



Research

Demographic correlates of gestational age at booking among antenatal clinic attendees in secondary healthcare facilities in semi-urban/rural areas of Rivers state, Southern Nigeria

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Abstract

Background: Pregnancy related complications remain unacceptably high in Nigeria. Antenatal Care is one of the pillars of safe motherhood. Early booking is known to improve outcomes and demographic factors correlate with the timing of booking. The aim of this study is to determine the booking pattern and demographic correlates of rural/semi-urban dwellers.

Method: The study was a cross-sectional study of women registering for Antenatal Care in Zonal/General Hospitals sited in rural/semi-urban areas of Rivers State, Southern Nigeria between January and June 2022.

Results: Half (50%) of the participants were aged between 21 and 30 years with a mean age was 29.86 ± 6.07 . Majority (54%) were business women and 61.5% had secondary level of education. 57.5% of their spouses were businessmen and 51% had secondary level of education. Participants who booked early were 13.5%. Multivariate analysis revealed significant association between early booking and Parity ($p=0.023$), Spouse's Occupation ($p=0.02$), Marital Status ($p=0.013$) and Spouse's Education ($p=0.01$). Majority (66.7%) were either nullipara or primipara.

Conclusion: Early booking remains a challenge in these women especially the multiparous women and the spouses of the women play a significant role in their health seeking behaviour with low spousal education associated with early booking.

Keywords

Early antenatal care, demography, correlates, gestational age, rural, semi-urban healthcare, Nigeria.

Introduction

Pregnancy related deaths and diseases remain unacceptably high with 303,000 women dying of pregnancy related causes, 2.7 million babies dying within 28 days of life and 2.6 million babies stillborn in 2015 alone¹. Around 99% of maternal deaths happen in low-asset settings and most can be averted through increased access to higher quality healthcare during pregnancy and childbirth with the 2016 World Health Organisation (WHO) Antenatal Care (ANC) model recommending the first contact in the first 12 weeks of gestation. Sadly only 64% of women globally receive antenatal care four or more times during pregnancy¹.

Antenatal Care remains one of the four pillars of safe motherhood. Antenatal care has been shown to improve pregnancy outcomes by anticipating and addressing complications early. This is particularly important in the

developing world where maternal and perinatal deaths remain unacceptably high. Furthermore, early antenatal booking within 12 weeks of gestation, has been shown to reduce adverse pregnancy outcomes when compared to booking later in pregnancy and will as such improve these sad indices. Previous studies however suggest that pregnant women especially in developing countries like ours are notorious for late booking.

Antenatal booking within the ideal booking period continues to pose a challenge especially in developing countries where socio-economic status, socio-cultural beliefs and religious ideologies play significant roles in decision making.

Previous studies have reported poor compliance with the WHO recommendation of antenatal booking within the 1st 12 weeks of Gestation (also referred to as 1st trimester booking or early booking). The percentage of





early booking ranges from 22% at the University of Port Harcourt Teaching Hospital² to 26.5% at the Rivers State University Teaching Hospital³. Other reported figures for early booking include 14.9% at Benin⁵, 14.1% at Ibadan⁸ and 27% at Lagos⁹ all in Southern Nigeria. Average gestational age at booking found in a study in Northern Nigeria was 19.1 ± 7.8 weeks. Reports of percentage early booking from other African countries include 56% in Cameroon¹³, 6% in South Africa¹⁶, 35.4% in Ethiopia¹⁷, 11.5% in Uganda¹⁸ and 19% in Zambia¹⁹. Figures for antenatal booking as high as 61% before 12 weeks and 81% before 14 weeks of gestation have been reported in the United Kingdom²⁰. The wide variation amongst different populations may be due partly to the varying demography associated with the gestational age at booking.

