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Obstetric outcomes of delayed initiation of antenatal care at a university teaching hospital in southwest Nigeria

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Abstract

Background: Antenatal care (ANC) is vital for the health of both mother and fetus. Generally, it has been observed that lack of prenatal care or inadequate utilization of antenatal care culminates in adverse maternal outcomes including maternal mortality.

Objective: To compare the obstetric outcomes in pregnant women that commenced ANC in the third trimester with those that initiated ANC contacts early.

Materials and Methods: This was a prospective cohort study conducted on antenatal attendees that booked and delivered at the Department of Obstetrics and Gynaecology of Ekiti State University Teaching Hospital (EKSUTH), Ado-Ekiti, southwest Nigeria from 1st of January, 2015 to 31st December, 2015. Data gathered were analyzed using Statistical Package for Social Sciences (SPSS) version 20. Descriptive statistics were used to examine the data, with results expressed as numbers and percentages. Associations between maternal factors, obstetric outcomes and delayed commencement of ANC were examined by Pearson Chi-square. The significance levels were set at $p < 0.05$.

Results: During the study period, 1633 women received antenatal care and delivered in our centre. Out of these 1633 women, 547(33.5%) had delayed initiation of antenatal care. Women with pre-existing medical illnesses were likely not to experience delayed initiation of ANC ($X^2 = 8.31$ p value=0.02). Women who initiated antenatal care in the third trimester were more likely to develop preeclampsia ($X^2 = 7.86$ p value=0.02) and prelabour rupture of the fetal membranes ($X^2 = 11.59$, p value=0.003).

Conclusion: The proportion of women who delayed initiation of ANC was high and they may be predisposed to developing preeclampsia. There is, therefore, a pressing need to increase advocacy on the need for early booking for antenatal care.

Keywords: Obstetric outcomes, delayed antenatal care, Nigeria

Introduction

Antenatal care (ANC) is vital for the health of both mother and fetus^[1]. Generally, it has been observed that lack of prenatal care or inadequate utilization of antenatal care culminates in adverse maternal outcomes including maternal mortality^[2-4]. It has also been proposed that the early beginning of quality ANC and timely handling of pregnancy problems prevent maternal mortality^[2-6]. Although ANC may not be able to detect and avert obstetric emergencies, women who start antenatal care interactions early are more likely to deliver with a qualified birth attendant where emergencies can be recognised early and addressed appropriately^[7-9]. ANC also exposes women to health education on risk factors for bad obstetric outcomes and this has been connected with the use of health care facilities for delivery^[7,8].

World Health Organization (WHO)'s 2016 ANC Model proposed ANC model of a minimum of 8 contacts between the pregnant women and adolescents and health care providers^[6]. This recent model is favored over the Focused ANC with just four contacts because it has been demonstrated to prevent perinatal mortality and improve a mother's pregnancy experience^[6]. In addition, these perinatal deaths were found to be linked to higher stillbirths^[10]. In the WHO's 2016 ANC Model, a pregnant woman is booked to have one ANC contact in the first trimester, two ANC contacts in the second trimester and 5 ANC contacts in the third trimester. A woman who has delayed commencement of ANC will miss out on some of these critical encounters. She could have missed out on therapies like early ultrasound screening, administration of calcium and low dose aspirin for prevention of preeclampsia.

In 2017, WHO reported that 94% of all maternal deaths occurred in low-and middle-income countries, which is a reflection of inequalities in access to quality health care including ANC as these deaths were preventable [11, 12]. This WHO report also recognized Nigeria as a “high alert” country with a maternal death ratio of 917 per 100,000 live births [11, 12]. With these high maternal mortality rates, the ANC coverage in Nigeria is 56.8% [13]. In addition, 19% of pregnant women initiated ANC contact in the third trimester [13]. This suggests that delayed prenatal care is fairly common in Nigeria. However, the obstetric outcomes are yet to be described. We compared the obstetric outcomes in pregnant women that commenced ANC in the third trimester with those that initiated ANC contacts early.

Materials and Methods

This was a prospective cohort study conducted at the Department of Obstetrics and Gynaecology of Ekiti State University Teaching Hospital (EKSUTH), Ado-Ekiti, southwest Nigeria from 1st of January, 2015 to 31st December, 2015. The tertiary facility is the Teaching Hospital for the College of Medicine, Ekiti State University, Ado-Ekiti, Nigeria. The teaching hospital acts as the principal referral centre for private, primary and secondary health institutions in the state and parts of the adjacent states including Osun, Kogi, Kwara and Ondo. The hospital conducts weekly antenatal clinics and 24-hour emergency obstetric and gynaecological services.

