MATERNAL AGE AT FIRST BIRTH AND OBSTETRIC OUTCOME

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SUMMARY

The objective of this study was to determine the effect of age on women going through their first pregnancy and delivery at extremes of reproductive life. All obstetric records of delivered mothers at the UBTH between January 1995 and December 1999 were extracted for the study.

There were 2,658 primiparous births (27.3%) out of a total of 9,735 deliveries. Teenage mothers were 156 (5.87 %), while the elderly primigravidas were 117 (4.4%) and the ideal age primigravidas (Control) were 2,385 (89.73%). The average maternal age at first birth was 27.05 ± 3.04 years. Teenagers registered for their first antenatal visit later than the elderly mothers (23 weeks vs. 18 weeks; $P < 0.05$). The elderly primigravidas utilized antenatal service more than the teenagers or young primigravidas; booking status (94.7%, 53.9% and 81.4% respectively), attended adequately (78.95%, 22.2% and 62.5% respectively).

The caesarean section rate for the elderly and the teenage primigravidas was 52.6% and 50.0% respectively compared with 29.2% for the young (ideal) mothers. The elective caesarean section rate was significantly higher for the elderly primigravida 21.05%, compared to 0.0% and 1.35% for the teenage and ideal primigravidas respectively. The incidence of low birth weight infants was significantly higher amongst the elderly primigravidas ($p = 0.000$).

The number of women having their first birth at the extremes of age is small in our community today. The caesarean section rate is high both for the teenagers and the elderly primigravidas, however their obstetric outcome is good if utilization of antenatal care is adequate and labour properly conducted.

KEY WORDS: *Primigravida, Age, First Birth, Pregnancy Outcome*

INTRODUCTION

The age a woman gives birth to her first child is influenced by various socio-economic, religious and complex cultural variables, which varies from nation to nation[1,2]. The first birth is often a significant event in a woman's life and has a relationship to subsequent childbearing and other lifetime events such as education, socio-political status and poverty. Also, it has implications for the nation's population dynamics[3-5], the infant and mother[6].

Teenage mothers have increased risk of developing complications, especially pregnancy induced hypertension / eclampsia, malaria, anaemia and low-birth weight infants. It is controversial whether biological or socio-economic inadequacies best explain these adverse pregnancy outcomes[7-10]. Reports on obstetric performance of older primigravida above 35 years points toward numerous feto-maternal risks, of preterm delivery, caesarean section and a significant increased rate of vaginal operative delivery, chronic hypertension and fibroids complicating the pregnancy[10-13]. Also, late foetal deaths, low birth weight, and infants with chromosomal abnormalities (especially small-arm chromosomes) increase with maternal age.

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The objective of this study was to determine in our practice, the effect of age on women going through their first pregnancy and delivery at extremes of reproductive life < 20 years and >35 years, compared with those having their first birth between 20 and 34 years of age.

MATERIAL AND METHODS

The obstetric data forms of all patients delivered at the University of Benin Teaching Hospital (UBTH) for the period of January 1995 to December 1999 were the material for the study. The records of patients having their first birth (primiparous) were sorted out, and on some circumstances the case notes were pulled out, for the study. Information extracted from the records included, socio-biological data: age, education level, occupation and marital status. Other variables coded included the gestational age at booking, number of clinic visits, antenatal events and complications such as pre- eclampsia and malaria; gestational age at onset of labour, foetal presentation, labour complications and mode of delivery. Foetal outcome such as birth weight, Apgar score and admission into the Special Care baby Unit (SCBU) was also extracted.

The first step in our analysis was to stratify the data into three sets of age groups for comparison. Mothers having their first birth below the age of 20 years (teenagers), the elderly

primigravidas age 35 years and over, and the young primigravidas age between 20-34 years (the control group or the ideal age group). Next, the mothers were classified as educated or uneducated. Mothers that completed the secondary level of education and obtained the West African School certificate (WASC) or its equivalent (approximately 12 years of education) were classified as educated. Mothers with less than 12 years of formal education (did not complete the WASC or its equivalent) were classified as uneducated. The third preliminary step was the stratification for adequacy of utilisation of maternity service, which was categorized by the number of the patients antenatal clinic visits throughout the pregnancy into inadequate, adequate and inappropriate (visits $\leq 4, \leq 8$ or >12 respectively).

The results were subjected to statistical analysis, using either the student t-test for comparing mean and the Chi-square (X^2) to determine association between age at first birth and pregnancy outcome variables. The statistical package of Epi Info 2000 was used and a P- value of < 0.05 was taken as significant.

