

Gestational age at initiation of antenatal care in a tertiary hospital, Southwestern Nigeria

OP Aduloju, AA Akintayo, IP Ade-Ojo, JO Awoleke, T Aduloju¹, OR Ogundare²

Department of Obstetrics and Gynaecology, Ekiti State University, Departments of ¹Medical Social Services and ²Nursing Services, Ekiti State University Teaching Hospital, Ado-Ekiti, Nigeria

Abstract

Context: Antenatal care utilization has been shown to be associated with reduction in maternal and perinatal morbidity and mortality while early initiation provides an opportunity for optimum utilization of this care with improved maternal and fetal outcomes.

Aim: This study seeks to determine the time of initiation of antenatal care among pregnant women and possible factors influencing such timing.

Setting: A cross-sectional study involving 530 pregnant women was carried out at the booking clinic of the Ekiti State University Teaching Hospital, Ado-Ekiti, between September 03, 2013, and March 04, 2014.

Subjects and Methods: A pretested questionnaire was administered to them to obtain information on their sociodemographic characteristics and factors influencing their timing of antenatal care initiation.

Results: The prevalence of early booking in this study was 22.7%, and the mean gestational age at booking was 21.09 ± 6.98 weeks. The age, parity, and occupation of the women and counseling on early booking were significantly associated with early booking among the respondents with *P* value of 0.010, 0.006, 0.011, and 0.009, respectively while on logistic regression, the occupation of women was the only significant association with early antenatal care initiation (adjusted odd ratio 0.388; confidence interval 0.212–0.710; *P* = 0.002). Complications experienced in previous pregnancies did not predict early initiation of care. More than half of the respondents (50.9%) gave early monitoring of their pregnancy as the reason for initiating the care.

Conclusion: Late initiation of antenatal care is still prevalent in our environment. Therefore, pregnant women should be adequately informed about the concept of early antenatal registration.

Key words: Antenatal care, gestational age, initiation, Nigeria, Southwestern

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Introduction

Antenatal care remains essentially one of the four pillars of safe motherhood, and it refers to the totality of health

care rendered to women during pregnancy. This form of care is supervised to enable them attain and maintain a state of good health throughout pregnancy and ensure good maternal and fetal outcomes.^[1-3] The utilization of antenatal care has been shown to predict outcomes of pregnancies, reducing significantly maternal and fetal morbidity and mortality while early utilization of antenatal

Address for correspondence:

Dr. OP Aduloju,
Department of Obstetrics and Gynaecology,
Ekiti State University, Ado-Ekiti, Nigeria.
E-mail: peter.aduloju@yahoo.com

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care is particularly believed to improve maternal and fetal health.^[2,4]

The booking visit serves as the entry point for antenatal care for the index pregnancy. The World Health Organization (WHO) has recommended that this first antenatal visit should be initiated at ≤ 12 weeks in focused antenatal care and < 14 weeks in traditional antenatal care.^[5-7] While the recommended gestational age for booking is within the first 14 weeks of pregnancy in developed countries such as the United Kingdom and the USA, no such national guidelines on antenatal care exist in most developing countries including Nigeria. However, based on WHO recommendation, commencement of antenatal care within first 14 weeks of gestation is widely accepted as early booking while it is late if commenced after this period.^[5-9]

Antenatal care exposes pregnant women to health education and counseling about the expected physiological changes in pregnancy, risk factors to adverse pregnancy outcomes, dietary counseling and to deliver preventive health services such as immunization against tetanus and prophylactic treatment of malaria and worms. Certain preexisting modifiable medical conditions such as diabetes mellitus, chronic hypertension, and cervical incompetence that may affect the course of pregnancy are also detected with plans of management determined during the booking visit. It is therefore important for women to start antenatal care early to fully benefit from these interventions.^[3,10,11]

Despite these documented benefits of early antenatal care initiation and subsequent care,^[1-4,12] low antenatal coverage, few visits, and late attendance at first antenatal visit are still common problems in sub-Saharan Africa posing difficulty in accomplishing the WHO recommended antenatal schedule.^[7,8,12] Previous studies have reported the prevalence of late booking in Nigeria to be 70.9–86%^[1,13,14] with regional variation in the mean gestational age at booking ranging from 21.82 weeks in Ibadan, 23.55 weeks in Sokoto, 23.6 weeks in Niger Delta to 24.3 weeks in Abakaliki.^[6,7,12,15] Reasons for this late antenatal care initiation include financial constraints, ignorance about the right time to start, lack of permission from spouse, distance from health facility, busy work schedule, apparently problem-free pregnancy, and cultural/personal perception of their health status among others.^[1,3,16]

This study was designed to determine the time of initiation of antenatal care among pregnant women and possible factors influencing the timing and choice of registration at the Ekiti State University Teaching Hospital (EKSUTH), Ado-Ekiti.

