Obstetrical and neonatal outcomes of singleton gestations among elderly Filipino primigravids in a tertiary government hospital – a five-year review*

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ABSTRACT

Objective: The elderly primigravid has inherent pregnancy risks which may have deleterious effects on both maternal and fetal outcomes. The purpose of this study is to review the obstetric and neonatal outcomes of singleton gestations among Filipino elderly primigravids who delivered in a tertiary government hospital from January 1, 2012 to December 31, 2016.

Methods: This is a retrospective cohort study of including 80 primigravid women aged 35 years and older (study group) and 160 primigravid women aged 20 to 34 years old (control group). Data was collected through review of hospital records, and data processing and analysis were carried out using the software, Stata 13.

Results: A total of 24,751 deliveries were attended to for the five-year period covered, giving the elderly primigravids a prevalence of 6.91%, with a mean age of 38 ± 2.63 years (range 35-43). Significantly, more women in the elderly group delivered at less than 36 weeks age of gestation, delivered abdominally, and had a history of infertility and important co-morbid conditions. No significant difference in the neonatal outcomes were noted between the two groups.

Conclusion: It can be suggested that there was no noted difference in terms of the maternal and neonatal outcomes between elderly primigravids than otherwise. Nevertheless, inherent differences between the study groups may be clinically important in customizing the management of these women.

Keywords: elderly primigravid, advanced maternal age, pregnancy outcomes

INTRODUCTION

For the past 25 years, the maternal mortality ratio (MMR; number of maternal deaths per 100,000 live births) was noted to have globally decreased by 44%[1], and although trends are noted to be decreasing, this figure still falls short from the Millennium Development Goal (MDG) target of at least 75% reduction in MMR. Globally, the World Health Organization (WHO) has estimated at least 303,000 maternal deaths for the year 2015, generating an overall MMR of 216, categorized as moderate (low <100; moderate 100-299; high 300-499; very high 500-999; extremely high ≥1000 maternal deaths per 100,000 live births).[1] For the Philippines alone, latest estimates by the WHO showed no progress in the country's attempts to reduce maternal mortality from the year 1990 to 2015 (MMR of 152 in 1990 to 114 in 2015).[1]

Likely contributing to these numbers are the complications observed, not only among cases with known co-morbidities, but also in cases initially assessed as uncomplicated pregnancies. While it is true that pregnancy and childbirth are normal physiological processes, innate and varying risks do exist among different populations and age groups. An uncomplicated pregnancy, despite the absence of maternal medical complications, may just be as equally burdened depending on maternal age alone. Women in the advanced maternal age have inherent pregnancy risks which may ultimately have deleterious effects on both maternal and fetal outcomes. More frequently, this group of women have higher risks for instrumental deliveries, induction of labor, prolonged labor, cesarean section, and medical complications such as gestational diabetes mellitus and pregnancy induced hypertension.[2]

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An elderly primigravid is defined as a woman having her first pregnancy at the age of 35 years old and above.[3,4] In different retrospective studies conducted from years 2003 to 2014, the prevalence of elderly primigravids ranges from 1.4% to 10.2%,[5-7] accounting for 4.7% to 38.5% of all the primigravid mothers.[5-8]

Adverse obstetric and neonatal outcomes have been associated with advanced maternal age, and this group of women is commonly faced with two major problems: elderly primigravids are generally believed to have decreased fertility, and, when they do get pregnant, they are observed to have higher risk for adverse pregnancy outcomes.[3] The decreased fertility is associated with poor oocyte quality, which in turn, is associated with chromosomal abnormalities eventually leading to outcomes such as spontaneous abortions or fetal congenital anomalies.[9] However, with the advent of technological advances in assisted reproductive techniques, fertility among women in advanced maternal age has gradually improved, leading to a continuous rise in the average maternal age at childbirth especially across Western countries.[10]

The other problem faced by women in the advanced maternal age group is the risk for developing obstetric and medical complications during delivery, although the risk for medical complications in the elderly primigravid is not universally observed across different studies. While most of the literature reported a significant relationship between advanced maternal age and medical complications (such as gestational diabetes mellitus and pregnancy induced hypertension),[7,8,11-14] other studies could not confirm the association between the two.[7] The most consistent finding across most studies, however, is the positive association of advancing maternal age with increased frequency of cesarean deliveries and operative vaginal deliveries.[2,5-8] Several large population studies have demonstrated increased rates of abdominal and operative vaginal deliveries among elderly women, and have reported a linear association between maternal age and these routes of delivery.[15] The reported rates of abdominal deliveries among elderly primigravids ranged from 30.8-32.4%.[2,13,16] about three-folds higher as compared with younger women.