RESULTS

A total of 9,735 mothers delivered at the labour ward of the UBTH, during the five years period, out of these there were 2,658 (27.3%) primigravidas. Teenage primigravidas (less than 20 years) were 156 (5.87 %), while primigravidas of age 35 years and above were 117 (4.40%) and ideal age group (control) primigravidas were 2,385 (89.73%).

Table 1 shows some selected maternal socio-biological characteristics of the entire study population. The average maternal age at first birth in this study was 27.05 ± 3.04 years, with a range of 15-39. The mean maternal height was 1.64 ± 0.05 metres. The average number of antenatal visits by expectant mothers was 8 visits, with a range of 1-20.

Table 1: Selected maternal socio-biological characteristics in the study population

Socio-biological Variable	Mean (SD)	Range
Age (Years)	.05 (3.04)	15-39
Height (Metres)	(0.05)	.46-1.86
Booking Gestation (Weeks)	22.02 (6.6)	6-40
Antenatal Visits (Numbers)	8.16 (3.11)	1-20
Birth Weight (kg)	.96 (0.47)	1.00-5.00

Table 2 shows the socio-biological characteristic of patients in the study stratified by age. There were more educated employed mothers amongst the elderly primigravidas subgroup than the teenager or ideal primigravidas subgroups (69.2%, 11.5%, and 51.5% respectively). There was a significant association with the age at first birth and education (chi-square 165.56, p = 0.000). The young primigravidas (ideal age subgroup) were more likely

Table 2: Maternal socio-biological variables stratified by age bracket

Social Variable	Teenage Primigravidas n (%)	Elderly Primigravidas n (%)	Control n (%)	Chi-square (P- value)
Educated (>12 years)	42 (26.92)	99 (84.62)	1754 (73.54)	165.56 (0.000)
Unemployed	24 (15.38)	18 (15.38)	527 (22.05)	
Employed	18 (11.54)	81 (69.23)	1227 (51.45)	
Uneducated (< 12 years)	114 (72.22)	18 (15.38)	632 (26.50)	
Unemployed	90 (57.69)	12 (10.53)	364 (15.28)	
Employed	24 (15.38)	6 (5.26)	268 (11.22)	
Marital status				
Married	84 (53.85)	111 (94.74)	2325 (97.49)	566.46 (0.000)
Single	72 (46.15)	6 (5.26)	60 (2.51)	

Table 3: Pattern of Antenatal care utilization by the three subgroups of primigravidas

Antenatal Attendance	Teenage Primigravidas n (%)	Elderly Primigravidas n (%)	Control n (%)	Chi-square (P- value)
Unbooked	72 (46.15)	6 (5.26)	443 (18.57)	86.94 (0.000)
Booked 84	(53.85)	111 (94.74)	1942 (81.43)	
Inadequate (≤ 4)	102 (65.38)	25 (21.05)	637 (26.69)	
Adequate (≤ 8)	35 (22.22)	92 (78.95)	1490 (62.48)	
Inappropriate (>12)	18 (11.54)	0 (0.00)	258 (10.83)	
Booking Gestation (Weeks)	23.00	18.00	22.12	
SD	9.30	8.65	7.44	

Table 4: **Antenatal complications stratified by age bracket**

Complications	Teenage Primigravidas n (%)	Elderly Primigravidas n (%)	Control n (%)	Chi-square (P- value)
Nil complication	36 (23.08)	18 (15.79)	706 (29.59)	
Malaria	12 (7.69)	43 (36.84)	484 (20.31)	37.15 (0.000)
Anaemia 18 (11.54)	6 (5.26)	314 (13.15)	6.70 (0.035)	
P.I.H / Pre-eclampsia	12 (7.69)	12 (10.53)	171 (7.16)	1.60 (0.4497)
UTI	6 (3.85)	0 (0.00)	101 (4.26)	5.19 (0.0746)
Preterm Labour	0 (0.00)	18 (15.79)	88 (3.68)	46.72 (0.0000)
Fibroid(s)	0 (0.00)	18 (15.79)	55 (2.32)	76.10 (0.0000)
Cervical Incompetence	0 (0.00)	6 (5.26)	55 (2.32)	7.85 (0.0197)
Threatened Abortion	0 (0.00)	4 (3.00)	55 (2.32)	4.40 (0.1109)
Diabetes Mellitus	0 (0.00)	2 (2.00)	36 (1.50)	2.40 (0.2959)
APH / Placenta Praevia	0 (0.00)	1 (1.00)	48 (2.00)	3.94 (0.1395)
Multiple pregnancy	6 (3.85)	6 (5.26)	106 (4.45)	0.26 (0.8779)