Most of the reported studies in our environment were done in tertiary healthcare facilities in urban centres. There is therefore paucity of data on the demographic characteristics associated with the gestational age at booking for women residing in rural and semi-urban areas. The aim of this study is to determine the pattern of gestational age at booking and relationship between the demographic characteristics of antenatal mothers and the gestational age at booking in semi-urban/rural dwellers.

This study will contribute to addressing the paucity of data on the demographic characteristics associated with the gestational age at booking for women residing in rural and semi-urban areas. The study will aid public health planning and interventions.

Methodology

Study area

Rivers State of Nigeria with a population of 5,185,400 according to the report of the last Nigerian National Census (2006) consists of an urban state capital made up of 2 Local Government Areas and 21 other Local Government Areas made up of predominantly semi-urban/rural communities. The State is divided into 3 Senatorial Districts with government owned Zonal/General Hospitals sited in these districts to cater for pregnant women and various other morbidities. These hospitals also serve as referral centres to the various Private Clinics and Government owned Primary Health Centres.

Study design/procedure

The study was a descriptive cross-sectional study conducted from 1 randomly selected Zonal/General Hospital in each of the 3 Senatorial Districts of Rivers State involving consenting and eligible pregnant women who presented to the hospitals to register for antenatal care and who were sure of their last menstrual period

and/or had an early ultrasonography for dating. Previously trained health workers administered the structured questionnaire-based interview after prior informed consent at Zonal Hospital Bori, Zonal Hospital Okrika and Zonal Hospital Bonny between January 2022 and June 2022.

The interview questionnaire applied was previously pretested with 20 patients in a different facility and found satisfactory. Questions asked include patient's age, parity, occupation, educational qualification, marital status, spouses' employment status and gestational age at booking. Early antenatal booking was taking as booking within the 1st 13 weeks of gestation.

Based on the reported 26.5% early booking in a previous study at the Rivers State University Teaching Hospital,² 5% error margin and 95% confidence interval, the calculated minimum sample size was 330 after allowing for 10% non-response rate using the formula as stated by Hamed T²¹.

$$n = \frac{p(100-p)Z^2}{E^2}$$

Where: n is the required sample size

p is 26.5 (the percentage of early booking from a study in Rivers State)

Z is 1.96 (at 95% confidence level)

E is 5% margin of Error

All consecutive and eligible patients who presented for antenatal registration in the hospitals within this period and agreed to participate formed the sample size. A total of 600 clients were recruited.

Data analysis

The data collected were entered into Microsoft Excel Worksheet 2016 version and were analysed using the Statistical Package for Social Sciences (SPSS) software version 21.0. These results are presented in tables and charts. The data fields were checked for accuracy using visual checking technique to eliminate possible data entry errors or inconsistencies of information. Multivariate analysis was done with chi-square (X^2) test to examine the relationship between the variables. In all cases, a probability value (p value) of < 0.05 was regarded as statistically significant.

Ethical consideration

Ethical approval was obtained from the ethical committee of the Rivers State Hospitals Management Board (Appendix 1). The participants were assured of strict confidentiality and anonymity of data obtained and the study was at no monetary or material cost to the participants.

Results

Half of the participants, (n = 300, 50%) were aged between 21 and 30 years (Table 1). The mean age was 29.86 ± 6.067 years with a median age of 29 years. Majority (n = 324, 54%) of participants were businesswomen (Table 1) while 369 (61.5%) of them had secondary level of education (Table 1). Only 21 participants (3.5%) were single while 567 (94.5%) were Christians (Table 1). Of the 600 participants, 198 (33%) and 135 (22.5%) were nullipara and primipara respectively (Table 1). Of their spouses, 345 (57.5%) were businessmen (Table 2) while 306 (51%) had secondary level of education (Fig 1).

