

Antenatal Care and Skilled Birth Attendance in Three Communities in Kaduna State, Nigeria

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Abstract

This study assessed antenatal care (ANC) coverage, place of delivery and use of skilled birth assistants in three communities in Kaduna State, Nigeria. The sample included 332 women who had delivered within two years of the survey. ANC attendance rates were high, with 76.2% of women reporting at least one visit, and 63.3% receiving four or more. However, median gestational age at the first visit was four months and only 9.3% received all the recommended components. Health facility deliveries (11.7%) were far lower than ANC attendance. Educational status was found to be statistically significantly associated with all ANC and safe delivery outcomes. To make significant progress towards the fifth MDG in northern Nigeria, effective strategies to encourage women's education paired with improvements in ANC quality (especially within communities) is essential. Most importantly, safer delivery options that would be acceptable in communities where women traditionally birth at home need to be explored (*Afr. J. Reprod. Health* 2010; 14[3]: 89-96).

Résumé

Soins prénatals et les accoucheuses qualifiées dans trois communautés dans l'état de Kaduna, Nigéria. Cette étude a évalué la couverture des soins prénatals CSP, la place de l'accouchement et l'emploi des accoucheuses qualifiées dans trois communautés dans l'état de Kaduna, Nigéria. L'échantillon comprenait 322 femmes qui avaient accouché au cours de deux ans qu'a duré l'enquête. Les taux d'assistance au niveau des CSP étaient élevés, 76,2% des femmes ayant signalé au moins une visite et 63,3% en ayant reçu quatre ou plus. Néanmoins, l'âge gestationnel médian à la première visite était quatre mois et seuls 9,3% ont reçu toutes les composantes recommandées. Les accouchements dans les établissements de santé (11,7%) étaient beaucoup moins nombreux que la fréquence à la CSP. Nous avons découvert que le niveau d'instruction était statistiquement et de manière significative liée aux résultats de la CSP et des résultats de l'accouchement sans danger. Pour faire du progrès significatif vers le cinquième OMD au nord du Nigéria, il est nécessaire de mettre en place les stratégies efficaces qui encourageront l'éducation de la femme ainsi que les améliorations dans la qualité des CSP (surtout au sein des communautés). Plus important encore, il faut explorer les options d'accouchement sans danger qui seront acceptables dans les communautés (*Afr. J. Reprod. Health* 2010; 14[3]: 89-96).

Key words: Antenatal care, skilled birth attendance, home deliveries.

Introduction

Globally, an estimated 585,000 maternal deaths occur annually, with over 99% of these deaths occurring in developing countries¹. It is barely five years to the target for the attainment of Millennium Development Goal (MDG) 5, which seeks to reduce the maternal mortality ratio (MMR) by three fourths, compared to the 1990 level. In Nigeria, the MMR is estimated to be 545 per 100,000 live births¹, which ranks among the highest in the world. In many parts of the North, the MMR exceeds 1,000 per 100,000.

These conditions reduce the likelihood that Nigeria will be able to bring its MMR down to 250 in five years' time³.

Poor quality and coverage of maternal health care has long been identified as leading causes of high maternal mortality in developing countries such as Nigeria. Existing evidence indicates that inability to access high-quality ANC and skilled providers at birth are likely to result in adverse outcomes for mothers and infants⁴⁻⁸. In northern Nigeria, there is a paradox of high rates of ANC but low rates of facility-based delivery⁹. A similar disconnects bet-

ween ANC and safe delivery has been reported in several other African and Asian countries. The WHO estimates that at least 45 million pregnant women in developing countries receive no ANC at all, and 60 million women deliver without the assistance of a skilled birth attendant¹⁰. The vast majority of the women who deliver outside of health facilities give birth at home, where risks of mortality increase in the absence of professional attendance.

The quality of ANC care received by pregnant women is another important determinant of pregnancy outcomes⁹. ANC offers providers an opportunity to inform women about safer delivery options and to refer those who may be at higher risk of complications. One aspect of quality of ANC care involves proper timing of visits. In 2001, the WHO created a new model for ANC called 'focused antenatal care' which specified that women should have at least four visits at appropriate gestational ages.

