



## Effect of Socio-demographic Characteristics on Obstetric Care-seeking Behaviours and Perinatal Outcome in Sagamu, Nigeria

Tinuade A. Ogunlesi<sup>1\*</sup>, Victor A. Ayeni<sup>1</sup> and Edward O. Jagun<sup>2</sup>

<sup>1</sup>Department of Paediatrics, Olabisi Onabanjo University Teaching Hospital, Sagamu, Nigeria.

<sup>2</sup>Department of Obstetrics and Gynaecology, Olabisi Onabanjo University Teaching Hospital, Sagamu, Nigeria.

### Authors' contributions

This work was carried out in collaboration between all authors. Author TAO designed the study. Authors TAO and VAA wrote the protocol and wrote the first draft of the manuscript. Author EOJ managed the literature searches. Author TAO analysed and interpreted the data. All authors read and approved the final manuscript.

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### ABSTRACT

**Background:** The persistence of severe intra-partum events as causes of perinatal mortality may be due to the poor care pregnant women receive in labour. The quality and scope of care received in labour varies with the types of health facilities patronized.

**Objective:** To describe the obstetric care-seeking behaviours of pregnant women in Sagamu, Nigeria and relate this to the perinatal outcome.

**Methods:** A cross-sectional survey of parturient at Olabisi Onabanjo University Teaching Hospital (OOUTH), Sagamu, Nigeria was conducted between August 2013 and November 2014. Data were obtained on the demographic and obstetric profile, details of facilities visited during labour and perinatal outcome for analysis.

**Results:** Out of 145 women, 93 (64.1%) received antenatal care at OOUTH. Of the 84 women who were first admitted in labour, 32 (38.1%) presented with emergencies. There were 140 live births

\*Corresponding author: E-mail: [togunlesi.52@gmail.com](mailto:togunlesi.52@gmail.com);

and 10 still births; 34/140 (24.3%) of the live births were hospitalized mostly with asphyxia (13/34; 38.2%). One of the 34 hospitalized babies died from asphyxia thus the overall perinatal mortality rate was 73.3/1000 births. Women who presented with emergencies during labour and traversed other health facilities while in labour characteristically had low maternal education, low socioeconomic status and received antenatal care outside OOUTH. Poor perinatal outcome was significantly associated with unbooked status, presentation with emergencies during labour and traversing other health facilities in labour.

**Conclusion:** Quality antenatal care and timely presentation during labour may influence perinatal outcome positively. Research should be focused on strengthening the existing health care structure.

*Keywords: Antenatal care; birth asphyxia; health care-seeking behaviour; Nigeria; obstetric emergency; still births.*

## 1. INTRODUCTION

Perinatal mortality rates are reliable indices of the quality of antenatal, delivery and immediate neonatal care services especially, neonatal resuscitation. Recent hospital-based perinatal mortality rates from some Nigerian centers ranged from 130/1000 total births in Katsina [1] to 81/1000 total births in Ilorin [2] and 70.6/1000 total births in Lagos [3]. These figures are higher than 57.7/1000 total births in northern Tanzania, [4] 39/1000 total births in northern Ghana [5] and 19.1/1000 total births in Kathmandu, Nepal [6]. Many recent literature, within and outside Nigeria, have also identified asphyxia and prematurity as leading causes of perinatal and neonatal deaths [3,4,7-9]. This trend reinforces the desirability of critical reviews of the burden of the factors associated with perinatal deaths, particularly, from birth asphyxia in the developing world. Various reasons have been proffered for the observed pattern of high perinatal deaths in the resource-constrained parts of the world; ranging from poor accessibility of quality care to poor infrastructure and poor technical wherewithal. Several studies have described the epidemiology and clinical course of perinatal asphyxia within and outside Nigeria [10,11]. The evidences from these studies suggest that unfavourable materno-foetal biological factors as well as poor obstetric management of expectant mothers are leading contributors to the burden of asphyxia in resource-poor settings.