A review of local literature retrieved only one study reporting on the pregnancy outcomes in the advanced maternal age group – a one-year study conducted in a tertiary institution among 750 elderly primi- and multi-gravids who delivered from January 1, 1994 to December 31, 1994.[17] Comparing the outcomes of women in the advanced maternal age group with those aged 20 to 34 years old (n = 3696), the results showed very few statistically significant differences in the factors considered (antenatal complications, gestational age at delivery, mode of delivery, neonatal outcomes, and presence of congenital anomalies). The study concluded that pregnancies in older women pose no additional risks for adverse maternal and neonatal outcomes, the findings of which conflict with the results of more recent studies done abroad.

Despite the pool of data and studies associating adverse obstetric and neonatal outcomes with pregnancies among this age group, the number of women delaying childbearing was still noted to be increasing8 mainly as a consequence of increasing cases of infertility and the tendency for educational and career pursuits.[18] Thus, it was prudent to investigate the effect of advanced maternal age on both obstetric and neonatal outcomes in women on their first pregnancy in the local setting, and to assess which parameters likely contributed to the different outcomes that were measured, with the intent that appropriate interventions may be executed to further improve pregnancy outcomes among women from the older end of the reproductive age spectrum.

DEFINITION OF TERMS

Elderly primigravid – a woman having her first pregnancy at the age of 35 years old and above.[3-4]

Spontaneous vaginal delivery – vaginal deliveries carried out without the aid of vacuum, forceps, or any other instruments; this does not apply to breech extractions.[19]

Operative vaginal delivery – vaginal deliveries carried out with the aid of a vacuum device or with forceps.[20]

Cesarean delivery – delivery of a fetus via laparotomy and then hysterotomy; this does not apply to ectopic nor to abdominal pregnancies.[20]

Gestational age – calculated from the first day of the last normal menstrual period, or based on the earliest available ultrasound if the patient is unsure of her menses (most accurate if based on the crown-rump length in the first trimester, and biparietal diameter during the second trimester).[20]

Pre-labor rupture of membranes – membrane rupture which takes place at or beyond 37 weeks age of gestation, prior to onset of labor.[21]

Pregnancy-induced hypertension – refers to blood pressure greater than or equal to 140/90 mmHg, with or without proteinuria (greater than or equal to 300mg in 24 hours), emerging not earlier than 20 weeks gestation but resolving up to 12 weeks postpartum. It could also refer to a new onset proteinuria in a known hypertensive

woman without evidence of proteinuria before 20 weeks gestation.[22]

Gestational diabetes mellitus – pertains to diabetes of variable severity, that is clearly not overt (neither Type 1 nor Type 2), onset or first recognition during pregnancy.[20]

Non-reassuring fetal status – it replaced the term "fetal distress," and generally describes the clinician's interpretation of data concerning the fetal status, followed by a description of findings (e.g. repetitive variable decelerations, fetal bradycardia, late decelerations, etc.)[23]

Cephalopelvic disproportion – describes the disproportion or disparity between the capacity of the maternal pelvis and the size of the fetal head which inhibits vaginal delivery.[24]

Extremely low birthweight – an infant whose birthweight is less than 1000 grams.[20]

Very low birthweight – an infant whose birth weight is greater than or equal to 1000 grams, but less than 1500 grams.[20]

Low birthweight – an infant whose birth weight is greater than or equal to 1500 grams, but less than 2500 grams.[20]

Small for gestational age – an infant whose birth weight falls below the 10th percentile for gestational age.[25]

Preterm birth – birth which occurred at less than 37 weeks age of gestation.[26]

