Pattern of Referral Cases to the Obstetrics Unit of the Rivers State University Teaching Hospital for Maternal Delivery

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Authors' contributions

This work was carried out in collaboration between both authors. Author PAA designed the study, performed the statistical analyses and wrote the first draft of the manuscript. Author DAMP assisted in data collection managed the analyses of the study and literature searches. Both authors read and approved the final manuscript.

Original Research Article

ABSTRACT

Background: Formal education, antenatal care, and improved health services still remain the key to a large-scale reduction in maternal mortality in developing countries. Pregnancy and labour complications are most prevalent among unbooked patients compared to booked patients. Prompt and effective treatment will go a long way to reduce these complications.
Objective: To determine the pattern of Obstetric referral cases to the Rivers State University Teaching Hospital (RSUTH) and assess time to response by the hospital.
Methodology: A retrospective review of hospital records of all pregnant women referred to RSUTH for maternal delivery and care in a six months period, 1st April to 30th September 2015, was carried out. Data on patients' age, educational level, marital status, gestational age, parity, booking status, time interval between admission and intervention, obstetric diagnoses and

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outcome were retrieved using structured pro-forma. Data were analyzed using United States CDC Epi Info Version 7.

Results: There were 460 cases referred to the hospital, which represents 42.6% of all maternal deliveries, with a mean age of 28.7±4.6 years and median age of 27.0 years. A majority, 73.7% had secondary education, 55.4% were Primigravidae, 55.4% had term pregnancies and 77.8% were booked elsewhere. Over 60% of diagnoses comprised of difficult labour, Pre-eclampsia/ Eclampsia and prolonged pregnancy. About 75% of the cases had intervention carried out within 12 hours of arrival to hospital.

Conclusion: The pattern of referral cases to our hospital are mainly young educated primigravidae at term, who have had some form of antenatal care and presenting with common complications associated with this group. The intervention response time is good, but we recommend that high risk pregnancies should ab initio be registered at centers properly equipped to handle such cases to avoid calamity.

1. INTRODUCTION

The maternal mortality ratio (MMR), expressed as maternal deaths per 100,000 live births over a given period, is a major measure of quality of obstetric care. According to World Health Organization (WHO) estimates, it varies up to 100-fold, from approximately 10 in developed countries to approximately 1,000 in least developed [1,2]. Antenatal care has since been shown to be related to lowered maternal mortality. Pregnancy and labour complications were most prevalent among unbooked patients compared to booked patients [3]. Formal education, antenatal care, and improved health services still remain the key to a large-scale reduction in maternal mortality in developing countries like Nigeria [4].

Obstetric emergencies are the leading causes of maternal mortality worldwide and particularly in developing countries where illiteracy, poverty, lack of antenatal care, poor transport facilities and inadequate equipment/staffing of hospitals, combine to magnify the problem [5,6]. Obstetric emergencies have direct relationship with the quality of antenatal care, with unregistered women in rural areas suffering much more than their urban/registered counterparts. Early registration, regular antenatal visits, early identification and timely referral of high-risk pregnancies can reduce the incidence of obstetric emergencies [7].

Prevention where possible and, prompt and effective treatment of obstetric emergencies, will go a long way to reduce the magnitude of our ever-high maternal mortality in developing counties. It is very important to give due attention to the nature and magnitude of these cases, so that corrective measures can be put in place to reduce occurrence and increase preparedness to manage them.

This study therefore, seeks to determine the pattern of Obstetric referral cases to the RSUTH; to review the socio-demographic characteristics, primary reasons for referral (diagnoses), interventions carried out and assess time to response by the hospital.

2. METHODOLOGY

A retrospective review of hospital records of all pregnant women referred to RSUTH for maternal delivery and care in a six months period (1ST April to 30TH September 2015) was carried out. Data on patients' age, educational level, marital status, gestational age, parity, booking status, time interval between admission and intervention, obstetric diagnosis and outcome were retrieved using structured pro-forma.

All referred (including self-referrals) antepartum and intrapartum cases ≥20 weeks gestation were included, while cases <20 weeks gestation, booked cases at our Centre and postpartum referrals were excluded. There were 460 cases that met the stated criteria and formed the study population.

Data were analyzed using United States CDC Epi Info Version 7. Data were summarized using frequencies and proportions for qualitative variables; and means, standard deviation, medians and range employed for quantitative variables. The mean time interval between admission and intervention were compared across the obstetric diagnoses using F-test at statistically significant level of $P<0.05$.