While efforts are on-going on a global scale to reduce the burden of intra-partum neonatal mortality in the low and middle income countries using policies directed at the factors amenable to correction, [12] many questions remain unanswered with regards to why a significant proportion of babies delivered in this part of the world still suffer serious intra-partum asphyxial

injuries. From the previous observations that most babies with asphyxia are delivered outside the hospital setting [13,14] it becomes imperative to examine the socio-economic situations surrounding childbirths in a low income setting where the burden of asphyxia is huge. One of these factors is the quality of care received in labour, particularly when labour is complicated [8]. Therefore, this study was conceived to describe the obstetric care-seeking behaviours of expectant mothers in Sagamu, Nigeria and relate the behaviours to the perinatal outcome.

## 2. METHODS

This cross-sectional survey was conducted at the Maternity and Neonatal units of the Olabisi Onabanjo University Teaching Hospital (OOUTH), Sagamu, Nigeria between August 2013 and November 2014. The hospital provides amongst other specialised services, antenatal, delivery, post-natal and newborn care services to expectant mothers who are registered with the hospital and those who are referred from other privately-owned health facilities as well as the public primary and secondary health institutions in Ogun State and parts of the neighbouring Lagos and Ondo states. Sagamu is a semi-urban community located between Lagos, a major commercial centre in Nigeria and Ibadan, the largest city in West Africa.

Institutional ethical clearance and informed verbal consent were obtained and enrolment into the study was done at the point of admission into the labour room in the maternity unit. The interview was conducted within two hours of delivery or after recovery from anaesthesia where general anaesthesia was used. The interview was conducted by a medical staff attached to the labour room who had been trained to serve as a research assistant, with

strict confidentiality. Purposive sampling was adopted for the selection of the subjects. The subjects included every consenting parturient and the products of conception whose assessment either ended in the delivery suite when they are stillborn or were followed up into the nursery or the neonatal ward as the case may be.

The data obtained included the maternal age, parity, marital status and type of family, identity of facilities patronised for antenatal care, hospitalizations during the index pregnancy, details of facilities visited during labour, morbidities present at the point of admission (emergencies or non-emergencies), delivery care, obstetric complications during delivery, outcome of index pregnancy and the outcome of hospitalization of the babies. Perinatal outcome was described as live birth, still birth, early neonatal death or discharge in good condition. Still birth and early neonatal death defined poor perinatal outcome. The highest educational qualification and the present occupation of the parturient and their spouses were used to compute the socioeconomic status of each family [15]. The socioeconomic status of the subjects were re-graded as high (classes I, II and III) or low (classes IV and V) classes. Educational qualification of the subjects was also re-classified as low (less than tertiary education) or high (tertiary education).

The data were analyzed with SPSS version 20.0 using univariate and bivariate analyses. The Student's t-test and the Odd Ratio (OR) with 95% Confidence Interval (CI) were applied where statistically relevant. Multivariate analysis was only conducted for independent determinants of hospitalization of the newborn babies rather than poor perinatal outcome since the number of subjects with poor perinatal outcome as defined above, was quite small and may not yield reliable statistical findings. The multivariate analysis was done using binary logistic regression methods. Statistical significance was defined by p-values less than 0.05 or 95% Confidence Interval excluding 1.0.

### 3. RESULTS

#### 3.1 General Description

A total of 145 mothers were studied. The mothers were aged between 18 years and 44 years with a mean of  $30.3 \pm 5.3$  years. As shown in Table 1, all the mothers were married, and mostly aged 20–35 years (117; 80.7%),

nulliparous or primiparous (74; 51.1%), had tertiary education (79; 54.5%), from monogamous family settings (133; 91.0%) and resident within Sagamu (93; 64.1%).

The spouses were also aged 20-60 years with a mean of  $35.9 \pm 6.3$  years. The modal age for the spouses was 31-50 years (114; 87.6%) and more than half (78; 53.8%) had tertiary education.

#### 3.2 Obstetric Profile of the Mothers

Ninety-three (64.1%) received antenatal care at OOUTH while 52 (35.9%) patronized other health facilities, apart from OOUTH, for antenatal care. Of the 93 who registered for antenatal care in OOUTH, 30 (32.3%) also patronized other maternity care providers [private clinics (18), primary health centres (9) and church (3)] concurrently.

