

OBSTETRIC PERFORMANCE OF ELDERLY PRIMIGRAVIDA IN JOS UNIVERSITY TEACHING HOSPITAL, JOS, NIGERIA.

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ABSTRACT

Background: *Obstetric complications have been associated with elderly primigravidaeworld wide and they continue to increase hence the need to review obstetric performance of elderly primigravida.*

Objective: *To compare the maternal and perinatal outcome of nulliparous women aged 35 years and older at time of delivery to that of nulliparous women aged 20-34 years old in Jos University Teaching Hospital.*

Methods: *A one year prospective study was carried out on allprimigravid women with singleton pregnancy that came to deliver in the labour ward unit of Jos University Teaching Hospital (JUTH), Jos-Nigeria from 1st May, 2010 to 30th April, 2011*

Main outcome measures: *gestational diabetes, chronic and pregnancy induced hypertension, antepartum haemorrhage, prelabour rupture of membranes, and preterm labour, breech presentation, cephalopelvic disproportion, failure to progress, increased cesarean deliveries, fetal asphyxia.*

Results: *Maternal age of thirty five years and older at the time of first child birth had higher obstetric and perinatal complications than younger maternal age group. During the study period, 411 primigravidae delivered in the labour ward unit of Jos University Teaching Hospital. Out of these, 397 (96.6%) were aged ≤ 34 years while only 14 (3.4%) were aged ≥ 35 years. The commonest obstetric complication was failure to progress in labour (FTP), 18(4.4%). Three hundred and thirteen (76.2%) of the women had spontaneous vaginal delivery, 97(23.6%) had caesarean delivery while 1(0.2%) had assisted vaginal delivery using vacuum. Twenty three (5.6%) of the babies were asphyxiated while 382(92.9%) were of normal APGAR scores.*

Conclusion: *Maternal age of thirty five years and older at the time of first child birth had higher obstetric and perinatal complications than younger maternal age group. Women who were thirty five years and older at the time of first delivery had worse maternal and perinatal outcome than women who were thirty four years and younger at the time of first delivery.*

Keywords: *Obstetric, Elderly, primigravida, Nulliparous, Maternal age, perinatal.*

INTRODUCTION

The elderly primigravidae is defined as a woman who becomes pregnant for the first time at the age of 35 years or more^{1,3}. Current fertility trends suggest that an increasing number of women in developed countries are delaying childbearing until their mid thirties and beyond⁴. Women of advancing reproductive age are now responsible for a greater percentage of total live births⁵. The current trend to older maternal age will continue, and some researchers anticipate that the elderly primigravidae will become the norm.

A number of social, educational and economic factors might be responsible for this increasing trend. In recent times, women have changed their life styles such as in the pursuit of higher education and entry into work force and career advancement outside the home. Increasingly, many women are delaying the age at first birth in order to complete their education and to advance their careers⁶. The current trend indicates that there is a substantial increase in the number of women of age 25 to 44 years participating in work force. Advances in assisted reproductive technology (ART), delayed marriage and increase in the rate of divorce

followed by re-marriage, all contribute to the upward trend⁷.

With more women postponing childbearing until their later reproductive years, there is increased awareness and concern among women and health care providers about the effects of advancing maternal age on both maternal and fetal morbidity and mortality⁸. It is well established that advancing maternal age is associated with chromosomal abnormalities, sub fertility, fibroids and multiple gestation. Other adverse outcome that occurs more frequently in older women include antepartum haemorrhage, pregnancy induced hypertension, malpresentation, premature rupture of membranes (PROM) and fetal distress.

Over the past several decades, researchers have examined these issues. The results however have been equivocal and inconclusive. Some studies have found an association between delaying childbirth and poor pregnancy outcome⁹ while other studies challenge these findings. This study is therefore instituted with the view of clearing some doubt about the association between elderly primigravidae and adverse obstetric outcome.

AIMS AND OBJECTIVES

To compare the maternal and perinatal outcome of nulliparous women aged 35 years and older at time of delivery to that of nulliparous women aged 20-34 years old.

LITERATURE REVIEW

This review highlights the effects on maternal age on obstetric and perinatal outcome. Complications have been associated with increasing maternal age, including abnormal weight gain, obesity, gestational diabetes, chronic and pregnancy induced hypertension, antepartum haemorrhage, placenta praevia, multiple gestation, prelabour rupture of membranes, and preterm labour¹⁰.