Subjects and Methods

This was a questionnaire-based, cross-sectional study. The study was carried out at the booking clinic of the Department of Obstetrics and Gynaecology of the EKSUTH, Ado-Ekiti. EKSUTH, Ado-Ekiti, is an emerging teaching hospital that serves as a referral centre for the specialist and general hospitals as well as healthcare centres in the state. There are also referrals from the neighboring states. The Department of Obstetrics and Gynaecology has eight consultants divided equally into two firms. The department runs two antenatal clinic days on Wednesdays and Fridays and a booking clinic on Tuesdays. About 3000 women register for antenatal care annually in this centre with an annual delivery rate of 1500 deliveries.

A total of 530 women attending antenatal booking clinic of EKSUTH, Ado-Ekiti, were consecutively recruited between September 03, 2013, and March 04, 2014. Pregnant women who were sure of their last menstrual period and confirmed it by an early ultrasound scan and those who were unsure of their last menstrual period but had an early ultrasound report were considered eligible for the survey. Consent was as per the introductory part of the questionnaire and informed consent was obtained from each participant. Pregnant women who were unsure of their last menstrual period and did not have early ultrasound scan or did not consent to participate in the study were excluded from the study. Early antenatal booking was considered as initiation of care within the first 14 weeks in this study while initiation of care after this period was considered as late booking.

The pretested structured questionnaires were administered to the consented pregnant women by the nursing staff of the booking clinic after the first author had spoken to the women about the study. The questionnaires were self-administered, and clarifications were provided when requested. The questionnaire elicited information about their sociodemographic characteristic of the women such as age, education, parity, religion, ethnicity, occupation, family setting, gestational age at booking, and husband's education and occupation in the first section while reasons for booking at this particular gestational age, decision to book at this centre, knowledge of the right timing of booking, and when pregnant women would require medical treatment were the main focus in the second section of the questionnaire. The second section also elicited information about whether complications in previous pregnancies affected the time of initiation of care in index pregnancy and if they received counseling for early booking in their last pregnancies.

Data collected were entered into Statistical Software for Social Sciences (SPSS) version 17 (SPSS® Inc., Chicago, IL, USA) for analysis. Variables were presented in frequency and average in means (standard deviation). Tests of

significance of differences were done at $P < 0.05$ using Student's *t*-test for continuous variables and Chi-square test for categorical and discrete variables. Logistic regression analysis was performed to determine the significant variables affecting the timing of booking.

Ethical approval was obtained from the Ethics and Research Committee of EKSUTH, Ado-Ekiti, and verbal consent was obtained from the women who participated in the study having duly explained to them the objectives of the study. The questionnaires were made anonymous and the women were at liberty to withdraw or refrain from the study without any consequence.

Results

A total of 530 questionnaires were administered to consecutive pregnant women who came to booking clinic within the study period, and 512 (96.6%) questionnaires were correctly filled and analyzed. The age range of the respondents was 17–42 years with a mean age of 30.8 ± 4.14 years. About 22.7% (116) of the women booked early (within 14 weeks of gestation) while 77.3% (396) booked late (after 14 weeks of gestation). The gestational age at booking ranged between 6 and 39 weeks with a mean gestational age at booking of 21.09 ± 6.98 weeks.