Only 6 (4.1%) mothers had previous early neonatal deaths. Twenty-three (15.9%) mothers were hospitalized during the index pregnancy: 12 (8.3%) at OOUTH and 11 (7.6%) at private clinics. Eighty-four (57.9%) were admitted into OOUTH in labour while the remaining 61 (42.1%) were admitted prior to the onset of labour either for planned Caesarean delivery or for management of serious ailments in pregnancy.

Of the 84 mothers who were admitted at OOUTH in labour, 32 (38.1%) presented with obstetric emergencies while 52 (61.9%) had no obstetric emergencies. The former group who presented with emergencies came on self-referral (14; 16.7%) or official referral (18; 21.4%) from private clinics [14/18; 77.8%] and primary health centre [4/18; 22.2%]. Of those who came to OOUTH on self-referral, 10/14 (71.4%) had previously visited churches and TBH.

#### 3.3 Profile of the Babies

There were 150 babies in the study comprising 140 (93.3%) singleton babies and 10 (6.7%) products of multiple gestations. The distribution of the babies according to Estimated Gestational Age (EGA) and birth weight are shown in Table 1. The EGA ranged between 29 weeks and 42 weeks with the mean of  $38.1 \pm 2.5$  weeks. Similarly, the mean birth weight was  $2.9 \pm 0.6$  kg (range: 1.1-4.1 kg). Majority of the babies had EGA  $\geq 37$  weeks (122/145; 84.1) and weighed between 2.5 and 3.9kg (123/150; 82.0%). The babies comprised 76 (50.7%) males and 74 (49.3%) females.

There were 140 (93.3%) live births and 10 (6.7%) stillbirths (3 fresh and 7 macerated still births). All the 10 products of multiple gestation were live births whereas the 140 singleton babies comprised 130 live births and 10 stillbirths. Of the 140 live births, 34 (24.3%) were hospitalized; 28/34 (82.4%) soon after birth and 6/34 (15.6%) within the first 48 hours of birth. The reasons for hospitalization at birth included perinatal asphyxia (13/34; 38.2%), prematurity (7/34; 20.6%), presumed sepsis (7/34; 20.6%) and birth injury (1/34; 2.9%). Conjunctivitis (3/34; 8.8%) and jaundice (3/34; 8.8%) were the reasons for hospitalization after birth.

The immediate outcome of the hospitalized babies was as follows: Discharge in good condition (31/34; 91.2%), death (1/34; 2.9%) and referral (2/34; 5.9%).

### 3.4 Perinatal Outcome

Overall, 11/150 (7.3% or 73.3 per 1000 total births) babies had poor perinatal outcome; these comprised 10 stillbirths (66.7/1000 total births) and one early neonatal death (6.6/1000 total births). All the affected babies were singleton and weighed 1.9-3.8 kg with the mean of 2.84±0.8 kg. The mean EGA of the still births was 36.7 weeks. There were 7 males and 4 females giving a male-to-female ratio of 1.7 to 1. As shown in Table 1, all the affected mothers belonged to the lower socioeconomic classes IV and V; they registered for antenatal care in OOUTH but had less than 4 attendances throughout pregnancies. In addition, all the affected mothers presented in OOUTH with emergencies in labour. Most of the

**Table 1. Socio-demographic and obstetric characteristics of the mothers**

Parameters		Frequencies (n = 145)	Percentage
Age (Years)	<20	2	1.4
	20-35	117	80.7
	>35	26	17.9
Level of education	Primary	16	11.0
	Secondary	50	34.5
	Tertiary	79	54.5
Age of spouse (Years)	20-30	28	19.3
	31-50	114	78.6
	>50	3	2.1
Paternal education	Primary	34	23.4
	Secondary	33	22.8
	Tertiary	78	53.8
Socioeconomic class	I	2	1.4
	II	18	12.4
	III	59	40.7
	IV	63	43.4
	V	3	2.1
Family type	Monogamous	133	91.7
	Polygamous	12	8.3
Place of residence	Within Sagamu	93	64.1
	Outside Sagamu	52	35.9
Parity	0	21	14.5
	1	53	36.6
	2-4	64	44.1
	≥5	7	4.8
ANC registration*	OOUTH	93	64.1
	Other facilities	52	35.9
EGA (weeks)**	<32	6	4.1
	32-36	17	11.7
	>37	122	84.2
Birth weight (kg)***	<1.5	3	2.0
	1.5-2.49	22	14.7
	2.5-3.9	123	82.0
	≥4	2	1.3

mothers were aged 20-35 years (8/11; 72.7%), multiparous (7/11; 63.6%), had low education (9/11; 81.8%), resided outside Sagamu (7/11; 63.6%) arrived OOUTH on referral from private clinics and TBH (8; 72.7%).