A search for population-based studies examining determinants of ANC and skilled delivery care revealed a study using multivariate analysis of DHS data in Bangladesh. The study found that maternal age, educational status, place of residence, household economic status, ANC attendance, and problems during previous delivery independently influenced safe delivery care⁵. Of the smaller community-based studies, most did not assess the role of socio-demographic factors in relation to the outcomes of interests. For example, a community-based cross-sectional study conducted in six states in northern Nigeria by Galadanci et al. reported that only 50% of the women attended ANC during their preceding pregnancy, 85.3% delivered at home and only 11.4% of those who received ANC also received postnatal care. Socio-demographic determinants were not analyzed in that study. Another community-based cross-sectional descriptive study analyzing the determinants of ANC and delivery care in rural Kano, Nigeria¹¹ focused on women's rationale for seeking care, but also did not include socio-demographic factors and it lacked a large enough sample size (n=107) to draw further conclusions.

Many of the other studies analyzing determinants of ANC attendance were hospital based. A cross-sectional descriptive study in Morocco showed that out of the 27% of pregnant women who did not attend ANC during their last pregnancy, the main reason given for non-attendance was 'not finding ANC necessary' (46.9%) followed by: 'health centre was too far away' (14%) and 'dissatisfaction with the quality of care' (12%). However, this study targeted hospital-based clients and thus cannot be generalized to larger community¹². Among Nigerian studies, Ezechi et al. conducted a hospital-based retrospective study examining ANC records of pregnant women between 1994 and 1998 to assess socio-demographic factors and maternal care. In

this study, parity, marital status, and distance between a woman's residence and the hospital were found to be statistically significant predictors of delivery outside hospitals even after attending ANC⁶. However, as it was hospital based, the study cannot reflect the factors affecting the majority of rural women. Another cross-sectional descriptive study conducted in 2009 among newly delivered mothers in Ilesha, Nigeria⁷, assessed the effect of social class on ANC and delivery care coverage. Of the 260 women interviewed, 90.8% attended ANC but only 49.3% delivered within a health facility. Finally, a cross-sectional descriptive study by Okunlola et al. studied the influence of socio-demographic factors on gestational age at ANC registration⁸. Illness in the index pregnancy and nulliparity were reported to be the only factors significantly associated with early registration.

A limited number of studies provide information on the socio-demographic factors responsible for poor maternal care coverage in northern Nigeria. Understanding the factors that could improve ANC attendance and encourage hospital based delivery is essential. The present study was conducted to explore socio-demographic factors influence ANC and delivery care coverage in three northern Nigerian communities.

Methods

This population-based cross-sectional descriptive study was conducted in three purposively selected communities – Dakace, Shika Dam, and Tsibiri – within the Zaria emirate. The study took place in November 2008. The study communities were homogenous; mainly Muslim Hausa-Fulani with a total population of 7,621. Each of the communities has a Primary Health Care (PHC) facility, but professional ANC and delivery care was available only in Dakace, the sole peri-urban community included in the study. A sample size of 332 was computed and proportionately allocated to the three communities. The sample included women of reproductive age (15-49 years) who delivered in the 24 months preceding the survey. Households were initially selected using Systematic Random Sampling (SRS). Where more than one eligible and consenting woman was found in a household, further randomization was done through balloting to select one woman per household. Structured questionnaires were administered to the recruited women.

ANC attendance was defined as at least one visit made by the pregnant woman for ANC during the course of her last pregnancy. The variable 'number of ANC visits' was coded as no visits, 1-3 visits, or 4 or more visits. ANC was disaggregated into 12 components recommended by the Nigerian government 'Integrated Maternal, Newborn and Child Health Strategy.' Responses were coded into two varia-

Table 1. Socio-demographic characteristics of pregnant women in three communities in Kaduna State, 2008 (n=332).