Table 1. Demographics of sample population

	Frequency(/600)	Percentage
Age/Years:		
15-20	42	7.0
21-30	300	50.0
31-40	243	40.5
41-50	15	2.5
Occupation:		
Student	63	10.5
Civil/Public Servant	99	16.5
Business	324	54.0
Unemployed	114	19.0
Education:		
Primary	15	2.5
Secondary	369	61.5
Tertiary	216	36.0
Marital Status:		
Married	579	96.5
Single	21	3.5
Religion:		
Christian	567	94.5
Islam	33	5.5
None	0	0
Parity:		
0	198	33.0
1	135	22.5
2	126	21.0
3	60	10.0
4 & Above	81	13.5
Gestational Age At Booking		
Early	81	13.5
Late	519	86.5

Table 2. Occupation of spouses

Occupation	Frequency	Percentage
Farmer/Fisherman	3	0.5
Civil/Public Servant	237	39.5
Business	345	57.5
Unemployed	15	2.5
TOTAL	600	100

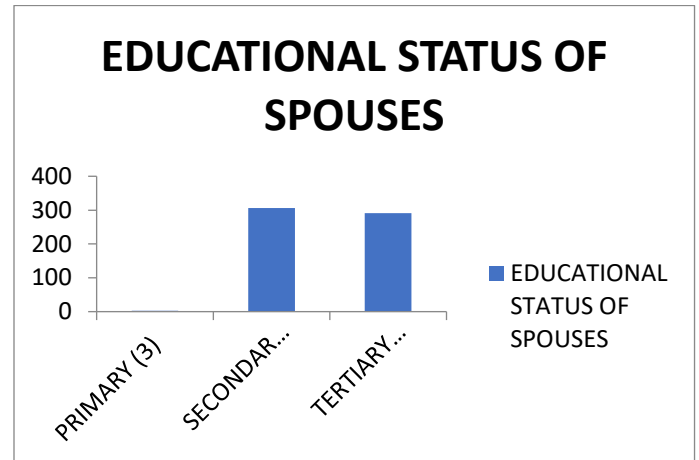


Figure 1. Educational status of spouses

Table 3. Association between demographics and gestational age at booking (multivariate regression analysis)

Variable	X ²	df	P
Age	4.133	3	0.247
Religion	0.001	1	0.976
Spouse Education	14.306	2	0.001
Spouse Occupation	9.793	3	0.020
Marital Status	6.153	1	0.013
Education (Participants)	5.527	2	0.063
Occupation (Participants)	7.255	3	0.064
Parity	11.313	4	0.023

Table 4. Association between demographics and gestational age at booking (univariate regression analysis)

VARIABLE	GESTATIONAL AGE	95% CI
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	Early Booking (%)	Late Booking (%)	X ²	Df	P	AOR	Lower	Upper
Parity								
0	30 (15.2)	168 (84.8)	2.94	1	0.086	2.232	0.892	5.589
1	24 (17.8)	111 (82.2)	4.285	1	0.038	2.703	1.054	6.928
2	15 (11.9)	111 (88.1)	0.506	1	0.300	1.689	0.637	4.551
3	6 (10.0)	54 (90.0)	0.604	1	0.587	1.389	0.425	4.540
4 And Above	6 (7.4)	75 (92.6)	R	0	R	R	R	R
Marital Status								
Married	81 (14.0)	498 (36)	2.2797	1	0.000	1.1 X 10 ⁷	1.1 X 10 ⁷	1.1 X 10 ⁷
Single	0 (0)	21 (100)	R	0	R	R	R	R
Spouse Occupation								
Farmer/Fisherman	0 (0)	3 (100)	-	1	-	7.5 X 10 ⁹	7.5 X 10 ⁹	7.5 X 10 ⁹
Civil/Public Servant	42 (17.7)	195 (82.3)	0.050	1	0.823	0.862	0.233	3.188
Business	36 (10.4)	309 (89.6)	1.302	1	0.254	0.466	0.126	1.730
Unemployed	3 (20.0)	12 (80.0)	R	0	R	R	R	R
Spouse Education								
Primary	3 (100)	0 (0)	-	1	-	1.84 X 10 ⁹	1.84 X 10 ⁹	1.84 X 10 ⁹
Secondary	36 (11.8)	270 (88.2)	0.932	1	0.334	0.790	0.490	1.274
Tertiary	42 (10.4)	249 (85.6)	R	0	R	R	R	R

Discussion

Adverse pregnancy outcomes including low birth weight, preterm births and stillbirths have been shown to increase with the gestational age at booking especially after 16 weeks²⁰. Maternal death, which is the extreme of this spectrum, remains unacceptably high in Nigeria despite concerted local and international efforts²².