### 3.5 Bivariate Analysis of the Obstetric Characteristics of the Mothers

Table 2 shows that a significantly higher proportion of the mothers who presented with emergencies in labour had low education (p = 0.0003), had spouses with low education (p =

0.0002), belonged to the lower socioeconomic classes (p = 0.025), resided outside Sagamu (p = 0.006), did not register for antenatal care in OOUTH (p = 0.001), had poor perinatal outcome (p < 0.0001) and the babies required hospitalization (p = 0.001). In addition, the mothers who presented with emergencies and those who did not present with emergencies were comparable in terms of age distribution, parity, type of gestation, estimated gestational age at presentation, previous early neonatal deaths and hospitalization during the index pregnancy.

**Table 2. Comparison of the socio-demographic and obstetric profile of mothers who were admitted in labour with emergencies and those admitted in labour without emergencies**

Parameters		With emergencies (n = 32)	Without emergencies (n = 52)	Statistics
Maternal age	≤35	27 (84.4)	45 (86.5)	OR = 0.84 CI = 0.21-3.44
	>35	5 (15.6)	7 (13.5)	
Maternal education	Low	24 (75.0)	18 (34.6)	OR = 5.6 CI = 1.92-17.20; p = 0.0003
	High	8 (25.0)	34 (65.4)	
Paternal education	Low	23 (71.9)	16 (30.8)	OR = 5.7 CI = 1.98-17.18; p = 0.0002
	High	9 (28.1)	36 (69.2)	
Socioeconomic class	II-III	11 (34.3)	31 (59.6)	OR = 0.35 CI = 0.13-0.97; p = 0.025
	IV-V	21 (65.6)	21 (40.4)	
Type of gestation	Singleton	29 (90.6)	52 (100.0)	Fisher's p = 0.052
	Multiple	3 (9.4)	0 (0.0)	
Parity	0/1	17 (53.1)	27 (51.9)	OR = 1.0 CI = 0.40-2.78
	>1	15 (46.9)	25 (48.1)	
Previous END*	Yes	0 (0.0)	3 (5.8)	Fisher's p = 0.284
	No	32 (100.0)	49 (94.2)	
Residence	Within Sagamu	16 (50.0)	41 (78.9)	OR = 0.27 CI = 0.09-0.78; p = 0.006
	Outside Sagamu	16 (50.0)	11 (21.1)	
ANC booking	OOUTH	3 (9.4)	48 (92.3)	OR = 0.01 CI = 0.00-0.05; p < 0.001
	Other facilities	29 (90.6)	4 (7.7)	
Hospitalization during pregnancy	Yes	4 (12.5)	6 (11.5)	OR = 1.1 CI = 0.23-4.94
	No	28 (87.5)	46 (88.5)	
EGA** (weeks)	<37	6 (18.8)	4 (7.7)	OR = 2.8 CI = 0.61-13.09
	≥37	26 (81.2)	48 (92.3)	
Perinatal outcome	Poor	7 (21.9)	0 (0.0)	Fisher's p < 0.0001
	Good	25 (78.1)	52 (100.0)	
SCBU hospitalization**	Yes	12 (44.4)	4 (7.7)	OR = 9.7 CI = 2.37-42.22; p < 0.001
	No	15 (55.6)	48 (92.3)	

**Table 3. Comparison of socio-demographic and obstetric profile of mothers who visited only the Teaching Hospital in labour and mothers who visited other health facilities in labour**