Table 1 shows that majority (60.4%) of the respondents were in the age range 30–39 years. Early booking was most common among women within 20–29 years with 28.6% while late booking was predominant among the teenagers (<19 years) which was 100%. Greater proportions (99%) of the respondents were married, and 77.1% of them were also found to initiate antenatal care late. All (100%) the single respondents booked late in this pregnancy. Christianity is the dominant religion in this study accounting for 93.4%, and late booking was associated with all the religion; however, more Christian women (23%) registered early. Most of the respondents (83.6%) had tertiary education while late booking was more common in women with only primary education. However, there was no significant association between level of education and timing of antenatal care initiation, $P = 0.407$. Majority (78.5%) of the respondents were employed in one job or the other, and 25.1% of them booked early while 86.1% of the unemployed respondents initiated antenatal care late. Majority (37.5%) of the women were nulliparous, and they also accounted for a high proportion (30.2%) of early antenatal booking while the higher parities (1–4; ≥ 5) accounted for most late bookings, 81.8% and 100%, respectively.

However, of the sociodemographic characteristics, age, parity, and occupation significantly influenced the time of antenatal care initiation with P values of 0.010, 0.006, and 0.011, respectively.

Table 2 shows that about 20.5% of the respondents had complications in previous pregnancies and majority (81.0%) of them booked late for antenatal care while the remaining 19% booked early for antenatal care. Of the women that

Table 1: Sociodemographic characteristics of the pregnant women in this study

Variables	n=512 (100%)	Early	Late	χ^2	df	P
Age						
≤19	3 (5.0)	0 (0)	3 (100)	11.355	3	0.010*
20-29	180 (35.2)	55 (30.6)	125 (69.4)			
30-39	309 (60.4)	59 (19.1)	250 (80.9)			
≥40	20 (3.9)	2 (10.0)	18 (90.0)			
Parity						
0	192 (37.5)	58 (30.2)	134 (69.8)	10.376	2	0.006*
1-4	318 (62.1)	58 (18.2)	260 (81.8)			
≥5	2 (0.4)	0 (0)	2 (0.4)			
Marital status						
Married	507 (99.0)	116 (22.9)	391 (77.1)	1.479	1	0.224
Single	5 (1.0)	0 (0)	5 (100)			
Tribe						
Yoruba	462 (90.6)	102 (22.0)	362 (78.0)	3.929	2	0.140
Igbo	38 (7.4)	13 (34.2)	25 (65.8)			
Hausa	10 (2.0)	1 (10.0)	9 (90.0)			
Religion						
Christianity	463 (90.4)	110 (23.0)	368 (77.0)	0.521	2	0.470
Muslim	34 (6.6)	6 (17.6)	28 (82.4)			
Traditional	15 (3.0)	3 (20.0)	12 (80.0)			
Education of women						
Primary	7 (1.4)	2 (28.6)	5 (71.4)	1.821	2	0.402
Secondary	77 (15.0)	13 (16.9)	64 (83.1)			
Tertiary	428 (83.6)	101 (23.6)	327 (76.4)			
Education of husband						
Primary	7 (1.4)	2 (28.6)	5 (71.4)	0.500	2	0.779
Secondary	66 (12.9)	13 (19.7)	53 (80.3)			
Tertiary	439 (85.9)	101 (23.0)	338 (77.0)			
Occupation of women						
Employed	402 (78.5)	101 (25.1)	301 (74.9)	6.505	1	0.011*
Unemployed	110 (21.5)	15 (13.6)	95 (86.4)			

Table 2: The events of previous pregnancy and its influence on the time of antenatal care initiation

Variable	Total	Early	Late	χ^2	P
Complication in previous pregnancy					
Yes	105 (20.5)	20 (19)	85 (81)	0.982	0.322
No	407 (79.5)	96 (23.6)	311 (76.4)		
Complications in previous pregnancy and booking					
Yes	109 (21.3)	20 (18.3)	89 (81.7)	0.226	1.466
No	403 (78.7)	96 (23.8)	307 (76.2)		
Counseling on early booking					
Yes	240 (46.9)	42 (17.5)	198 (82.5)	6.854	0.009*
No	272 (53.1)	74 (27.2)	198 (72.8)		

*statistically significant

Table 3: Logistic regression analysis with gestational age at booking as dependent variable

Variables	Frequency	AOR (95% CI for AOR)	P
Age of woman (years)			
≤19	3	0.008 (0.000)	0.999
20-29	180	0.242 (0.053-1.096)	0.066
30-39	309	1	
≥40	20	0.373 (0.083-1.683)	0.200
Previous delivery			
No	192	1	0.142
Yes	320	0.661 (0.380-1.149)	
Occupation			
Employed	402	1	0.002*
Unemployed	110	0.388 (0.212-0.710)	
Counseling on early booking			
Yes counseling	240	1	0.182
No counseling	272	1.432 (0.835-2.457)	

