

# **Burden of Unplanned Antenatal Visits in a Tertiary Hospital in Nigeria: Making a Case for an Improved Referral System**

**Awoleke Jacob Olumuyiwa<sup>1, \*</sup>, Olofinbiyi Babatunde Ajayi<sup>1</sup>, Awoleke Adeola Olabisi<sup>2</sup>, Olofinbiyi Rebecca Oluwafunke<sup>3</sup>**

<sup>1</sup>Department of Obstetrics and Gynaecology, Ekiti State University, Ado-Ekiti, Nigeria

<sup>2</sup>Ekiti State University Teaching Hospital School of Nursing, Ado-Ekiti, Nigeria

<sup>3</sup>Department of Nursing Science, Babcock University, Ilishan-Remo, Nigeria

## **Email address:**

bisijacob@yahoo.co.uk (A. J. Olumuyiwa)

\*Corresponding author

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**Abstract:** Non-urgent unplanned visits are frequently observed in pregnancy. However, there are no studies from Nigeria exploring its burden. A cross-sectional cohort survey of 1,182 women at the only state-owned teaching hospital in Ado - Ekiti was conducted to address this need. One-quarter of the population studied had unplanned antenatal visits during the period of care. Only about one in four of the reasons for the unplanned visits were 'direct' pregnancy-related complaints, while the largest proportion of the women, 227 (73.5%), visited on account of infectious morbidities, followed by gastrointestinal disorders, 63 (20.4%). Mothers who were skilled workers were significantly more likely to have unplanned antenatal visits compared with their unemployed counterparts (45.3% versus 20.7%,  $p = 0.013$ ). Unplanned visits were significantly more in women who had reduced fetal movements (9.4% versus 0.9%,  $p < 0.0001$ ); significantly more women who had out-of-schedule prenatal visits were admitted for care (37.9% versus 0.2%,  $p < 0.0001$ ), and had induction of labour (20.1% versus 10.3%,  $p < 0.0001$ ) when compared with those who had no unplanned visits. Reduced maternal perception of fetal movements (odds ratio: 7.57; 95% C. I. 3.07 - 18.70,  $p < 0.0001$ ), prenatal admission (odds ratio: 241.81; 95% C. I. 59.02 - 990.75,  $p < 0.0001$ ), and induction of labour (odds ratio: 1.90; 95% C. I. 1.24 - 2.93,  $p = 0.003$ ) were found to be independently associated with unplanned antenatal visits.

**Keywords:** Unplanned Visits, Non-urgent, Emergency Department, Prenatal Care, Referral System, Nigeria

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## **1. Introduction**

Urgent or emergent medical conditions usually necessitate visits to the emergency units of various health facilities. However, studies are showing a consistent increase in the use of the emergency department for non-urgent conditions, especially in countries where health care is publicly funded [1-8]. Non-urgent use of the emergency department could be for conditions in which a delay of several hours would not lead to an increased likelihood of an adverse outcome [9]. Patients with such conditions, who could have been managed at primary or secondary levels of care, are seen in the emergency rooms of tertiary facilities, most of them by-

passing the referral system [10-11]. This scenario has been associated with bogus healthcare spending, unnecessary diagnostic tests and therapies, and poorer patronage of lower tiers of the health care system. Also, the over-burdened staff within the tertiary facilities are prone to fatigue, increased personnel turn-over, and medical errors [12-14].

In most developing countries, health care is accessed via a fee-for-service because such nations do not have a national health insurance package that trickles down to the grassroots [15]. Although their tertiary facilities are usually established to cater for a broad segment of the populace, they end up providing primary and first-port-of-call care, skewed largely towards urban clientele [16]. The factors that drive this

inappropriate use of tertiary facilities and their emergency departments in developing countries have not been adequately explored in the literature.

Unplanned visits to the emergency departments or labour rooms are common among pregnant women [17-18]. Despite the fact that they have a programmed scheme of care, half of the pregnant women in a cohort studied visited the emergency room for care during the prenatal period [19], with a proportion of these pregnant mothers using the emergency department for non-urgent reasons. This has been partly linked to the poor performance of the referral system in many developing countries, including Nigeria [20]. Thus, highly skilled manpower and facilities are expended on health conditions requiring lesser resources to deal with [21]. Is the misuse of the emergency department by obstetric patients in developing countries driven by different factors from those that obtain in the more advanced nations? Identifying factors that promote the use of the emergency department for non-urgent, unplanned antenatal visits will aid in stemming its tide, and also improve the efficiency of the health system. Being an emerging subject on the Nigerian health landscape, data that will provide information on the predictors of unplanned, non-urgent visit to tertiary facilities by pregnant women, and their influence on pregnancy management are urgently needed. These are the objectives of this study.