Stillbirth – also referred to as fetal death; delivery of a fetus exhibiting absence of signs of life such as breathing, heart beats, umbilical cord pulsations, or definite voluntary muscle movements, with gestational age of 20 weeks or greater[27] or with a weight greater than or equal to 500 grams.[20]

Apgar Score – a scoring system intended to rapidly assess the clinical status of a new-born infant at 1 and 5 minutes after birth, as well as the need for and response from resuscitation; it consists of 5 components – heat rate, respiratory effort, muscle tone, reflex irritability, and color – each of which is assigned a score of 0, 1, or 2. A 5-minute Apgar score of 7 to 10 is deemed normal[28] (for this study, a 5-minute score that is less than 7 will be considered low or poor Apgar).

Congenital anomalies – also known as birth defects, congenital disorders, congenital malformations; pertains to structural or functional defects which occur before birth and may be detected prenatally or later in infancy.[29]

OBJECTIVE

The purpose of this study was to review the obstetric and neonatal outcomes of singleton gestations among Filipino elderly primigravids who delivered in a tertiary governement hospital for a period of five years. It sought to describe the demographic profile and prevalence of Filipino early primigravids, and to determine their pregnancy outcomes in terms of obstetric complications (e.g. malpresentation, dysfunctional labor, fetal distress), adverse maternal outcomes (e.g. gestational diabetes mellitus, pregnancy-induced hypertension), and neonatal outcomes (e.g. pediatric aging, birth weight, stillbirth, congenital anomalies, Apgar scores).

MATERIALS AND METHODS

This was a five-year, retrospective cohort study including primigravid women aged 35 years and older (elderly primigravid group), and primigravid women aged 20 to 34 years old (the control group) admitted for delivery in the charity service of the department of obstetrics and gynecology of a tertiary government hospital from January 1, 2012 to December 31, 2016. The study was approved by the Research Ethics Board of the same institution.

Taking into account prior data which had shown that the probability of abdominal delivery among women across all ages was around 30%, and that the relative risk of an elderly primigravid undergoing a caesarean section was around 1.92 compared to younger women, there was a need to look at 57 exposed and unexposed participants to be able to reject the null hypothesis that the failure rates for experimental and control subjects were equal with a power of 80%. The Type I error probability associated with this test of this null hypothesis was 0.05. We used a continuity-corrected chi-squared statistic or Fisher's exact test to evaluate this null hypothesis. An adjustment of 10% was performed to account for possibility of loss to follow up and incomplete data, thus the final sample size was 240 primigravid women composed of 160 women between 20 to 34 years, and 80 women 35 years old and above. Inclusion criteria for this study were as follows: the subject should be in her first pregnancy, the subject should have been admitted and should have also delivered during the same admission, the pregnancy was a singleton gestation, and the fetus delivered should weigh at least 500 grams. All cases of abortions, ectopic pregnancies, molar pregnancies, multiple gestations, primigravid women with mental retardation and/or intellectual disability, and

undelivered obstetric admissions were excluded from the study.

Data was collected from hospital charts, and to ensure confidentiality and for ethical considerations, any identifying information were removed, data processing was anonymized, and only the information necessary to answer the research questions were recorded using a data collection form (Table 1). Since the data obtained was retrospective, prospective consent taking was deemed impracticable. The charts which were retrieved, as well as the raw data collected, were only made available to authorized personnel.

Table 1. Data collection form.

