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Gestational age at antenatal booking and delivery outcome.

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Summary

Antenatal care is a form of preventive medicine that pregnant women to allows maintain a state of good health throughout pregnancy, and to improve their chances of having a safe delivery of healthy infants. To achieve this aim, it is a widely held belief that pregnant women need to book early preferable before 14 weeks gestation. This is a retrospective study which reveals among others that late booking is still a common practice in the developing countries with average gestational age at booking being 23.59 (+/- 8.45) weeks, and only 14% of the women booked before the end of first trimester. Nulliparity or low parity was found to be the only factor that favoured early booking. However, gestational age at booking as a sole factor for predicting the pregnancy outcome was found to be insignificant as the outcome was same for early and late bookers. Unbooked pregnant women were found to be twice at risk of operative delivery, four times more likely to suffer delivery complications and twice likely to have low birthweight babies when compared to booked patients. In conclusion, findings of this study confirm the importance of antenatal care for better maternal and foetal outcome, however gestational age at booking as a sole factor is a poor predictor of pregnancy outcome. It is believed that this finding which is in tandem with the new WHO antenatal care protocol will generate divergent views among the health care givers and modify our current practice of Antenatal care to a more focused and effective risk assessment system.

Keywords: *Gestational, antenatal, delivery, outcome*

Résumé

Les soins prénatale est une forme de médecine préventive pour les femmes enceintes pour faire maintenir l'état de bonne santé durant toute la grossesse et d'augmenter leur chances d'avoir un accouchement sain. Pour atteindre ce but, c'est une croyance généralement que les femmes enceintes doivent s'enregistrer tôt, preferablemet avant 14 semaines de gestation. Cette l'étude rétrospective relève parmi d'autres les enregistrements tardifs sont commune dans les pays sous développés avec une moyenne d'age de gestation de 23.59+_8.45) semaines et seulement 14% des femmes enregistrés avant la fin du premier trimestre. La parité faible était faite comme étant le seul facteur qui favorisait l'enregistrement précoce. Cependant l'age gestationnel à l'enregistrement comme l'unique facteur pour prédire l'issue de la grossesse avait été trouvé important puisque l'issue était le même pour les enregistrements précoces ou tardifs. Les femmes enceintes non enregistrées avaient des doubles risques d'accouchement par opération, 4 fois plus de risque de complication de l'accouchement et 2 fois des risques d'avoir des bébés a poids faible à la naissance comparativement aux patients enregistrés. Les résultats de cette étude confirment l'importance des soins prénatals pour des résultats maternels et feotal meilleurs. Ces résultats sont en accord avec le protocole des soins de santé prénatale de l'OMS vont apportés des vues divergentes parmi les personnels de santé et modifiera les pratiques prénatales currents avec plus d'attention sur les risques effectifs.

Introduction

Antenatal care is a specialised pattern of care organised for pregnant women to enable them attain and maintain a good state of health throughout pregnancy, and to improve their chances of having safe delivery of healthy infants [1]. It is a form of preventive medicine dealing with presymptomatic diagnosis and treatment of general medical and pregnancy-related disorders. In addition to nutrition, health education and social medicine, it is key to modern obstetrics and an important pillar of the safe motherhood initiative [2]. Antenatal care traditionally consists of the booking clinic visit (first visit) and follow up visits. The usual recommendation is for the booking visit to be made in early pregnancy (prior to 14 weeks). During this stage of pregnancy, fairly accurate dating of the pregnancy is feasible, especially in women who are unsure of their last

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menstrual period. Also, certain baseline measurements done at this gestational age give a fair idea of the pre-pregnancy state of the patient. These include the blood pressure (BP), body mass index (BMI) and urinalysis among others. [2,3].

Despite intense health education on the benefit and numerous advantages of early booking for antenatal care, late booking is prevalent in most developing countries. Earlier studies from different regions of Nigeria, namely Ibadan, Benin and Sokoto put the average gestational age at antenatal booking at 21.8, 23.7 and 23.6 weeks respectively. Reasons alluded for late booking in these studies includes apparently problem—free pregnancy, financial constraints and no perceived benefit of early booking [4,5,6]. Although there should be no racial differences in the initiation of antenatal care, black women are still less likely to receive adequate care as measured by the Kessner index, or to have as many total antenatal care contacts as white women. [7].