The RSUTH is one of two tertiary hospital for referral from all private clinics, maternity homes, primary health centers and secondary health facilities from all the 23 Local government areas of Rivers State, Nigeria. The hospital is funded by the Government and patients are expected to pay directly for services (except few that participate in National Health Insurance Scheme). It provides emergency obstetric services to women referred from other centers, as well as providing antenatal care and delivery services for low and high-risk pregnant women booked with the hospital. The hospital is well equipped and has round the clock availability of qualified team comprising of Obstetricians, Pediatricians and Anaesthetist. There is availability of laboratory and blood bank services in the hospital. Referrals are made directly from primary, as well as secondary, health facilities not following any pattern.

3. RESULTS

During the six months period, there were a total of 1,080 admissions for maternal delivery of which 460 (42.6%) were referral cases (unbooked/booked elsewhere). The maternal age ranged from 15-45 years with a mean age of 28.7±4.6 years and median age of 27.0 years. A majority 339 (73.7%) had secondary education, 255 (55.4%) were Primigravidae (Nulliparous), 255 (55.4%) presented with term pregnancies (Gestational age 37-40 weeks) and 358 (77.8%) were booked elsewhere i.e. received some form

of antenatal care from a referral Center. See Table 1.

The leading reasons for referral (diagnoses made at admission) as shown in Fig. 1, were Difficult labour 34.3% (comprising cephalopelvic disproportion, prolonged / obstructed labour ± ruptured uterus); Pre-eclampsia/Eclampsia 14.1%; Postdate/prolonged pregnancy 12.0%; and Fetal emergencies 10.2%. Least common reasons for referral were multiple pregnancies 2.8%, Non-obstetrics emergencies 1.5% and previous uterine scars 0.7%.

In terms of interventions carried out for these cases, a majority were delivered through Caesarean Section (54.6%); 41.3% had spontaneous vaginal delivery (SVD), 2.2% had Laparotomy for ruptured uterus and 0.7% had assisted vaginal delivery (AVD), as shown in Table 2. The only undelivered case was a maternal death which was a non-obstetrics emergency (upper GI bleeding) that died shortly after arrival. This represents 0.2% or MMR of 217 per 100,000. About 75% of the cases had intervention carried out within 12 hours of arrival to hospital (Table 3). Those who were delivered after 24 hours were mainly non-emergencies, requiring stabilization and planned induction or elective caesarean section. Fig. 2 shows the comparison of mean time to intervention across the referral diagnoses; as expected the mean time to response was shortest for fetal emergencies and longest for non-emergencies.
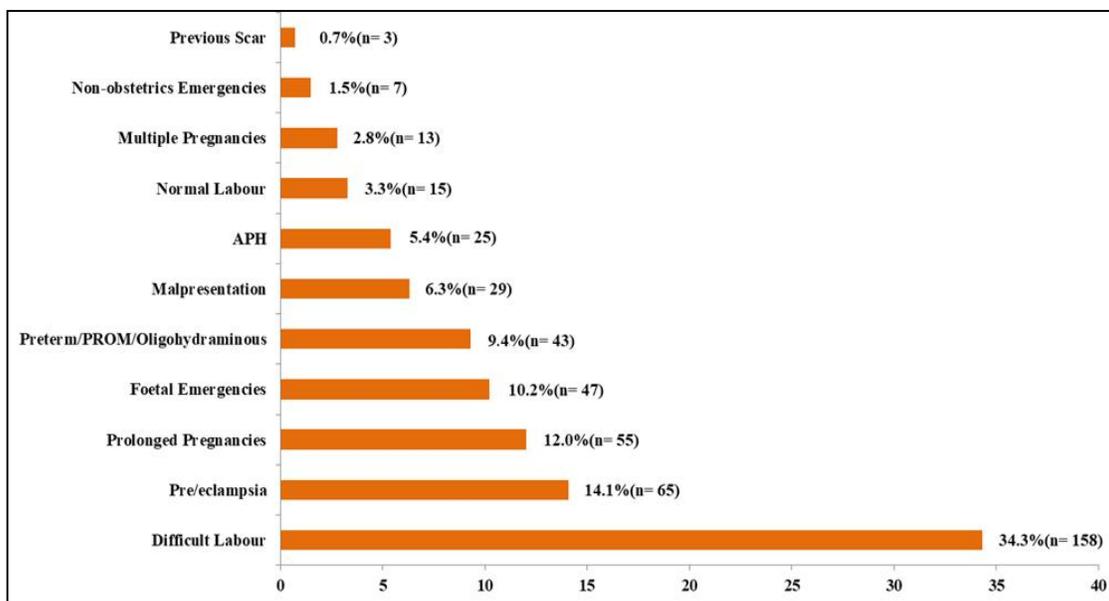