Feto-maternal, socio-demographic and clinical factors were retrieved from a large obstetric database utilizing a comprehensive proforma comprising over ninety items and encompassing over 180 variables. These variables comprised sociodemographic data, past obstetric and gynaecological information, index pregnancy’s antepartum, intrapartum and postpartum episodes with observed problems and perinatal outcomes. Delayed commencement of antenatal care was defined as initial contact with a health care provider in the third trimester-after 26 full weeks of pregnancy.

The information was acquired in real-time by a qualified research assistant and community health officer engaged full time for obstetric database collection. Approval for the study was acquired from the hospital’s Ethics and Research

Committee.

Data gathered were analyzed using Statistical Package for Social Sciences (SPSS) version 20. Descriptive statistics were used to examine the data, with results expressed as numbers and percentages. Associations between maternal factors, obstetric outcomes and delayed commencement of ANC were examined by Pearson Chi-square. The significance levels were set at $p < 0.05$.

Results

During the study period, 1633 women received antenatal care and delivered in our centre. Out of these 1633 women, 547(33.5%) had delayed initiation of antenatal care. Women who delayed initiation of ANC were significantly older and of higher parity compared with those that did not delay initiation of ANC (Table 1). There was no significant difference in the timing of initiation of ANC among the ethnic groups represented in this study (Table 1). Average family income also did not differ between the women who had delayed ANC and those who didn’t (Table 1). Surprisingly, women with health insurance were significantly more likely to experience delayed initiation of ANC (Table 1).

Table 2 showed the comparison of the past medical and obstetric history of these women. Women with pre-existing medical illnesses were likely not to experience delayed initiation of ANC ($X^2 = 8.31$ p value=0.02). Previous Caesarean delivery, previous gestational diabetes mellitus, previous hypertensive disorders, previous stillbirth, previous history of infertility did not affect the timing of initiation of ANC in this study (Table 2).

Women who initiated antenatal care in the third trimester were more likely to develop preeclampsia ($X^2 = 7.86$ p value=0.02) and prelabour rupture of the fetal membranes ($X^2 = 11.59$, p value=0.003). In addition, women that initiated ANC in the third trimester were more likely to deliver via spontaneous vaginal delivery. ($X^2 = 23.34$, p -value <0.001). There was no significant difference in anaemia in pregnancy, pregnancy-induced hypertension and intrauterine growth restriction. Neonatal outcomes did not differ with the timing of initiation of ANC (Table 3).

Table 1: Baseline characteristic of the participants

Characteristics	Delayed Initiation of Antenatal care N (%)	No delayed initiation of Antenatal care N (%)	X ²	P value
Age (mean ± SD)	30.67 ± 4.49	29.61 ± 4.70	0.17 ± 0.07	0.008*
Parity (mean± SD)	1.24 ± 1.26	1.06 ± 1.23	1.06 ± 1.24	<0.001*
Ethnic group				
Yoruba	502 (33.8)	983 (66.2)	2.96	0.18
Hausa	2(40)	3 (60)		
Igbo	27 (30)	63 (70)		
others	13 (37.14)	22 (62.86)		
Marital status				
Married	546 (34.13)	1054 (65.88)	23.6	<0.001*
Single	1 (3)	32 (97)		
Maternal education Level None/primary				
Secondary	30 (49.2)	31 (50.8)	27.06	<0.001*
Tertiary	87 (25.36)	256 (74.6)		
	430 (34.9)	799 (65.1)		
Health insurance				
Yes	20 (60.61)	13 (39.39)	11.11	0.001*
No	527 (32.9)	1073 (67.1)		
Average family income	\$782 ± 579	\$711 ± 681	\$70 ± 56	0.21

*Statistically significant

Table 2: Comparison of Obstetrics Characteristics of Participants

Characteristics	Delayed antenatal care	Not delayed antenatal care	X ²	P-value
Previous CD				
Yes	78 (35.3)	143 (64.7)	3.86	0.28
No	469 (33.2)	943(66.8)		
Previous stillbirth				
Yes	28 (36.4)	49 (63.6)	3.29	0.35
No	519 (33.4)	1035 (66.6)		
Pre-existing Medical disorder				
Yes	0 (0)	6 (100)	8.31	0.02*
No	547 (33.6)	1080 (66.4)		
Previous GDM				
Yes	1 (25)	3 (75)	2.66	0.62
No	546 (33.5)	1083 (66.5)		
Previous Hypertensive disorder in Pregnancy				
Yes	10 (21.7)	37 (78.3)	3.45	0.33
No	537 (31.7)	1049 (68.3)		
Previous Infertility				
Yes	10 (33.3)	20 (66.7)	1.52	0.68
No	537 (33.5)	1066 (66.5)		
Previous miscarriage				
Yes	62 (31.6)	134 (68.4)	1.37	0.50
No	485 (33.6)	952 (66.4)		