Women of advancing reproductive age are now responsible for a greater percentage of total live births¹¹. In a study done by Martin and Hamilton in the United States, more than 13% of all births are to women 35 years and older, and 22% of these births are to first time mothers¹². In another study done in United States by Freeman-Wang and Beski, 2002, showed that the current trend to older maternal age at first birth will continue, and some researchers anticipate that the "elderly primigravida" will become the norm¹³, in this study the factors found to

be responsible for the delay in childbearing included women pursuing higher education and a career, expanded roles for women in the work place, the need for dual incomes, postponed at second marriages. In a study by Heck, et al 1997¹⁴, and Mosher et al; 2002¹⁵, the age at first birth among 45.5% of female college graduates in the United States was 30 years and over.

Several investigators reported that when age dependent confounders (i.e parity, socio-economic status, preexisting chronic diseases, smoking status, and antenatal complication are controlled, women 35 years and older are at minimal increased risk, and their neonatal outcomes are comparable with those at younger women who are of optimal reproductive age "(Bianco et al, 1996, Edge and Laros, J., 1993; Prysak et al; 1995)^{16,17}.

In a large population – based study conducted in Sweden, researchers found that delayed childbearing was associated with an increased risk of poor pregnancy outcomes even after adjusting for maternal complications and other risk factors (Cnattingius et al; 1992)¹⁸.

In a Canadian study of 283,956 infants, researchers found that delayed childbearing (maternal age \geq 35years) was responsible for a substantial proportion of the population increases in the rate at preterm births and multiple birth (i.e; twins, triplets; Tough et al, 2002)¹⁹. Between 1990 and 1996, the number of births to women 35years of age and older increased from 8.4% to 12.6%⁸. Among these women, preterm deliveries increased by 14% and multiple births rates increased by 15% for twins, and 14% for triplets¹⁰ When compared with younger women, those of advancing maternal age were 40% more likely to deliver preterm¹⁹.

In a study by Eke A. C; and Eleje G. U. in NnamdiAzikiwe University Teaching Hospital in Nigeria, elderly primigravida had a significantly higher incidence of postpartum hemorrhage, cephalo-pelvic disproportion, preeclampsia, preterm labour and they were also at higher risk of episiotomy²⁰. Other intrapartum complications such as fetal distress prolonged second stage were also found to be statistically significant association between elderly primigravida and increased risk of chronic hypertension, preeclampsia, preterm labour, and post datism²⁰. For the most part, the elderly primigravida on the average delivered at term (38.0 to 39 weeks), with birth weights

comparable to new born of younger primigravida aged 20-25 years at delivery, it was also significantly associated with increased risks of anemia, diabetes mellitus, mal-presentation, hyperemesis gravidarum, IUGR and fibriod²⁰. Caesarean section rate was also noticed to be higher. In the women that had vaginal delivery 94.6% of them had episiotomy in the study group. The newborns in the study group had less birth weight $2.9 \pm 0.7\text{kg}$ than the control group $3.1 \pm 0.7\text{kg}$, but this was not statistically significant²⁰.

In a study done by Jahromi B. N. and Husseiniz in 2008, complications such as preeclampsia, gestational hypertension, caesarean delivery, abruption placenta, preterm delivery and 5-minute APGAR scores < 7 were significantly higher in the older group ($P > 0.05$)²⁰. A comparison of complications with respect to parity showed that preterm birth ($P = 0.002$) and low birth weight ($P = 0.04$) occurred more frequently in primiparous older women²². However, preeclampsia ($P = 0.002$) and abruption ($P = 0.0012$) were more common in multiparous older women.

In a historical cohort study by Tabaharoen et al conducted to examine the pregnancy outcome in women aged 40 years or older showed that the older group had more medical and obstetric complication (diabetes mellitus, chronic hypertension, mal-presentation, pregnancy-included hypertension, placenta pralvia, multiple pregnancies, preterm labour, fetal distress, retained placenta, postpartemhaemorrhage and endometitis), more adverse fetal outcomes (low birth weight, low Apgar Scores and congenital anomalies) and a higher caesarean section rate²².