The aim of this study is to determine the trends in antenatal booking practice and relationship between early antenatal booking and delivery outcome among pregnant women that delivered in University College Hospital Ibadan, Nigeria. The study hypothesis is that there is no difference in pregnancy and delivery outcome between women that booked for antenatal care early or late.

Materials and methods

This is a retrospective study of all patients that delivered in the University College Hospital, Ibadan between 1st January to 31st of December, 2005. 911 case files out of a total of 1297 delivered mothers were retrieved (Retrieval rate of 70%). A post hoc sample size calculation was done which gave a minimal value of 185 based on 14% prevalence of early booking [4] and study power of 80% (1-â) with a risk of type 2 error (á) of 5%. Information extracted from the case files included mother's age, parity, educational status, tribe, number of living children, booking status, gestational age at booking, previous obstetric complications, illness in pregnancy before and after booking, gestational age at delivery, mode of delivery, delivery complications, birth weight, Apgar score and sex of the baby. A 5minute Apgar score of equal or less than 6 was regarded as poor and more than 6 as good [8]. The data was entered and analyzed with the SPSS computer program Version 11. Frequency tables were generated for different characteristics and cross tabulation of gestational ages against observed factors were done .Observed differences were subjected to â² analysis

and the level of statistical significance was set at p < 0.05.

Ethical clearance was obtained from the University of Ibadan /University College Hospital, Ibadan Ethical Review Committee.

Result

Of 911 cases retrieved, 654 were booked patients. The age group 25-34 years formed the largest group (71.1%). 68% the of studied group were Christians while the Yoruba speaking women formed the major tribe in the study (86%). 57% of the group had tertiary education .The para 1-4 group of women were the majority of the study population accounting for 57.6%. A detail of their socio-demographic data is shown in table 1.

Table 1: Socio-demographic characteristics of the study group

Variables	Number	Percentage (%)
Age group		
15 - 24	71	10.8
25 - 34	465	71.1
35 - 44	118	18.1
Level of education		
No formal education	7	1
Primary	92	14
Secondary	183	28
Tertiary	372	57
Parity		
0	263	40.2
1-4	377	57.6
>5	14	2.2
Religion		
Christianity	445	68
Islam	209	32
Tribe		
Yoruba	562	86
Hausa/Fulani	13	2
Igbo	46	7
Others	33	5

Seventy-two percent of the studied group were booked at the University College hospital while the rest were referred on account of pregnancy and labour complications. Only about 14% of the booked population registered for antenatal care at/or before fourteen week gestational age.

Table 2 shows the influence of parity on gestational age at booking, this revealed that the nulliparous tend to book earlier than multiparous women. Other factors like previous pregnancy and birth complications, educational status of the patients

and their husbands had no significant influence on gestational age at booking.

Table 2: Influence of parity on gestational age at booking

Parity	< 14 weeks	> 14 weeks	Total
0	56 (21.37%)	206 (78.53%)	262 (100%)
1 - 4	37 (9.71%)	344 (90.29%)	381 (100%)
>4	0 (0.00%)	11 (100.00%)	11 (100%)

P < 0.0001 (statiscally significant)

Table 3 shows the association between gestational age at booking and mode delivery outcomes; no statistical difference was observed in any of delivery outcomes considered.

