

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

**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, 1<sup>ST</sup> April to 30<sup>TH</sup> 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 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.

**Key Words:** Unbooked patient, referral cases, intervention time, maternal delivery, Rivers State,

**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

40 areas suffering much more than their urban/registered counterparts. Early registration, regular antenatal  
41 visits, early identification and timely referral of high-risk pregnancies can reduce the incidence of  
42 obstetric emergencies [7].

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

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

#### 50 **Methodology:**

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

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

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

63 The RSUTH is one of two tertiary hospital for referral from all private clinics, maternity homes, primary  
64 health centers and secondary health facilities from all the 23 Local government areas of Rivers State,  
65 Nigeria. The hospital is funded by the Government and patients are expected to pay directly for services  
66 (except few that participate in National Health Insurance Scheme). It provides emergency obstetric  
67 services to women referred from other centers, as well as providing antenatal care and delivery services  
68 for low and high-risk pregnant women booked with the hospital. The hospital is well equipped and has  
69 round the clock availability of qualified team comprising of Obstetricians, Pediatricians and Anaesthetist.  
70 There is availability of laboratory and blood bank services in the hospital.

#### 71 **Results:**

72 During the six months period, there were a total of 1,080 admissions for maternal delivery of which 460  
73 (42.6%) were referral cases (unbooked/booked elsewhere). The maternal age ranged from 15-45 years  
74 with a mean age of  $28.7 \pm 4.6$  years and median age of 27.0 years. A majority 339 (73.7%) had secondary  
75 education, 255 (55.4%) were Primigravidae (Nulliparous), 255 (55.4%) presented with term pregnancies  
76 (Gestational age 37-40 weeks) and 358 (77.8%) were booked elsewhere i.e. received some form of  
77 antenatal care from a referral Center. See Table 1.

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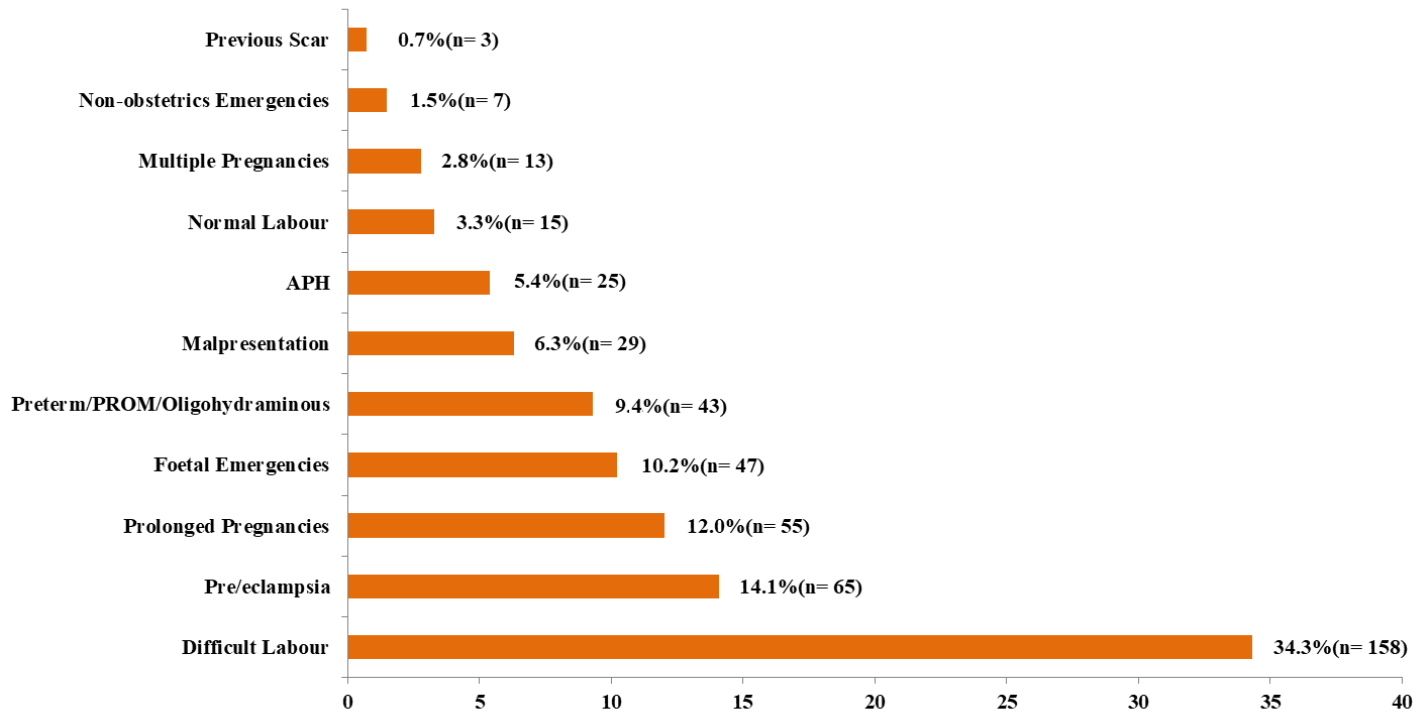
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81 **Table 1: Socio-demographic characteristics of referral cases (N=460):**

