Gestational age at booking for Antenatal Care and the pregnancy outcome at Faith Alive Hospital, Jos, Nigeria

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Abstract

Background: Early initiation of antenatal care is believed to improve maternal and foetal outcome. We sought to ascertain gestational age at booking and the outcome of these pregnancies at a faith based hospital in northern Nigeria.
Methods: A retrospective descriptive study of patients who booked for antenatal care at the Faith Alive Hospital, Jos, Nigeria between 1st January, 2010 to 31st December, 2017 was done. Information regarding demographics, gestational age at booking and outcome of these pregnancies were analyzed.
Result: *D*uring the study period, 3739 women registered for antenatal care. Majority of women were 20-24years (n= 1252 , 33.5 %) while The mean age was 28 ± 4years Of these women, 96.2% were married , 75.2% were Christians, 43.8% had secondary level of education and 41.2% were traders. Furthermore, 23.2% of the clients booked in the 1st trimester in 2010, decreased to 17.3% in 2012 but progressively increased to 35.2% , 40.2% and 53.4% in 2014, 2015 and 2017 respectively. There was a significant statistical association between parity, marital status and educational status with late booking for antenatal care. Clients who booked late for antenatal care had poorer neonatal outcomes (low birth weight, still births and birth asphyxia) compared to those who booked early.
Conclusion: Late initiation of antenatal care is common in our environment and associated with poorer neonatal outcomes. Nonetheless, a progressive improvement in early bookings was noticed with improved pregnancy outcome.

Key Words: Gestational age, booking, pregnancy outcome, Faith Alive, Jos

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Introduction

Antenatal care concerned mostly with prevention, early diagnosis and treatment of general medical and pregnancy associated disorders now holds the keys to modern obstetrics.[1,2] As part of reproductive healthcare, antenatal care(ANC) presents a unique and lifesaving opportunity for health promotion, disease prevention, early diagnosis and treatment of illnesses in pregnancy using evidence-based practices.[1,2] The high maternal and perinatal mortality rates in Nigeria continue to be issues of concern as they are indicators of the poor state of health services with the implication that relevant health related development goals may not be achieved in the country.[1] Maternal complications and poor perinatal outcome are associated with non-utilization of antenatal and delivery care services and poor socio-economic conditions of the patients, with poorer outcomes in unbooked than booked patients.[2-5] Adequate antenatal care and skilled obstetric assistance during delivery are important strategies that significantly reduce maternal mortality and morbidity. ANC provides avenues to avail pregnant women with information, treat existing psycho-social and medical conditions and screen for risk factors.[6,7] ANC may include education on nutrition, potential problems with pregnancy or childbirth, child care and prevention or detection of disease during pregnancy by qualified care givers.[6-9]

Various studies have confirmed the positive influence of antenatal care on maternal and perinatal outcomes irrespective of other maternal characteristic such as age and parity.[10] In order to achieve this, it is recommended that antenatal care commences prior to 14 weeks.[11] However, despite the advantages, most parturients do not commence ANC at this period and most are not consistent with their visits. [5,9,13] This may be connected with educational levels of clients and financial constraints. [13]

We therefore sought to find out the gestational age at initiation of antenatal care and the outcome of these pregnancies in a faith based institution where services are provided at little or no cost to the clients.

Methods

Study Area

The study location was Faith Alive Foundation and Hospital located in central area of Jos, Plateau state, Nigeria which was established in 1996 to meet the

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holistic health and social services needs of the less privileged including people living with HIV (PLWH) at no costs to them[14]. The antenatal clinic in the hospital was run by a team of doctors and midwives initially. However, over the years volunteer Obstetrician and gynaecologists with their resident doctors in training have come in increasing numbers to attend to the needs of clients at free cost.

Study type: A retrospective descriptive study was done amongst the clients who booked for antenatal clinic in Faith Alive Foundation and Hospital between 1st January 2010 to 31st December, 2017.

Study participants: Each woman upon registering in the facility, had an antenatal file opened and all her details recorded. All her subsequent visits and delivery were also recorded. The various records of interest on each patient were extracted from their case files and other important findings were retrieved from antenatal booking records, delivery records, lying ward and theatre operation records books. Information regarding the outcome of the pregnancies such as gestational age at delivery, mode of delivery, state of the fetus, APGAR scores etc were also retrieved and analyzed.

