



## Determinants of Intrauterine Fetal Death among Unbooked Parturients at the University of Port Harcourt Teaching Hospital, Southern Nigeria

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### Authors' contributions

This work was carried out in collaboration among all authors. Author TK designed the study, wrote the protocol and the first draft of the manuscript. Authors JOA and IJ did the statistical analysis and literature searches and analysis. All authors read and approved the final manuscript.

### Article Information

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### ABSTRACT

**Background:** Intrauterine fetal death (IUFD) is one of the most important problem in reproductive health, especially in developing countries. Unbooked pregnant women are more likely to suffer IUFD.

**Objectives:** To determine the prevalence and risk factors of intrauterine fetal death among unbooked parturients at the University of Port Harcourt Teaching Hospital. **Materials and Methods:** A retrospective study of 344 unbooked women with intrauterine fetal death who presented at the labour ward of the University of Port Harcourt Teaching Hospital between January 1, 2011 and December 31, 2015. Data was obtained from their case / theater records and ward registers, encoded into a spreadsheet and analyzed using SPSS 22.0. Results were presented as means, rates and proportions. Associations between variables were assessed using students t-test and Pearson's correlation. Differences were considered statistically significant at  $P < 0.05$ .

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**Results:** There were 12,421 deliveries during the study period: 10,136 (81.6%) received antenatal care while 2,285 (18.4%) did not. There was a total of 1,313 perinatal deaths, giving a perinatal mortality rate of 60.9/1000 births in unbooked patients and 18.4/1000 births in booked patients ( $P < 0.01$ ). Majority 149 (43.3%) of the IUID occurred below 37 weeks and 123 (35.8%) at term. IUID occurred prior to presentation in 320 (93%), of which most were referred from traditional birth attendants and religious institutions. Hypertensive disorders, abruptio placentae, obstructed labour, prolonged pregnancy, and prolonged rupture of membranes were the most common complications associated with IUID.

**Conclusion:** Pregnant women should be encouraged to register for antenatal care and deliver in health facilities with skilled attendants.

*Keywords: Intra uterine fetal death; unbooked; Port Harcourt; Nigeria.*

## 1. INTRODUCTION

The World Health Organization (WHO) defines stillbirth as death of a fetus before the complete expulsion or extraction from its mother of a product of conception weighing at least 1000g and occurring after 28 completed weeks of gestation or having at least 35 cm body length, which is indicated by the fact that after such separation, the fetus does not show any evidence of life [1]. The definition of stillbirth using gestational age or birth weight varies in different countries. This makes the comparison of stillbirth rates difficult. However, the definition recommended by the WHO for international comparison is a baby born with no signs of life at or after 28 weeks of gestation [2,3]. An estimated 2.6 million stillbirths occur annually with 98% in the low-income and middle-income countries [4]. Stillbirth rates vary in different countries. It is lowest in Finland with the rate of 2 per 1000 births, high in Pakistan and Nigeria with stillbirth rates of 47 and 42 per 1000 births respectively. It also varies within countries with India having a range of 20 to 66 per 1000 births in different states [3]. In Nigeria, the perinatal mortality rate varies in different regions and centers, ranging from 39 to 130/1000 live births [5-7]. Half of all stillbirths (1.3 million) occur during labour and delivery, [8] especially in developing countries. Majority of these intrapartum deaths are due to avoidable causes. In the developed world, stillbirths are largely antepartum with no obvious cause [9]. Causes of intrauterine fetal death include maternal infections (malaria, syphilis, human immunodeficiency virus), metabolic abnormalities like diabetes and thyroid dysfunction, [10] also hypertension, obesity, rhesus isoimmunization. Fetal causes include congenital abnormalities, intrauterine growth restriction, with some placental and umbilical causes (placenta abruptio, cord accidents) contributing to it [11]. Stillbirth is a subset of

perinatal mortality and a major contributor of over 50% of perinatal mortality in developing countries [12,13]. It is an important indicator of the quality of antenatal care and obstetric care during labour and delivery [14]. Perinatal mortality is defined as the total number of late fetal deaths (stillbirths) and deaths within the first week of life (early neonatal deaths) per 1000 total births [15]. It is one of the important vital statistics that is used to measure the quality of maternal and fetal care of any nation, and this also has a direct relationship with a nation's socioeconomic advancement [16]. Nigeria has high rates of stillbirths (42 per 1000 total births) worldwide, [3] as well as perinatal mortality rates which vary between different centers from 39-133 per 1000 total births [5,6,17,18]. The unbooked patient is more at risk of having intrauterine fetal death and other pregnancy complications [19]. They do not access antenatal care because of poverty, illiteracy, ignorance, traditional/cultural/religious beliefs, or low status of women in the society. There are no recent studies in our center addressing this important issue. This study therefore sets out to determine the prevalence of intrauterine fetal death and identify the associated risk factors among the unbooked patients seen in our hospital. Such knowledge will be useful in developing strategies to prevent IUIDs.