Table 5: **Gestational age and fetal presentation at onset of labour**

Labour Variable	Teenage Primigravidas n (%)	Elderly Primigravidas n (%)	Control n (%)	Chi-square (P- value)
Gestation <37 Weeks	24 (15.38)	55 (47.37)	360 (15.09)	978.78 (0.000)
37-40 Weeks	90 (52.63)	62 (52.63)	1550 (64.99)	
> 40 Weeks	6 (3.85)	0 (0.00)	434 (18.18)	
Cephalic	114 (73.08)	86 (73.68)	2237 (93.81)	
Breech/ Abnormal presentation	42 (26.92)	31 (26.32)	148 (6.19)	135.51 (0.000)
Spontaneous labour	138 (88.46)	74 (63.16)	1813 (76.02)	135.51 (0.000)
Induced Labour	18 (11.54)	18 (15.79)	545 (22.84)	
Labour Duration (Hrs)	7.50	7.88	7.79	
SVD	60 (38.46)	37 (31.58)	1430 (59.96)	
Caesarean Section	78 (50.00)	62 (52.63)	697 (29.21)	55.52 (0.0000)
Elective CS	0 (0.00)	25 (21.05)	32 (1.35)	
EmCS	78 (50.00)	37 (31.58)	664 (27.85)	
Instrumental Delivery	18 (11.54)	0 (0.00)	194 (8.12)	12.92 (0.0015)
Breech Delivery	0 (0.00)	18 (15.79)	65 (2.71)	64.42 (0.000)

to be married at the time of their first pregnancy than the elderly primigravida and the teenage primigravidas (97.5%, 94.7% and 53.9% respectively), p=0.000.

The pattern of antenatal care utilization stratified into the three age brackets is shown in Table 3. A high percentage (46.15 %) of the teenagers were unbooked compared with 18.6% and 5.26% amongst the young primigravidas and the elderly primigravidas. There was a significant association between registering for antenatal care and age (chi-square 86.94, p = 0.000). Teenagers registered for their first antenatal visit later than the elderly mothers (23 weeks vs. 18 weeks; p <0.05). The elderly primigravidas utilized antenatal service more than the teenagers or control subgroup primigravidas (booking- 94.74% vs. 53.85%, and 81.43% respectively) and attended adequately (78.95%, vs. 22.22% and 62.48% respectively).

The frequency of malaria, preterm labour, and fibroid was higher in the elderly primigravida than the other two subgroups (Table 4). The difference was statistically significant (Chi-square 37.15, p = 0.000). The rates of occurrence of pregnancy-induced hypertension and pre-eclampsia were not statistically different for the 3 subgroups (7.69%, 7.16%, vs. 10.53%). There was a significant association between age a first birth and cervical incompetence (chi-square 7.85, P = 0.02). Cervical incompetence was more in the elderly primigravidas compared with the teenagers (5.26% vs. 0.00%), and the young primigravidas (1.35%) as shown in Table 4. Multiple pregnancies (twins) were observed in all the primigravidas subset (3.9%, 4.5% and 5.3% respectively). There was no statistical difference, chi-square 0.26, p = 0.88.

Fetal Outcome	Teenage Primigravidas n (%)	Elderly Primigravidas n (%)	Control n (%)	Chi-square (P- value)
Mean Birth Weight (kg)	2.83	2.89	3.01	
Birth Weight (SD)	0.31	0.56	0.43	
Birth Weight				
Below 2.5 kg	0 (0.00)	18 (15.79)	65 (2.71)	64.42 (0.000)
2.5-2.99 kg	42 (26.92)	18 (15.79)	346 (14.51)	
3.0-3.49kg	78 (50.00)	55 (47.37)	1513 (63.44)	
3.5-3.99kg	36 (23.08)	18 (15.79)	383 (16.05)	
> 4kg	0 (0.00)	6 (5.26)	80 (3.34)	
Apgar Score				
1 min (<7)	10 (38.46)	37 (31.58)	153 (29.59)	
5 min (<7)	4 (15.38)	18 (15.79)	45 (8.70)	
SCBU Admission	14 (53.85)	55 (47.37)	210 (40.62)	173.68 (0.0000)
Fetal Abnormality	0 (0.00)	0 (0.00)	4 (0.77)	0.46 (0.795)
Stillbirth Rate (FSB & MSB)	3 (11.54)	0 (0.00)	19 (3.68)	3.4 (0.2080)
Booked	0 (0.00)	0 (0.00)	9 (1.74)	
Unbooked	3 (11.54)	0 (0.00)	10 (1.93)	

Table 5 summarizes various labour and delivery variables for the three data sets. The rate of spontaneous labour was highest amongst the teenagers (88.5%) compared with the ideal mothers and elderly primigravidas (76.0%, 63.2% respectively). Chi- square $(X^2) = 23.79$ (2 degrees of freedom) P value = 0.00000683. Preterm delivery was more frequent amongst the elderly primigravidas (47.4%). Chi- square $(X^2) = 97.78$, 2 degrees of freedom, P value = 0.000. The incidence of breech /abnormal presentation in labour was significantly higher in the elderly primigravidas group (26.3%). Chi- square $(X^2) = 135.51$, 2 degrees freedom, p value = 0.0000.