Data Collection Form (Obstetric and neonatal outcomes of singleton gestations among elderly Filipino primigravids in a tertiary government hospital – a five-year review)					
Data #:		Case #:		Date admitted:	
Age:		Marital status:		Chief complaint:	
Admitting Diagnosis:					
AOG (by LNMP or ultrasound):				Infertility:	__ Yes, __ No
Highest Educational Attainment	__ Vocational __ Elementary __ High School __ College	Employment	__ Unemployed __ Employed __ Self-employed	Number of antenatal visits	__ No visits __ 1 to 3 __ ≥ 4 visits
Place of antenatal visits:	__ PGH __ LHC __ Lying-in clinic __ Local hospital __ Private MD	Other medical condition:	__ Chronic HTN __ Preeclampsia __ GDM __ Thyroid disease __ BA __ Heart disease __ Others	Cervical dilatation: Membranes: Presentation:	__ cm __ Intact __ Ruptured __ cephalic __ breech __ transverse
Mode of Delivery:	__ SVD __ OFE __ Vacuum __ Abdominal	If CS: Type of CS:	__ LSCS __ Low vertical __ Classical	If CS, indication:	__ Malpresentation __ CPD __ NRFS __ Placenta previa __ Deteriorating maternal status __ Others
Birth weight: _____ grams	__ SGA __ AGA __ LGA	Pediatric aging: Disposition: Meconium staining:	__ weeks __ DRI __ NICU __ Yes __ No	Livebirth 1 min Apgar 5 min Apgar MCA specify:	__ Yes, __ No __ __ __ Yes, __ No

Information from the data collection forms were manually entered into an electronic spreadsheet file; data processing and analysis were then carried out using the software, Stata 13. Descriptive statistics – such as mean, standard deviation, frequency and percentage – were used to provide an overview of the socio-demographic characteristics of the study population. A Chi-square test of association was used for categorical variables such as: presence of comorbidities, manner of delivery, fetal presentation, status of membranes upon admission, APGAR scores, antenatal visits, neonatal disposition, meconium staining and presence of congenital deformities; and independent t-test for continuous variables like maternal age, age of gestation, birth weight, pediatric aging were used to compare the presence of the aforementioned characteristics and clinical outcomes such as obstetric complications and neonatal conditions across the two study groups. Specifically, the following formula were used in computing for the following data:

Prevalence of elderly primigravid – number of elderly primigravids who delivered divided by the total number of deliveries in the period covered.

Incidence (proportion) of preterm birth – number of preterm births which occurred in the subgroup (e.g. number of preterm births among elderly primigravid) divided by the total number of subjects in the subgroup (e.g. total number of elderly primigravid).

Incidence (proportion) of adverse maternal outcomes / adverse neonatal outcomes – number of subjects with adverse maternal outcomes / adverse neonatal outcomes (e.g. elderly primigravids with preterm delivery) divided by the total number of subjects in the subgroup (e.g. total number of young primigravid).

Primary cesarean section rate (per subgroup) – number of women having a first cesarean delivery (e.g. number of elderly primigravid who underwent cesarean section) divided by the number of live births to women who have never had a cesarean delivery (e.g. total number of elderly primigravid), multiplied by 100.

Logistic regression was used to determine the association of the occurrence of primary abdominal delivery and maternal age group. Crude odds ratios were also computed comparing the occurrence of the obstetric and neonatal outcomes, and the maternal age categories. Adjusted odds ratios were produced by controlling for possible confounders found in the literature using the backward elimination process.

The level of significance for all sets of analysis was set at $p<0.05$ using two-tailed comparisons. A cut-off for the change in the estimation criterion of more than or equal to 10% was used for inclusion in the final model, otherwise it was considered a non-significant confounder. Significance levels were adjusted for multiple comparisons performed.

RESULTS

During the five-year study period, a total of 24,751 deliveries were attended to, giving the elderly primigravids a prevalence of 6.91%, with a 95% confidence interval between 6.11 to 7.81% (Table 2) based on hospital census. However, the prevalence was less in the general population of deliveries which was at 1.11% (0.99-1.25%).

Demographic analysis (Table 3) showed that the mean age of the study group was 38 ± 2.63 years (range 35-43), while the control group had a mean age of 24 ± 3.40 years.

Table 2. Elderly primigravid charity deliveries in from January 1, 2012 to December 31, 2016.

Year	Elderly Primigravid Deliveries	Total number of Deliveries	Prevalence (95% CI)
2012	57	4,997	1.14% (0.88-1.48%)
2013	45	4,155	1.08% (0.81-1.45%)
2014	60	4,893	1.23% (0.95-1.58%)
2015	51	4,279	1.19% (0.90-1.57%)
2016	62	6,427	0.96% (0.75-1.24%)
Total	**275**	**24,751**	**1.11% (0.99-1.25%)**

Significantly, there were more women in the elderly group whose age of gestation upon delivery was less than 36 weeks, with a history of infertility, and with presence of important co-morbidities as compared to primigravids in the control group. In terms of marital status, more women from the control group were reportedly unmarried. Also, more women from the control group go to same tertiary care institution for their prenatal consultations than otherwise.