Data analyses: Only pregnancies that were booked in the facility were analyzed. Information regarding gestational age at booking of the clients was analyzed. Early booking was taken to be 1st ANC visit before 14 weeks of gestation.[11] Low APGAR was assessed as neonates who had a score of <7 in the 5th minute of life.[15] A checklist was used in collecting the necessary information and data processed using statistical package of social sciences (SPSS). Chi-square analysis was done and statistical significance tested. Data was summarized and presented in tables.

Ethical issues: Ethical approval for this retrospective descriptive study was obtained from the Ethics committee of Faith Alive Foundation, Jos, Plateau State.

Result

Majority of the patients were aged 20-29yrs(57.3%) as shown in Table1. The mean age was 28 ± 4years and the age range is 16-47 years. Most patients were married (96.2%), Christians (75.2%), had secondary level of education (43.8%) and were engaged in Trading/ business (41.2%) as shown in Table 1.

Table 1: Sociodemographic characteristics of the respondents (*n*=3739)

Characteristic	Number (n=3739)	Percentage (%)
Age(years)		
15-19	296	7.9
20-24	1252	33.5
25-29	890	23.8
30-34	625	16.7
35-39	519	13.9
≥ 40	157	4.2
Religion		
Christian	2819	75.4
Moslem	920	24.6
Marital status		
Single	142	3.8
Married	3597	96.2
Highest level of Education completed		
None	235	6.3
Primary	1092	29.2
Secondary	1638	43.8
Tertiary	774	20.7
Occupation		
House Wife	909	24.3
Trader/Business	1541	41.2
Civil Servant	647	17.3
Banker/Accountant	15	0.4
Student	194	5.2
Healthcare Worker	254	6.8
Others (Cleaner/apprentice/Hair-dresser/Tailor)	179	4.8

Table 2 shows that 23.2% of the clients booked in the 1st trimester in 2010 and this decreased to 17.3% in 2102 but progressively increased to 35.2% in 2014, 40.2% in 2015 and 53.4% in 2017

Table 3 shows that there was significant statistical association between Parity, marital status and educational status with late booking for antenatal care. There was also significant statistical association between time of booking and outcome of births.

Table 2: Gestational Age (in Weeks) At Booking From 2010-2017

Year	2010	2011	2012	2013	2014	2015	2016	2017	Total
weeks	N(%)	N(%)	N(%)	N(%)	N(%)	N(%)	N(%)	N(%)	
≤13	39 (23.2)	19(8.8)	63 (17.3)	57 (12.5)	182 (35.2)	240 (40.2)	307(48.2)	420(53.4)	1327
14 - 26	86 (51.2)	134(62.0)	234(64.1)	301(66.1)	199 (38.6)	106 (17.8)	119 (18.7)	123(15.6)	1302
27 - 40	43(25.6)	63(29.2)	68(18.6)	97(21.3)	135 (26.2)	250 (42.0)	210 (33.1)	244(31.0)	1110
Total	168	216	365	455	516	596	636	787	3739

Table 3: Relationship between Sociodemographic characteristics of the pregnant women and foetal outcome to time of booking

Variables	n=3739	Early booking (%)	Late booking (%)	X^2	Df	p
Parity						
0	952	313(32.87)	639(67.12)	31.21	5	0.01
1	693	227(32.82)	466(67.28)			
2	562	179(31.88)	383(68.12)			
3	337	132(39.06)	205(60.94)			
4	280	102(36.52)	178(63.48)			
>5	915	395(43.17)	520(56.83)			
Marital Status						
Married	3597	1301(36.16)	2296(63.83)	20.35	1	0.01
Single	142	26(18.30)	116(81.70)			
Education of clients						
None	235	66(28.09)	169(71.91)	68.72	3	0.01
Primary	1092	298(27.29)	794(72.71)			
Secondary	1638	247(15.08)	1391(84.92)			
Tertiary	774	716(92.51)	58(7.49)			
Fetal outcome at birth						
Live births	1528	471(30.82)	1057(69.18)	5.57	1	0.01
Still births	141	37(26.27)	104(73.73)			
Total	1669	508	1161			

Table 4: Outcome Of Booked Pregnancies

Year	Number of ANC bookings	Miscarriage	Spontaneous Vaginal Delivery (SVD)	Caesarean Section (CS)	Total birth (SVD + CS)	Total live births	Still births	Total number of deliveries and miscarriages managed in FAF Hospital Total (%)
2010	168	8	44	6	50	46	4	58(34.5%)
2011	216	12	53	14	67	61	6	79(36.6%)
2012	365	14	130	20	150	138	12	164(46.3%)
2013	455	14	178	27	205	188	17	219(48.1%)
2014	516	21	230	28	258	237	21	279(54.1%)
2015	596	30	226	44	270	245	25	300(50.3%)
2016	636	42	238	58	296	272	24	338 (53.1%)
2017	787	58	301	72	373	341	32	431(54.8%)
Total	3739	199	1400	246	1669	1528	141	1868