*Statistically significant. AOR=Adjusted odd ratio; CI=Confidence interval

Table 4: Suggested ideal gestational age for antenatal care initiation and treatment requirement by the respondents

Variables	Ideal age for booking		When treatment would be required	
	n	Percentage	n	Percentage
Gestational age				
First trimester	236	46.1	102	19.9
Second trimester	161	31.4	64	12.5
Third trimester	14	2.7	25	4.9
Labor and delivery	0	0	12	2.3
Anytime	32	10.2	264	51.6
I do not know	49	9.6	45	8.8

had complications in previous pregnancy, only 21.3% of them accessed antenatal care in the index pregnancy due to the complications and 81.7% of the women still initiated antenatal care late. Less than half (46.9%) of the respondents received counseling for early booking in their last pregnancy, but only 17.5% of them actually had early booking in this index pregnancy.

Counseling on early booking was significantly associated with time of initiation of antenatal care ($P = 0.009$) while complications in previous pregnancy did not impact significantly on the time of booking in this study ($P = 0.226$).

Table 3 shows that only the employment status of the respondents was the significant predictor of early initiation of antenatal care among them on logistic regression.

Table 4 shows that majority (46.1%) of the respondents suggested correctly that the 1st trimester was the ideal age to initiate antenatal care while 31.4% and 2.7% of them suggested the 2nd and 3rd trimesters, respectively. The 1st and 2nd trimesters were identified as the period when pregnant

Table 5: Reasons for initiation of antenatal care at this gestational age

Reasons for booking now	Frequency	Percentage
Early monitoring of my pregnancy	261	50.9
Nothing happened to my pregnancy	95	18.5
When it was convenient for me	77	15.0
This was the appropriate time for me	48	9.3
I have registered in another hospital before	28	5.4
Others*	53	10.4

*Others include=My baby has developed, when I have money, I was weak initially, etc.; Multiple responses were allowed

Table 6: Decision to book in Ekiti State University Teaching Hospital and reasons for choosing Ekiti State University Teaching Hospital

Variables	Frequency (n=512)	Percentage
Who took the decision to book in EKSUTH		
Both of us	377	73.6
Husband	61	11.9
Referred	55	10.8
Myself	13	2.5
In-laws	4	0.8
Friends	2	0.4
Reason for choosing to book in EKSUTH		
For better care	369	72.1
Advised to do so	75	14.6
Because of my experience in previous pregnancy	68	13.3

EKSUTH=Ekiti State University Teaching Hospital

women would require treatment by 32.4% of the women while 51.6% of them identified that pregnant woman would require treatment anytime during the period of pregnancy.

Table 5 shows that more than half of the respondents (50.9%) gave early monitoring of their pregnancy as a reason for initiation of antenatal care while other reasons include when it was convenient for me, so that nothing happened to my pregnancy or this was the appropriate time.

Table 6 shows that the decision to register for antenatal care in this centre was jointly taken with the husband in 73.6% of the cases in this study while husband and the respondents took the decision in 11.9% and 2.5% of cases, respectively. About 72.1% (369) of the respondents chose to register in this center to receive better care while 14.6% and 13.3% did so based on advice given to them by people and the experience they had in previous pregnancies, respectively.

Discussion

The mean gestational age at initiation of antenatal care in this study was 21.1 weeks which was comparable to 21.8 weeks in Ibadan^[6] and 21.4 weeks in Sagamu; slightly