In terms of obstetric outcomes (Table 4), significantly more women from the study group delivered abdominally. Of note, also, women from the control group had higher incidence of prelabor rupture of membranes (PROM) compared to the elderly primigravid group. In terms of neonatal outcomes (Table 5), no significant difference was noted.

Using logistic regression, the crude association showed that the odds of abdominal delivery were more than twice likely among mothers in the elderly primigravid group (Table 6). Also, the likelihood of PROM was twice lower among elderly primigravids than otherwise. Adjusted logistic regression, while controlling for clinically significant variables such as age of gestation at the time of delivery, history of infertility, number of prenatal consultation, and presence of comorbidities, was performed. It showed that upon adjustment, the likelihood of PROM remained similar to the results of the crude analysis.

DISCUSSION

The purpose of this study was to describe the obstetric and neonatal outcomes of singleton gestations among elderly Filipino primigravids for a period of five years. Based on the demographic analysis, the mean age computed for the study group (38 ± 2.63 years) was not far from those reported by studies done in India6 (36.91 ± 1.87) and Saudi Arabia[8] (38.72).

The results also demonstrated that advanced maternal age is associated with a history of infertility and an increased risk for adverse outcomes including delivery prior to 37 weeks of gestation and developing important co-morbid conditions (such as chronic hypertension, preeclampsia, and gestational diabetes mellitus). Although not universally demonstrated across studies, these findings remain expected, as most studies still report a higher risk of developing comorbid conditions for elderly primigravid women.

In terms of prenatal visits, although there was no significant difference in the total number of prenatal consults undergone by both groups prior to admission for delivery, more women from the control group tend to seek consult at a tertiary facility (that is, the current institution where the study was conducted, as opposed to local health centers and lying-in facilities) than women from the elderly group. This is actually unfortunate and is something that can be improved upon in the management of high risk pregnancies (that is, elderly primigravid patients), because women in the elderly group have an increased risk of developing co-morbid conditions during the pregnancy and would likely benefit more from a multi-disciplinary and multi-subspecialty management approach that a tertiary facility could offer.

The most consistent finding across most studies, the positive association of advancing maternal age with increased frequency of abdominal delivery,[2,5-8] was demonstrated in this review, with the computed rate (58.75%) noticeably higher than those reported by previous studies.[2,13,16] The higher rate of cesarean section in elderly primigravids can be associated with the higher rate of obstetrical complications.[4] Also, for this study, the most common reason for abdominal delivery among the elderly group was fetal distress. This finding, although not statistically significant, contradicts previous studies which report cephalopelvic disproportion as the most common reason for abdominal delivery.[8] As for operative deliveries, no significant difference was noted between the control and the study group.

Interestingly so, elderly primigravids had a twice lower risk of developing PROM, as compared to primigravids in the 20 to 34-year old age group. Although limited studies are available that could help expound on the finding, a study done by Noor, et. Al[30] in 2007 identified lower maternal age and nulliparity as factors associated to prolonged rupture of membranes at term and to preterm prelabor rupture of membranes, with high incidence noted among patients less than 35 years old. Further studies may be needed to describe the incidence and risks associating a young maternal age with PROM.

In terms of neonatal outcomes, no significant difference was observed between the groups, despite the higher incidence of maternal co-morbid conditions among

Table 3. Baseline demographic and obstetric characteristics of the sample population.