Parameters		Mother who only visited teaching hospital in labour (n = 49)	Mothers who visited other facilities in labour (n = 35)	Statistics
Maternal age	≤35	42 (85.7)	30 (85.7)	OR = 1.0; p = 1.00
	>35	7 (14.3)	5 (14.3)	
Maternal education	Low	17 (34.7)	25 (71.4)	OR = 0.21 CI = 0.07-0.60; p = 0.001
	High	32 (65.3)	10 (28.6)	
Paternal education	Low	14 (28.6)	25 (71.4)	OR = 0.16 CI = 0.05-0.46; p = 0.0001
	High	32 (71.4)	10 (28.6)	
Socioeconomic class	II-III	30 (61.2)	12 (34.3)	OR = 3.0 CI = 1.12-8.31; p = 0.015
	IV-V	19 (38.8)	23 (65.7)	
Type of gestation	Singleton	49 (100.0)	32 (96.4)	Fisher's p = 0.0015
	Multiple	0 (0.0)	3 (8.6)	
Parity	0/1	26 (53.1)	18 (51.4)	OR = 1.07 CI = 0.41-2.79
	>1	23 (46.9)	17 (48.6)	
Previous END	Yes	3 (6.1)	0 (0.0)	Fisher's p = 0.262
	No	46 (98.9)	35 (100.0)	
Residence	Within Sagamu	38 (77.6)	19 (54.3)	OR = 2.91 CI = 1.03-8.37; p = 0.024
	Outside Sagamu	11 (22.4)	16 (45.7)	
ANC booking	OOUTH	45 (91.8)	6 (17.1)	OR = 54.38 CI = 12.21-76.63; p < 0.001
	Other facilities	4 (8.2)	29 (82.9)	
Hospitalization during pregnancy	Yes	6 (12.2)	4 (11.4)	OR = 1.08 CI = 0.24-5.06
	No	43 (87.8)	31 (88.6)	
Gestational age	Term	46 (93.9)	28 (80.0)	OR = 3.8 CI = 0.8-20.64
	Preterm	3 (6.1)	7 (20.0)	
Perinatal outcome	Poor	0 (0.0)	7 (20.0)	Fisher's p = 0.001
	Good	49 (100.0)	28 (80.0)	
SCBU hospitalization	Yes	3 (6.1)	*12 (42.9)	OR = 0.09 CI = 0.02-0.40; p < 0.0001
	No	46 (93.9)	16 (57.1)	

In Table 3, a comparison of the mothers who did not visit other facilities apart from OOUTH during labour and those who visited other facilities showed that a significantly higher proportion of the latter group had low education (p = 0.001), had spouses with low education (p = 0.0001), belonged to the lower socioeconomic classes (p = 0.015), had multiple births (p = 0.0015), resided outside Sagamu (p = 0.024), had registered with other facilities apart from OOUTH for antenatal care during pregnancy (p < 0.001), had poor perinatal outcome (p = 0.001) and the babies required hospitalization (p < 0.0001). The proportions of the two groups were comparable in terms of age distribution, parity, estimated gestational age and previous early neonatal deaths.

The socio-demographic and obstetric factors of mothers associated with the hospitalization of

their babies are depicted in Table 4. A significantly higher proportion of the mothers whose babies were hospitalized had low education (p = 0.0003), had spouses with low education (p = 0.01), belonged to the lower socioeconomic classes (p = 0.041), registered for antenatal care in other facilities apart from OOUTH (p < 0.0001), had preterm birth (p < 0.0001) and patronized other facilities in labour (p < 0.0001).

### 3.6 Multivariate Analysis of Factors Associated with Hospitalization of Newborn Babies

Maternal education, paternal education, family socioeconomic status, estimated gestational age, site of registration for antenatal care during pregnancy, presence of emergencies in labour

and facilities visited during labour were significantly associated with the hospitalization of babies after birth. These variables were used for multivariate analysis to determine independent contribution to the need for hospitalization of babies.

contributions to the need for hospitalization of babies in this study. Babies delivered preterm were 11 times more likely to be hospitalized compared to term babies ( $p < 0.001$ ) while babies whose mothers had visited other facilities in labour were 7 times more likely to be hospitalized compared to those whose mothers did not visit other facilities in labour ( $p = 0.011$ ).

