Is poor maternal mortality index in Nigeria a problem of care utilization? A case study of Anambra State

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ABSTRACT

Maternal mortality in Nigeria is unacceptably high. Some of the reasons may include poor socioeconomic development, weak health care system, low socioeconomic status of women and socio-cultural barriers to care utilization.

A cross sectional study was carried out to assess the use of maternal services in Anambra State. A multi stage sampling technique was used to select 800 nursing mothers from the State who were interviewed on the use of maternal services during their last pregnancy.

Over 95% of the subjects had formal education. Almost all the subjects (99.7%) attended antenatal clinics during their last pregnancy with 92.3% (646) of them making 4 or more visits before delivery. Over 97%(680) of the deliveries took place in formal health facilities. Obviously, the women in the study population utilize maternal health services. The problem of maternal mortality in the country may not necessarily lie with utilization but with the quality of services. *(Afr J Reprod Health 2008;* 12[2]:132-140)

RÉSUMÉ

Est-ce qu´un mauvais indice de la mortalité maternelle au Nigéria constitue un problème de l´utilisation des soins? Une étude de cas de l´ Etat d´ Anambra. La mortalité maternelle au Nigéria est si élevée que c´est inacceptable. Parmi les raisons on peut citer le développement socio- économique, un mauvais système de soins médicaux, la mauvaise situation socio-économique de la femme et les obstacles socio-culturels à l´utilisation de soins. Une étude transversale a été menée pour évaluer l´emploi des services maternels dans l´Etat d´ Anambra. A l´aide d´une technique d´un échantillon à multi-stade, nous avons selectionné 800 mères qui allaitent qui ont été intérrogées sur l´utilisation des services maternels au cours de leurs dernières grossesses. Plus de 95% des sujets ont suivi une scolarité formelle. Presque tous les sujets (99,7%) ont fréquenté les consultations des services prénatals pendant leur dernière grosssesse alors que 92,3% (646) d´elles se sont pr**é**sentées 4 fois ou plus avant l´ accouchement. Plus de 97% (680) des accouchements ont eu lieu dans des établisements de santé formels. Evidemment les femmes dans la population étudiée utilisent des services de santé maternelle. Le problème de la mortalité maternelle dans le pays peut ne pas nécessairement rester celui de l'utilisation mais celui de la qualité des services. (*Rev Afr Santé Reprod* 2008; 12[2]:132-140)

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Introduction

Maternal deaths have devastating impacts on families and communities[1]. Unfortunately, it is not an uncommon event in several parts of the developing world. An estimated 600,000 women die from complications of pregnancy, child bearing and unsafe abortions worldwide[2, 3,4]. About 99% of these deaths occur in the developing world[2, 3]. Indeed, the greatest discrepancy in all human development indicators is seen in the maternal mortality ratio between the developed and the developing world. The maternal mortality ratio is highest in sub-Saharan African countries[3]. Nigeria has a maternal mortality ratio of 800 deaths per 100,000 live births. About 35,000 women are estimated to die annually from pregnancy related causes. Out of about 27 million women of reproductive age in the country, about 2 million will not survive pregnancy or childbirth[5, 6]. The high maternal mortality in the developing world is sustained by a weak health care system, poor socio-economic background and low socio-economic status of women[7].

Provision of health care services to parturient mothers is critical in the outcome of pregnancy. Proportion of births attended by trained personnel has been found to correlate closely with the maternal mortality rates of nations[8]. Individual characteristics of mothers found to influence maternal deaths include maternal age, educational attainment, socioeconomic status and antenatal clinic attendance [9,10].

While concerns are on reviewing the current pattern of obstetric services in the sub-region to make them more effective in addressing the complications of pregnancy, labour and peurperium[7, 8,11,12,13,14], the socioeconomic status of women and use of maternal services must not be lost out of sight.

A cross sectional survey was carried out in Anambra State, southeast Nigeria to determine whether mothers make enough contact visits with health care workers during pregnancy and delivery.

Materials and methods

A cross sectional study was carried out in Anambra State southeast Nigeria in 2002 to determine the use of maternal services by parturient mothers. A multi stage sampling technique was used to select the subjects. Five Local Government Areas (LGAs) were selected by simple random sampling out of the 21 Local Government Areas in the State. The selected LGAs are Awka South and Oyi in Anambra Central Senatorial District, Aguata and Ekwusigo in Anambra South Senatorial District and Idemili North in Anambra North Senatorial District. Their population in 2002 were 178,310, 112,379, 391,508, 121,485 and 380,233 respectively. Data on number of health facilities, doctors, nurse/midwives for each LGA was obtained while doctor/population ratio and nurse/midwife population ratio were estimated.

