Predictors of early initiation of antenatal care at an emerging teaching hospital in southwestern Nigeria

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ABSTRACT:
Background: Antenatal care (ANC) is a preventive and stabilizing arm of the comprehensive maternity care, linking preconception care with intrapartum and postpartum care. It is one of the important prongs of safe motherhood initiatives. Despite the proven benefits of early booking, significant number of pregnant women in Nigeria still book late. **Objective**: The study sought to determine the prevalence and predictors of early initiation of ANC at Ekiti State University Teaching Hospital (EKSUTH), Ekiti State, Nigeria. **Materials and Methods**: This study was an observational and prospective study carried out in Ekiti State University Teaching Hospital (EKSUTH), Ado Ekiti in southwestern Nigeria from 1st January 2018 to 31st December 2018. Data collected were entered and analysed using Statistical Software for Social Sciences version 20 (SPSS 20, IBM, Chicago). Continuous variables were analysed using mean and standard deviation while categorical variables were presented in frequency and percentages. Tests of significance of differences were done at P value of less than 0.05 using Student's t-test for continuous variables and Chi-square test for categorical and discrete variables and with confidence interval set at 95%. **Results**: The total number of booked patients recorded over the study period was 1,655; out of which 231 booked within 14weeks of getting pregnant, giving a prevalence of early initiation of ANC of 14%. Previous miscarriages, gestational diabetes mellitus, health insurance and maternal educational status were statistically significant predictors of early initiation of antenatal booking. **Conclusion**: There is a pressing need to intensify efforts on education and advocacy on the need for early initiation of antenatal booking. This should cut across social gatherings like community meetings, churches, mosques, antenatal classes and various arms of social media.

Keywords: Predictors, Initiation of antenatal care, Teaching hospital, Southwest, Nigeria

INTRODUCTION:
Antenatal care (ANC) is a preventive and stabilizing arm of the comprehensive maternity care, linking preconception care with intrapartum and postpartum care (1,2) . It is one of the important prongs of safe motherhood initiatives(3). Antenatal care has been described as a specialized form of care given to a woman during pregnancy to help her attain and maintain healthy condition throughout the pregnancy and improve her chances of having a healthy baby delivered to her at term(4). The goals of ANC are to prevent pregnancy-related complications arising from medical, surgical and social conditions predating the pregnancy especially those that are poorly managed or not detected before engaging on the voyage of pregnancy; treat emerging problems in the mother and her fetus and prepare for labour and delivery and equip the expectant parents and their baby for post-delivery health promotion strategies like child rearing, family planning, immunization and so on(5). Therefore, with effective ANC, maternal and perinatal morbidity and mortality are appreciably reduced(4). Studies have also shown that feto-maternal outcomes could be predicted by the level of utilization of ANC (2,6,7). The first ANC visit, called booking visit, ushers the pregnant woman into ANC programmes. By the World Health

Organization's recommendation(8), this first visit should be initiated before or at 12weeks, under the newly introduced Focused Antenatal Care (FAC); and before or at 14weeks under the traditional form of ANC, which is the more popular and acceptable option in Nigerian ANC picture. Therefore, by the WHO's definition, early booking is one that occurs within the first 14weeks of gestation; with late booking being the one happening after 14weeks. Despite the proven benefits of early booking, significant number of pregnant women in Nigeria still book late(9). Prevalence of late booking varies according to ethnicity and region in Nigeria; ranging from 70.9% to 86%(9–11). Studies have shown the mean gestational ages at booking in Sokoto, Delta and Ibadan to be 23.55weeks, 24.30weeks and 23.55weeks respectively(12–14); the three areas are in different geo-political zones of Nigeria. Factors for late booking are not unconnected with poverty, ignorance, spousal influence, our socio-cultural lens that sees pregnancy as a natural and healthy state that should not be medicalized, over confidence on the part of multiparous patients whose previous pregnancies have been itch-free and uneventful, busy work schedule, accessibility to health facility etc(7,10,14). The study sought to determine the predictors of early initiation of ANC at Ekiti State University Teaching Hospital (EKSUTH), Ekiti State, Nigeria. Anecdotal and published findings have shown that maternal and perinatal mortality ratios are relatively high in southwestern Nigeria and these are linked with late initiation of ANC. Although there have been studies exploring the area of initiation of ANC in the region, it has become imperative to re-explore the area as late booking has remained a strong factor implicated in the road to maternal and perinatal deaths especially in the developing countries (9,10).