<b>Variables</b>	<b>Frequencies (N)</b>	<b>Percentage (%)</b>
<b>Age category</b>		
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
<i>Mean age ± SD =28.7±4.6 years; Median age=27.0years; Age range: 15 - 45 years</i>		
<b>Education</b>		
None	1	0.2
Primary	31	6.7
Secondary	339	73.7
Tertiary	89	19.4
<b>Parity Category</b>		
Para 0	255	55.4
Para 1	73	15.9
Para 2-4	118	25.7
Para >4	14	3.0
<b>Gestational Age Category</b>		
≤28 Weeks	5	1.1
>28 Weeks to <37 Weeks	98	21.3
37 – 40 Weeks	255	55.4
>40 Weeks	102	22.2
<b>Booking Status</b>		
Booked elsewhere	358	77.8
Not booked anywhere	102	22.2

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



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**Figure 1: Distribution of diagnoses of referral cases to RSUTH (N=460)**

90 In terms of interventions carried out for these cases, a majority were delivered through Caesarean Section  
 91 (54.6%); 41.3% had spontaneous vaginal delivery (SVD), 2.2% had Laparotomy for ruptured uterus and  
 92 0.7% had assisted vaginal delivery (AVD), as shown in Table 2. The only undelivered case was a  
 93 maternal death which was a non-obstetrics emergency (upper GI bleeding) that died shortly after arrival.  
 94 This represents 0.2% or MMR of 217 per 100,000. About 75% of the cases had intervention carried out  
 95 within 12 hours of arrival to hospital (Table 3). Those who were delivered after 24 hours were mainly  
 96 non-emergencies, requiring stabilization and planned induction or elective caesarean section. Figure 2  
 97 shows the comparison of mean time to intervention across the referral diagnoses; as expected the mean  
 98 time to response was shortest for fetal emergencies and longest for non-emergencies.

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100 **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
<b>Total</b>	<b>460</b>	<b>100.0</b>

