Use of Antenatal Services and Delivery Care Among Women in Northern Nigeria

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Background

Maternal and child health outcomes in Nigeria are among the worst in the world, and Nigeria contributes approximately 10% of the global burden of maternal and child deaths. WHO estimated that 59,000 maternal deaths occurred in Nigeria in 2005 and the maternal mortality ratio (MMR) was 1,100 deaths per 100,000 live births, giving a lifetime risk of maternal death of 1 in 18. The situation in northern Nigeria is a particular cause of concern where maternal mortality is much higher than the national average. MMR in 2003 for the North West Zone and North East Zone of Nigeria was estimated at 1,025 and 1,549 deaths per 100,000 live births respectively compared to a national average of 800 deaths per 100,000 live births (Maternal and Newborn Road Map, 2003 Nigeria DHS).

Antenatal care (ANC) attendance provides a unique opportunity to improve the health of women and their infants. Utilization of ANC provides opportunities for a full range of health promoting services that may include weight and blood pressure measurement, screening and treatment for syphilis, prevention and presumptive treatment of malaria in pregnancy and health education, among others. ANC is also the opportunity to counsel women about possible serious complications to pregnancy and delivery. At each ANC visit women can be asked whether they have experienced any of these complications and they can be reminded what to do if any occur. The importance of skilled attendance at delivery has long been recognized, and ANC visits also serve to encourage women to have skilled attendants at birth at a facility. However, distance to health facilities, inadequate transportation, socio-cultural beliefs and the need for immediate and specialized services have hampered women's ability to access these services in many less developed countries and northern Nigeria in particular. Attention to clean and hygienic delivery practices (WHO 2003) and the provision of essential care for the newborn, such as thermal protection and early and exclusive breast-feeding (WHO 1996), are important for the health of all infants whether born at home or in a health care facility. Community and primary care level interventions aimed at increasing these critical elements of ANC have been found to be highly cost effective.

The aim of this study is to describe use of ANC services and delivery care amongst women in the three northern Nigeria states of Katsina, Yobe and Zamfara; to facilitate our understanding of women's access of antenatal and maternity services; to examine the range of services that they received and to describe common perinatal care practices that occur both at home and in health care facilities. The study was conducted in preparation for implementation of new measures to improve delivery outcomes and neonatal survival in northern Nigeria.

Methods

The baseline survey was conducted in the three northern Nigeria states of Katsina, Yobe and Zamfara to support the efforts of the Maternal and Newborn Child Health (MNCH) programme to reduce the unacceptably high rates of maternal, newborn and child mortality in northern Nigeria. Repeating the survey periodically after implementation of programmatic interventions will enable the programme to monitor and evaluate the contribution of the interventions and systemic changes on achieving the goals of reducing mortality and improving health outcomes.

As the MNCH activities are implemented in key clusters in each state, the sample design needed to include enough respondents in these clusters to allow estimation of programme impact in these clusters. Therefore, we used a *stratified two-stage cluster, random sample survey.* The sample was designed to be representative of all women of reproductive age (15-49 years) in the three states. Each of the states was divided into two strata: Local Government Areas (LGAs) with intensive MNCH activities and the LGAs with less intensive MNCH activities. We oversampled in the LGAs with more intensive MNCH activities to facilitate impact evaluation. An Enumeration Area (EA) within a stratum was the first stage; with this first-stage EA selected using probability proportional to size. From the core cluster and other clusters, 30 EAs and 15 EAs were selected respectively. For the second stage or selection process, in each of the selected EAs, 47 households were selected at random for interviews. Thus, the household was the ultimate sampling unit. Within each randomly selected household, all ever married women of reproductive age were eligible for interview (n= 7,442).

Trained interviewers visited the selected women at home and administered a questionnaire which included translation of key concepts and terms in the local languages (e.g., Hausa, Kanuri). Interviews were conducted in April-May 2009. Respondents were asked if they had visited an ANC during their last pregnancy in the five years prior to the survey. If they answered "Yes," they were asked to specify the provider, source of ANC, number of months pregnant when they had the first ANC, services received during the ANC and other questions related to maternal and newborn care. Socio-economic information was obtained from the household questionnaire used to identify eligible women. Information on household assets was used to derive a wealth index using the method developed by Filmer and Pritchet (2001). All households were categorized by quintile: a medium/low socioeconomic status (SES) was defined as an SES in the bottom 3 quintiles of the wealth index.

In our analyses, sampling weights were used to correct for the oversampling in the intensive intervention areas and make the data statistically representative. Bi-variate analyses were used to

assess associations between maternal characteristics, ANC, and delivery characteristics. Odds ratios (ORs) with 95% confidence intervals (CIs) were calculated. Results were stratified by age, parity, SES, settlement area, level of education, state of residence and history of previous stillbirth. Primiparae were women who had delivered for the first time, multiparae were women who had delivered more than once. Grand multiparae were defined as women who had delivered 5 or more times, given that a high number of previous deliveries is an obstetric risk factor. Logistic regression was used to assess the effect of various factors on ANC attendance and place of delivery. The effect of the variables used for stratifying the results was examined. Factors significant in the bivariate analysis were included in the multivariate analysis.