The caesarean section rate for the elderly and the teenage primigravidas was 52.6% and 50.0% respectively compared with 29.2% for the ideal mothers (Table 5). The elective caesarean section rate was significantly higher for the elderly primigravidas 21.05%, compared to 0.0% and 1.35% for the teenage and ideal primigravidas respectively. However, the caesarean section rates for the teenagers and elderly primigravida groups were essentially the same (50.0% vs. 52.63%) table 5. The teenage mothers had a slightly shorter labour duration than the other two groups of primigravidas (7.50 vs. 7.79, and 7.88 hours).

The mean birth weights of infants born to the 3 subgroups were statistically not different (2.83 kg, 3.01 kg and 2.89 kg, respectively). The incidence of low birth weight infants was significantly higher amongst the elderly primigravidas (15.38%, p = 0.000), see Table 6. There were more stillbirths amongst the unbooked teenage mothers than the other two subgroups (11.5%, 1.9% and 0.0% respectively). The association was not statistically significant. The teenage mothers had more depressed babies at birth (1 min Apgar scores – 38.5%, 29.6% and 31.6% respectively)

and more neonatal admissions to the special care baby unit (SCBU) Table 6.

DISCUSSION

The percentage of women having their first birth at the extremes of age in this study was small. A large percentage of the ideal age subgroup primigravidas had no antenatal care and utilized care inadequately so contrasting may be inaccurate or magnified, due to the fact that many antenatal complications may have been undocumented. However, the elderly primigravidas showed a higher incidence of malaria, preterm labour, and fibroid compared to the other two subgroups, which was not statistically significant. The teenage primigravidas were socially and economically more disadvantaged as shown from the study results. They were less educated and unemployed mothers. Their first antenatal visit was significantly delayed.

The frequency of pregnancy-induced hypertension and eclampsia were not statistically different for the 3 subgroups, but notably the frequency of cervical incompetence was higher in the elderly primigravidas. Other significant labour and delivery variables found in the study were the high incidence of breech / abnormal presentation in labour, and preterm delivery amongst the elderly primigravidas. Other workers in this field have documented similar finding[10-12].

The caesarean section rates for the young and old primigravidas (50% Vs 53%) was high but essentially the same, though the component of elective caesarean section was significantly higher amongst the subgroup of elderly primigravida. The elderly primigravida was readily offered a caesarean section.

The easy resort to caesarean section may be due to the fact that pregnancy is considered precious in this age group especially if there has been a history of infertility[10-11] and the chances of future childbirth may be dwindling.

The teenager primigravida had slightly shorter labour compared with the other two subgroups of primigravidas but a higher emergency caesarean section rate. The high emergency caesarean section rate may be the consequences of no antenatal care, in addition to her young biological age and or other social disadvantages. These inadequacies also explain the study finding of a significant association between being unbooked and delivering a stillbirth. Most of the teenage primigravidas were referred in labour at various stages of progress, with the foetus already compromised. Caesarean section was offered as the management option to salvage the mother.

The difference in stillbirth rate amongst the three subgroups became insignificant when adjustment was made for booking status. Growing older (age) with low correlation with education does improve an adolescent's ability to participate in decision-making about her health concerns[4]. With modern perinatal management normal foetal outcome is expected if patients arrived on time to the labour ward. The perinatal mortality and stillbirths was very low amongst the elderly primigravidas, which was not in keeping with the finding of high maternal and foetal risks in elderly primigravidas by some workers[6,7,10-13]. Our results showed that pregnancies and deliveries at the extremes ages of reproductive life, if properly conducted, are safe and there is no significantly added perinatal morbidity and mortality in these subgroups of primigravidas compared with the younger ideal age group.

The age at first birth of the childbearing population in this community may be increasing, also the level of education and working experience. The mean age at first childbirth in this study of 27 years was high, and with other maternal characteristics (e.g. height) is similar to the biometrics from the developed world community. The median age at first birth in Japan in 1994 was estimated at 26.6 years and 24.4 in the USA[3,4]. The implication of this for reproductive performance is positive, which may slow down the dynamics of the nation's rate of population growth.

CONCLUSION

The number of women having their first birth at the extremes of age is small in our community toady. The caesarean section rate is high both for the teenagers and the elderly primigravidas, however their obstetric outcome is good if utilization of antenatal care is adequate and labour properly conducted.

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