## 2. Method

### 2.1. Study Setting

Data for this study was extracted from an existing comprehensive database of 3477 births managed in the Department of Obstetrics and Gynaecology of the Ekiti State University Teaching Hospital, situated in Ado - Ekiti, the urban capital city of Ekiti State in southwest Nigeria, between April, 2012 and March, 2015. Ekiti State University Teaching Hospital, Ado - Ekiti is a tertiary health facility which serves as the Teaching Hospital for the College of Medicine, Ekiti State University, Ado - Ekiti, and is also an obstetric referral centre serving the private, primary and secondary health institutions within Ekiti State and its neighbouring states. Its clientele is made up of a mixture of self-presenting, health-personnel-referred, and health-facility-transferred patients. It runs weekly antenatal clinics supervised by obstetricians. For obstetric referrals or in cases of unplanned prenatal visits, the first point of care within the hospital is the obstetric emergency room, and all care is undertaken by consultant obstetrician-led teams.

### 2.2. Study Design

Maternal socio-demographic and clinical characteristics were extracted into the database using a comprehensive proforma with ninety items covering over 180 variables, including previous gynaecological and obstetric details, index pregnancy and its progress, parturition, puerperium, observed complications, and perinatal outcomes. The data

was obtained from antenatal progress records, registers in the materno-fetal medicine/antenatal ward, labour ward, maternity theatre, postnatal ward, and complemented by entries from Nurses' sheets to ensure completeness. The information was obtained in real time by a trained research assistant employed full time for that purpose. The study was approved by the Ethics and Research Committee of Ekiti State University Teaching Hospital.

Women who were not registered for antenatal care in the hospital, had severe medical illness, and multiple gestation were excluded from this study.

Case definition: Unplanned visits refer to utilization of prenatal care services outside the obstetric clinics. Non-urgent conditions in pregnancy are those in which a delay of several hours would not lead to an increased likelihood of an adverse outcome.

### 2.3. Data Analysis

The retrieved data was coded into, and analysed using the Statistical Software for the Social Sciences (SPSS) package version 20. Results were presented as percentages. Chi-square and students' t-tests were used for categorical and continuous variables respectively; variables with  $p$  value  $< 0.05$  were included in multivariate logistic regression analyses to identify the independent risk factors for unplanned antenatal visits. The results were expressed as odds ratio at 95% confidence interval (C. I.), with level of significance set at  $p < 0.05$ .

## 3. Results

Of the population studied, 309 (26.1%) had unplanned antenatal visits during the period of care. More than one-quarter, 82 (26.5%), had at least two unplanned visits to the tertiary facility, with at least four-fifths, 257 (83.2%), of those visits occurring in the third trimester of pregnancy. Only about one in four of the reasons for the unplanned visits were 'direct' pregnancy-related complaints, while the largest proportion of the women, 227 (73.5%), visited on account of infectious morbidities, followed by gastrointestinal disorders, 63 (20.4%) (Table 1).

The relationship between the demographic and obstetric characteristics of the women and pattern of antenatal visits are as shown in Table 2. The mean age of the women was  $30.67 \pm 4.50$  years, with a range of 15 - 47 years. Mothers who were skilled workers were significantly more likely to have unplanned antenatal visits compared with their unemployed counterparts (45.3% versus 20.7%,  $p = 0.013$ ). Unplanned visits were significantly more in women who had a live birth during the last delivery (98.4% versus 94.4%,  $p = 0.002$ ), and who had reduced fetal movements in the index pregnancy (9.4% versus 0.9%,  $p < 0.0001$ ). Also, significantly more women who had out-of-schedule prenatal visits were admitted for care (37.9% versus 0.2%,  $p < 0.0001$ ), and had induction of labour (20.1% versus 10.3%,  $p < 0.0001$ ) when compared with those who had no unplanned visits. There was no significant association between

unplanned visits and age, level of education, parity, marital status, health insurance coverage, alcohol use during pregnancy, previous history of infertility, and mode of delivery.

Results of the multivariate logistic regression analysis of the variables significantly associated with unplanned visits are shown in Table 3. Reduced maternal perception of fetal movements (odds ratio: 7.57; 95% C. I. 3.07 - 18.70,  $p < 0.0001$ ), prenatal admission (odds ratio: 241.81; 95% C. I. 59.02 - 990.75,  $p < 0.0001$ ), and induction of labour (odds ratio: 1.90; 95% C. I. 1.24 - 2.93,  $p = 0.003$ ) were found to be independently associated with unplanned antenatal visits.