Table 5 shows that only preterm birth and visit to other facilities during labour had independent

**Table 4. Comparison of the sociodemographic and obstetric profile of mothers whose infants were hospitalized and mothers whose infants were not hospitalized**

Maternal parameters		Mothers of Infants hospitalized (n=32)	Mothers of Infants not hospitalized (n = 103)	Statistics
Maternal age (years)	≤35	29 (90.6)	82 (79.6)	OR = 2.48
	>35	3 (9.4)	21 (20.4)	CI = 0.63-11.38
Maternal parity	0/1	16 (50.0)	54 (52.4)	OR = 0.91
	>1	16 (50.0)	49 (47.6)	CI = 0.38-2.38
Maternal education	Low	21 (65.6)	37 (36.0)	OR = 3.41
	High	11 (34.4)	66 (64.0)	CI = 1.36-8.54; p = 0.0003
Paternal education	Low	22 (68.8)	37 (35.9)	OR = 3.92
	High	10 (31.2)	66 (64.1)	CI = 1.56-10.04; p = 0.01
Socioeconomic status	I-III	13 (40.6)	63 (61.2)	OR = 0.48
	IV-V	19 (59.4)	40 (38.8)	CI = 0.18-0.93; p = 0.041
Residence	Within Sagamu	18 (56.3)	71 (68.9)	OR = 0.58
	Outside Sagamu	14 (43.7)	32 (31.1)	CI = 0.26-1.41
Gestational age	Preterm	15 (46.9)	5 (4.9)	OR = 17.29
	Term	17 (53.1)	98 (95.1)	CI = 4.99-63.72; p < 0.0001
ANC booking	OOUTH	13 (40.6)	79 (76.7)	OR = 0.21
	Other facilities	19 (59.4)	24 (23.3)	CI = 0.08-0.52; p < 0.0001
Hospitalization during pregnancy	Yes	2 (6.2)	20 (19.4)	OR = 0.28
	No	30 (93.8)	83 (80.6)	CI = 0.04-1.38
Admitted as emergency	Yes	11 (34.4)	14 (13.6)	OR = 3.33
	No	21 (65.6)	89 (86.4)	CI = 1.20-9.23; p = 0.08
Patronized other facilities in labour	Yes	24 (75.0)	16 (15.5)	OR = 16.31
	No	8 (25.0)	87 (84.5)	CI = 5.70-48.35; p < 0.0001

**Table 5. Multivariate analysis of factors associated with hospitalization of babies into the SCBU**

Variables	B	OR	p-values	95%CI
Low maternal education	0.500	1.6	0.455	0.45 - 6.11
Low paternal education	0.135	1.1	0.891	0.16 - 7.93
Low socioeconomic status	0.022	1.0	0.982	0.15 - 7.05
Preterm birth	2.436	11.4	0.000	2.95 - 44.25
ANC at Facilities except OOUTH	-0.043	0.9	0.954	0.22 - 4.18
Emergency presentation during labour	-0.006	0.9	0.993	0.22 - 4.34
Traversed other facilities in labour	1.889	6.6	0.011	1.53 - 28.53
Constant	-2.915	0.05	0.000	

B- Coefficient of Regression; OR = Odds Ratio; 95%CI = 95% Confidence Interval

#### 4. DISCUSSION

All the subjects in the present study received some forms of antenatal care with 64.1% attending the teaching hospital and 35.9% other facilities. This high rate of utilization of antenatal care services agreed with 84.6% previously reported from Sagamu in 2009 [16]. In addition, out of those who attended the teaching hospital for antenatal services, 32.3% also utilized antenatal care services provided by other facilities simultaneously. This pattern of dual utilization of antenatal care facilities is not strange in this part of the country as earlier reported from another centre in southwest Nigeria [17]. Although, the population in the present study may not be totally representative of the general population of expectant women in Sagamu, it is attractive to adjudge as reassuring, the almost universal tendency of the pregnant women studied in this part of the country, to seek some forms of health care during pregnancy, though with varying degrees of quality of care. The observations earlier made from Ilesha, another tertiary facility setting in south-west Nigeria suggested poor utilization of maternity services. This is not peculiar to the Nigerian setting as similar reports had been made from other parts of the developing world. [18-20].