MATERIAL AND METHODS:

The study was conducted at the department of Obstetrics and Gynaecology of Ekiti State University Teaching Hospital (EKSUTH), Ado-Ekiti, southwest, Nigeria. It was a prospective study carried out between January 1st to December 31st, 2018. The tertiary facility is the teaching hospital for the College of Medicine; the relatively young teaching hospital turned out its first set of medical graduands in July 2019. The tertiary health institution which primarily serves Ekiti State also serves the neighbouring states like Osun, Kogi, Kwara and Ondo. The teaching hospital acts as the principal referral center for private, primary and secondary health institutions around the environment. The hospital offers 24-hour emergency obstetric and gynaecological care as well as weekly antenatal and gynaecological clinics. A proforma was used to extract relevant information from a large comprehensive obstetric database (developed prospectively from parturients' case files) comprising around 90 items and more than 180 variables .The information comprised sociodemographic characteristics of parturients, obstetric parameters of the index pregnancy with the time of booking, prior obstetric and gynaecological information, the antepartum, intrapartum and postpartum events of the index pregnancy with observed problems and perinatal outcomes. To ensure completeness, the large obstetric database information was supported with pertinent extra pieces of information from parturients themselves and nurses' record sheets. While early booking refers to the one that occurs within the first 14 weeks of gestation, late booking is the one that occurs after 14 weeks. A community health officer trained as research assistant worked full-time for the collection of the large obstetric database information. The Ethics and Research Committee of the hospital granted the study approval. Version 20 of the Statistical Package for Social Sciences (SPSS) was used to analyse the data. The data were analysed using descriptive statistics, and the outcomes were presented as percentages and numbers. Tests of significance of differences were done at P value of less than 0.05 using Student's t-test for continuous variables and Chi-square test for categorical and discrete variables.

RESULTS:

The total number of booked patients recorded over the study period was 1,655; out of which 231 booked within 14weeks of getting pregnant, giving a prevalence of early initiation of ANC of 14%.

Table 1: comparison of baseline socio-demographic characteristics of the participants

Characteristics	Early initiation of ANC	Late initiation of ANC	X^2	P value
Age (mean $\pm$ SD)	30.46$\pm$4. 47	29.88 $\pm$ 4.69	0.57 $\pm$ 0.33	0. 08
Parity (mean $\pm$ SD)	0. 86 $\pm$ 4.20	1.04 $\pm$ 6.17	3.34 $\pm$ 4.02	0.41
Average family income (mean	$921 $\pm$ $ 697	$697 $\pm$ 616	$206 $\pm$ 77	0.008

± SD)				
Ethnic group: Yoruba	204 (883)	1281 (90)	31.42	0.39
o	10 (4.3)	70 (4.9)		
Hausa	4 (0.02)	1 (0.10)		
others	13 (0.06)	72 (5.1)		
Marital status: married	129 (55.8)	1369 (960)	12.18	0.003
Single	102 (44.2)	55 (4.1)		
Educational maternal status: none	0 (0)	0 28 (2.0)	31.30	<0.001
Primary	1 (0.4)	35 (2.4)		
Secondary	26 (11.3)	317 (22.3)		
Tertiary	204 (88.3)	1044 (73.3)		
Health insurance	9 (27.3)	24 (72.7)	4.97	0.02
out of pocket	222 (13.7)	1400 (86.3)		

Table 1shows the comparison of baseline socio-demographic characteristics of the participants. While the mean age of patients that booked early was 30.46 ± 4.47; those for late booking was 09.88 ± 4.69. There were significant associations between average family income (P = 0.008); marital status (P = 0.003); maternal educational status (P < 0.001), health insurance status (P = 0.002); and initiation of ANC. Early booking was also more common among married people, those that had tertiary education and those on health insurance scheme.

Table 2: Comparison of previous obstetric and medical challenges

Characteristics	Early initiation	Late initiation	X^2	P value
Previous CD: Yes	36 (16.3)	185 (83.7)	5.71	0.13
No	195 (13,8)	1239(86.4)		
Previous stillbirth or END	15 (19.5)	62.(80.5)	6.01	0.11
	216 (13.7)	1362 (86.3)		
Previous miscarriage: Yes	3.8 (19.4)	158 (80.6)	9.01	00.1
No	193 (13.4)	1266 (86.6)		
Previous Hypertension: Yes	10 (15.4)	55 (84.6)	3.98	0.14
Disorder negative: No	221 (13.9)	1369 (86.1)		
Previous GDM: Yes	3 (75)	1 (25)	18.63	0.001
No	228 (13.8)	1423 (86.2)		
Previous medical: Yes	18 (50)	18 (50)	8.24	0.02
Disorder in pregnancy: No	213(13.2)	1406 (86.8)		
IVF(………….): Yes	2 (40)	3 (60)	7.07	0.13
Pregnancy: No	229(80)	14(20)		
Previous : Yes	5 (16.7)	25 (83.3)	4.28	0.23
Infertility: No				

Table 2 shows comparison of previous obstetric and medical challenges. Previous miscarriage had a significant association (P = 0.01) with initiation of booking, with early initiation more common (19.4%) in people with a previous miscarriage. Previous history of gestational diabetes (GDM) had a statistically significant association (P = 0.001) with initiation of booking; with people having previous history of GDM (75%) initiating more early booking than people with a negative history.