MATERIALS AND METHODS

STUDY AREA

The study was conducted at the Jos University Teaching Hospital (JUTH), a 600-bed tertiary health institution located in Jos, the capital of Plateau State in North Central Nigeria. Plateau State has over 40 different ethnic groups, with no single group large enough to claim majority position. It is one of the 36 states of the Federal Republic of Nigeria. The 2006 Nigeria census puts the population of Plateau State at 3,178,712, of these 1,585,679 were females. The State occupies 30,913 square kilometers. It is located between latitude 8° north and longitudes 8° and 10° east. Jos, the capital city, is a pear-shaped upland known as Jos Plateau. It stretches for approximately 104km from north to south and 80km from east to

west. The altitude of Plateau State ranges from around 1,200 meters to a peak of 1829 meters above sea level in the Shere Hills range near Jos.⁴⁴

The Jos University Teaching Hospital, established in 1981, is located in the eastern part of Jos metropolis. It has a well established department of Obstetrics and Gynaecology, which receives referrals from all over Plateau State and also from neighboring states including Bauchi, Benue, Kogi, Gombe, Nassarawa, Adamawa, Taraba and parts of Kaduna and Niger states.

STUDY DESIGN

This was a cross-sectional study.

STUDY POPULATION

The study population comprised of all primigravid women with singleton pregnancy that came to deliver in the labour ward of the Jos University Teaching Hospital (JUTH), Jos-Nigeria.

DATA COLLECTION

Data was collected from 1st May, 2010 to 30th April, 2011.

INCLUSION CRITERIA

The study included all primigravid women who came to deliver in the labour ward unit of JUTH.

EXCLUSION CRITERIA

1. All multigravida
2. Women with multiple pregnancy

ESTIMATE OF SAMPLE SIZE

The sample size was calculated using the formula:⁴⁵

$$n = \frac{Z^2 pq}{d^2}$$

Where:

n= the desired sample size.

Z= the standard normal deviation, 1.96, which corresponds to the 95% confidence interval.

P= the best estimate of the prevalence in the target population expressed as a fraction of 100%.

In this case 50%²⁰ will be used.

Therefore, $P = 0.5$

q= complementary proportion = $(1 - P) = 0.5$

d= degree of accuracy desired, i.e. 0.05

$$n = \frac{(1.96)^2 \times 0.5 \times 0.5}{(0.05)^2} = 384$$

A minimum of 384 pregnant women were recruited for the study.

DATA ANALYSIS

All statistical analysis was performed using Epi-info 2008 software (version 3.4.1). Frequency tables was generated, test of associations between variables performed using chi-square and t-test conducted on categorical and continuous variables respectively. A p-value of less than 0.05 will be considered statistically significant.

RESULTS

During the study period, 411 primigravidae delivered in the labour ward unit of Jos University Teaching Hospital. Out of these, 397 (96.6%) were aged ≤ 34 years while only 14 (3.4%) were aged ≥ 35 years

Table I Distribution of Age Group

Age Group	Frequency	Percent	Cum Percent
≤ 34	397	96.6%	96.6%
≥ 35	14	3.4%	100%
Total	411	100.0%	100.0%

Greater proportion, 390 (94.9%) of the women were Christians while 21 (5.1%) were Muslim.

Table II Religion

Religion	Frequency	Percent	Cum Percent
Christianity	390	94.9%	94.9%
Islam	21	5.1%	100.0%
Total	411	100.0%	100.0%

Majority of the women were from ethnic group other than Hausa, Igbo or Yoruba.

Table III Ethnicity

Ethnicity	Frequency	Percent	Cum Percent
Hausa	10	2.4%	2.4%
Igbo	38	9.2%	11.7%
Others	329	80.0%	91.7%
Unspecified	6	1.5%	93.2%
Yoruba	28	6.8%	100.0%
Total	411	100.0%	100.0%

Two hundred and eighty (50.7%) of the women had secondary school education and 186 (45.4%) had tertiary education while 16 (3.9%) had only primary school education.

Table IV level of education among

primigravidae

Education	Frequency	Percent	Cum Percent
Primary	16	3.9%	3.9%
Secondary	208	50.7%	54.6%
Tertiary	186	45.4%	100.0%
Total	410	100.0%	100.0%

A greater number of the primigravidae, 368 (89.5%) booked for antenatal care against 43(10.5%) that did not book for antenatal care.

Booking Status

Booking	Frequency	Percent	Cum Percent
Booked	368	89.5%	89.5%
Unbooked	43	10.5%	100.0%
Total	411	100.0%	100.0%

Two hundred and seventy four (66.7%) of the women delivered at term, 89 (21.7%) had preterm deliveries while 43(10.5%) had prolonged pregnancy as shown in table VI below.

