MGIMS), Sevagram, Wardha, Maharashtra, India
[4]Department of Obstetrics and Gynaecology, F. H. Medical College, Agra, Uttar Pradesh, India
[5]Department of Obstetrics and Gynaecology, Gouri Devi Institute of Medical Sciences and Hospital, Durgapur, West Bengal, India
[6]Department of Obstetrics and Gynecology, Jawaharlal Nehru Hospital and Research Center, Bhilai, Chhattisgarh, India

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***Correspondence:**
Dr. Pothula Sudheshna Devi,
E-mail: sweetsudhi87@gmail.com

ABSTRACT

Background: An elderly primigravida means age more than 35 years. Several maternal and foetal risk factors are well-established in elderly primigravida mothers. The study aimed to evaluate the maternal and foetal outcome in elderly primigravida mothers of central part of India and also to identify risks associated with advanced maternal age for mother.
Methods: The study was conducted as an observational prospective study in Jawaharlal Nehru Hospital and Research Centre, Bhilai, Chhattisgarh. In this study, the 82 mothers presenting primigravida aged ≥35 years and attending antenatal clinic for the period of January 2019 to December 2020. All primigravida aged 35 years and above, attending antenatal clinic, all primigravida aged 35 years and above admitted in emergency. We used data for demographic and socioeconomic status of the subjects, various obstetrics parameters related to gestational period and other relevant data were collected at the time of registration and the subjects were followed up till delivery and discharge. Detailed maternal and foetal outcomes were recorded.
Results: In the present study, the mean age was of about 36.52±2.41 years among the studied mothers. Higher education and socioeconomic status revealed the conception for pregnancy was found to be delayed. This concept is leading to more LSCS following antenatal complications of mothers that may be causative factors for neonatal complications. In the present study, no mortality was observed among newborns.
Conclusions: It was concluded that vaginal deliveries were significantly less and there was an increase in caesarean section rate in this study. Management will largely depend on attempts at improving perinatal outcome without compromise to health and well-being of the mother.

Keywords: Elder primigravida, Foetal outcome, Maternal outcome, Pregnancy outcome

INTRODUCTION

An elderly primigravida means age more than 35 years. They consisted of two groups such as women who marry early tend to get pregnant late or get pregnant in their late thirties.[1] Although the age limits are subjective, international standard FIGO-1951 has been fixed at 35 years, which is the lower age limit for elderly primigravida.[2] While the Indian standard is fixed at 30 years as per earlier study.[3]

Many investigators revealed that these women are high risk for both maternal and foetal outcomes.[1,4-9] In epidemiological perspective, the birth rate in women of 20-24 age group declined from 80.7‰ in 2013 to 79.0‰ in 2014, which was considered as a higher rate of about 115.1‰ in 1980.[10] In Japan, the birth rate of women who aged >35 years increased from 8.6% in 1990 to 25.9% in 2012.[11] Similar trends have been found in other countries like UK, Australia, Africa, Asia, Latin America, Thailand, and the Middle East.[9,12-15] In Indian context, a recent study by Bhankar et al reported the incidence of elderly primigravida was about 1.05%.[16]

Several maternal and foetal risk factors are well-established in elderly primigravida mothers. Incidence of prolonged labour, uterine dysfunctions, malpresentations, twins, inelastic perineum and anxiety state are found to be increased.[1] In earlier study, Bernard and Weisl reported the incidence of persistent occipito posterior and breech of about 7.9%.[17] Increased incidence PROM and foetal distress are leading to high induction rate and operative interference. Bhankhar et al observed that the risk factors such as gestational hypertension (48%), preeclampsia (28%), oligohydramnios (36%), and intrauterine growth restriction (32%) among mothers.[16] Common complications encountered in foetus are low birth weight, congenital anomalies, like down's syndrome, anencephaly, hydrocephalus, and also macrosomia

The present study was attempted to evaluate the maternal and foetal outcome in elderly primigravida mothers of central part of India and also to identify risks associated with advanced maternal age for mother.

METHODS

The study was conducted as an observational prospective study in Jawaharlal Nehru Hospital and Research Centre, Bhilai, Chhattisgarh. In this study, the 82 mothers presenting primigravida aged ≥35 years and attending antenatal clinic for the period of January 2019 to December 2020.

Inclusion criteria

All primigravida aged 35 years and above, attending antenatal clinic, all primigravida aged 35 years and above admitted in emergency.

Exclusion criteria

Primigravida with age less than 35 and patients aged ≥ 35 years with pre-existing medical, surgical risk factors like rheumatic heart disease, chronic liver disease, kidney disease, connective tissue disorder, major skeletal deformities which can affect our outcome.

