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Factors Associated with Delayed Presentation of Sick Neonates at a Nigerian Tertiary Facility

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Abstract

Background: Neonatal mortality is a high-priority public health concern in Nigeria, with delayed initiation of adequate health care for sick neonates contributing to unfavourable outcomes. This indicates the urgent need to address the barriers to timely access to healthcare for neonates in desperate situations.

Objectives: To determine the factors associated with the delay in presentation of sick neonates at the University College Hospital, Ibadan.

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Methods: A sequential-exploratory mixed-method approach was used. Data were collected using a semi-structured questionnaire adapted from the Healthcare-Seeking Behaviour and Patient Satisfaction Questionnaire. Qualitative interviews with caregivers of neonates were analysed using thematic analysis.

Results: Of the 312 neonates, 151(48.4%) had delay in presentation (DIP) while 63(20.0%) had delayed health seeking. The mean delay in presentation and delayed health-seeking was 46±86hrs and 33±73hrs, respectively. The reasons for DIP were predominantly previous treatment (48; 31.8%), lack of awareness in the mother (46; 30.5%), and thoughts that the illness would resolve (33; 21.9%). The reasons for DHS included the belief that illness would resolve (22; 8.6%), lack of maternal awareness (20; 7.8%), and cost (10; 3.9%). In multivariate analysis, age <7 days was a predictor of both DIP and DHS (AOR:0.316, CI:0.19-0.52) and (AOR:0.285, CI:0.15-0.53), respectively. Prematurity protected against DIP (AOR:0.437, 95%CI: 0.26-0.72) but increased the likelihood of DHS (AOR:2.794, CI:1.36-5.73).

Conclusion: Delay in healthcare seeking among caregivers of neonates remains high. Efforts to improve caregivers' knowledge of neonatal illnesses should be promoted to enhance neonatal care.

Keywords: *Delayed health-seeking, Neonatal danger signs, Neonatal jaundice, Neonatal mortality, prematurity.*

Introduction

Neonatal mortality remains unacceptably high in low- and middle-income countries (LMICs) like Nigeria, despite great worldwide advancements in child health.¹ It represents around 47% of all

mortality among children under five globally.² A considerable percentage of these fatalities arises from preventable conditions, including infections, birth asphyxia, and complications of prematurity.² Timely healthcare-seeking

behaviour is crucial in decreasing avoidable neonatal deaths and enhancing survival rates. Therefore, any neonate with any form of illness should be promptly assessed and commenced on the appropriate care as soon as possible to prevent rapid deterioration and eventual mortality.³ To achieve this, carers must recognise neonatal illnesses and seek medical help as soon as symptoms appear.⁴

However, in resource-limited environments, many babies are presented to the hospital late.^{5,6} Delay in healthcare seeking in neonates is defined as seeking health care for sick neonates greater than 24 hours after the onset of symptoms.^{7,8} This could be occasioned by delay in the prompt recognition of neonatal danger signs such as poor feeding, convulsions, lethargy, fever, hypothermia, difficulty in breathing or jaundice. It may also be due to delay in deciding to seek medical help and poor access to healthcare facilities.⁹⁻¹¹

The reasons for delay in presentation of sick neonates vary widely across regions, socioeconomic characteristics and culture. Awareness of neonatal danger signs as well as the use of traditional remedies and self-medication practices by the caregiver is reportedly an important cause of delay, both in eastern Nigeria and other parts of the world.^{9,12-14} A report from Pakistan showed that the identification of at least one recognised danger sign was an independent predictor of seeking care.^{9,12,15}

These diverse reasons for the different types of delay in healthcare-seeking for neonatal illnesses suggest that the reasons for delay in sick neonates receiving healthcare may be unique to the specific setting. To improve neonatal survival, there must be a reduction in delay. To achieve this reduction in delay, context-specific evidence on the underlying reasons for delay in presentation of sick neonates, particularly in resource-

constrained settings, must be obtained. This study, therefore, aimed to determine the factors associated with the delay in the presentation of sick neonates at the University College Hospital, Ibadan.

Methods

Study design

An exploratory sequential mixed-methods study design was utilised. The study comprised of caregivers of ill neonates admitted over six months to the Outborn Neonatal Unit of the University College Hospital (UCH), Ibadan, Nigeria.

Study site

The UCH is a tertiary health facility located in Ibadan, southwest Nigeria. Ibadan is an urban city with a population of approximately four million.¹⁶ There are 150 paediatric beds in the hospital, of which 40 beds are neonatal beds. The hospital serves as a referral hospital for neonates from primary and secondary healthcare facilities, as well as for home deliveries in Ibadan.¹⁷ There are two neonatal units: the Special Care Baby Unit (SCBU), which admits inborn neonates, and the C1-2nd ward (Out-born Unit), which admits about 600 neonates referred from external facilities or home deliveries annually.

Ethical Approval

Ethical approval for this study was obtained from the Oyo State Research Ethical Review Committee, Nigeria. All research procedures involving human participants were conducted in accordance with the ethical guidelines of the institutional and/or national research committee and the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from caregivers before data collection.