Results

Study population

Of the 7,442 women selected for interview, 42 (0.6%) could not be reached during the period of survey and 264 women (3.5%) had died before the interview. Another 212 were not able to be interviewed or failed to complete interviews for a variety of reasons. This gave 6,924 completed interviews and an overall response rate of 93%. We believe that due to the generally homogeneity of the study population, our results would not be different if all the non-responding women had been interviewed. Of the 6,924 women interviewed, 91.5% were married and 73.1% were living in rural areas. About 60% of women were members of the Hausa ethnic group whereas 13.1% had some formal schooling. The mean age (standard deviation, SD) was 28.7 (8.7) years; 344 women (4.7%) were less than 20 years of age. The median number of pregnancies was 4 (range 1-15). All measures pertaining to maternal and health care are restricted to the most recent pregnancy among women who gave a live birth any time in the five years preceding the survey (n=1,788).

Care during pregnancy

Only 24.7% had visited a clinic or facility for ANC at least once during their most recent pregnancy, with 4.9 as the mean number of antenatal visits during pregnancy. One or two visits only were made by 33 (7.5%) and 63 (14.3%) of the women, respectively. Among those who could recall when they first attended, 110 women (25.9%) started ANC visits in the first trimester, 272 women (61.7%) started in the second trimester, and 58 women (13.2%) in the third trimester.

Among those with some type of ANC during pregnancy, 85.0% of mothers had their weight recorded, 87.2% had their blood pressure measured, 81.2% received an anti-tetanus vaccination, 56.8% received breastfeeding counseling, 58.3% newborn counseling, 64.9% received antimalarial treatment, and 64.2% were told about the signs of pregnancy complications. With or without counseling, 94.7% knew at least one complication, with 42.6% of women knowing severe headache and 25.7% knowing blurred vision, and 15.8% mentioned reduced fetal movement. Those who were counseled about pregnancy complications during ANC visits were more likely to know about convulsions, high blood pressure, and vaginal bleeding. For women who reported multiple complications, 25.7% mentioned two complications followed by 16.4% who mentioned three complications. The results show that few women know more than five complications.

A total of 1,347 (75.3%) women never had ANC during their most recent pregnancy. Of those with no ANC, 14.0% sought advice on their health or the health of their unborn child from sources such as traditional birth attendants, family members, friends, or co-wives. In the bivariate analysis, women with two or more children were the least likely to have ANC including women of high socioeconomic status (SES), those residing in rural areas and those residing in Yobe and Zamfara. Women whose recent birth is dead are also least likely to attend ANC. In a multivariate model, only women living in rural areas (adjusted odds ratio [AOR] 3.4, 95% CI 3.0–3.8), those without primary (AOR 0.3, 95% CI 0.3–0.4) and without secondary and higher education (AOR 0.2, 95% CI 0.17–0.24) remained associated with never having ANC. Residence in Yobe (AOR 1.4, 95% CI 1.2–1.6) and Zamfara (AOR 3.0, 95% CI 2.1–4.1) including women whose recent birth died (AOR 1.5, 95% CI 1.3–1.9) are associated with never attending an ANC.

About 67% made some preparations for delivery, including 45.6% who made provisions for clean clothes; 7% prepared for clean instruments for delivery and another 7% made other preparations. Only 0.4% had made any preparations for transport if needed to a health facility. Over half of the women prefer a home delivery because it is comfortable and not necessary to go elsewhere.

Assistance during delivery

Most women (90.7%) delivered at home, their own or someone else's. The most frequent reason for not attending a health facility for delivery was that home deliveries were comfortable (43.8%). Other important barriers were 'not necessary to deliver at health facility' (18.6%), and expense (total and for transport) (17.4%). A small subset (3.4%) had no permission from their husband and another 2.1% disliked the attitude of health workers. Seven percent of the women gave other reasons for not delivering at a health facility, such as against local custom. Of note, 93.6% of those who delivered at home were aware of the potential complications and could identify one or more complications that could occur during pregnancy. Fifty three percent of these women knew at least two complications. In multivariate analysis, factors associated with home delivery included: age ≥ 20 years, parity ≥ 2, rural settlement, lacking any education, residence in Zamfara state and death of recent child.

Among all women, only 11.2% were attended to by a professionally trained provider (doctor or nurse/midwife) whereas trained and non-trained TBAs assisted another 14.6% and 45.8% of women respectively. A high proportion of women (21.1%) were attended by an untrained other person.