We used pretested structured proforma to collect data pertaining to the identification data for demographic and socioeconomic status of the subjects, various obstetrics parameters related to gestational period and other relevant data were collected at the time of registration and the subjects were followed up till delivery and discharge. Details regarding mode of delivery, condition of the baby, baby whether active or not-active, sex of the baby, birth weight, need for admission to NICU were noted. Baby details noted and followed up till their discharge.

The information regarding age, educational status, marital status like marital life. Complications during antenatal period such as anemia, UTI, hypo-thyroid is gestational hypertension, gestational diabetes, preeclampsia, first trimester bleeding p/v, abortions, ectopic pregnancy, second trimester bleeding per vaginum, ante partum haemorrhage, anemia, intrauterine growth restriction, intrauterine fetal demise, and abnormal presentation were noted. Third trimester pre-eclampsia, eclampsia, gestational diabetes mellitus, intrauterine growth restriction was also noted. Details regarding gestational age at delivery, mode of delivery, active/not active/still birth, birth weight of the baby, NICU admission, congenital anomalies chromosomal anomalies, complications in NICU, duration of stay in NICU and neonatal deaths were noted.

RESULTS

Table 1 describes the demographic-socioeconomic status of mothers in elderly primigravida. For age groups, maximum (92.7%) mothers were observed 45-40 years of age group with a mean value of 36.52±2.41 years of age. Regarding education status, the majority of mothers were graduate (58.02%). More than half of the mothers were of upper middle class (52.4%). Half of the mothers were declared the married life of about 6-10 years (50.0%) followed by 1-5 years (40.24%).

Table 2 evaluates gestational age of the mothers at time of admission in which maximum mother were >37 weeks (87.50%) followed by 10.97% were between 32-37 weeks while 1 case for each duration (1.21%) was between 28-32 weeks and <28 weeks.

Table 3 describes the mode of delivery in the studied mothers in which about 59.75% patients delivered by emergency LSCS, 21.95% patients delivered by elective LSCS and 18.29% patients delivered vaginally.

Table 4 shows the antenatal complications of mothers. Maximum mothers were of about 34.32% developed GDM followed by 17.9% developed gestational hypertension, pre-eclampsia (11.94%), anemia (11.94%), hyperemesis (8.95%), bleeding (8.95%), IUGR (8.95%), and 4.47% had abnormal presentation (Breech) as well as 4.47% had UTI.

Table 1: Distribution of demographic-socioeconomic status of mothers.

Variables	Frequency	Percentage (%)
Age groups (years)		
35-40	76	92.70
41-45	5	6.10
46-50	1	1.20
Mean±SD	36.52±2.41	
Educational status		
Post-graduate	7	8.64
Graduate	47	58.02
Upper secondary	12	14.81
Secondary	9	11.10
Upper primary	2	2.46
Primary	4	4.93
Socioeconomic status		
Upper	31	37.8
Upper middle	43	52.4
Lower middle	8	9.75
Marital life (years)		
1-5	33	40.24
6-10	41	50.0
11-15	8	9.75

Table 2: Distribution of gestational status of mothers.

Gestational age (weeks)	Frequency	Percentage (%)
<28	1	1.21
28-32	1	1.21
32-37	9	10.97
>37	71	87.5
Mean±SD	37.78±2.24	

Table 3: Distribution of mode of delivery of mothers.

Mode of delivery	Frequency	Percentage (%)
Emergency LSCS	49	59.75
Elective LSCS	18	21.95
Vaginal delivery	9	10.97

LSCS = Lower segment caesarean section

Table 5 evaluates foetal complications among elderly primigravida mothers. The range of birth weight of the babies observed higher value of about 41.5% were between 2500-3000gms followed by 3000-3500gms (31.70%), 2000-2500gms (12.2%), 1500-2000gms (3.70%) and lower value of 1000-1500gms (1.20%), respectively. Indication for NICU admission revealed that about 36.6% admitted only for observation as a matter of protocol for even asymptomatic babies, delivered by LSCS followed by tachypnoea (21.10%), for MSL (12.60%), for preterm and LBW (8.40%), only for LBW (5.60%), for delayed cry (4.20%), for caput (2.80%), for MSL and LBW (1.40%) and for preterm, LBW and MSL (1.40%). For the duration of NICU stay, about 77.40% stayed for <5 days followed by 6-10 days (18.30%), and 11-15 days (4.20%). Regarding the complications of foetus, maximum frequency of jaundice (37.50%) followed by RDS (30.00%), sepsis (15.00%), convulsions (12.50%) and jitteriness (5.00%) were recorded.

Table 4: Distribution of antenatal complications of mothers.