Table 3: Predictors of early initiation of antenatal care

Variable	Odds ratio	95% C I	P value
Average family income	1.53	1.37 – 6.45	0.1
Marital status	1.28	0.72 – 2.86	0.83
Educational maternal status:			
none	Ref	Ref.	Ref.
Primary	1.11	044 – 2.27	0.99
Secondary	1.58	0.20 – 9.11	99
Tertiary	3.79	2. 82 – 9.13	0.01
Health insurance	1.42	1.19 – 1.92	0.03
Previous miscarriage	1.26	1.44 – 1.95	0.01
Previous GDM	1.04	1.05 – 1.52	0.01
Previous medical disorder	1.69	1.16 – 3.31	0.1

Table 3 shows predictors of early initiation of antenatal care. Patients that had tertiary education had a statistically significant association with early initiation of ANC (95% CI: 2.82-9.13; OR: 3.79; P value:0.01). Health insurance (95% CI: 1.19-1.92; OR: 1.42; P value:0.03), previous miscarriage (95% CI: 1.44-1.95; OR: 1.26; P value:0.01) and previous gestational diabetes mellitus (95%CI:1.05-1.52; OR:1.69; P value:0.01) were also good predictors of early initiation of ANC.

DISCUSSION:

The prevalence of early initiation of ANC booking in this study was 14% which was lower than the value recorded (22.7%) by Aduloju et al, who conducted a similar study at the same centre about 4 years earlier(7) . The two studies were conducted under different democratic governments in the state. While Aduloju et al's study was conducted under economically buoyant regime in which people in the state had a good purchasing power with ease of settling healthcare bills, our study was conducted during a more harsh economic condition during which patients' turnout in the hospital was very low. Thus, the wide disparity in prevalence was probably not unconnected with economic meltdown and deepening poverty level. This study also recorded a prevalence of 86% for late initiation of booking. This was a bit higher than what were recorded in Lagos (82%)(9) and Ibadan (85.9%)(12) and much higher than value gotten from Makurdi (71.6%)(15). These disparities could still be as a result of the differing economic strength as the highlighted 3 centres are well known economically strong and business- oriented centres in the country. In addition, the level of education of the participants showed a statistically significant relationship with

timing of booking. This finding is in consonance with what was reported by Adeleke and Isawunmi(9). This was, however, at variance with what Ono et al reported in which sociodemographic factors did not have any relationship with booking timing(16). Higher education enables a woman to have deeper knowledge and to be better informed about implication and dangers of late booking. Higher education could also open doors of better economic opportunities and purchasing power for pregnant women, resulting in less spousal influence in taking decisions that can affect health negatively. In this study, being on health insurance was a good predictor of early initiation of booking. Therefore, the appreciable economic support and subsidy enjoyed under health insurance scheme could be an impetus for early booking as the stress of having to pay out-of-pocket is appreciably removed. It is interesting to know that Aduloju et al's study and other available studies on factors influencing initiation of booking did not consider respondents' health insurance status, which is essentially an important contemporary issue in health financing especially in accessing quality maternity care(17). Previous miscarriage and gestational diabetes mellitus were good predictors of early initiation of antenatal booking

in this study. Fear of repeat miscarriage could make a counselled pregnant woman avail herself of the opportunity of booking early. In the same vein, a properly counselled woman with a previous history of gestational diabetes mellitus is likely to initiate antenatal booking early in order to prevent complications and adverse outcomes. However, previous medical complications did not significantly influence the timing of booking in Aduloju et al's study(7)

CONCLUSION:

This study demonstrated low prevalence of early initiation of antenatal booking and that previous miscarriages, gestational diabetes mellitus, health insurance and maternal educational status were good predictors of early initiation of booking. There is, therefore, a pressing need to intensify efforts on education and advocacy on the need for early initiation of antenatal booking. This should cut across social gatherings like community meetings, churches, mosques, antenatal classes, various arms of social media, radio, television and so on.

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