Table 4 shows a progressive increase in deliveries (Spontaneous vaginal delivery plus caesarean section) from 50 in 2010 to 150 in 2012, 235 in 2014,296 in 2016 and 373 in 2017.Table 4 also shows that 34.5% of the booked clients had management of their delivery or miscarriage in Faith Alive Hospital Jos in 2010. This increased to 46.3% in 2012, 54.1% in 2014 and to 54.8% in 2017.

Table 5 showed that patients who booked late for antenatal care had poorer neonatal outcomes (perinatal deaths and birth asphyxia) compared to those who booked early.

Table 5: Foetal Outcome of Booked Pregnancies

Foetal outcomes	Booking for antenatal care		
	Early, N=508	Late, N=1161	TOTAL, N=1669
Foetal weight, N(%)			
wt<2.5kg	46(34.72%)	86(65.28%)	132
wt > 2.5kg	462(30.06%)	1075(69.94%)	1537
Births, N(%)			
Total live births	471(30.82%)	1057(69.18%)	1528
Still births	37(26.27%)	104(73.73%)	141
5th Min APGAR scores, N(%)			
Low (<7)	64(36.99%)	109(63.01%)	173
Normal (≥7)	444(29.68%)	1052(70.32%)	1496

Discussion

The study showed initial late booking for antenatal care among the clients. There was subsequent change in trend to early booking. Clients who booked late for antenatal care had more unfavourable neonatal outcome. There was significant statistical association between gestational age of booking and outcome of births. Our study also showed a rise in delivery in the facility consequent upon the increasing number of booked clients in the years under review.

The mean gestational age at initiation of antenatal care in this study was 19.2 weeks which is comparable to 19.1 weeks in Makurdi[16] but lower than 23.5 weeks in Sokoto[17],21.8 weeks in Ibadan[18],23.7weeks in Benin19 and 24.3 weeks in Abakaliki. [20]Our study showed that majority of the women initially did not book early in the first trimester for antenatal care from 2010-2013 but this trend reversed with early bookings from 2104-2017.These findings from 2010-2013 agree with findings by researchers in Nigeria and other African countries, where majority of pregnant women made their first antenatal visit in the third trimester.[6,16,,21] However the surge noted in first trimester booking from 2014 -2017 in the facility may be attributed to the increase in the volunteer obstetricians who have been consistent in service delivery.

Late booking is thought to be a normal practice in our setting as most women book late because of a belief that there are no advantages in booking for antenatal care in the first three months of pregnancy.[13,19] Also, antenatal care is viewed primarily by some women as curative rather than preventive. [19] The practice of late booking for antenatal care is not only contrary to the recommendation of the WHO and National programme guidelines, but could result in missed opportunities for early detection of maternal and foetal conditions that might require immediate attention.[11,22]

Public health systems in developing countries should always aim at early booking in order to detect the high-risk pregnancies that would require urgent interventions. It is hoped that interventions that would explore the cultural practices of late booking in developing countries are most desirable. Such interventions would bring to the fore reasons for late booking in the context of local culture and also aim to suggest strategies required to discourage the practice.[23,24]

Our study showed that 65.0% of the clients had at least secondary form of education. This is higher than the 45.8% with at least secondary education reported by Ifenne and Utoo[16]in North central Nigeria. The level of education significantly influenced gestation age at booking from our study. This is consistent with the findings of Ifenne and Utoo[16] who showed that late booking was significantly influenced by level of education. It is a fact that higher education level leads to prospects of good job and enhanced financial capacity which ideally should favour early antenatal booking. [22]Also our study revealed that marital status and parity had significant influence on late booking. This is similar to findings by other authors.[21,22]

Our study also showed increasing number of booked clients with a rise in delivery in the facility This rise may be adduced to the fact that FAF offer care to the patients at no cost. In addition the central location of the hospital gives most clients easy accessibility and utilization of its services. Studies have identified that in situations where ANC uptake requires travel and long waiting hours, pregnant women and their families experience huge opportunity costs such as the loss of income in order to attend services.[23] Long distances to health facilities as well as insufficient number of ANC providers at various ANC clinics negatively affect ANC utilization.[24,25]