Complications	Frequency	Percentage (%)
Hyperemesis	6	8.95
Bleeding	6	8.95
Anemia	8	11.94
Gestational HTN	12	17.91
Pre-eclampsia	8	11.94
GDM	23	34.32
UTI	3	4.47
IUGR	6	8.95
Abnormal presentation (Breech)	3	4.47

HTN = Hypertension; GDM = Gestational diabetes mellitus; UTI = Urinary tract infection; IUGR = Intrauterine growth restriction

In the present study (Table 6), the associations between different age groups and maternal complication parameters by analysing Pearson's correlation coefficient among elederly primigravida was performed. The age group was significantly ($p<0.05$) negatively correlated with hyperemesis (-0.3639) while hyperemesis and anaemia were significantly ($p<0.05$) positively correlated with GDM (0.2415) and pre-eclampsia (0.3408) while gestational HTN was significantly ($p<0.05$) positively correlated with pre-eclampsia (0.2439) but rest parameters did not show significant correlations.

Table 5: Distribution of foetal complications.

Complications	Frequency	Percentage (%)
Birth weight (gms)		
1000-1500	1	1.20
1500-2000	3	3.70
2000-2500	10	12.2

Continued.

Complications	Frequency	Percentage (%)
2500-3000	34	41.5
3000-3500	26	31.70
3500-4000	8	9.75
Indication for NICU admission		
Observations (asymptomatic healthy babies born by LSCS)	26	36.60
Tachypnea	15	21.10
MSL	9	12.60
Preterm, LBW	6	8.40
Preterm	4	5.60
LBW	4	5.60
Delayed cry	3	4.20
Caput succedaneum	2	2.80
MSL, LBW	1	1.40
Duration of NICU stay (days)		
<5	55	77.40
6-10	13	18.30
11-15	3	4.20
Mean±SD	3.92±3.51	
Complications in NICU		
Jaundice	15	37.50
RDS	12	30.00
Sepsis	6	15.00
Convulsions	5	12.50
Jitteriness	2	5.00

LBW = Low birth weight; MSL = Meconium staining of the liquor; NICU = Neonatal intensive care unit; RDS = Respiratory distress

Table 6: Correlation matrix on age and maternal complications.

	Age	Hyper-emesis	Ble-eding	An-emia	Gestational HTN	Pre-eclampsia	GDM	UTI	IUGR	Abnormal presentation (Breech)
Age	1									
Hyperemesis	-0.3639*	1								
Bleeding	0.0749	-0.0789	1							
Anemia	0.0877	0.0654	0.0654	1						
Gest-HTN	0.0027	-0.1163	-0.1163	0.0964	1					
Pre-eclampsia	0.0815	-0.0858	-0.0858	0.3408*	0.2439*	1				
GDM	-0.0879	0.2415*	-0.0711	-0.1138	-0.1049	-0.0936	1			
UTI	0.0519	-0.0547	-0.0547	-0.0641	-0.0807	-0.0595	0.0229	1		
IUGR	0.0749	0.1009	0.1009	0.0654	-0.1163	0.0817	0.0330	0.1947	-0.0547	
Abnormal presentation (Breech)	0.0519	0.1947	-0.0547	-0.0641	-0.0807	-0.0595	0.0229	-0.0380	-0.0547	1

*p<0.05

DISCUSSION

Recently, there is an increasing trend for delayed marriage and delayed the conception on pregnancy and childbearing due to higher education level and literacy in females. Many females are now becoming self-dependent by working culture and considered their first pregnancy beyond the age of ≥35 years.[16]

In the present study, the mean age was of about 36.52±2.41 years among the studied mothers, which has close similarities with other investigators. Moses and Dalal observed the mean age of about 36.80 years while AL-Turaihy et al reported of about 36.67±1.21 years.[18,19] Regarding educational status, majority of the mothers were graduate (58.02%). This is an agreement with other studies by Ojule et al observed maximum mothers were bachelor's degree holder (56.8%) in Nigeria, Africa and Bhankar et al reported that majority of mothers were graduate and above (42.5%) in Gujrat, India.[20,16] In our study socioeconomic status was calculated based on modified Kuppuswamy classification and majority of the mothers belonged to upper middle (52.4%) followed by upper class (37.8%). However, a similar study conducted by Thatal et al that showed majority belonging to upper middle class (83.8%) while Pradhan et al reported that maximum mothers belonged to upper class (62.86%).[21,1] In the present study, half of the mothers declared the married life of about 6-10 years (50.0%) followed by 1-5 years (40.24%). A similar report presented by Moses and Dalal that more than half of the mothers (51%) <2 years of married life followed by 3-5 years of married life (41%).[18]