Fig. 1. Distribution of diagnoses of referral cases to RSUTH (N=460)

Table 1. Socio-demographic characteristics of referral cases (N=460)

Variables	Frequencies (N)	Percentage (%)
Age category		
15 – 19 years	9	2.0
20 – 24 years	66	14.3
25 – 29 years	196	42.7
30 – 34 years	135	29.3
35 – 39 years	46	10.0
≥40 years	8	1.7
Education		
None	1	0.2
Primary	31	6.7
Secondary	339	73.7
Tertiary	89	19.4
Parity category		
Para 0	255	55.4
Para 1	73	15.9
Para 2-4	118	25.7
Para >4	14	3.0
Gestational age category		
≤28 Weeks	5	1.1
>28 Weeks to <37 Weeks	98	21.3
37 – 40 Weeks	255	55.4
>40 Weeks	102	22.2
Booking status		
Booked elsewhere	358	77.8
Not booked anywhere	102	22.2

Mean age ± SD =28.7±4.6 years; Median age=27.0 years; Age range: 15 - 45 years

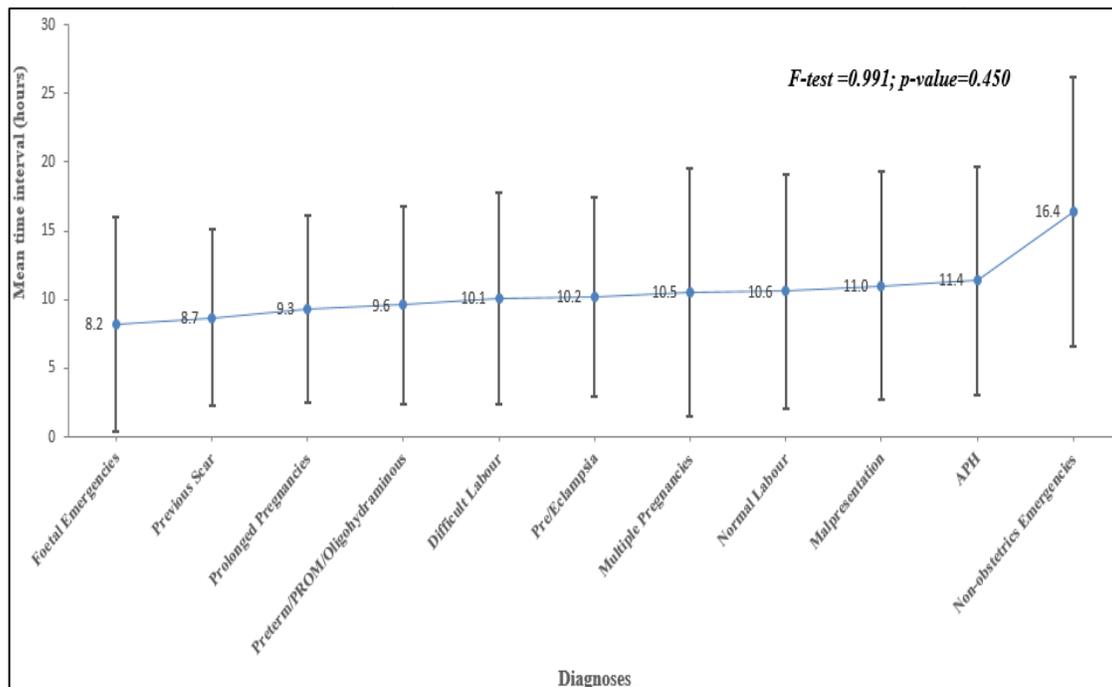**Fig. 2. Comparison of mean time to intervention across the referral diagnoses**

Table 2. Intervention carried out among the referral cases (n=460)