A modified WHO-30 cluster sampling technique was used to select 160 nursing mothers (mothers with babies under 6 months of age) in each of the 5 LGAs making a total of 800. The interviewers were final year medical students undergoing a rural posting in Primary Health Care. A three day training workshop was organized for them in various aspects of the survey. The field work lasted for 6 weeks. Three interviewers

and a field supervisor conducted the survey in each LGA giving a total of 15 interviewers. The mothers were interviewed on the use of maternal services in their last pregnancy. A semi-structured questionnaire that sought information on socio-demographic variables and use of maternal services was used for the data collection. The supervisor edited the question-naires before collecting them from the interviewers so that incorrectly filled ones were identified and necessary corrections made while in the field. Subjects that were unavailable after three call backs were replaced with new ones by the supervisor. The data entry, validation and analysis was by EPI info software version 6. This was carried out over a 6 months period by the computer Unit of the Arbo Virus Research Laboratory, Federal Ministry of Health, Enugu. Frequency distributions, means and standard deviations of relevant variables were obtained.

Results

There is a high number of health facilities in each of the LGAs. The number of doctors in each LGA varied from 65 in Awka South LGA, which is the State Capital to only 6 in Oyi LGA. The number of nurse/midwives varied from 210 in Awka South to 39 in Oyi LGA. The doctor population ratio as well as the nurse/midwife ratio is low in all the LGAs except Awka South table 1.

Data from seven hundred mothers were returned for analysis giving a response rate of 87.5%. The mean age of the subjects was 29.2 ± 6.4 years. Most of the subjects (87.7%) fall within the 20 to 39 year age group table 2. Six hundred and forty-nine (92.7%) of the mothers are in marital union while 24 (3.4%), 23 (3.3%), and 4 (0.6) were widowed, single and divorced/separated respectively. Over 95% of the subjects had formal education with 51.9% (363) and 18.9% (132) of them attaining up to secondary and tertiary levels of education respectively. The main occupations of the subjects are trading, civil service and farming table 3.

Almost all the subjects (698; 99.7%) attended antenatal clinic during their last pregnancy. The places where the clinics were attended were mainly health centers, private hospitals, maternity homes and general hospitals table 4.

The factors that influence choice of place for antenatal clinics were mainly attitude of health workers (265; 37.9%), proximity of

Table 1. **Distribution of population, health facilities and personnel in the study local government areas**

LGAs	Population	Number of health facilities	Number of doctors	Doctor/popu-lation ratio	Number of nurse/midwives	Nurse/midwives/Population ratio
Aguata	391,508	62	22	1/17,796	70	1/5,593
Awka ** South	178,310	48	65	1/2,743	210	1/849
Ekwusigo	121,485	21	15	1/8,099	65	1/1,869
Idemili North	380,233	64	40	1/9,506	98	1/3,880
Oyi	112,379	20	6	1/18,730	39	1/2,882

Table 2. **Age distribution of the subjects**

Age (yrs)	Number	Percentage
15 – 19	46	6.6
20 – 24	136	19.4
25 – 29	232	33.1
30 – 34	155	22.1
35 – 39	92	13.1
40 – 44	31	4.4
45 – 49	8	1.1
Total	**700**	**100**

Mean age = 29.2 ± 6.4 years

Table 3. **Occupational distribution of the subjects and their husbands**

Occupations	Subjects		Husbands	
	Numbers	Percentage	Numbers	Percentage
House/wife	109	15.6	—-	—-
Petit trader	280	40	132	20.3
Farmer	78	11.1	114	17.6
Artisan	62	8.9	195	30
Junior Civil Servant	83	11.9	60	9.2
Senior Civil Servant	73	10.4	71	10.9
Business Man/ women	11	1.6	58	8.9
Professionals	4	0.6	19	2.9
Total	**700**	**100**	**649****	**100**

** Data on husbands available on only for the 649 mothers that are in marital union.

Table 4. **Places where mothers attended antenatal clinics and delivered their babies during their last pregnancies**