In the present study, gestational age (GA) of the mothers at time of admission in which maximum mother were >37 weeks (87.50%) followed by 10.97% were between 32-37 weeks with an average value of about 37.78±2.24 weeks. A similar study by AL-Turaihy et al observed the GA among the majority of mothers >37 weeks (93.4%) with the mean value of about 37.04±3.43 weeks.[19]

In the present study, the mode of delivery in the studied mothers in which about 59.75% patients delivered by Emergency LSCS. Similar study conducted by Moses and Dalal observed maximum mothers delivered by LSCS (40.0%) while Ojule et al observed that majority of mothers (58.0%) delivered by CS.[18,20]

In the present study, the antenatal complications of mothers observed in which maximum mothers were of about 34.32% developed GDM followed by 17.9% developed gestational hypertension, pre-eclampsia (11.94%), anemia (11.94%), hyperemesis (8.95%), bleeding (8.95%), IUGR (8.95%), and 4.47% had abnormal presentation (Breech) as well as 4.47% had UTI. A study conducted by Moses and Dalal in which higher GHTN (24%), followed by anemia (19%) while lower GDM and Breech (6%).[18] Bhankar et al observed higher GHTN (48%), followed by IUGR (32%), pre-eclampsia (28%), anemia (22%) while lower GDM (16%).[16]

The foetal complications among elderly primigravida mothers were studied. The range of birth weight of the babies observed higher value of about 41.5% were between 2500-3000gms followed by 3000-3500gms (31.70%), 2000-2500gms (12.2%), 1500-2000gms (3.70%) and lower value of 1000-1500gms (1.20%), respectively. Indication for NICU admission revealed that about 36.6% admitted only for observation as a matter of protocol for even asymptomatic babies, delivered by LSCS followed by tachypnoea (21.10%), for MSL (12.60%), for preterm and LBW (8.40%), only for LBW (5.60%), for delayed cry (4.20%), for caput (2.80%), for MSL and LBW (1.40%) and for preterm, LBW and MSL (1.40%). For the duration of NICU stay, about 77.40% stayed for <5 days followed by 6-10 days (18.30%), and 11-15 days (4.20%). Regarding the complications of foetus, maximum frequency of jaundice (37.50%) followed by RDS (30.00%), sepsis (15.00%), convulsions (12.50%) and jitteriness (5.00%) were recorded.

In the present study, no baby is more than 4 kg. However, the study conducted by Ojule et al in which babies were ≥4 Kg (16.2%), between 2.5-3.9 Kg (73%) and below 2.5 Kg (10.8%).[20] Another study conducted by Thatal et al observed that about 91.8% were between 2.5-3.9 Kg while about 5.3% were <2.5 Kg and 2.9% were ≥4 Kg.[21] In the present study, there were no congenital anomalies detected in the newborn and there were no neonatal deaths.

In the present study, the associations between different age groups and maternal complication parameters by analysing Pearson's correlation coefficient among elederly primigravida was performed. The age group was significantly ($p<0.05$) negatively correlated with Hyperemesis (-0.3639) while Hyperemesis and anemia were significantly ($p<0.05$) positively correlated with GDM (0.2415) and pre-eclampsia (0.3408) while gestational HTN was significantly ($p<0.05$) positively correlated with pre-eclampsia (0.2439) but rest parameters did not show significant correlations.

This study highlighted the importance of age versus pre-pregnancy as antenatal complications for women of elderly primigravida with observed with co-morbidities.[22] The causes of GDM is observed similarity with earlier study.[23]

CONCLUSION

Advanced maternal age is risk factor for pre-eclampsia, GDM, and increased incidence of operative interventions particularly LSCS and NICU admission of the baby. Maternal age is one significant factor that could affect obstetric and neonatal outcomes hence, the need for education of women about the safe age of planning a pregnancy and explaining the risk factors and complications associated with delaying pregnancy. Women should be informed that the risk of pregnancy complications and adverse birth outcome increases with age. Hence good antenatal care is advocated for these

women, preferably at a tertiary care centre, so that complications are picked up at the earliest and well taken care of. In view of majority of these patients landing into caesarean delivery and a good number of babies requiring admission in NICU, it is advisable that delivery of these women be conducted at a hospital, well equipped with Blood bank services, availability of round the clock anesthetist and pediatrician and good NICU set up also.

It was concluded that vaginal deliveries were significantly less and there was an increase in caesarean section rate in this study. Management will largely depend on attempts at improving perinatal outcome without compromise to health and well-being of the mother. The onus lies on the government and health care providers at all levels to raise awareness about the obstetric implications of delayed childbirth. Such women should be educated on the need to register early for antenatal care to ensure adequate screening and management of morbidities that may complicate pregnancy among women of advanced age. The main limitations were the lower sample size and single centre study.

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