GA Type

GA Type	Frequency	Percent	Cum Percent
Missing	5	1.2%	1.2%
Preterm	89	21.7%	22.9%
Prolong	43	10.5%	33.3%
Term	274	66.7%	100.0%
Total	411	100.0%	100.0%

Pregnancy outcome	Frequency	Percent	Cum Percent
Breech	1	0.2%	0.2%
CPD	3	0.7%	1.0%
ELCS	1	0.2%	1.2%
DM	1	0.2%	1.5%
HTN	6	1.5%	2.9%
FTP	18	4.4%	7.4%
IUFD	11	2.7%	10.0%
NL	345	84.6%	94.6%
RVD	22	5.4%	100.0%
Total	408	100.0%	100.0%

Table VII shows the various complications found among the primigravidae in the study group. The commonest obstetric complication was failure to progress in labour (FTP),18(4.4%). Other complications encountered in them are as show in the table above.

Three hundred and thirteen (76.2%) of the women had spontaneous vaginal delivery, 97(23.6%) had caesarean delivery while 1(0.2%) had assisted vaginal delivery using vacuum. Twenty three (5.6%) of the babies were asphyxiated while 382(92.9%) were of normal APGAR scores. These are shown below in tables VIII and IX respectively.

Table VIII Mode of delivery

Delivery Type	Frequency	Percent	Cum Percent
CS	97	23.6%	23.6%
ND	313	76.2%	99.8%
Vacuum	1	0.2%	100.0%
Total	411	100.0%	100.0%

Table IX percent of Asphyxia

APGAR Type	Frequency	Percent	Cum Percent
Asphyxia	23	5.6%	5.6%
Missing	6	1.5%	7.1%
Normal	382	92.9%	100.0%
Total	411	100.0%	100.0%

Of the fourteen elderly primigravidae that were found in the study, 10(71.4%) of them had caesarean delivery while only 4(28.6%) had normal spontaneous vaginal delivery. Three hundred and nine (77.8%) of those aged 34 years and younger, had spontaneous vaginal delivery as shown in table X below.

Table X comparison of mode of delivery

Delivery Type	≤34	≥35	Total
CS	87	10	97
	21.9	71.4	23.6
ND	309	4	313
	77.8	28.6	76.2
Vacuum	1	0	1
	0.3	0.0	0.2
Total	397	14	411

$$X^2 = 18.3923, Df=2, P=0.0001$$

The elderly primigravidae had more medical conditions in pregnancy such as hypertension in pregnancy 6(42.8%), diabetes in pregnancy 1(7.2%) than the younger age group as shown in table XI below.

Pregnancy outcome	≤34	≥35	Total
Breech	1	0	1
Col %	0.3	0.0	0.2
CPD	3	0	3
Col %	0.8	0.0	0.7
ELCS	1	0	1
Col%	0.3	0.0	0.2
DM	0	1	1
Col%	0	7.2	0.2
HTN	0	6	6
Col%	0	42.8	1.5
FTP	16	2	18
Col%	4.2	14.3	4.4
IUFD	11	0	11
Col%	2.8	0.0	2.7
NL	341	4	345
Col %	86.5	28.5	84.6
RVD	21	1	22
Col%	5.4	7.2	5.4
Total	394	14	408
Col%	100.0	100.0	100.0

$$X^2 = 8.1649, df = 2, P = 0.0041$$

High percentage of the women booked for antenatal care, 355(89.4%) of the younger age group and 13(92.9%) of the elderly primigravidae booking for antenatal care as shown in table XII below.

Table XII Booking comparison of the Age Groups

AGE GROUP			
Booking	≤34	≥35	Total
Booked	355	13	368
Col%	89.4	92.9	89.5
Unbooked	42	1	43
Col%	10.6	7.1	10.5
Total	397	14	411
Col%	100.0	100.0	100.0

$X^2 = 0.171, df=1, p =0.679$

Table XIII shows a comparison between the APGAR scores of babies born to the elderly primigravidae and the younger age group. Greater percentage of babies born to the elderly primigravidae was asphyxiated 1(7.1%) than those born to the younger age group 22(5.5%).

Table XIV GA at Delivery

AGE GROUP			
APGAR Scores	≤34	≥35	Total
Asphyxia	22.	1	23
Col%	5.5	7.1	5.6
Missing	6	0	6
Col%	1.5	0.0	1.5
Normal	369	13	382
Col%	92.9	92.9	92.9
Total	397	14	411
Col%	100.0	100.0	100.0

$X^2 = 0.2736, df =2 , P =0.8722$

Prolonged pregnancy was higher in the elderly primigravidae 3(21.4%) than the younger age group 40(10.1%). However preterm labour was more in the younger age group 88(22.2%) as compared to the older age group 1(7.1%). This is as shown in table XIV below.

