Maternal and fetal outcomes of emergency obstetric referrals to a Nigerian teaching hospital

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Abstract

Our study sought to determine the maternal and fetal outcomes of emergency obstetric referrals to a Nigerian teaching hospital as well as assess reasons for these referrals.

We enrolled women referred or who presented themselves to the emergency obstetric unit for management of complications of pregnancy, labour, delivery or the puerperium.

The majority presented late, their mean duration of stay at the referring facility being 22.25 h. Only nine (7.3%) were transported by ambulance. Severe pre-eclampsia and eclampsia (in 33, 26.8%) were the commonest obstetric indications for referral. Stillbirths occurred in 20/122(16.4%). There were eleven maternal deaths, giving an emergency referral fatality rate of 8.9%. Both maternal and fetal outcomes of these emergency obstetric referrals were poor owing mainly to late presentation, this being the result, among other factors, of an inefficient referral system.

Keywords

Emergency obstetric referrals, maternal, fetal, outcome, Nigeria

Introduction

Maternal mortality and morbidity in low- and middle-income countries (LMICs) including Nigeria is yet to show potentially possible decline, despite strategies put in place by government and other stakeholders. Nigeria's current maternal mortality ratio (MMR) is 576 per 100,000 live births,[1] which is higher than the number previously reported (545) and more than 50 times higher than the mortality under the best global circumstances.[2] Perinatal and neonatal mortality, although showing a steady decline, are still unacceptably high.[1]

Although emergency obstetric and newborn care (EONC) has been identified as an important healthcare intervention towards reducing maternal and neonatal morbidity and mortality,[3] this strategy, however, cannot function optimally without its integration with a functional referral system which allows for early diagnosis and treatment at both referring and referral hospitals.[4] Another key intervention closely linked to EONC towards reducing maternal and neonatal deaths is the issue of increasing contraceptive demand, access and uptake.[5] It is estimated that contraceptive use averted 44.3% of maternal deaths worldwide in 2008.[6] Unfortunately, contraceptive use rates in Nigeria and most LMICs are sadly still low and associated with a high unmet demand for contraception.[1,7]

An efficient referral system is still wanting in Nigeria, as evidenced by the late presentation of women requiring emergency obstetric care.[8,9] Despite enormous resources put in place by both government and international organisations towards obstetric training of midwives and doctors at primary and secondary healthcare facilities and the obvious benefit of early referral, late presentation remains the norm.

We therefore sought to determine the maternal and fetal outcomes of emergency obstetric referrals, as well as those without a referral to the obstetric unit of

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a tertiary teaching hospital. We attempted to find out the indications for these referrals.

Methods

Ours was a prospective longitudinal study conducted at the department of Obstetrics and Gynecology of the University of Abuja Teaching Hospital, Gwagwalada from 7 November 2015 to 31 March 2016. The hospital has approximately 350 beds, serves an area of 1043 km^2 and a population of > 1 million, and delivers approximately 3000 women annually.

All women requiring emergency obstetric care who had been referred from either a primary, secondary, tertiary or private health facility were included. Also included were patients who were self-referred within 24 h of management of a pregnancy complication at any of the aforementioned facilities and were thought on arrival to require emergency obstetric care. Women who met the above criteria but refused to give written or verbal consent for participation in the study were excluded.

The time of presentation was entered into a study proforma by the attending physician and relevant history related to the management of the patient was recorded. Upon stabilisation of the patient, information from the case-notes was then transferred to the proforma as well as other relevant information relating to reasons and conditions for referral, duration of stay at the referral facility and time spent in the process. All information from the interview was cross-checked with the referral documentation when available. Maternal and fetal outcome was retrieved from the case notes before mother and baby were discharged from the hospital.

Data analysis was done using the Statistical Package for social sciences (SPSS) software version 21 programme. Categorical variables were compared using the Chi-squared test while continuous variables were compared using Student's t-test. A P value < 0.05 was accepted as indicating statistical significance.

Ethical approval for this study was obtained from the Research Ethics Committee of the University of Abuja Teaching Hospital.

Results

During the study period, there were 138 emergency obstetric referrals, including eight self-referred cases. Fifteen patients refused to participate and so were excluded.

Only one (0.8%) was aged less than 20 years while seven (5.7%) were aged 40–44 years. In all, 23 (18.7%) women neither registered nor attended antenatal care. The age distribution and parity of participants are shown in Table 1.

Table 1. Age distribution and parity of participants.

Age group (years) *Mean ± SD 29.4 ± 5.6*	Frequency	%
<20	1	0.8
20–24	22	17.9
25–29	47	38.2
30–34	27	22.0
35–39	19	15.4
40–44	7	5.7
Parity		
Nullipara	42	34.1
Primipara	27	22.0
Multipara	45	36.6
Grand multipara	9	7.3
Total	123	100.0

Grand multipara delivered ≥ 5 times.