Socio-demographic characteristics	Frequency	Percentage
Age		
<20	39	11.7
20-24	92	27.7
25-29	111	33.4
30-34	52	15.7
35-39	21	6.3
40+	17	5.1
Marital status		
Single	1	0.3
Married	331	99.7
Occupation		
None	151	45.5
Student	9	2.7
Petty trading	123	37
Artisan	24	7.2
Civil servant	12	3.6
Private sector	1	0.3
Other	12	3.6
Religion		
Islam	293	88.3
Christianity	39	11.7
Educational status		
None	13	3.9
Quranic	203	61.1
Primary	64	19.3
Secondary	45	13.6
Tertiary	7	2.1
Parity		
1	54	16.3
2	52	15.7
3	46	13.9
4	37	11.1
5+	143	43.1

bles: those who received all 12 components and those who received fewer components. Skilled attendance at delivery was defined as having a skilled provider (i.e. doctor, midwife or nurse) present during delivery who is trained to manage normal deliveries and immediate postpartum care. Questionnaires were checked for completeness, coded, and analyzed using SPSS version 17.0. Statistical significance of relationships between variables was assessed using Chi-square test with significance level established at p-value < 0.05.

Ethical clearance was obtained from the Ethical Committee of Ahmadu Bello University Teaching Hospital (ABUTH) in Zaria, and written informed

consent was sought from individual respondents before each interview.

Results

A total of 332 women were interviewed. As seen in Table 1, the mean age of the respondents was 25.8 ±6.4 years. The majority (76.8%) was between 20 and 34 years, with 11.7% under 19 years, and 11.4% older than 35 years. Almost all (99.7%) the women were married and most described themselves as unemployed (45.5%) or petty traders (37%). Islam was the predominant religion in these communities (88.3%) More than half of respondents (61.1%) had received Qu'ranic education but only 19.3%, 13.6% and 2.1% also attended primary, secondary or tertiary education respectively. Only 3.9% had no formal education. Almost half (43.1%) of the women had delivered 5 or more children with an average parity of 4.5.

Rates of ANC attendance, defined as having at least one visit, was 76.2% with the majority having four or more visits. There was an apparent difference by age, with 81% of women aged 35-39 having attended ANC compared to 67.4% of women aged 30-34, but the difference was not statistically significant. Over 80% of women in the study had reported their occupation to be 'none' or 'trader.' of the unemployed, 78.8% attended ANC and of the traders, 68.3% attended ANC, but again, there was no statistically significant difference by occupation. The relationship between education and ANC attendance, was significant: 100% the women with secondary or tertiary education attended ANC compared to 82.8%, 69.5% and 50% of those with primary, Quranic only, or no education (p=0.000).

As seen in Table 2, only 20.5% of respondents registered for ANC within the first trimester. The median gestational age (GA) at ANC registration was 4 months (range: 1-8 months). About one-fifth of the women in each age group registered for ANC in the first trimester while about half of respondents in each age group registered between 4 and 6 months. As educational status increased, women were more likely to register for ANC early. Tertiary-educated women (42.9%) and secondary-educated women (24.4%) were the most likely to book in the first trimester, compared to only 10% of women without formal education, a difference that was statistically significant (p=0.000). By occupation, 21.2% of unemployed women and 17.9% of traders attended ANC in the first trimester. Parity did not appear to have an effect on the timing of ANC registration, as approximately one-fifth of the women in each parity group booked in the first trimester. In contrast, education was statistically significantly associated with timing of ANC registration. The proportion of women registering for ANC in the first trimester rose steadily as educational attainment increased. Only

Table 2. Antenatal care use by socio-demographic characteristics of pregnant women in three communities in Kaduna State, 2008 (n=332).