Table 3: Association between gestational age at booking and delivery outcomes

Delivery outcomes	<14 weeks	> 14 weeks	P value
Mode of delivery			
SVD	61 (65.6%)	340 (60.6%)	
CS (Elective)	12 (12.9%)	52 (9.3%)	
CS (Emergency)	17 (18.3%	150 (26.7%)	
Instrumental			0.4548
vaginal delivery	2 (2.2%0	12 (2.1%)	
Not indicated	1 (1.1%)	7 (1.3%)	
Delivery complications			
PPH	2 (2.2%)	6 (1.1%)	
Genital laceration	2 (2.2%)	19 (3.4%)	
IUFD	2 (2.2%)	9 (1.6%)	
Obstructed labour	1 (1.1%)	15 (2.7%)	0.9815
Cord prolapsed	0	2 (0.4%)	
Others	1 (1.1%)	2 (0.4%)	
None	85 (91.4%)	508 (90.6%)	
Apgarscore			
Poor	2 (2.2%)	26 (4.6%)	
Good	90 (96.8%)	530 (94.5%)	0.5423
Not indicated	1 (1.1%)	5 (0.9%)	
Birthweight (kg)			
< 1.5	5 (5.4%)	9 (1.6%)	
1.5 - 2.49	12 (12.9%)	54 (9.6%)	
2.5 - 3.99	71 (76.3%)	460 (82.0%)	0.1521
>4.0	4 (4.3%)	31 (5.5%)	
Not indicated	1 (1.1%)	7 (1.3%)	
Total	93 (100%)	561 (100%)	

Table 4 shows the association between booking status and delivery outcomes; all factors were found to be statistically significant. The rate of emergency Caesarean (CS) section, postpartum haemorrhage (PPH), obstructed labour and poor Apgar score at 5 minute of life were found to be 2.5, 15, 6 and 4 times respectively higher in the unbooked than booked patients.

Table 4: Association between booking status and delivery outcomes

Delivery outcomes	Booking status		
	Booked	Unbooked	P value
Mode of delivery			
SVD	401 (63.1%)	82 (31.9%)	
CS (Elective)	64 (9.8%)	7 (2.7%)	
CS (Emergency)	167 (25.5%)	155 (60.3%)	
Instrumental			0.001
vaginal delivery	14 (2.1%)	7 (2.7%)	
Not indicated	8 (1.2%)	6 (2.3%)	
Delivery complications			
PPH	8 (1.2%)	40 (15.6%)	
Genital laceration	21 (3.2%)	3 (1.2%)	
IUFD	11 (1.7%)	38 (14.8%)	
Obstructed labour	16 (2.5%)	45 (17.5%)	0.001
Cord prolapsed	2 (0.31%)	5 (1.9%)	
Others	3 (0.5%)	-	
None	593 (90.7%)	126 (49.0%)	
Apgarscore			
Poor	28 (4.3%)	44 (17.1%)	
Good	620 (94.8%)	184 (71.6%)	0.001
Not indicated	6 (0.9%)	29 (11.3%)	
Birthweight (kg)			
< 1.5	14 (2.1%)	21 (8.2%)	
1.5 - 2.49	66 (10.1%)	48 (18.7%)	
2.5 - 3.99	531 (81.2%)	163 (63.4%)	0.002
>4.0	35 (5.4%)	12 (4.7%)	
Not indicated	8 (1.2%)	13 (5.1%)	
Total	654 (100%)	257 (100%)	

Discussion

The findings of this study are in tandem with earlier studies [4,5,6] confirming the practice of late antenatal booking in developing countries; the average gestational age at booking in this study being 23.59 (+/-8.45) weeks. This practice is however not in line with what obtains in developed countries and a few other countries. For example the average age at booking in Riyadh Hospital Saudi Arabia was 13weeks [9]. When considering the reasons usually for late booking among the study population, the only one consistent factor that influenced early registration for antenatal booking is nulliparity. This is similar to observations in earlier reports [4,5,6,10]. Other confounding factors like age, educational status, husband economic status, religion or tribe and previous

complications from child birth were found to have little or no influence on gestational age at booking.

With regards to various pregnancy outcome measures in this study, (for example like mode of delivery - spontaneous vertex delivery), or caesarean (elective / emergency), assisted vaginal delivery there was it was found that, no significant difference in the outcome of delivery between late and early bookers. Also, when considering delivery complications such as primary postpartum haemorrhage, obstructed labour, cord prolapse, genital laceration and intrauterine foetal death there was no differences observed between early and late bookers. Likewise, regarding the baby's clinical outcome such as Apgar score at 5minutes of life and birthweight, there was no difference observed in the two groups.