101 \*Maternal death

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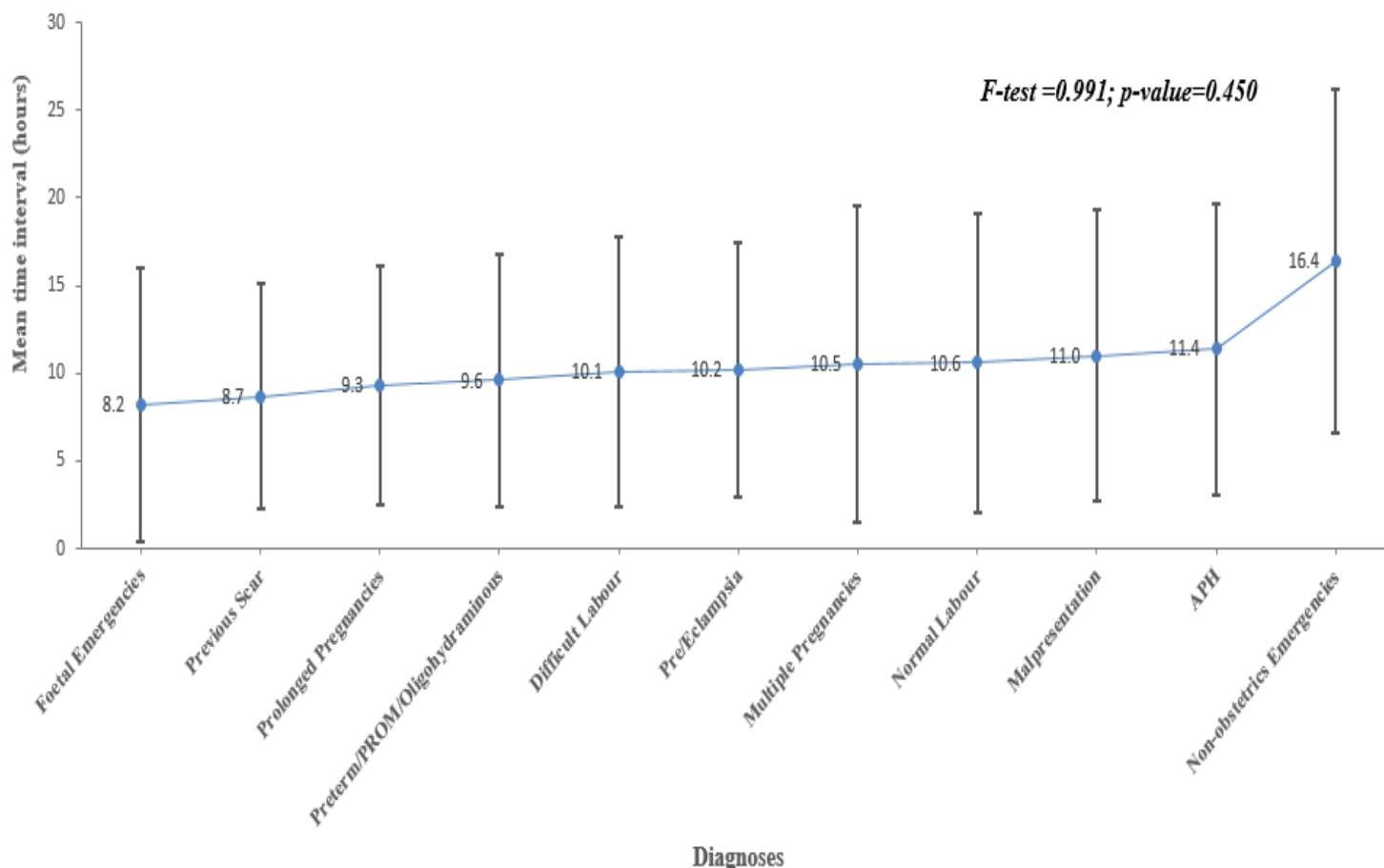
103 **Table 3: Interval between admission and intervention among referral cases (n=460):**

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
<b>Total</b>	<b>460</b>	<b>100.0</b>

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108 Figure 2: Comparison of mean time to intervention across the referral diagnoses

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110 **Discussion:**

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

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

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

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

138 We had one maternal death of the 460 referral cases (0.2%) giving a Maternal Mortality Ratio of 217 per  
139 100,000 which is still on the high side. This patient was brought in moribund and died shortly after  
140 admission for non-obstetric emergency (upper GI bleeding). Sabale et al [8] reported a mortality of 0.8%  
141 and Almerie et al [12] reported a ratio of 54.8 per 100,000.

142 This study is limited by the fact that inadequate documentation could have caused some cases being  
143 missed due to the retrospective nature of the study. In addition, maternal deaths in the puerperium could  
144 have been underreported as the cases were not followed up to the postnatal clinic.

145 **Conclusion:**

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

150 High risk pregnancy identification and, proper antenatal and intrapartum care, will reduce the incidence of  
151 obstetric emergencies. Prevention where possible and, prompt and effective treatment of obstetric  
152 emergencies, will go a long way to reduce the magnitude of our ever-high maternal mortality in  
153 developing counties.

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156 **Conflict of Interest:** None

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161 **References:**

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