The mean duration of patients stay at the referring facility was 22.25 h. Nearly 15% of the women came from the referring centre via a second hospital. Only eight (6.5%) were accompanied by any medical staff. In all cases, there was no initial phone call or communication received at the obstetric unit of the teaching hospital. The mean time taken from referral to arrival was 8 h 54 min. Only nine (7.3%) women were transported by hospital ambulance. Other modes of transportation included the use of non-medicalised vehicles and motorbikes. The non-medical reasons for referral are shown in Table 2. The main obstetric indications are shown in Table 3. One woman died undelivered; 20 delivered before presentation and 102 delivered after arrival; 71/122 (58.2%) had an emergency Caesarean section and the remaining 51 delivered vaginally, five of whom (9.8%) were aided instrumentally by vacuum extraction. Overall, there were 102 (83.6%) live births, 14 (11.5%) fresh stillbirths and six (4.9%) macerated stillbirths. However, among the 102 women referred either as antepartum or intrapartum cases only, four (3.9%) had stillbirths.

There were 11 maternal deaths, giving an emergency referral fatality rate of 8.9%.

There was no statistically significant relationship between booking status and maternal outcome (Chi-squared test = 3.450, $P = 0.485$). However, there was an obvious relationship between the status of referral hospital and maternal outcome as shown in Table 4. The majority of maternal deaths (n = 7, 63.6%) occurred among women referred from secondary health facilities while three (27.2%) were from private hospitals and the remaining one (9.1%) was from a maternity home (Chi-squared test = 14.356, $P = 0.006$).

Table 2. Main non-obstetric reason for referral.

Main non-obstetric reason for referral	Frequency	%
Inadequate manpower/expertise	53	43.1
Lack of bed space	25	20.3
Lack of neonatal services	20	16.3
Non-functional theatre	9	7.3
Others	8	6.5
Hospital on strike	4	3.3
Lack of material needed for surgery	2	1.6
Financial reasons	2	1.6
Total	123	100.0

Table 3. Main obstetric indication for referral.

Main obstetric indication for referral	Frequency	%
Severe pre-eclampsia/eclampsia	33	26.8
CPD/Obstructed labour	27	22.0
Premature rupture of membrane	22	17.9
Nil	11	8.9
Antepartum haemorrhage	9	7.3
Previous CS scar	5	4.1
Post-term pregnancy	4	3.3
Severe anaemia	2	1.6
Postpartum haemorrhage	2	1.6
Ruptured uterus	2	1.6
Fetal distress	1	0.8
Congestive cardiac failure in pregnancy	1	0.8
Triplet gestation in labour	1	0.8
Intra uterine fetal death	1	0.8
Prolonged latent phase of labour	1	0.8
Puerperal sepsis	1	0.8
Total	123	100.0

Table 4. Relationship between status of referral hospital and maternal outcome.

Status of referral hospital	Maternal outcome		Chi-squared	P value
	Died	Alive and discharged		
PHC	0	32	14.356	0.006
SHC	7	56		
Private clinic	3	21		
Tertiary hospital	0	3		
Others	1	0		
Total	11	112		

PHC, primary healthcare facility; SHC, secondary healthcare facility.

The case fatality rate for severe pre-eclampsia/eclampsia was 30.3%. This pathological entity contributed to most of the maternal deaths among referrals (10/11, 90.9%). When these are stratified according to the state of pregnancy at presentation, 5/20 (25%) postpartum women died, 5/76 (6.6%) referred in the intrapartum period died and 1/27 (3.7%) died before the onset of labour.

Discussion

A functional referral system is an integral component of making sure pregnant women and their unborn babies receive optimal care and chance of survival when in need of emergency obstetric services.[10,11] Findings from our study suggest that attendance to antenatal care by pregnant women in Nigeria has improved remarkably.[1,12] The issue seems now to be, at least in our area, the quality of antenatal and intrapartum care women receive at the health facilities and the poor functionality of the referral system that pertains. Ensuring early patient referral, transportation of patients in ambulances, effective communication and provision of feedback by the receiving centre are essential.

The major non-medical reasons for inadequacy of referrals were blamed on inadequate manpower/expertise, lack of bed space, lack of neonatal services, non-functional theatres, lack of funds to pay for service (especially at the private clinics) and industrial action by healthcare workers.[13–17]

A recently launched volunteer obstetrics scheme (VOS) by the Society of Gynaecology and Obstetrics of Nigeria (SOGON) aiming to deploy volunteer obstetricians at designated primary healthcare centres during scheduled visits is a step in the right direction, but cannot provide a lasting solution.

Our study highlights the huge contribution of severe pre-eclampsia and eclampsia to maternal morbidity and mortality. This information is, however, well-known.[18]

Emphasis on early identification and prevention of eclampsia by prompt administration of the correct dosage of magnesium sulphate by healthcare providers is necessary, as we found only few had documented evidence of administration prior to referral.

Furthermore, the partogram, a well-established tool for monitoring the progress of labour, should be enforced in all healthcare facilities, including the private sector. Unfortunately, it is still poorly utilised in maternity units in Nigeria.[19,20]

The high percentage of maternal deaths occurring in the postpartum period elicited in our study affirms the premium to be placed on early referral of high-risk patients before the onset of labour or delivery,

and the need for vigilance and continued care in the puerperium.

Although our audit has centred on outcome of emergency referrals mainly in the context of what happened before arrival at the teaching hospital, other studies exploring the events that occur at the referring and the referral centres need to be carried out.

The reliance on referral should be shifted to improve function at referring centres.

In conclusion, our findings highlight an unacceptable maternal and perinatal mortality in Nigeria.

Declaration of conflicting interests

Funding

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