**Table 1.** Overview of the unplanned antenatal visits,  $n = 309$ .

	n (%)
Unplanned antenatal visits	
No	873 (73.9)
Yes	309 (26.1)
Number of antenatal unplanned visits	
1	227 (73.5)
2	65 (21)
3	17 (5.5)
Gestational age at the unplanned visits*	
First trimester (Months 1 - 3)	21 (6.8)
Second trimester (Months 4 - 6)	128 (41.4)
Third trimester (Months 7 - 9)	257 (83.2)
Reasons for unplanned visits*	
1. Pregnancy-related complaints	
Reduced fetal movements	24 (7.8)
Antepartum haemorrhage	12 (3.9)
Spurious labour	10 (3.2)
Threatened miscarriage	9 (2.9)
Preterm rupture of membranes	8 (2.6)
Preterm labour	6 (1.9)
Gestational Diabetes Mellitus	4 (1.3)
Hyperemesis gravidarum	4 (1.3)
Pregnancy-induced hypertension	3 (1.0)
Degenerating fibroids in pregnancy	1 (0.3)
Intrauterine growth restriction	1 (0.3)
2. Infectious morbidity	
Malaria infestation	149 (48.2)
Respiratory tract infection	35 (11.3)
Skin sepsis	25 (8.1)
Gastroenteritis	18 (5.8)
3. Gastrointestinal disorders	
Abdominal pain	52 (16.8)
Gastro-oesophageal reflux disorder	8 (2.6)
Haemorrhoids	2 (0.6)
Constipation	1 (0.3)
4. Urinary conditions	19 (6.1)
5. Respiratory conditions	
Asthma	2 (0.6)
6. Musculoskeletal conditions	
Back ache	10 (3.2)
*Total > 100% because of multiple responses	

**Table 2.** Relationship between the demographic and obstetric characteristics of the women and pattern of antenatal visits.

Variables	Categories	Unplanned visits	No unplanned visits	p value
		n (%)	n (%)	
Age (years)	Mean $\pm$ SD	30.48 $\pm$ 4.36	30.73 $\pm$ 4.55	0.404
Age group (years)	< 30	124 (40.1)	361 (41.4)	0.707
	$\geq$ 30	185 (59.9)	512 (58.6)	
Marital status	Single	1 (0.3)	3 (0.3)	0.958
	Married	308 (99.7)	870 (99.7)	
Level of education	No formal	0 (0)	1 (0.1)	0.369
	Primary	1 (0.3)	13 (1.5)	
	Secondary	39 (12.6)	116 (13.3)	
	Tertiary	269 (87.1)	743 (85.1)	
Occupation	Unemployed	64 (20.7)	156 (17.9)	0.013*
	Unskilled	68 (22)	208 (23.8)	
	Semi-skilled	37 (12)	59 (6.8)	
	Skilled	140 (45.3)	450 (51.5)	
Parity	0	127 (41.1)	309 (35.4)	0.181
	1 - 4	180 (58.3)	555 (63.6)	
	$\geq$ 5	2 (0.6)	9 (1)	
Health insurance	No	299 (96.8)	855 (97.9)	0.243
	Yes	10 (3.2)	18 (2.1)	
Alcohol	No	306 (99)	869 (99.5)	0.313
	Yes	3 (1)	4 (0.5)	
Previous infertility	No	297 (96.1)	854 (97.8)	0.107
	Yes	12 (3.9)	19 (2.2)	
Assisted conception	No	306 (99)	871 (99.8)	0.084
	Yes	3 (1)	2 (0.2)	
Gestational DM	No	295 (95.5)	836 (95.8)	0.828
	Yes	14 (4.5)	37 (4.2)	
Pre-eclampsia	No	295 (95.5)	852 (97.6)	0.058
	Yes	14 (4.5)	21 (2.4)	
Last pregnancy	Stillbirth	4 (1.3)	49 (5.6)	0.002*
	Live birth	305 (98.7)	824 (94.4)	
Reduced kicks	No	280 (90.6)	865 (99.1)	< 0.0001*
	Yes	29 (9.4)	8 (0.9)	
Labour induction	No	247 (79.9)	783 (89.7)	< 0.0001*
	Yes	62 (20.1)	90 (10.3)	
Route of delivery	Vaginal	207 (67)	588 (67.4)	0.907
	Abdominal	102 (33)	285 (32.6)	
Prenatal admission	No	192 (62.1)	871 (99.8)	< 0.0001*
	Yes	117 (37.9)	2 (0.2)	
Pregnancy outcome	Stillbirth	5 (1.6)	5 (0.6)	0.085
	Live birth	304 (98.4)	868 (99.4)	
EGA at delivery	Mean $\pm$ SD	38.25 $\pm$ 2.31	38.43 $\pm$ 2.29	0.230
Delivery age (weeks)	$\leq$ 40	266 (86.1)	732 (83.8)	0.352
	> 40	43 (13.9)	141 (16.2)	