Socio-demographic Characteristic	Gestational age at ANC registraton				Place of ANC			
	1-3	4-6	>6	No ANC	Health facility Public	Private	Other ANC	No ANC
Age								
<20	17.9	53.8	7.7	20.5	56.4	10.3	12.8	20.5
20-24	21.7	50.0	5.4	21	73.9	0	3.3	22.8
25-29	20.7	53.2	3.6	22.5	66.7	5.4	5.4	22.5
30-34	15.4	46.2	5.8	32.7	53.8	9.6	3.8	32.7
35-39	23.8	57.1	0.0	19.0	66.7	9.5	4.8	19.0
40+	29.4	47.1	0.0	23.5	58.8	11.8	5.9	23.5
Total	20.5	51.2	4.5	23.8	65.1	5.7	5.4	23.8
Occupation								
None	21.2	53.0	4.6	21.1	65.6	6.6	6.6	21.2
Student	22.2	55.6	11.1	11.1	88.9	0.0	0.0	11.1
Petty trading	17.9	45.5	4.9	31.7	58.5	5.7	4.1	31.7
Artisan	12.5	58.3	4.2	25.0	62.5	8.3	4.2	25.0
Civil Servant	25.0	66.7	0.0	8.3	75.0	0.0	16.7	8.3
Private Sector	0.0	100.0	0.0	0.0	100.0	0.0	0.0	0.0
Others	50.0	50.0	0.0	0.0	100.0	0.0	0.0	0.0
Total	20.5	51.2	4.5	23.8	65.1	5.7	5.4	23.8
Educational status								
None	10.0	30.0	10.0	50.0	40.0	0.0	10.0	50.0
Quranic	20.2	46.3	3.0	30.5	60.1	3.4	5.9	30.5
Primary	18.8	57.8	6.3	17.2	73.4	7.8	1.6	17.2
Secondary	24.4	68.9	6.7	0.0	77.8	13.3	8.9	0.0
Tertiary	42.9	57.1	0.0	0.0	85.7	14.3	0.0	0.0
Others	0.0	33.3	33.3	33.3	66.7	0.0	0.0	33.3
Total	20.5	51.2	4.5	23.8	65.1	5.7	5.4	23.8
Parity								
1	20.4	57.4	7.4	14.8	59.3	11.1	14.8	14.8
2	25.0	48.1	5.8	21.2	71.2	3.8	3.8	21.2
3	15.2	63.0	2.2	19.6	67.4	6.5	6.5	19.6
4	16.2	51.4	5.4	27.0	70.3	2.7	0.0	27.0
5+	21.7	46.2	3.5	28.7	62.9	4.9	3.5	28.7
Total	20.5	51.2	4.5	23.8	65.1	5.7	5.4	23.8

10% of women without formal education started ANC during the first trimester. Among primary school and Quranic school attendees, between 18% and 21% of women registered within the first 3 months, compared to only 10% of women without any education. A similar association was found with the number of visits. While 91.1% and 100% of secondary and tertiary educated women had at least 4 visits, even a primary education was associated with 4-6 visits: 79% of primary educated women had 4-6 visits compared to only half of women without a formal education.

Among the 332 women, 216 (65.1%) used public health facilities for ANC and only 19 (5.7%) used private sector. Neither age nor occupation appeared to have a significant relationship with place of ANC. A third category called 'other' ANC included women

seeking advice from TBAs or going to 'prayer houses' that offer limited ANC services and spiritual support. Education did have an impact on where women got ANC. Women with a tertiary education primarily used the public sector (85.7%) and none of them attended ANC in 'other' places. Women without an education, on the other hand, were most likely to seek ANC in 'other' places (10%). Parity did not appear to have an effect on the place of ANC as about 60 to 70% of the women in all groups attended ANC in public facilities.

Table 3 shows that only 9.3% of the women received all 12 components of ANC shown in Figure 1. As seen in Figure 1, the proportion of women who received specific components ranged widely. The vast majority of women (92%-95%) received an abdominal examination and had their weight and

Table 3. Number of ANC visits and number of ANC components received by socio-demographic characteristics of women in three communities in Kaduna State, 2008 (n=332).