higher than 19.1 weeks in Makurdi^[16] and 20.3 weeks in Lagos^[14] but lower than 23.5 weeks in Sokoto,^[15] 23.7 weeks in Benin,^[7] and 24.3 weeks in Abakaliki.^[3] This study showed that about a quarter of the respondents booked within the WHO recommended time while the rest booked late. The late booking of 77.3% found is lower than 82.0% in Lagos^[14] and 85.9% in Ibadan^[6] but higher than 71.6% in Makurdi.^[16] It is still quite interesting to note that despite the documented benefits of early antenatal care initiation and what is obtained in developed and few developing countries, late booking is still predominant in our environment as highlighted by the study. Our study showed primigravid women were more likely to book early, and this is in congruence with previous studies by Gharoro and Igbafe,^[12] Nwagha *et al.*^[17] and Okunlola *et al.*^[6] Furthermore, the level of education significantly affects timing of booking which was similarly reported by Adekanle and Isawunmi^[14] and Ekele and Audu^[15] where higher education level and good family income as reflected by the good occupation of the women favored early booking. However, this was at variance with findings of Onoh *et al.*^[3] who reported that all the sociodemographic characteristics did not have any significant influence on the timing of antenatal care initiation.

The higher the parity, the more likely pregnant women may feel experienced enough as not to initiate antenatal care early which is actually contrary to the fact that they are likely to be at a higher risk of complications associated with high parity and advanced maternal age. Higher education level and occupation of the women encouraged early antenatal care initiation because they are well informed of the benefits of antenatal care and are financially empowered since majority of them have good source of income. This financial empowerment makes them less dependent on their husbands for money and improves their health seeking behavior. The decision to initiate care in this centre was jointly taken by the husbands and wives in three-quarter of the respondents in this study. This was in contrast to study by Gharoro and Igbafe^[12] where the decision to initiate care was taken majorly by the husband. This is rather encouraging as men are becoming involved in reproductive health issues as it concerns their spouses.

Complications experienced and counseling received in previous pregnancies did not significantly influence the timing of antenatal care initiation as majority of the respondents who were influenced by these reasons to register in this center still did so late. This was contrary to the expectation that these reasons should have positively influenced their early booking, so it was possible that these women were not aware of the recurrent nature of these complications, or they were just not compliant with medical advice, a phenomenon that is not uncommon in our society. There appears to be discordance between the knowledge of the respondents about the ideal time for antenatal care

initiation and the actual practice in most of them. This probably showed that they were not convinced of the benefits of early booking since majority of them correctly identified the first trimester as the ideal gestational age to initiate care even though less than a quarter actually registered early according to the WHO recommendation.

This is further corroborated by the fact that even among those who received counseling, majority still booked late. This clearly demonstrates that the information and counseling received by these women, especially those of higher parities have not resulted in behavioral changes and modifications. These findings were consistent with previous findings reported by Okunlola *et al.*,^[6] Ebeigbe and Igberase,^[7] Adeyemi *et al.*,^[2] and Onoh *et al.*^[3] They suggested that good health education would only produce optimum health care utilization if the sociocultural and religious determinants of health seeking behaviors are modified.

Many of the respondents in this study gave the reasons for initiating antenatal care in this particular health institution as early monitoring of their pregnancy and such that nothing would happen to the pregnancy even though most of them did so late. Initiation of antenatal care at a time convenient for them, when the baby has developed well, when I am no longer weak and when they have the money also encouraged late booking. This reflects the inadequacy of the knowledge and information they have with respect to antenatal care. A lot of women still view antenatal care as curative rather than preventive contrary to the goals of antenatal care and that no treatment is given to them when they initiate antenatal care early Onoh *et al.*^[3] and Ebeigbe and Igberase.^[7] This follows the vicious cycle of ignorance, poverty, and disease proposed by Adekanle and Isawunmi.^[14]

This study has shown that contrary to what obtains in the developed countries that the timing of antenatal care initiation has not changed over the years in this part of the world. Therefore, women in this part of the country should be adequately educated and informed about the concept of early antenatal registration and its benefit since no single pregnancy is the same as the other and unexpected adverse outcome may occur despite previous uncomplicated pregnancies. This should be done during the antenatal clinics and further reiterated at discharge after delivery. The mass media can also be employed using radio and television jingles specifically on benefits of early antenatal registration and utilization of antenatal care. The government should introduce the concept of free maternal and child care services which would include antenatal care services into the health care delivery as this would encourage early and more utilization of these services. Incentives may be given to pregnant women who register while discounts on fees for service may also be instituted in the hospital for those who book early to encourage early registration within the

first 3 months of pregnancy. Women in the reproductive age should be empowered so that they can be financially independent. This would allow the women access maternal health services without hindrances and encourage early utilization of the services.

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Conflicts of interest

There are no conflicts of interest.

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