Bivariate analyses showed that low maternal education, low spousal education and low socio-economic status of the family were significantly associated with presentation of pregnant women with emergencies during labour as well as visits to other providers of maternity care services during labour. This observation was similar to previous reports from other parts of the world. [21,22] This pattern of obstetric care seeking behaviour might be explained in terms of lack of knowledge about the seriousness of obstetric conditions, and wrong choices of health care due to financial handicap. Further exploration of other confounding factors, apart from low maternal or spousal education, is best done using qualitative research methods. Socio-cultural factors such as the dictates and preferences of spouses also influence the choices of facilities patronised for maternity services [16,17]. Low satisfaction of clients with the existing quality of maternity care may also be a matter for concern as previously observed in Sri-Lanka [22]. Similarly, in Ethiopia, [19] only 12.1% of pregnant women had institutional delivery and high maternal education, urban residence and utilization of antenatal care services positively influenced the

utilization of delivery services. Utilization of maternity services determines, to a large extent, maternal and foetal outcome of pregnancies [23] as it minimizes the risks of adverse events during labour and delivery and ensures the availability of support care and appropriate resuscitative measures, in cases of complications. Therefore, the patronage of other facilities where care during labour might have been sub-optimal, might explain the preponderance of serious intra-partum events such as perinatal asphyxia in the present study. It is expected that with low educational qualifications of the pregnant woman and her spouse, the likelihood of poverty and ignorance might be the cause of delay in seeking care at the appropriate levels of care or wrong choices of care [24]. As previously observed in Sagamu, [25] the out-of-pocket health financing method operating in virtually every part of the country, makes it difficult for families to access quality maternity care as appropriate. This is in tandem with a previous observation that perinatal mortality in a Nigerian centre tended to increase drastically following the replacement of free health care with the fee-charging health services system in Nigeria [26]. This observation seem to agree with the reports of Nigerian studies that poor finance was a major reason for the patronage of spiritual birth homes in southern Nigeria [17,27,28]. It was also reported in rural India that the observed low rate of institutional delivery was more associated with low socioeconomic standards rather than poor physical access [29]. Therefore, it becomes imperative for health policy makers and administrators to improve the accessibility of quality public maternity services by introducing an efficient health insurance scheme which removes the financial burden associated with seeking health care.

The overall perinatal mortality rate in the present study was 73.3 per 1000 total birth (7.3%). The bulk of these deaths (90.9%) were still births while the only early neonatal death resulted from perinatal asphyxia. Almost 25% of the live births required hospitalization immediately or soon after birth. Most of the babies hospitalized early in life (38.2%) had perinatal asphyxia thus highlighting the role of adverse intra-partum events caused by poor obstetric care-seeking behaviour on the perinatal outcome of pregnancies. These morbidities and mortalities were highly plausible to be related to intra-partum events. By extension, this observation reflects the poor quality of the management of labour and delivery in the affected mothers. Evidently, most of them



were booked for antenatal care in the teaching hospital but had poor antenatal clinic attendance records. These mothers, most likely, deflected to other facilities, particularly, the non-orthodox facilities during labour mostly for reasons of cost and religion as previously observed in other Nigerian centres [17,27]. A study earlier conducted within the same Ogun state, revealed that only 9.8% of women who registered for antenatal care at government facilities actually delivered their infants in health facilities [29]. It is not surprising, therefore, that these mothers arrived the teaching hospital with obstetric emergencies (mainly from antepartum haemorrhage, eclampsia, cord accidents and breech presentation) after traversing some private clinics, spiritual and traditional birth homes. The large proportion of pregnant women who arrived at the teaching hospital on self-referral following unsuccessful attempts in other facilities further lent support to the hypothesis. This trend underscores the need to strengthen the existing health care delivery services, particularly, with regards to prompt materno-foetal referral between the different tiers of health care, be it public and private or orthodox and unorthodox.