Table XIV Gestational Age at Delivery

AGE GROUP			
GA Type	≤34	≥35	Total
Missing	5	0	5
Col%	1.3	0.0	1.2
Preterm	88	1	89
Col%	22.2	7.1	21.7
Prolong	40	3	43
Col%	10.1	21.4	10.5
Term	264	10	274
Col%	66.5	71.4	66.7
Total	397	14	411
Col%	100.0	100.0	100.0

$X^2 = 3.3011, df = 3, P = 0.3475$

Approximately half of the elderly primigravidae had tertiary education 7(50.0%) as against the younger age group where most of them had only secondary school education 203(51.3%). However a great proportion of the elderly primigravidae were house wife 9(63.4%) as shown below in table XV and XVI respectively.

Table XV Educational Level of the Age group

AGE GROUP			
Education	<34	>35	Total
Primary	14	2	16
Col%	3.5	14.3	3.9
Secondary	203	5	208
Col%	51.3	35.7	50.7
Tertiary	179	7	186
Col%	45.2	50.0	45.4
Total	296	14	410
Col%	100.0	100.0	100.0

$X^2=4.7175,df=2,p=0.0945$

Table XVI Occupation

AGE GROUP			
Occupation	≤34	≥35	Total
Artisan	9	1	10
Col%	2.3	7.1	2.4
Civil/Public Servant	26	2	28
Col%	6.5	14.3	6.8
House Wife	250	9	259
Col%	63.0	64.3	63.0
Professional	1	0	1
Student	72	0	72
Col%	18.1	0.0	17.5
Trade	35	2	37
Col%	8.8	14.3	9.0
Unemployed	4	0	4
Col%	1.0	0.0	1.0
Total	397	14	411
Col%	100.0	100.0	100.0

$$\chi^2 = 5.6779, df = 6, P = 0.4602$$

DISCUSSION

In this study, only a small proportion (3.4%) of the primigravidae were aged 35 years and older. This was in contrast with the study done in the United States by Martin, Hamilton and Venture¹² where more than 13% of all births were to women 35 years and older. Freeman-Wang and Heak also found higher proportion of elderly primigravidae¹. The lower proportion of elderly primigravidae found in this study in Jos, plateau state, North central, Nigeria could be as a result of the cultural practice in this part of the world where early marriage is the practice of the majority of the populace.

In this study, it was found that more than half of the elderly primigravidae had tertiary education which

contributed to their delay in first child birth. This finding was consistent with the finding of Heck et al and Mosher et al where the age at first child birth of the female college graduate in the United States was 30 years and older.

This study found a statistically significant higher caesarean section rate among the elderly primigravidae than the younger age group. This was in keeping with the findings by Eke A.C. and Eleje G.U²⁰ in the Eastern part of Nigeria. This was because elderly primigravidae are more prone to obstetric complications that warrant caesarean delivery.

Medical conditions in pregnancy like diabetes mellitus in pregnancy and hypertensive disorders in pregnancy were higher among the elderly primigravidae than in the younger age group. This was because of the advanced maternal age which tends to increase the chances of developing these medical conditions that complicate pregnancy. This was consistent with the findings in the study done in Canada by Tough et al¹⁹ and in Sweden by Cnattingiles et al¹⁸ where pregnancy complications were higher in the older maternal age group than in the younger age group.

The percentage of prolonged pregnancy was higher among the elderly primigravidae than the younger age group. This was consistent with the findings in eastern part of Nigeria by Eke A.C and Eleje G.C²⁰

Adverse fetal outcome was more among the babies born to the elderly primigravidae than the babies born to the primigravidae of younger age group; higher percentage of the babies of elderly primigravidae were Asphyxiated.

CONCLUSION

Maternal age of thirty five years and older at the time of first child birth had higher obstetric and perinatal complications than younger maternal age group. Women who were thirty five years and older at the time of first delivery had worse maternal and perinatal outcome than women who were thirty four years and younger at the time of first delivery.

RECOMMENDATION

It is therefore recommended that women should have their first child birth before the maternal age of thirty five years to prevent higher risk of obstetric and perinatal outcome

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