Not all clients who booked their pregnancies for antenatal care subsequently had their deliveries or miscarriages in Faith Alive hospital. Similar findings was identified by studies where it was shown that some women do however, book concurrently for antenatal care in multiple facilities.[9] This may pose a risk in optimizing care as they may not be able to effectively keep up their appointments, and important follow-up appointments may be missed. This practice may also be wasteful as it may mean using scarce resources that could have been put to other use in several facilities.[9,26]

Our study showed that patients who booked late for antenatal care had poorer neonatal outcome compared to those who booked early. In settings of late booking of pregnancy, there may be late detection of certain preexisting maternal medical conditions or other illnesses which gets worsened with advancing gestation and some of these conditions may be associated with poorer foetal prognosis. Such situations would have been better managed had such clients booked early with necessary interventions undertaken. This is similar to the finding by Njim[27] where late initiation of antenatal care was found to have negative consequences on overall perinatal outcomes in women and their children hence increasing morbidity and mortality. Engaging reproductive age women in user-friendly educational programs in such regions has been found to be a strategy to address this challenge and possibly minimize its magnitude.[23,27]

The limitations of this study include the fact that it was a retrospective study with its attendant setbacks. Secondly it was a single center study and so the generalizability of the findings is limited. However, this study provides a background for further studies to explore issues concerning the booking pattern of antenatal clients and information used for planning in provision of maternal care to improve outcomes.

Conclusion

Our study showed that early initiation of antenatal care is a challenge in our setting. Nonetheless, a progressive improvement in early bookings was noticed with improved pregnancy outcome. The study also showed poorer neonatal outcome for patients who booked late for pregnancy.

Widespread dissemination of information about early antenatal registration and the benefit for such practices towards avoiding poor perinatal outcome should be done in our antenatal clinics and the media. Introduction of free antenatal care services in our health system would encourage early and more utilization of these services and having the will power to sustain this as done in the study facility should attract more clients. Reduction of fees for those registering in the first trimester could boost the number of early booking for antenatal care.

Conflicts of interest- none
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References

1. Dahiru T, Oche OM. Determinants of antenatal care, institutional delivery and postnatal care services utilization in Nigeria. Pan Afr Med J. 2015;21 10.11604/pamj.2015.21.321.6527PMID: 26587168
2. Nimi T, Fraga S, Costa D, Campos P, Barros H. Prenatal care and pregnancy outcomes: a cross-sectional study in Luanda, Angola. Int J Gynaecol Obstet 2016;135Suppl 1:S72–S78. 10.1016/j.ijgo.2016.08.013PMID: 27836089
3. Adjiwanou V, LeGrand T. Does antenatal care matter in the use of skilled birth attendance in rural Africa: A multi-country analysis. Soc Sci Med. 2013;86:26–34. PMID: 23608091
4. Okedo-Alex IN, Akamike IC, Ezeanosike OB, Uneke CJ. Determinants of antenatal care utilisation in sub-Saharan Africa: a systematic review BMJ Open. 2019: 7;9(10):e031890. doi: 10.1136/bmjopen-2019-031890.PMID: 31594900
5. Kuhnt J, Vollmer S. Antenatal care services and its implications for vital and health outcomes of children: evidence from 193 surveys in 69 low-income and middle-income countries. BMJ Open 2017;7:e017122 10.1136/bmjopen-2017-017122PMID: 29146636
6. Osungbade KO, Shaahu VN, Uchendu OC. Clinical audit of antenatal service provision in Nigeria. Health care women international 2011; 32: 441-452 PMID: 25885481
7. Enabudoso EJ, Obhielo E.Socio-demographic and obstetric determinants of gestational age at booking at the University of Benin Teaching Hospital: a descriptive survey. Niger Postgrad Med J. 2012;19(3):149-52.PMID: 23064170
8. Mbuagbaw L, Medley N, Darzi AJ, Richardson M, Habiba Garga K, Ongolo-Zogo P. Health system and community level interventions for improving antenatal care coverage and health outcomes. Cochrane Database Syst Rev. 2015;(12):CD010994. doi: 10.1002/14651858. CD010994.pub2. PMID: 26621223
9. Adeoye S, Ogbonnaya LU, Umeorah OUJ, Asiegbu O. Concurrent use of Multiple antenatal care providers by women utilizing free antenatal care at Ebonyi State University Teaching Hospital, Abakaliki. African Journal of reproductive health 2005; 9: 101-108PMID: 16485590
10. Osungbade K, Oginni S , Olumide A. Content of antenatal care services in secondary health care facilities in Nigeria: implication for quality of maternal health care. Int J Qual Heal Care. 2008;20:346–51. doi: 10.1093/intqhc/mzn026 PMID: 18621778
11. World Health Organization. WHO recommendations on antenatal care for a positive pregnancy experience. Geneva, Switzerland, 2016. [http://apps.who.int/iris/bitstream/10665/250796/1/9789241549912-eng.pdf] Accessed 6 June, 2020
12. Downe S, Finlayson K, Tunçalp Ö, Gülmezoglu AM. Provision and uptake of routine antenatal services: a qualitative evidence synthesis. Cochrane Database Syst Rev. 2019;6(6):CD012392. doi: 10.1002/14651858.CD012392.pub2. PMID: 31194903
13. Ejeta E, Dabsu R, Zewdie O, Merdassa E Factors determining late antenatal care booking and the