Unfortunately, expectant mothers who did not receive antenatal care in the teaching hospital had been reported to form the bulk of obstetric emergencies managed in the maternity unit of the hospital and their babies, the bulk of in-born babies requiring hospitalization [25]. The risk of the infants of such mothers suffering asphyxia was reported to be nine-fold compared with the infants whose mothers received antenatal care in the same hospital as reported in a south-eastern Nigeria centre [30]. The worsening scenario of perinatal asphyxia in south western Nigeria occasioned by decreasing utilization of maternal and child health services available in government-owned health facilities compared to traditional and spiritual birth homes had been described in a hospital-based study [13]. While it is expected that, the teaching hospitals, being the highest level of health care delivery in the country should ordinarily, receive referrals from the lower tiers of health care delivery, the pregnancy and foetal outcome could be a lot better when such referrals are done at the earliest indication with minimal morbidities as the benefit. Unfortunately, the referrals are either delayed at the peripheral health facilities or deliberately resisted by the affected families, even when initiated early, for reasons of socio-cultural and financial hindrances. As recorded in

the present study, a remarkable proportion of the women in labour had earlier traversed other health facilities, before arriving at the teaching hospital on referral, mostly self-referral and with various materno-foetal complications. Although, the present study did not elucidate the circumstances surrounding the referrals from the peripheral health facilities, it is attractive to speculate that, given the low scale of operations of the National Health Insurance Scheme and the relatively higher cost of care outside government-owned health facilities in Nigeria, families in the low socioeconomic rungs may have difficulty accepting the option of referral to the teaching hospital where services are known to be more comprehensive but expected to be more expensive.

Some socio-economic and cultural factors strongly influencing health care seeking behaviours for childhood illnesses are known [31]. Therefore, it will not be surprising if similar factors, such as poor finances, distance and preference for traditional or spiritual methods of healing, also affect care-seeking behaviours for women during pregnancy, labour and childbirth [25].

The multivariate analysis of the data in the present study was only limited to the risk for hospitalization of babies rather than poor perinatal outcome (defined by stillbirth rate and early neonatal deaths) due to the relatively small size but preterm birth and visits to other health facilities in labour prior to arrival in the teaching hospital were identified as major contributors to the risk of hospitalization in to the special care baby unit (SCBU). While it is virtually impossible for all expectant mothers to deliver their babies in the teaching hospital, efficient lesser tiers of maternal and child health care delivery, if adequately staffed and equipped, should have the operational capabilities to provide most of the required maternity and immediate newborn care services and reduce the need for tertiary care. The availability of such facilities, would reduce delays in effective intervention, minimise complications and reduce mortality. This can be achieved by strengthening the scope of services provided at the primary and secondary levels of care in the country through recruitment and training of personnel as well as provision of the necessary infrastructural supports.

The prime role of preterm birth in necessitating hospitalization in the SCBU is most likely related to the leading role of prematurity and low birth

weight in neonatal admissions in centres across the country [9,32]. On the other hand, traversing other health facilities, particularly outside the Sagamu metropolis, prior to arrival in the teaching hospital, during labour, might have technically delayed effective intervention and worsened the on-going materno-foetal morbidities, including foetal distress. This explains why perinatal asphyxia was the leading complication recorded amongst the infants of mothers who presented with emergencies in labour.

The relationship between place of residence and utilization of maternity services had earlier been described [17]. The present study also demonstrated the association between residence outside Sagamu and the risk of presentation with emergencies during labour and poor perinatal outcome. Babies who required hospitalization frequently belonged to mothers who had low education, who received antenatal care outside the teaching hospital, who traversed other facilities during labour before referral to the teaching hospital and to families with low socioeconomic status. These are settings where access to health information may be low, use of effective health knowledge may be low and access to quality health care services may be low as earlier reported [33]. Within the limits of the information available, it is clear that the common denominator among these babies is poor access to quality health care services either during pregnancy or during labour.

## 5. CONCLUSION

The present study has demonstrated the relationship between poor obstetric care-seeking behaviours and adverse perinatal outcome among parturient in a teaching hospital. Improved communication, information and education strategies will be useful tools in positively changing the care-seeking behaviours of expectant mothers. Future studies are required to determine the specific socioeconomic, cultural and health-system factors directly and indirectly related to obstetric care-seeking behaviours, preferably using qualitative methods such as in-depth interview, focus group discussion or verbal autopsies where relevant. Ultimately, these steps would contribute immensely to the reduction of the contribution of severe intra-partum events which are major determinants of perinatal survival.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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