Intervention carried out	Frequency (N)	Percentage (%)
Caesarean section (CS)	251	54.6
Spontaneous vaginal delivery (SVD)	190	41.3
Laparotomy	10	2.2
Assisted vaginal delivery (AVD)	8	1.7
Undelivered*	1	0.2
Total	**460**	**100.0**

Maternal death

Table 3. Interval between admission and intervention among referral cases (n=460)

Interval between admission and intervention	Frequency (N)	Percentage (%)
Within 1 hour	25	5.4
>1 hour – 6 hours	187	40.7
>6 hours – 12 hours	132	28.7
>12 hours – 24 hours	51	11.1
>24 hours	65	14.1
Total	**460**	**100.0**

4. DISCUSSION

This study has shown that referral cases (obstetric emergencies) are relatively common (42.6%) in this center and a huge proportion (77.8%) were booked at a center from where they were referred. This is similar to the findings of Bangal et al. [7] and Sabale et al. [8] and stresses the need for improvements in healthcare services at the peripheral centers. High risk pregnancy identification and its timely referral to higher centers with facilities for specialist care holds the key to success in reducing the incidence of obstetric emergencies. The finding of about one-quarter of referral cases being unbooked (not previously registered at any center), corresponds to other studies [8,9].

Majority (57%) of the referral cases were young (aged 20-29) and were primigravidae (55.4%); this is similar to the findings, of 58.2% and 58.9% respectively, by Sabale et al. [8]. These categories of patients are high risk with known pregnancy and labour complications associated with them, such as difficult labour ("untried" pelvis), Pre-eclampsia & related conditions and prolonged pregnancy, often requiring good antenatal vigilance and specialist delivery. It is not surprising therefore that the commonest reasons for referral (diagnoses) in this study were Difficult labour 34.3% (comprising cephalopelvic disproportion, prolonged / obstructed labour ± ruptured uterus), Pre-eclampsia/Eclampsia 14.1%, and Postdate/prolonged pregnancy 12.0%. Pre-eclampsia/Eclampsia was the only similar major reason for referral in the study by Sabale et al. (25.8%) [8] and Charu et al. (26%) [10] despite similarity in having mostly young primigravidae as referred cases. Both studies were carried out among Indian women and may be due to differences in cephalopelvic characteristics between the two group of women.

The Caesarean Section rate in this study was high (54.6%), this is similar to the findings of 42.1% by Sabale et al. [8] and 55% by Sorbye et al. [11]. We can conclude that the Caesarean Section rate is substantially high in referral cases. This is clearly due to the fact that mainly complicated cases needing abdominal delivery, which could not be carried out in the referral centers for various reasons, are the ones being referred.

Admission to delivery interval for majority of the cases (46.1%) was 6 hours or less, similar to the finding of about 47% by Sabale et al. [8]. About 75% of our patients were delivered within 12 hours, irrespective of diagnoses, which is quite commendable. As expected, the mean time to response was shortest for fetal emergencies and longest for non-emergencies.

We had one maternal death of the 460 referral cases (0.2%) giving a Maternal Mortality Ratio of 217 per 100,000 which is still on the high side. This patient was brought in moribund and died shortly after admission for non-obstetric emergency (upper GI bleeding). Sabale et al. [8] reported a mortality of 0.8% and Almerie et al. [12] reported a ratio of 54.8 per 100,000.

This study is limited by the fact that inadequate documentation could have caused some cases being missed due to the retrospective nature of the study. In addition, maternal deaths in the puerperium could have been underreported as the cases were not followed up to the postnatal clinic. Also, data was collected only for six

months; this was the first six months following a prolonged period of free caesarean section when cases, sometimes dubious and unwarranted, were referred to the hospital.

5. CONCLUSION

The pattern of referral cases to our hospital are mainly young educated primigravidae at term, who have had some form of antenatal care and presenting with common complications associated with this group. The intervention response time is good, but we recommend that high risk pregnancies should ab initio be registered at centers properly equipped to handle such cases to avoid calamity.

High risk pregnancy identification and, proper antenatal and intrapartum care, will reduce the incidence of obstetric emergencies. Prevention where possible and, prompt and effective treatment of obstetric emergencies, will go a long way to reduce the magnitude of our ever-high maternal mortality in developing counties. There is need for a policy on antenatal registration in the state, where risk stratification guidelines and systems will be put in place to assist in early referral of high risk obstetric patients to centers equipped to handle them.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard, written approval of Ethics committee has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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