Places of antenatal clinic/delivery	Antenatal clinic attendance		Delivery of babies	
	Number	Percentage	Number	Percentage
Health center	274	39.1	217	31
Private Hospital	175	25	208	29.7
Maternity Home	124	17.7	142	20.3
General Hospital	117	16.7	113	16.3
Traditional Birth Attendant	8	1.1	14	2
None/Home	2	0.3	6	0.9
Total	**700**	**100**	**700**	**100**

Table 5. **Factors that influence choice of places for antenatal clinic and delivery of babies**

Factors	Antenatal clinic		Delivery services	
	Number	Percentage	Number	Percentage
Proximity	244	34.9	197	28.1
Cost	106	15.1	153	21.9
Attitude of Health workers	265	37.9	265	37.9
Availability of Services at all time	63	9	55	7.9
Others	22	3.1	30	4.3
Total	**700**	**100**	**700**	**100**

the clinic (244; 34.9%) and cost of the service (106; 15.1). Similar factors also influenced the choice of place for delivery services though with slightly varying proportions table 5.

The mean number of antenatal clinic attendance before delivery was 6.5 ± 1.8. Over 92% (646) of the mothers made 4 or more visits to the antenatal clinics before delivery.

The use of formal health facilities for delivery services is very high among the subjects as 97.3%(680) of the deliveries took place in health centers, private hospitals, maternity homes and general hospitals. Only 6 (0.9%) of the mothers delivered their babies at home without the assistance of health workers. Similarly, patronage of the traditional birth attendants for obstetric services is minimal among the study group as only 14 (2%) mothers delivered their babies under their care table 4.

Majority of mothers attended health facilities for antenatal clinics and for delivery of their babies in places less than I Km from their homes. The mean distance to the health facility was 1.4 ± 1.6 Km. The subjects got to the health facility by trekking (503; 71.9%); cars/motor cycles (188; 26.9%); and bicycles (9; 1.3%).

Discussion

The number of health facilities in the LGAs is high. However, the doctor-population ratio and the nurse/midwife-population ratio are low in the study area. This is because of the high number of primary health centers in the LGAs, which are mostly manned by nurse/midwives and nurse assistants (Community Health Extension Workers). Similarly, most private hospitals and maternity homes engage the services of nurse assistants (auxiliary nurses) thereby leading to the relatively low number of nurse/midwives working in the study area.

The Socio demographic profile of the subjects is similar to the findings of the Nigeria Demographic and Health Survey (NDHS) of 2003 for southeast Nigeria. For while the study showed that over 95% of the subjects had formal education with 51.9% (363) and 18.9% (132) of them attaining up to secondary and tertiary levels of education respectively, the NDHS found that 7.7% had no education while 55.5% and 12.1% had secondary and post secondary education respectively[15]. A high proportion of mothers are gainfully engaged in productive ventures. The high proportion of mothers with formal education and means of livelihood has implications for health, as

education and income are important determinants of maternal health[2,9,10].

Almost all the mothers attended antenatal clinic during their last pregnancy. This is in contrast to the findings in Northern Nigeria and rural Pakistan where only 25.9% and 61% of the women respectively received antenatal care during their last pregnancy[16, 17]. The high rate of patronage of antenatal services in the study population is commendable, as prenatal services have been known to be one of the sure ways of reducing maternal morbidities and mortalities[7, 13,18,19]. The subjects obtained their antenatal services mostly from the formal health sector viz health centers private hospitals, maternity homes and general hospitals. These health facilities are conventionally manned by trained personnel and regulated by the state ministry of health. The proportion of mothers that used the services of the traditional birth attendant for antenatal visits is meagre. This is corroborated by the findings of the NDHS which showed that only 0.9% of the mothers visited the traditional birth attendants for prenatal care in southeast Nigeria[15].

The factors that influenced choice of facilities for prenatal services are very revealing and have policy implications. The attitude of health workers is considered the most important factor followed by proximity and the cost of services. Other authors have recognized the influence of health workers attitude to care utilization[16, 20,21.] The current reform in the health sector in Nigeria is expected to address this. The primary health programme in Nigeria has obviously helped in making health care services including maternal care available to people close to where they live. As a result distance to antenatal services in the state does not seem to pose serious problems. Majority of the subjects reported that the facilities were less than 1.5 Km and that they trekked to their places of prenatal services.