## 2. MATERIALS AND METHODS

### 2.1 Study Site

This study was carried out at the labour ward of the University of Port Harcourt Teaching Hospital (UPTH). The University of Port Harcourt Teaching Hospital is a 649-bed tertiary hospital located at Alakahia in Obio Akpor Local Government Area of Rivers State, South-South Nigeria. An average of 3000 deliveries are conducted annually. The unit has a total of 153 beds, with 30 beds in the antenatal ward, 40

beds in the postnatal ward, 40 beds in the unbooked ward, 13 beds in the first stage room, 4 beds in the second stage room and 8 beds in the private/semi-private rooms.

## 2.2 Methods

This was a retrospective cohort study of 756 unbooked women with IUFD who presented to the labour ward of the department of Obstetrics and Gynaecology, University of Port Harcourt Teaching Hospital (UPTH) between January 1, 2011 and December 31, 2015. Data was retrieved from patient's case notes, labour ward and theatre registers during the period under review. Information collected included socio-demographic characteristics, place of referral, mode of delivery, maternal complications. The proforma for each patient was checked for completion before it was entered into a spreadsheet and analyzed.

## 2.3 Statistical Analysis

The statistical package SPSS version 22.0 for windows® was used for analysis. Results are

presented as means with standard deviations, rates and proportions. Associations between variables were assessed using students t-test. Differences were considered statistically significant at  $P < 0.05$ .

## 3. RESULTS

In the period under review, there were a total of 12,421 deliveries. Of this, 10,136 (81.6%) were booked while 2285(18.4%) were unbooked. There was a total of 985 still births, giving a still birth rate of 80.5 per 1000 births. There was a total of 1,313 perinatal deaths, giving a perinatal mortality rate of 105.8 per 1000 births. Still births comprised 75% of all perinatal deaths (985 of 1313). There was significantly more still births among the unbooked parturients (330.8 per 1000 births) than the booked parturients (22.6 per 1000 births). Three hundred and forty-four (344) unbooked women had intrauterine fetal deaths. About half of them (170) had no form of antenatal care while 174 had some form of antenatal care but defaulted. The mean age was  $28.7 \pm 4.8$  years. The mean parity was  $1.5 \pm 1.68$ . Table 1 shows the sociodemographic characteristics of

**Table 1. Socio-demographic characteristics**

Characteristics	Number	Percentage %
<b>Age</b> (mean + SD)	28.67±4.76	
≤19	5	1.5
20-29	199	57.8
30-39	132	38.4
40-49	8	2.3
<b>Parity</b> (mean + SD)	1.50 ±1.68	
0	125	36.3
1	90	26.2
2	42	12.2
3	42	12.2
4	22	6.4
≥5	23	6.7
<b>Educational status</b>		
No formal education	30	8.7
Primary	36	10.5
Secondary	210	61.1
Tertiary	68	19.8
<b>Occupation</b>		
Housewives	116	33.7
Civil servants	92	26.7
Traders/Business women	84	24.4
Students	29	8.4
Teachers	18	5.2
Health workers	5	1.5
<b>Marital status</b>		
Married	335	97.4
Single	9	2.6

the parturient. Majority of the women [210 (61.1%)] had secondary education, however there was no significant correlation between education or occupation and the occurrence of intrauterine fetal death (Pearson's correlation =0.0043). A weak negative correlation between parity and the occurrence of intrauterine fetal death (Pearson's correlation = -0.13) was observed. About a third of the women 123 (35.8%) presented at term (37 weeks or more) with labour complications, while 149 (43.3%) were preterm presentations, and 40 (11.6%) presented at an unknown gestational age. Intrauterine fetal death occurred prior to presentation in 320 (93%) of the patients. This was statistically significant at  $p < 0.01$ . Table 2 shows that 167 (48.5%) women were referred from faith-based institutions while 47 (13.7%) came from Traditional birth attendants. Majority 216 (62.5%) had spontaneous vaginal deliveries while 85 (24.7%) had Emergency Caesarean sections and 15 women (4.4%) had hysterectomies. This is shown in Table 3 Majority of the babies 206 (59.9%) were of normal weight while 94 (27.3%) were low birth weight babies. About two-third (60%) of the babies were macerated stillbirths while 40% (145) were fresh stillbirths. Table 4 shows the maternal complications on admission. Severe preeclampsia/ Eclampsia 55(15.9), abruptio placentae 50(14.5%), obstructed labour 35(10.2%), prolonged pregnancy 27(7.9%),

prolonged rupture of membranes (PROM) and chorioamnionitis 25(7.3%) were the most common maternal complications associated with intrauterine fetal deaths.