Socio-demographic Characteristics	Number of ANC visit			Components received		
	1-3	≥4	No ANC	No ANC	ALL	NOT ALL
Age						
<20	12.8	66.7	20.5	20.5	10.3	69.2
20-24	20.7	56.5	22.8	22.8	8.7	68.5
25-29	12.6	64.9	22.5	22.5	10.8	66.7
30-34	5.8	61.5	32.7	32.7	7.7	59.6
35-39	0.0	81.0	19.0	19.0	4.8	76.2
40+	5.9	70.6	23.5	23.5	11.8	64.7
Total	12.7	63.3	23.8	23.8	9.3	66.8
Occupation						
None	15.9	62.9	21.2	21.2	11.9	66.9
Student	11.1	77.8	11.1	11.1	33.3	55.6
Petty trading	10.6	57.7	31.7	31.7	4.9	63.4
Artisan	4.2	70.8	25.0	25.0	8.3	66.7
Civil Servant	16.7	75.0	8.3	8.3	0.0	91.7
Private Sector	0.0	100.0	0.0	0.0	100.0	0.0
Others	8.3	91.7	0.0	0.0	8.3	91.7
Total	12.7	63.3	23.8	23.8	9.3	66.8
Educational status						
None	0.0	50.0	50.0	50.0	0.0	50.0
Quranic	15.3	54.2	30.5	30.5	5.4	64.0
Primary	10.9	71.9	17.2	17.2	14.1	68.8
Secondary	8.9	91.1	0.0	0.0	20.0	80.0
Tertiary	0.0	100.0	0.0	0.0	28.6	71.4
Others	0.0	66.7	33.3	33.3	0.0	66.7
Total	12.7	63.3	23.8	23.8	9.3	66.8
Parity						
1	20.4	64.8	14.8	14.8	11.1	74.1
2	11.5	67.3	21.2	21.2	11.5	67.3
3	19.6	60.9	19.6	19.6	6.5	73.9
4	10.8	62.2	27.0	27.0	16.2	56.8
5+	8.4	62.9	28.7	28.7	7.0	64.3
Total	12.7	63.3	23.8	23.8	9.3	66.8

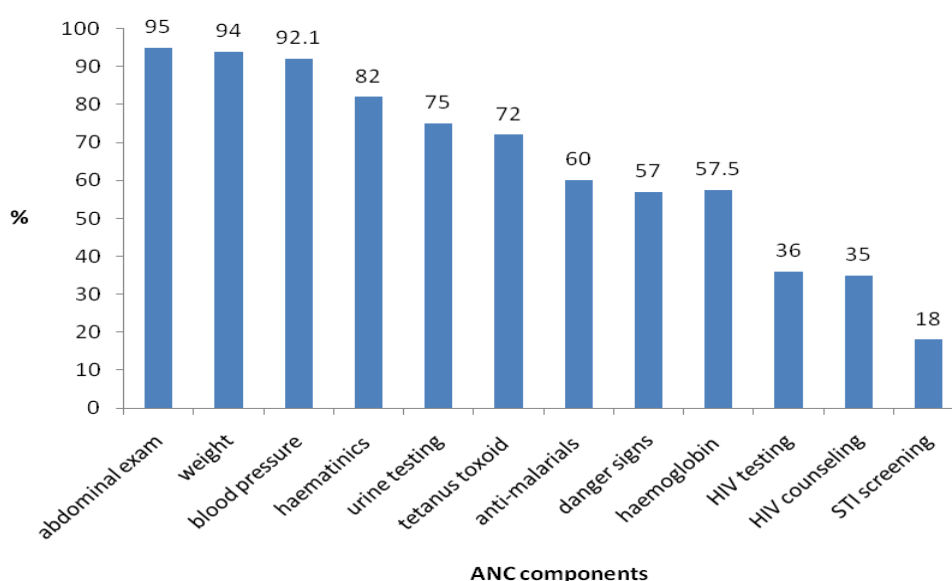


Figure 1. Components of ANC received by women in three communities in Kaduna State.

Table 4. Place of delivery and attendant at delivery by socio-demographic characteristics of women in the three communities in Kaduna State, 2008 (n=332).