However, if one considers the pregnancy outcome unbooked pregnant women with booked patients, it was found that over half of them had emergency Caesarean delivery when compared with one in four booked pregnant women. Delivery complications like obstructed labour, primary postpartum haemorrhage, genital laceration, cord prolapse and intrauterine foetal death, poor and Apgar score occurred 3-4 times more in unbooked than booked parturient women. Similar results were obtained by Aboyeji and Fasubaa [11,12] who reported 66% and 80.4% of unbooked patients had delivery complications in two different tertiary hospitals in Southwest Nigeria. It was also found from this study that unbooked patients were 2 times more likely to have low birthweight (LBW) babies and 4 times more likely to have very low birthweight (VLBW) babies compared with booked patients.

From the above findings this study confirms the importance of antenatal care. It reaffirms that patients who receive antenatal care generally tend to have better pregnancy outcomes than their unbooked counterparts, however the gestational age at antenatal booking (whether before 14 weeks or later) is by itself not a good predictor of pregnancy outcome. In light of result of this study one may recommend the new WHO antenatal care model for low-risk pregnant women in the developing countries like Nigeria. Early booking on the other hand should be encouraged among the few pregnant women with pre-existing medical conditions that could be picked early enough so that and intervention could be offered. It is recommended that further multicenter research is required on this topic and there is the obvious need for in depth analysis of the various findings.

References

1. Omigbodun AO. Preconception and antenatal care. In: Kwawukume EY, Emuveyan EE, editors. Comprehensive obstetrics in the Tropics. Accra: Asante and Hittscher. 2002; Ch 2. 7-14
2. World Health Organization. WHO antenatal care randomized trial: manual for the implementation of the new model. WHO Programme to map best reproductive practices. Geneva: World Health Organization 2002.
3. Royal College of Obstetricians and Gynaecologists (RCOG). Clinical Guideline. Antenatal care routine care for the healthy pregnant woman. London: RCOG Press 20-03.
4. Okunlola MA, Ayinde OA, Owonikoko KM, Omigbodun AO. Factors influencing gestational age at antenatal booking at the University College Hospital, Ibadan, Nigeria. Journal of obstetrics and Gynaecology 2006; 26(3): 195-197.
5. Gharoro EP, Igbafe AA. Antenatal care: some characteristics of the booking visit in a major teaching hospital in the developing world. Medical Science Monitor. 2000; 6:519-522.
6. Ekele BA, Audu LR. Gestational age at first antenatal clinic booking in Sokoto, Northern Nigeria. African Journal of Medicine and Medical Science. 1998; 27: 161-163.
7. LaVeist T A, Keith V M, and Gutierrez M L. Black/white differences in prenatal care utilization: an assessment of predisposing and enabling factors. Health Serv Res. 1995; April; 30(1 Pt 1): 43–58.
8. Carla Janzen and Williiam L. Gill. Essentials of Normal Newborn Assessment and Care. Current Obstetric and Gynecology Diagnosis and Treatment. 9th Edition 2003;. Chapter 11 page 222-233.
9. Al-shammari SA, Khoja T, Jarallah JS. The pattern of antenatal visit with emphasis on gestational age at booking in Riyadh Health Centers. Journal of Reproductive and Social Health. 1994; 114:62-66.
10. Baldo MH, al-Mazrou YY, Forag MK, Aziz KM, Khan MU. Antenatal care, attitudes and practices. Journal of Tropical Pediatrics. 1995; 41(Suppl 1):21-29.
11. Aboyeji A.P. Trends in Maternity Mortality in Ilorin, Nigeria. Tropical Journal of Obstetrics and Gynaecology. 1988; vol. 15, 1, 15-20.

12. Fasubaa OB, Ogunniyi SO, Ezechi OC. Maternal Mortality in Obafemi Awolowo University Teaching Hospital Complex, Ile-Ife. A comparison of maternal death in youth and older women. Nigeria Journal of Medicine. 1999; Vol 8(4). Pp 147-151.