#### 4. DISCUSSION

Intrauterine fetal death can be devastating both to the mother and the attending Obstetrician. The hope of every expectant mother is to deliver a live healthy baby and any deviation from that could be agonizing. The definition of stillbirth varies in different countries. However, in this study, it was taken as a baby born with no signs of life after 28 weeks of gestation. Still birth rate also varies in different countries and in some countries, between regions. The stillbirth rate in this study was 80.5 per 1000 births, with most occurring in the unbooked women. This is high compared to a study conducted in Saudi Arabia where the stillbirth rate was 10 per 1000 deliveries.[9] It is also higher than what was obtained in India (29.2 per 1000 live births), [2] Abakaliki, South-Eastern Nigeria (41.4 per1000 births) [20] and Katsina, Northern Nigeria (46.9 per 1000 deliveries) [21]. A study in Orlu, South-Eastern Nigeria reported a higher rate (180 per 1000 births) than what was observed in this study [22]. Majority of the women presented at a gestational age  $\geq 37$  weeks with intrapartum complications which is the time most intrauterine fetal death occur in developing countries as

**Table 2. Place of referral**

Characteristics	Number	Percentage %
Faith based institutions	167	48.5
Traditional birth attendants	47	13.7
Private clinics	39	11.3
Health centers	34	9.9
Self- referral	28	8.1
Maternity homes	20	5.8
RSUTH	6	1.7
General Hospital	3	0.9

**Table 3. Mode of delivery**

Characteristics	Number	Percentage %
Spontaneous vertex delivery	216	62.8
Emergency caesarean section	85	24.7
Exploratory laparotomy	13	3.8
Exploratory laparotomy + Hysterectomy	11	3.2
Assisted vaginal breech delivery	7	2.0
Instrumental delivery	7	2.0
Caesarean hysterectomy	4	1.2
Destructive operation	1	0.3

**Table 4. Maternal complications on admission**

<b>Complication</b>	<b>Number</b>	<b>Percentage %</b>
Severe preeclampsia/Eclampsia	55	15.9
Abruptio placenta	50	14.5
Obstructed labour	35	10.2
Prolonged pregnancy	27	7.9
PROM with Chorioamnionitis	25	7.3
Placenta praevia	9	2.6
Uterine rupture	8	2.4
Hypertension in pregnancy	7	2.0
RVD in pregnancy	6	1.7
Malaria	5	1.5
Breech presentation	5	1.5
Retained 2 <sup>nd</sup> twin	5	1.5
Severe anaemia	4	1.2
Impacted transverse lie	4	1.2
Others*	99	28.8

*Others = Anencephaly, hydrocephalus, Cord prolapse, gestational diabetes mellitus, prolonged labour, shoulder dystocia*

opposed to developed countries. The stillbirths occurred prior to presentation in 93% of patients which was statistically significant. This indicates late presentation to the health facility in the advent of complications. The same trend was observed in a study carried out in Benin city where perinatal mortality rate in the unbooked patients was about eight times that of the booked patients [23]. Similar findings were reported in South-Eastern Nigeria where majority of the stillbirths occurred in unbooked patients [20]. Majority of the women were referred late from faith based institutions and traditional birth attendants indicating lack of antenatal care in these patients. This was also reported in India where 43.3% of stillbirth cases were referred cases [2]. A study done in Lagos, South-Western Nigeria also reported lack of antenatal care amongst other risk factors [24]. Good quality antenatal care was observed in Ghana to significantly decrease the odds of delivering a stillborn [25]. A large number of them had vaginal deliveries as was also observed in other studies [2,22]. The risk factors for intrauterine fetal death (IUFD) in this study varied from preeclampsia/eclampsia accounting for most of the cases, followed by abruptio placentae and obstructed labour. A previous study carried out in Uyo, Southern Nigeria also reported preeclampsia/eclampsia accounting for most cases of IUFD [26]. Prolonged pregnancy and obstructed labour as contributing factors further show lack of antenatal care and delivery with skilled birth attendants. Many of the babies were macerated indicating that the fetal deaths occurred more than 24 hours prior to

presentation. This was also observed in previous studies in Jos and Orlu, both in Nigeria [22,27]. This is because of delay in decision making by most of our women to utilize a health facility even in emergency situations. The study in India however reported a greater number of fresh still births which is contrary to the findings in this study [2]. This may be due to early health seeking behaviour in such a place. We observed more stillbirths in women aged 20-29 years in this study as opposed to other studies where older women were more affected [28,29]. Most of the women had secondary and tertiary education but still did not register for antenatal care in any health facility or registered but defaulted. These women preferred to patronize faith-based institutions and traditional birth attendants reflecting how religion and culture can affect women's health seeking behaviour in our environment irrespective of their educational status.

## 5. CONCLUSION

Pregnant women who do not register for antenatal care are more predisposed to having adverse pregnancy outcomes. This is further worsened when there is no skilled birth attendance at deliveries. The risk factors identified are largely preventable and can be detected early during antenatal care and appropriately managed. Also, creating awareness about the dangers of lack of antenatal care is pertinent, women should be encouraged to register early for antenatal care and deliver in health facilities with skilled birth attendants.

## CONSENT

Standard written informed consent was obtained from the patients and preserved by the authors.

## ETHICAL APPROVAL

Ethical approval for the study was given by the Ethics review committee of the University of Port Harcourt Teaching Hospital.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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