content of care among pregnant mother attending antenatal care services in East Wollega administrative zone, West Ethiopia. Pan Afr Med J. 2017;27:184. doi: 10.11604/pamj.2017.27.184. 10926. eCollection 2017.PMID: 28904711
14 Faith Alive Foundation Nigeria. https://www.faithalivenigeria.org. Accessed July 5th, 2020
15 Leuthner SR, Das UG. Low Apgar scores and the definition of birth asphyxia. Pediatr Clin North Am. 2004;51(3):737-45. doi:10.1016/j.pcl.2004.01. 016. PMID: 15157595
16. Ifenne D.I, Utoo B.T . Gestational age at booking for antenatal care in a tertiary health facility in north-central Nigeria. Niger Med J. 2012; 53(4): 236-9 PMID: 23661885
17. Ekele BA, Audu LR. Gestation age at antenatal clinic booking in Sokoto, Northern Nigeria. Afr J Med Med Sci. 1998;27:161-3.PMID: 10497639
18. Okunlola MA, Ayinde OA, Owonikoko KM, Omigbodun AO. Factors influencing gestational age at antenatal booking at the University College Hospital, Ibadan, Nigeria. J Obstet Gynaecol. 2006;26:195-7PMID: 16698622
19. Ebeigbe PN, Igberase GO. Reasons given by pregnant women for late initiation of antenatal care in the Niger delta, Nigeria. Ghana Med J. 2010;44:47-51.PMID: 21327003
20. Onoh R, Umerora O, Agwu U, Ezegwui H, Ezeonu P, Onyebuchi A. Pattern and determinants of antenatal booking at Abakaliki Southeast Nigeria. Ann Med Health Sci Res. 2012;2:169-75. PMID: 23439716
21. Nwagha UI, Ugwu OV, Nwagha TU, Anyaehie US. The influence of parity on the gestational age at booking among pregnant women in Enugu, South East Nigeria. Niger J Physiol Sci. 2008;23:67-70. PMID: 19434217
22 Aduloju OP, Akintayo AA, Ade-Ojo IP, Awoleke JO, Aduloju T, Ogundare OR .Gestational age at initiation of antenatal care in a tertiary hospital, Southwestern Nigeria. Nigerian Journal of Clinical Practice. 2016;19(6):772-777 PMID 27811450
23. Fagbamigbe AF, Idemudia ES. Barriers to antenatal care use in Nigeria: evidences from non-users and implications for antenatal health programming. BMC pregnancy and child birth. 2015; 15:95 PMID: 25885481
24. Gong E, Dula J, Alberto C, De Albuquerque A, Steenland M, Fernandes Q, Cuco RM, Sequeira S, Chicumbe S, Gudo ES, McConnell M. Client experiences with antenatal care waiting times in southern Mozambique. BMC Health Serv Res. 2019, 1;19(1):538. doi: 10.1186/s12913-019-4369-6 PMID: 31370854
25. Haruna-Ogun OA. Geographical differentials in uptake of antenatal care services in Nigeria. Health Care Women Int. 2018;39(1):34-49. doi: 10.1080/07399332.2017.1388804. Epub 2017 Nov 28. PMID: 29053408.
26. Nwogu-Ikojo EE, Okafor II, Ezegwui HU. Multiple antenatal bookings among pregnant women in Enugu, Nigeria. J Obstet Gynaecol. 2010; 30(3):244-7. doi: 10.3109/01443610903383382. PMID: 20373923.
27. Njim TN. Late pregnancy outcomes among women who attended and women who did not attend first trimester antenatal care visits in a suburban regional hospital in Cameroon. Int J MCH AIDS. 2016;5(1):14-23. doi: 10.21106/ijma.80. PMID: 27622008