\*significant at  $p < 0.05$

**Table 3.** Logistic regression analysis of the factors associated with unplanned antenatal visits.

Characteristics	Odds ratio	95% Confidence Interval	p value	Reference
Prenatal admission	241.81	59.02 - 990.75	< 0.0001*	No admission
Live birth	3.21	1.00 - 10.25	0.050	Stillbirth
Reduced kicks	7.57	3.07 - 18.70	< 0.0001*	Adequate kicks
Labour induction	1.90	1.24 - 2.93	0.003*	No induction
Skilled workers	0.81	0.53 - 1.25	0.350	Unemployed

\*significant at  $p < 0.05$

## 4. Discussion

Although there are sparse studies showing the burden of non-urgent use of the emergency department of tertiary hospitals by non-pregnant clients in Nigeria [10], we found no study strictly among the obstetric population. Thus, findings from this study are the first to document the burden of unplanned antenatal visits in a tertiary facility in a low resource setting.

Similar to findings from an American study [22], this study revealed that unplanned hospital visits are common in pregnancy, even among women with established care-givers. Interestingly, only one-quarter of these visits were for specific pregnancy-related complaints, with over three-quarters of the visits secondary to other medical/surgical (and, mainly non-urgent) conditions. This is contrary to the findings from a study by Magriples et al [22], which revealed that more than half of the unscheduled prenatal visits were for obstetric complications, with only 10% being secondary to other medical/surgical issues. The observed differences could be due to the fact that their study participants were aged 25 years and below, had complete prenatal insurance coverage, and did not include visits that ended in an admission. However, the implication of our finding is that obstetric patients with milder, non-obstetric conditions skip consulting primary or secondary care facilities to access care in the emergency departments of tertiary hospitals. This could result in an increase in the burden on the emergency room staff, making it more difficult for them to care for severely ill patients [11]. Educating the populace on what constitutes urgent obstetric complications, and providing accessible and effective care for medical/surgical issues, especially infectious morbidities occurring in pregnancy, at the secondary facilities are advocated.

Skilled workers, who are potentially more financially empowered, were significantly more likely to have unplanned visits during pregnancy. Since the costs of antenatal care have been shown to be greater with unscheduled prenatal visits [22-23], they are more likely to be able to afford the higher costs. Other socio-demographic variables have not shown a consistent association in the published literature with unplanned antenatal visits [9]. This could be due to variations in the criteria used to select the study participants, their perception of their symptoms, the general health-seeking behaviour of the community etc.

Understandably, the index study found that mothers who

had a reduction in their perceived fetal movements were more likely to have unplanned hospital visits. These extra visits could be needed to ascertain the complaint, identify a possible cause, and institute therapeutic interventions. Also, our study found that women with unplanned visits were more likely to be admitted for in-patient care. We hypothesize that, although the proportion of women with 'direct' obstetric complications was smaller, those complaints were important enough to warrant hospitalization, and possibly delivery, a fact corroborated by the findings that more mothers had unplanned visits in the third trimester of pregnancy, and also had significantly higher rates of labour induction. Increased staffing of the obstetric units and improved infrastructure (including electronic fetal surveillance techniques) in the secondary care facilities would better equip them to effectively manage obstetric complications, thereby reducing the burden of unplanned visits on tertiary facilities. The establishment of national management guidelines for various obstetric complications, coupled with an efficient and effective referral system would mean that the quantity of clients utilizing tertiary facilities for non-urgent conditions will diminish, while the quality of care provided by lower health facilities will improve.

This survey may be limited by the definition of non-urgent conditions, as 3% - 5% of cases that were initially adjudged to be non-urgent at presentation required immediate hospitalization on closer evaluation in the emergency room [24]. Besides, the study is a tertiary facility-based survey of largely fee-paying clients with a scheduled prenatal care arrangement. Thus, it may make generalization of the findings to other population of obstetric patients in lower tiers of health facilities difficult. Future research on the subject would benefit from the data provided by this study to address these limitations.

## 5. Conclusion

Unplanned prenatal visits are frequently observed, even among pregnant women in a routine programme of care. Most of these visits, however, were for milder, non-obstetric conditions, especially infectious morbidities. These out-of-schedule visits were also predicted by reduced maternal perception of fetal movements, resulting in significantly more prenatal hospitalizations and labour induction. Educating the populace on what constitutes urgent obstetric complications, and scaling up care at the secondary facilities are advocated. Increased staffing of the obstetric units and improved infrastructure (including electronic fetal surveillance techniques) in the secondary care facilities would better equip them to effectively manage obstetric complications, thereby reducing the burden of unplanned visits on tertiary facilities. The establishment of national management guidelines for various obstetric complications, coupled with an efficient and effective referral system are indispensable, if we must reduce the burden of unplanned visits and the overall cost of prenatal care.

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## Conflict of Interest Statement

All the authors do not have any possible conflicts of interest.

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