The number of antenatal visits by the subjects before delivery is commendable. For while over 94% of the mothers made 3 or more visits, the mean number of visits of 6.5 ± 1.8 is enough contact time for the health workers to identify and address any likely untoward events of pregnancy. It is above 4, minimum number of antenatal visits recommended by the World Health organization[22]. A study in Israel showed the rate of physician visits during prenatal period to be in the range of 2.3 ± 2.4 to 4.9 ± 2.9[23]. Studies have compared the standard model of prenatal services with a new model that emphasizes actions known to be effective in improving maternal and neonatal outcomes and has fewer clinic visits. In such studies, the standard model with a median visit of 8 and the new model with a median of 5 were shown to be comparable in both maternal and perinatal outcomes[11, 12,13].

The use of the formal health facilities for delivery services is very high in the study population as 97.3% of the subjects delivered in health facilities. This is in contrast to a study in Pakistan where 67% of the women delivered at home while a study in northern Nigeria showed that only 9.9% of the women delivered in a health facility[16, 17]. Compelling evidence show that maternal deaths are substantially reduced when a high proportion of births are attended by health professionals[2, 3,7,8]. From the above, it is normal to expect a high standard of maternal health in the study

population since their utilization pattern for maternal services is comparable to what is obtainable in some of the developed nations[11, 12,13,23]. This however is not the case. The maternal mortality ratio for Nigeria is 800/100,000. The reasons for the high maternal deaths are not far fetched. In the developing world, it is not just sufficient to state that attendance of births by trained professionals will drastically reduce maternal deaths. It is also necessary to consider the preparedness of the health facilities to cope with obstetric emergencies. Avoidable hospital factors are known to contribute substantially to maternal mortality in the developing world[20, 24,25,26]. A number of the health facilities especially at the primary health care centers, maternity homes and some private and general hospitals in the country do not meet up with the criteria for basic or comprehensive essential obstetric care. A national survey on essential obstetric care revealed that less than a third of the public sector referral health facilities in Nigeria met the standard for comprehensive essential obstetric care[27]. As a result, even the referral centers in the country are incapable of effectively attending to women with obstetric emergencies. Even in situations where the health facilities do meet the EOC criteria as in teaching hospitals, several other contending forces still render emergency obstetric care ineffective. For example, the decision-surgical intervention intervals in teaching hospitals in Nigeria could vary from 30 minutes to 5.8 ± 1.2 hours. The delays are attributable to unavailability of blood, electricity, sterilized instruments, ambulance, late arrival of experienced theatre staff and unhealthy hospital policy[20, 24]. The interval between request for blood and its availability

for transfusion to patients in hospitals in Nigeria could be up to 3 to 4 hours[28]. With these scenarios in mind, it becomes clear that the problem of maternal mortality in Nigeria may not necessarily lie with the mothers' failure to utilize maternal care but that the health care system probably needs to be repositioned to meet up with the challenges of modern obstetric care.

Acknowledgement

REFERENCES

1. Horon IL, Cheng D. Enhanced surveillance for pregnancy-associated mortality—Maryland, 1993-1998. JAMA. 2001;285(11): 1455-9.

2. Kurjak A, Bekavac I. Perinatal problems in developing countries: lessons learned and future challenges. J-Perinat-Med. 2001; 29(3): 179-87.

3. Ghosh MK. Maternal mortality. A global Perspective. J Reprod Med. 2001; 46(5): 427-33.

4. Hill K, AbouZhar C, Wardlaw T. Estimates of maternal mortality for 1995. Bull World Health Organ. 2001; 79(3): 182-93.

5. Federal Ministry of Health, Abuja. Reduce Maternal and Newborn deaths in Nigeria, Make Pregnancy Safer, 2000.

6. Otolorin OE. An overview of maternal mortality in Nigeria, in Safe Motherhood at Local Government Level in Nigeria. The proceedings of workshops on strategies for the reduction of high maternal mortality. Ed. Akuse. 1999; 52-64.

7. Drazancic A. Antenatal care in developing countries. What should be done? J Perinat Med. 2001; 29(3): 188-98.

8. Robinson JJ, Wharrad H. The relationship between attendance at birth and maternal mortality rates: an exploration of United Nations data sets including the ratios of physicians and nurses to population, GNP per capita and female literacy. J Adv Nurs. 2001; 34(4): 445-55.