Socio-demographic characteristics	Place of delivery			Attendant at delivery			
	Home	Health facility	Others	Skilled attendant	TBA	Friends/family members/self	Others
Age							
<20	89.7	5.1	5.1	7.7	38.5	51.3	2.6
20-24	91.3	7.6	1.1	8.7	43.5	44.6	3.3
25-29	84.7	14.4	0.9	18.9	27.9	49.5	3.6
30-34	86.5	13.5	0.0	15.4	34.6	46.2	3.8
35-39	71.4	28.6	0.0	28.6	28.6	38.1	4.8
40+	88.2	5.9	5.9	5.9	52.9	29.4	11.8
Total	86.7	11.7	1.5	14.2	35.8	46.1	3.9
Occupation							
None	86.1	13.2	0.7	13.9	48.3	33.1	4.6
Student	55.6	33.3	11.1	55.6	11.1	33.3	0.0
Petty trading	90.2	7.3	2.4	9.8	25.2	62.6	2.4
Artisan	83.3	16.7	0.0	20.8	41.7	37.5	0.0
Civil Servant	83.3	16.7	0.0	33.3	25.0	33.3	8.3
Private Sector	0.0	100.0	0.0	0.0	0.0	0.0	100.0
Others	100.0	0.0	0.0	0.0	8.3	83.3	8.3
Total	86.7	11.7	1.5	14.2	35.8	46.1	3.9
Educational status							
None	100.0	0.0	0.0	0.0	50.0	50.0	0.0
Quranic	96.1	2.5	1.5	3.9	41.4	50.7	3.9
Primary	81.3	18.8	0.0	17.2	34.4	45.3	3.1
Secondary	55.6	42.2	2.2	51.1	15.6	26.7	6.7
Tertiary	57.1	42.9	0.0	57.1	0.0	42.9	0.0
Other	66.7	0.0	33.3	33.3	33.3	33.3	0.0
Total	86.7	11.7	1.5	14.2	35.8	46.1	3.9
Parity							
1	83.3	13.0	3.7	20.4	40.7	33.3	5.6
2	76.9	19.2	3.8	17.3	34.6	44.2	3.8
3	87.0	13.0	0.0	13.0	37.0	45.7	4.3
4	89.2	10.8	0.0	13.5	29.7	56.8	0.0
5+	90.9	8.4	0.7	11.2	35.7	49.0	4.2
Total	86.7	11.7	1.5	14.2	35.8	46.1	3.9

blood pressure measured, but not enough women were offered haematinics (82%), urine testing (75%) and tetanus toxoid (72%). Of particular concern in endemic countries is the fact that only 60% of women received prophylaxis for malaria, a major cause of maternal morbidity and also of fetal and perinatal wastage¹³. Less than 60% of women were informed about danger signs, and only slightly over one-third got HIV counseling or testing. The component most frequently omitted was STI screening and treatment, of which only 18% of women received the benefit.

Age did not appear to have much effect on the components of ANC received as fewer than 12% of women across age groups received complete care. By occupation, only 11.9% of those without an occupation received all components compared to 4.9% of traders. Again, education was statistically significantly associated with receiving all components of ANC. As educational status increased, the propor-

tion of women receiving all components of ANC increased; ranging from 0 to 5.4% among those with no education or only Quranic education, 14.1%-20% among those with primary or secondary, and 28.6% among those with tertiary education ($p=0.000$). Parity, on the other hand, did not appear to affect the likelihood of a woman receiving all components of ANC.

The majority of deliveries (86.7%) took place at home. The proportion of deliveries in health facilities increased with educational status ($p=0.000$). None of the uneducated women delivered at a health facility, compared to, 2.5%, 18.8%, 42.2%, and 42.9% among those with Quranic only, primary, secondary, or tertiary education.

As seen in Table 4, only 14.2% of all deliveries were attended by skilled birth attendants. The proportion of deliveries supervised by a skilled birth attendant increased with educational attainment; as

with facility based delivery, not a single woman without any formal education was delivered by a skilled attendant, compared to 3.9%, 17.2%, 51.1%, 57.1% and 66.7% of women, respectively, having Quranic, primary, secondary, or tertiary education.

Discussion

The major findings in this study are: a high level of ANC utilization (76.2%), delayed ANC booking (only 49.4% in the first trimester), high prevalence of home delivery (86.7%), and low level of skilled attendance at delivery (14.2%).