Characteristics	Primigravids 20-34 years old (n=160)	Elderly Primigravid (n=80)	p-value
Mean maternal age in years	24 ± 3.40	38 ± 2.63	
Gestational age on admission:			
20 – 24 6/7 weeks	-	2 (2.50%)	
25 – 35 6/7 weeks	24 (15%)	12 (15%)	0.02*
36 – 40 weeks	91 (56.88%)	54 (67.50%)	
40 weeks and above	45 (28.13%)	12 (15%)	
Marital status			
Single	130 (81.25%)	49 (61.25%)	0.01**
Married	30 (18.75%)	31 (38.75%)	
Highest educational attainment			
Elementary	-	1 (6.25%)	
High school	7 (31.82%)	6 (37.50%)	0.19
Vocational	1 (4.55%)	3 (18.75%)	
College	14 (63.64%)	6 (37.50%)	
Employment			
Unemployed	5 (22.73%)	3 (18.75%)	0.55
Employed	17 (77.27%)	13 (81.25%)	
History of infertility	-	11 (13.75%)	0.01**
Number of antenatal visits			
0 antenatal visit	2 (1.25%)	3 (3.75%)	
1 to 3 visits	34 (21.25%)	15 (18.75%)	0.45
≥ 4 visits	124 (77.50%)	62 (77.50%)	
Place of antenatal visits			
PGH	70 (44.30%)	19 (24.68%)	
Local health center	21 (13.29%)	6 (7.79%)	
Lying-in clinic	12 (7.59%)	5 (6.49%)	0.01**
Local hospital	12 (7.59%)	5 (6.49%)	
Private MD	11 (6.96%)	5 (6.49%)	
Presence of medical conditions			
Chronic hypertension	-	7 (8.75%)	0.01**
Gestational hypertension	5 (3.13%)	3 (3.75%)	0.53
Preeclampsia	10 (6.25%)	17 (21.25%)	0.01**
Gestational diabetes mellitus	6 (3.75%)	13 (16.25%)	0.01**
Thyroid disease	5 (3.13%)	5 (6.25%)	0.21
Bronchial asthma	2 (1.25%)	4 (5%)	0.10
Heart disease	5 (3.13%)	3 (3.75%)	0.53
Others	15 (9.38%)	21 (26.25%)	0.01**
Presentation:			
Cephalic	147 (91.88%)	68 (85%)	
Breech	12 (7.50%)	8 (10%)	0.06
Transverse	1 (0.63%)	4 (5%)	

Table 4. Distribution of obstetric outcomes across maternal age group.

Characteristics	Primigravids 20-34 years old (n=160)	Elderly Primigravid (n=80)	p-value
Mode of delivery			
Spontaneous vaginal delivery	78 (48.75%)	25 (31.25%)	
Outlet forceps extraction	12 (7.50%)	4 (5%)	0.02*
Vacuum-assisted delivery	9 (5.63%)	4 (5%)	
Abdominal delivery	61 (38.13%)	47 (58.75%)	
Type of Caesarean Section	58 (96.67%)	45 (95.74%)	0.80
Low segment caesarean	2 (3.33%)	2 (4.26%)	
Classical			
Indications for abdominal delivery			
Malpresentation	12 (19.67%)	11 (23.40%)	
Cephalopelvic disproportion	20 (32.79%)	9 (19.15%)	
Non-reassuring fetal status	23 (37.70%)	25 (53.19%)	0.29
Placenta previa	2 (3.28%)	1 (2.13%)	
Deteriorating maternal status	3 (4.92%)	-	
Others	1 (1.64%)	1 (2.13%)	
Preterm delivery	23 (14.37%)	12 (15.38%)	0.49
Prelabor rupture of membranes	48 (30%)	13 (16.25%)	0.03

Table 5. Distribution of neonatal outcomes across maternal age group.