Participants in this study, who booked early (before 12 weeks of gestation) were 13.5%. This is similar to the findings from Benin (14.9%)⁵ and Ibadan (14.1%)⁸. It is however different from findings as seen in Port Harcourt in the same Rivers State (22% and 26.5% in University of Port Harcourt Teaching Hospital³ and Rivers State University Teaching Hospital² respectively) and Lagos (27%)⁹. This may be attributed to the more urbane nature of the sample populations in the later studies.

Multivariate analysis (Table 3), revealed that demographic variables significantly associated with gestational age at booking include Parity (p=0.023), Spouse's Occupation (p=0.02), Marital Status (p=0.013) and Spouse's Education (p=0.01).

Participants who booked early were 17.8% amongst the primipara and 15.2% amongst the nullipara. The Primipara and Nullipara constitute 66.7% of those that booked early and univariate analysis revealed their higher odds for early booking (OR = 2.703 and 2.232 respectively, table 4). This is similar to the findings in several other studies^{2,5,7,8,9,13,16}, where low parity was a consistent demographic factor correlating with early gestational age at booking. The women with higher parity may feel they have seen it all and will thus present late.

The odds for early booking is higher for women married to public/civil servants compared to businessmen. No farmers wife booked early therefore showing odds for late booking. This can be attributed to the economic status of the spouses. Some previous studies found a relationship between a higher economic status of the couple and early gestational age at booking^{9,12,13,14,21}.

Married participants have higher odds for early booking than single participants demonstrating the influence of the men in the women's decision making.



This study found a statistically significant correlation between the spouse's education and early booking with the odds higher for spouses with primary level of education. It is similar to the findings in other studies^{14,18,21} where this demographic factor was evaluated. This can be explained by the fact that the spouses especially of rural women have a significant role to play in their decision making and that the poorly educated men are more likely to be worried about their wives wellbeing than the more educated men who may think they know it all and will delay access to healthcare especially when there is no apparent cause for concern. This should form an important consideration in public health interventions.

There was no significant correlation between the participants' age, educational status, occupation, and religion with early booking. This contrasts with other studies where maternal age^{12,17,19} and maternal educational status^{2,10,12,19} correlated with the gestational age at booking. The findings in these other studies where that the correlation with maternal age was with the age bracket 20 to 30 years who formed the bulk (50%) of our participants while the general finding was that the more educated the women, the less the likelihood of early booking. Women with primary level of education tended to book early. We found no correlation in our study probably because the previous studies were in urban dwelling women as opposed to our study on semi-urban/rural dwelling women whose spouses play a more significant role in decision making for the women. These findings should help guide future public health interventions aimed at improving acceptance of antenatal care especially outside urban centres. Future studies should include interviews of the men folk with the aim of assessing their perceptions about antenatal care and its benefits.

Conclusion

The compliance with the WHO recommendation of early gestational age at booking for antenatal care is still unacceptably low in developing countries especially in women dwelling in rural/semi-urban areas. Public health interventions should aim at improving early antenatal booking in these areas and should target the spouses of the women especially the highly educated spouses married to multiparous women.

Authors' contribution

KEO and BO participated in the design of the study, BO supervised the data collection, KEO and BO analysed the data. KEO drafted the manuscript while KEO, BO, IJ and JO revised the manuscript critically for intellectual contents. All authors read and approved the final manuscript.

Conflict of Interest

There was no conflict of interest

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