9. Magadi M, Diamond I, Madise N. Analysis of factors associated with maternal mortality in Kenyan hospitals. J Biosoc-Sci. 2001; 33(3): 375-89.

10. Okonta PI, Okali UK, Otoide VO Twomey D. Exploring the causes of and risk factors for maternal deaths in a rural Nigerian referral hospital. J Obstet Gynaecol. 2002; 22(6):626-9.

11. Villar J Ba'aqeel H, Piaggio G, Lumbiganon P, Miguel-Belizan J, Farnot U, Al-Mazrou Y, Carroli G, Pinol A, Donner A, Langer A, Nigenda G, Mugford M, Fox-Rushby J, Hutton G, Bergsjo P, Bakketeig L, Berendes H, Garcia J. WHO antenatal care randomized trial for the evaluation of a new model of routine antenatal care. Lancet. 2001; 357(9268): 1551-64.

12. Carroli G, Villar J, Piaggio G, Khan-Neelofur D, Gulmezoglu M, Mugford M, Lumbiganon P, Farnot U, Bersgjo P. WHO systematic review of randomized controlled trials of routine antenatal care. Lancet. 2001; 357(9268): 1565-70.

13. Carroli G, Rooney C, Villar J. How effective is antenatal care in preventing maternal mortality and serious morbidity? An overview of the evidence. Paediatr Perinat Epidemiol. 2001; 15(Suppl 1): 1-42.

14. Posmontier BE. Antepartum care in the twenty-first century. Nurs-Clin North Am. 2002; 37(4): 757-69.

15. National Population Commission, Federal Republic of Nigeria. Nigeria Demographic and Health Survey 2003. ORC Macro Calverton, Maryland, USA, 2004.

16. Ejembi CL, Alti- Muazu M, Chirdan O, Ezeh HO, Sheidu S. Utilization of maternal health services by rural Hausa women in Zaria environs, northern Nigeria: has primary health care made a difference? Journal of Community Medicine and Primary Health Care. 2004; 16(2): 47-54.

17. Safdar S, Inam SN, Omair A, Ahmed ST. Maternal health care in a rural area of Pakistan. J Pak Med Assoc. 2002; 52(7): 308-11.

18. Ikechebelu JI, Okoli CC. Review of eclampsia at the Nnamdi Azikiwe University Teaching Hospital Nnewi (January 1996-December 2000). J Obstst Gynaecol. 2002; 22(3): 287-90.

19. Mahran M. Eclampsia: a leading cause of maternal mortality. J Perinat Med. 2001; 29(3): 235-40.

20. Okaro JM, Umezulike AC, Onah HE, Chukwuali LI, Ezugwu OF, Nweke PC. Maternal mortality at the University of Nigeria Teaching Hospital, Enugu, before and after Kenya. Afr J Reprod Health. 2001;5(2) 90-7.

21. Dawuda C, Millam J, Mohammed YA, Oguntona T. A review of factors associated with low utilization of maternity facilities for delivery in Maiduguri. Journal of Community Medicine and Primary Health Care.1991; 4

22. World Health Organization. Antenatal care. Report of a technical working group, Geneva 31 October to 4 November 1994(WHO/FRI/MSH/96.8) Geneva, 1996.

23. Ezra Y, Schmuel E, Hakim M, Schenker JG. The outcome of grand-multiparous pregnancies of Arabic and Jewish populations

in peripheral and central areas of Israel. Acta Obstet Gynecol Scand. 2001; 80(1): 30-3.

24. Orji E O, Fasubaa OB, Onwudiegwu U, Dare FO, Ogunniyi SO. Decision-intervention interval in ruptured uteri in Ile-Ife, Nigeria. East Afr Med J. 2002; 79(9):496-8.

25. Hickey MU, Kasonde JM. Maternal mortality at University Teaching Hospital Lusaka. Med J Zambia. 1997; 11: 74-78.

26. Mhango C, Rochat R, Arkutu A. Reproductive mortality in Lusaka, Zambia. Stud Fam Plann. 1986; 17: 243-251.

27. Federal Ministry of Health, Abuja. National study on essential obstetric care facilities in Nigeria, 2003; 9-18.

28. Ibeh CC, Ele PU, Ukpabi OJ. Assessment of doctors management of severe malaria in urban centers in Eastern Nigeria. Afr J Med Sci. 2004; 33:149-153.