Discussion

This survey provides specific guidance for our programme planning. It is clear that our programmes must address the reduction of maternal mortality from within and without the health care system. The low ANC rate found in this survey is consistent with earlier studies conducted in 2000 in rural Kano State of northern Nigeria where 12% of the women were reported to have attended ANC (Adamu and Salihu 2002). What we have learned with our survey is the need to target outreach about the importance of ANC to those most at risk for not being aware of or able to access appropriate care. In these three states, efforts need to be intensified in Yobe and Zamfara states.

We also need to focus on women with no formal education and particularly those who have already had lost a newborn or young infant. Although the perceived expense of the ANC may hinder attendance, it is uncertain that free ANC would increase coverage substantially because transport costs, physical inability to travel long distances, and a perceived negative attitude of health workers and poor quality of care would remain barriers.

A substantial proportion of women did not receive services offered by the ANCs such as breastfeeding and newborn counseling, malaria prevention and counseling on complications. Yet the ANC through the health care system remains the primary source of information about pregnancy and newborn care, because only a minority sought advice elsewhere on their health or the health of their unborn child. Because of the high illiteracy among women interviewed in the survey and generally among women in northern Nigeria, outreach efforts need to use a variety of community engagement strategies, and counseling and educational materials used during ANC also need to be audio-visual, interactive, and pictorial, enabling them to reach the uneducated women most at risk for not attending ANC or learning the details about assessing their own risk for severe complications. The cultural resistance to ANC and to delivery at a health facility also needs to be addressed through a variety of channels, some of which need to include men who give permission and the money to their wives for these visits.

When women do receive ANC, it is generally not before the second trimester. Late ANC attendance does not provide women with a chance of benefiting fully from preventive strategies, such as iron and folic acid supplementation, and intermittent preventive malaria treatment in pregnancy among others. To encourage earlier ANC attendance, service delivery must be improved and communication messages that aim at removing barriers to ANC utilization should be increased.

The proportion of women who gave birth in a health facility is lower than the national estimate of 35.0% for Nigeria, slightly higher by one percentage points than the estimate for the North West zone (8.4%), and lower than the estimate for the North East Zone in which the three states fall (i.e., Katsina and Zamfara fall in North West; Yobe in North East) (National Population Commission [Nigeria] and ICF Macro 2009). In general, deliveries at health facilities are lower in the study area and Nigeria in particular compared with other West Africa countries such as Senegal (61.8%; 2005 DHS), Mali (45.1%; 2006 DHS) and Cameroon (59.0%; 2004 DHS) (Measure DHS STATcompiler 2009). Key contributing factors for a home delivery included perception that home deliveries are comfortable, cost and health deliveries not being considered as necessary. As the programme seeks to build basic support for deliveries at community health posts, it is important to also pay attention to communicating about facility based deliveries so that these also are perceived in a positive light and accepted by the community. As indicated by the reasons for not delivering in a health facility, it is also important to work on addressing emergency obstetrical access, both through a community fund for families facing emergencies and with a transport "chain" to evacuate women in labor.

The use of TBAs in the study area is very high and suggests that they are the backbone of maternity services in rural areas, and in our survey they attended about 60.4% of deliveries. While recognizing the importance of facilitating access to health facilities for deliveries, efforts need to be expanded to train a cadre of skilled birth attendants who can work within the villages to assist home-

based deliveries where the risk of complications is not as high. Such skilled TBAs also can provide advice to pregnant women and assist in assessing complication risk, so that women with potentially dangerous pregnancies are encouraged to go to the health facility for care before they begin the labor and delivery process when this becomes more urgent and more difficult.

Safe motherhood strategies promote counseling of clients on danger signs and the development of an individual birth plan. Pregnant women and their relatives are encouraged to arrange transport, money and a companion before onset of labor. These results indicate that the situation in northern Nigeria needs urgent improvement. The MNCH Programme is working on providing maternal and child health services and saturating them in the three selected states of Katsina, Yobe and Zamfara. This survey can provide baseline data for the target states against which efforts to improve services in the ANCs can be evaluated.

References

Adamu, Y.M. and H.M. Salihu. 2002. "Barriers to the use of antenatal and obstetric care services in rural Kano, Nigeria." *Journal of Obstetrics and Gynaecology* 22(6): 600–603.

Filmer, D. and Pritchett, L. 2001. "Estimating wealth effects without expenditure data – or tears: an application to educational enrollments in states of India." *Demography* 38(1): 115-132.

Measure DHS STATcompiler. 2009. "Percentage of live births delivered at a health facility." www.statcompiler.com; accessed September 16, 2009.

National Population Commission [Nigeria] and ICF Macro. 2009. *Nigeria Demographic and Health Survey 2008 Preliminary Report. Abuja, Nigeria and Calverton, Maryland:* National Population Commission and ICF Macro.

World Health Organization. 2003*Pregnancy, childbirth, postpartum and newborn care: a guide for essential practice*. Geneva: WHO press.

World Health Organization, Division of Reproductive Health. 1996. *Essential Newborn Care, report of a technical working group Trieste, 25–29 April 1994*. Geneva: WHO press.