*Statistically significant

Table 3: Obstetrics Outcomes of Participants

Outcome	Delayed antenatal care N (%)	Not delayed antenatal care N (%)	X ²	P-value
PIH				
Yes	12 (2.2)	24 (2.2)	0.000	0.98
No	535 (97.8)	1062 (97.8)		
Preeclampsia				
Yes	27 (4.9)	4 (0.4)	7.86	0.02*
No	520 (95.1)	1082 (99.6)		
Anaemia in pregnancy				
Yes	1 (0.2)	2 (0.2)	0.75	0.69
No	546 (99.8)	1084 (99.8)		
PROM				
Yes	20 (3.7)	85 (7.8)	11.59	0.003*
No	527 (96.3)	1001 (92.2)		
Mode of delivery				
ELCS	70 (12.8)	94 (8.7)	23.34	<0.001*
EMCS	102 (18.6)	366 (33.7)		
SVD	375 (68.6)	626 (57.6)		
IUGR				
Yes	12 (2.2)	15 (1.4)	2.48	0.29
No	535 (97.8)	1071 (98.6)		
NICU Admission				
Yes	55 (10.1)	156 (14.4)	9.25	0.10
No	492 (89.9)	930(85.6)		
Stillbirth				
Yes	7 (1.4)	35 (3.2)	9.72	0.29
No	539 (98.6)	1051 (96.6)		

*Statistically significant.

IUGR-Intrauterine growth restriction

NICU-Neonatal Intensive Care Unit

Discussion

A third of the women delayed initiation of ANC till the third trimester in this research. They did not have any contact with health care providers throughout the first, second and third trimesters. A study done in Ethiopia indicated that more than half of women experienced their first ANC encounter in the second or first trimester [3]. According to 2018 Nigeria Demographic and Health Survey statistics, 19% of pregnant women initiated antenatal treatment in the third trimester [13]. This is comparable to findings in other African countries like

Ethiopia [3, 4]. A third of pregnant women having first contact with a health care provider in the third trimester is worrying. The question that easily comes to mind is whether these women know the essence of prenatal care. Knowledge of ANC has been connected significantly with the timing and frequency of ANC encounters during pregnancy [3, 8, 9]. The knowledge of these women on antenatal care should be examined.

Older women and those with higher parity were more likely to initiate ANC in the third trimester in this study population. The age and parity of these women were interwoven as a woman's

age increases as her parity increases. Primigravidae have been documented to initiate ANC earlier than others in previous studies^[9, 14-16]. Adekanle *et al.*, also found the older age group to be a significant factor for late initiation of ANC^[17]. The attitude of initiating ANC late among this group of women may be connected to a sense of being experienced in the process of pregnancy and childbirth; giving them confidence that they can make appropriate decisions during any pregnancy emergency. Married women are more likely to initiate ANC in the third trimester. Ideally, marriage is supposed to be a protective factor as the women tend to have partners and family support during pregnancy^[8]. Probably, women in this study were married but had poor spousal and family support.

In addition, women who were not literate were more likely to initiate ANC late which is in tandem with findings from other studies^[4, 7, 17]. This could be attributed to the fact that illiterate women are likely not to be knowledgeable about pregnancy risk factors and the importance of early initiation of ANC. Paradoxically, women with health insurance were more likely to initiate ANC in the third trimester. Many studies have demonstrated an association between the initiation of ANC and health insurance^[7, 18, 19]. A paradoxical association was demonstrated in this study as women with health insurance were likely to initiate ANC in third trimester. This may be due to delay in registration for health insurance by the participants.

Women with pre-existing medical illness were less likely to have delayed ANC probably because of consistent contact with other health care providers in other specialities. Although, previous poor obstetric history and pregnancy associated medical disorders did not exhibit any association with timing of initiation of ANC.

Preeclampsia was found to be more likely in participants that had delayed initiation of ANC compared to others. This difference can be attributed to preventive measures like administration of calcium and low dose aspirin that should have been instituted early in pregnancy. Other obstetric outcomes like anaemia, pregnancy induced hypertension, intrauterine restriction did not show any significant association. The effectiveness of antenatal care in prevention of maternal mortality and severe maternal morbidity has been a source of debate for many years^[20, 21]. However, with recent evidence, WHO has recommended some proven interventions to prevent certain morbidities during pregnancy and childbirth^[6]. Participants who delayed initiation of ANC were also more likely to have spontaneous vaginal delivery. This finding may be connected to the fact this group of women had previous vaginal delivery and were generally low risks compared with those that had early initiation of ANC.

The strength of this study was that it is a prospective study and all data were appropriately captured. However, the weakness of the study was that we did not explore factors like knowledge of the pregnant women about ANC. In conclusion, the proportion of women who delayed initiation of ANC was high and they may be predisposed to developing preeclampsia. There is, therefore, a pressing need to increase advocacy on the need for early booking for antenatal care.

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