The median gestational age (4 months) at initial ANC booking in this study was lower than the median GA found in a study conducted in eastern Nigeria¹⁴ and is also lower than the NDHS 2008 findings for rural women. Both of these studies found the median GA at registration to be 5 months. Other studies have found that as women's perceived benefits of ANC increase, GA at registration tends to occur earlier^{8,12}. Higher educational status was confirmed to be a determinant of greater ANC utilization and early ANC registration^{14,15}. The high proportion of women in our study who attended ANC in a health facility is lower than the 93% of rural women who attended facility-based ANC in eastern Nigeria, as reported by Nwakobi¹⁴. Most of the women in our study who attended ANC chose to use public health facilities, which could reflect the fact that maternal health services are provided free in public health facilities.

Pregnant women are advised to attend at least four ANC visits at specific gestational ages during their pregnancy. 63.3% of pregnant women in our sample reported that they attended four or more ANC visits, a finding that diverges considerably from the 39.4% reported in the NDHS 2008. The reason for this high number of ANC visits in our study is unclear. It is likely, however, that health workers posted in the region have not been trained in focused ANC and thus may rely more heavily on the traditional approach to ANC, which places more emphasis on the number of visits rather than the quality of care. It is important to note that quantity, in this setting, does not necessarily translate into quality, as evidenced by the low percentage of women who received all the recommended components. Given the extremely high rates of home deliveries in Nigeria, the fact that nearly 40% of women were not informed about any danger signs in pregnancy is shameful, putting many at risk of prolonged and obstructed labour and contributing to the high rates of obstetric fistula¹⁶.

Improving the quality of maternal care during ANC, labor and delivery, has the potential to dramatically improve pregnancy outcomes. On a positive note, over 90% of women in the sample reported having an abdominal examination and having their

blood pressure measured during ANC, which supports the findings of Osungbade et al (2008) in Ibadan¹⁷. However, only a tenth of the women received all 12 components of ANC and some of the critical components with well-established links to averting maternal and/or neonatal mortality (i.e. urinalysis, tetanus toxoid, and danger signs) were far from universal. Interestingly, educational attainment was again significantly associated with receiving complete ANC.

The predominance of home deliveries found in our study is similar to that reported for rural women in NDHS 2008² and to the findings of Galadanci et al.⁹ in northwestern Nigeria. Education appears to be a strong facilitating factor for skilled attendance at delivery. In rural settings such as in northern Nigeria, rates of home delivery are so high that use of skilled attendants will be correspondingly low, as has been reported in other parts of Nigeria¹⁷, Uganda¹⁸, Nepal¹⁹ and other countries. In addition to the barrier of education, high levels of poverty and incomplete knowledge about the risks of home births may also influence decisions regarding place of delivery^{14,17}. Cultural norms, such as Hausa-Fulani women's strong preference for privacy during delivery, may also play a role. Finally, the poor quality of ANC in many hospitals could deter women from returning there to deliver. Families that are disappointed with the treatment they receive in hospitals, or who prefer to decide for themselves which rituals are performed during childbirth, may also prefer to deliver at home.

Conclusion

The quality and coverage of ANC and safe delivery care are still inadequate in many parts of Kaduna State. Since educational attainment has been found to be the most consistent determinant of both ANC attendance and skilled assistance in delivery, stakeholders need to take immediate actions toward improving girls' entry and retention in school. These actions should involve various levels of government and non-governmental actors and community members who are concerned with maternal and neonatal health. Similarly, program designers, managers and health workers need to work together to improve the quality of ANC at primary health care facilities. If even poorly educated communities perceive the benefits of ANC and are showing up regularly for care, this represents a valuable public health opportunity to reduce disparities in delivery of essential information and services. If ANC is one of the few points of contact a woman has with the formal health system, providers can use this opportunity to explain to families the potential advantages of delivering with a skilled birth attendant. In 2007, the Nigerian government unveiled a new Integrated Maternal, Newborn and Child Health Strategy. This

strategy urgently needs to be made manifest at the community level as may be our best hope to deliver evidence-based interventions during pregnancy, labor and delivery and the postpartum period.

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