Characteristics	Primigravids 20-34 years old (n=160)	Elderly Primigravid (n=80)	p-value
Birth weight in grams			
<1000 grams	1 (0.61%)	3 (3.75%)	
1000 to <1500 grams	4 (2.50%)	3 (3.75%)	0.27
1500 to <2500 grams	35 (21.88%)	21 (26.25%)	
2500 to <4000 grams	119 (74.38%)	53 (66.25%)	
>4000 grams	1 (0.63%)	-	
Birth weight (for gestational age)			
Small	8 (5%)	5 (6.41%)	
Appropriate	149 (93.13%)	69 (88.46%)	0.31
Large	3 (1.88%)	4 (5.13%)	
Pediatric Aging			
Extremely preterm (<28 weeks)	1 (0.63%)	2 (2.56%)	
Very preterm (28 to <32 weeks)	6 (3.75%)	4 (5.13%)	
Moderate to late preterm	16 (10%)	6 (7.69%)	0.53
(32 to <37 weeks)	-	-	
Term (37 to <42 weeks)	137 (85.63%)	66 (84.62%)	
Apgar Scores			
1st minute	9±1.40	8±1.76	0.19
< 7	17 (10.69%)	13 (16.67%)	0.14
≥ 7	142 (89.31%)	65 (83.33%)	
5th minute	9±0.67	9±0.96	0.24
< 7	3 (1.89%)	5 (6.41%)	0.08
≥ 7	156 (98.11%)	73 (93.59%)	
Stillbirth	1 (0.63%)	2 (2.50%)	0.26
NICU admission	49 (30.82%)	24 (30.77%)	0.56
Meconium staining	22 (13.84%)	9 (11.54%)	0.62
Congenital anomalies	3 (1.88%)	2 (2.50%)	0.54

Table 6. Regression of select clinical outcomes and maternal age group.

Clinical Outcomes	Unadjusted		Adjusted	
	OR (95% CI)	p-value	OR (95% CI)	p-value
Maternal and Obstetric				
Abdominal delivery	2.31 (1.34 – 4.00)	0.01**	1.32 (0.66 – 2.64)	0.43
Assisted vaginal delivery	1.19 (0.47 – 3.01)	0.72	0.66 (0.21 – 2.10)	0.48
Malpresentation	1.25 (0.50 – 3.14)	0.64	1.98 (0.35 – 11.09)	0.44
Cephalopelvic disproportion	0.49 (0.20 – 1.20)	0.12	0.89 (0.24 – 3.36)	0.87
Non-reassuring fetal status	1.88 (0.87 – 4.06)	0.11	1.66 (0.59 – 4.63)	0.34
Placenta previa	0.64 (0.06 – 7.29)	0.72	0.64 (0.06 – 7.29)	0.72
Preterm delivery	1.20 (0.58 – 2.47)	0.62	1.20 (0.58 – 2.47)	0.62
Prelabor rupture of membranes	0.45 (0.23 – 0.90)	0.02*	0.45 (0.23 – 0.90)	0.02*
Neonatal				
Small for gestational age	1.30 (0.41 – 4.12)	0.65	0.80 (0.11 – 5.89)	0.83
Low birth weight neonate	1.53 (0.85 – 2.75)	0.16	1.53 (0.85 – 2.75)	0.16
Preterm birth	1.16 (0.51 – 2.65)	0.72	0.30 (0.01 – 6.14)	0.43
Poor 5th minute Apgar	3.56 (0.83 – 15.31)	0.09	4.00 (0.73 – 22.04)	0.11
Stillbirth	4.08 (0.36 – 45.65)	0.25	5.60 (0.41 – 77.01)	0.20
NICU admission	1.00 (0.55 – 1.79)	0.99	1.09 (0.53 – 2.25)	0.81
Meconium staining	0.81 (0.35 – 1.86)	0.62	1.03 (0.43 – 2.43)	0.59
Congenital anomalies	1.34 (0.22 – 8.20)	0.75	1.34 (0.22 – 8.20)	0.75

the elderly primigravid group. This can be attributed to the fact that the study group had a higher cesarean section rate with fetal distress as the most common reason for abdominal delivery, and that timely detection of fetal distress coupled with an appropriate intervention could have contributed to good neonatal outcomes similar to the control group with significantly less co-morbid conditions.

CONCLUSION AND RECOMMENDATION

It can be suggested that there was no noted difference in terms of the maternal and neonatal outcomes between elderly primigravids than otherwise. Nevertheless, the inherent differences between the study groups may be clinically important in customizing the management of these women.

This study had limitations which need to be recognized including the study design which was retrospective, and that the study might have also been restricted by probable inaccuracies of available retrievable hospital records. The findings in this study might have also been influenced by the fact that the hospital was a tertiary referral center, in that more abnormal than normal cases were attended to regularly. ■

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