Participants

Parents of neonates admitted to the Outborn Unit of the hospital during the study period were

recruited. The participants were selected based on eligibility criteria that included being a primary caregiver for a neonate aged 0–28 days, excluding caregivers who were not parents or who did not wish to provide informed consent. Total sampling was used to recruit eligible participants over the six-month study period.

Data collection

The research was carried out in two phases: the first phase was a quantitative assessment utilising a semi-structured questionnaire adapted from the Healthcare-Seeking Behaviour and Patient Satisfaction Questionnaire.^{18,19} This tool was used to obtain data from caregivers on health-seeking behaviours, reasons for delay, financial constraints, prior treatment attempts, and satisfaction with healthcare services. The Oyedele method of socioeconomic classification was used to determine the socioeconomic class of the parents.²⁰

In the second phase, a qualitative exploration was done using in-depth interviews with caregivers who had experienced delays. Open-ended interview protocols were used to analyse caregivers' perspectives of sickness severity, cultural beliefs, decision-making processes, and healthcare accessibility.

Definitions

Delay in presentation (DIP) was defined as presenting to UCH more than 24 hours after the onset of the complaint.

Delay in health seeking (DHS) was defined as an interval of > 24 hours between the onset of any symptom and presentation at any health facility, occasioned by either delay in recognising the symptom in the neonate, delay in deciding to seek help for the symptom, or delay in reaching the healthcare facility.

Statistical analysis

The quantitative phase used SPSS software, while the qualitative phase used thematic analysis. Descriptive statistics were applied to summarise the study variables, and inferential statistics were used to determine the association between variables. Further analysis was conducted utilising binary logistic regression to evaluate determinants of delayed healthcare-seeking. The results were presented as odds ratios (ORs) with 95% confidence intervals (CIs). For the qualitative phase, particular focus was placed on themes relating to barriers to early healthcare-seeking, maternal decision-making, and challenges within the healthcare system.

Results

Sociodemographic characteristics

The parents of 312 neonates were enrolled in the study. The neonates were aged 0 to 28 days with a mean age of 9.0 ± 7.1 days. There were 196 males (62.8%) and 116 females (37.2%). Two hundred and twenty-six (72.4%) were in the first week of life, while 86 (27.6%) were aged 7–28 days.

The majority (288; 92.3%) of the mothers received antenatal care (ANC) at health facilities, mostly in private health facilities (121; 39.2%), while only 3 (1.0%) mothers did not receive ANC. Two hundred and sixty (80%) of the neonates were delivered at healthcare centres, while 11 (3.6%) were delivered at home (Table I). The majority of the caregivers were Yoruba by tribe 269 (86.8%) and from monogamous families (274; 91.9%) (Table I).

Presenting Complaints

The most common presenting complaints included jaundice (100; 32.1%), fever (99; 31.7%), prematurity (97; 31.1%), poor cry at birth (65; 20.8%), and respiratory distress (49; 15.7%).

Table Ia: Sociodemographic characteristics (n = 312)

Variables	No Delay n (%)	Delay n (%)	Total n (%)	p-value
Age				
< 7days	133 (42.6)	93 (29.8)	226 (72.4)	< 0.001
7 -28days	28 (9.0)	58 (18.6)	86 (27.6)	
Sex				
Male	99 (31.7)	97 (31.1)	196 (62.8)	0.616
Female	62 (19.9)	54 (17.3)	116 (37.2)	
Tribe				
Yoruba	139 (44.8)	130 (41.9)	269 (86.8)	0.583
Igbo	11 (3.5)	13 (4.2)	24 (7.7)	
Hausa	4 (1.3)	1 (0.3)	5 (1.6)	
Others	6 (1.9)	6 (1.9)	12 (3.9)	
Family Type				
Monogamous	137 (46.0)	137 (46.0)	274 (91.9)	0.266
Polygamous	9 (3.0)	4 (1.3)	13 (4.4)	
Unmarried	5 (1.7)	3 (1.0)	8 (2.7)	
Religion				
Christianity	104 (33.5)	95 (30.6)	199 (64.2)	0.76
Islam	56 (18.1)	55 (17.7)	111 (35.8)	
Birth Order				
1 – 2	8 (2.6)	5 (1.6)	13 (4.2)	0.005
3 – 5	114 (37.0)	129 (41.9)	243 (78.9)	
>5	37 (12.0)	15 (4.9)	52 (16.9)	
Place of ANC				
THCC	12 (3.9)	11 (3.6)	23 (7.4)	0.004
SHCC	60 (19.4)	27 (8.6)	87 (28.2)	
PHCC	28 (9.1)	29 (9.4)	57 (18.4)	
Private hospitals	51 (16.5)	70 (22.7)	121 (39.2)	
Religious Centre/TBA	9 (2.9)	12 (3.9)	21 (6.8)	
Home				
Place of Delivery				
THCC	9 (2.9)	10(3.3)	19(6.2)	0.021
SHCC	58 (18.9)	28(9.1)	86(28.0)	
PHCC	16 (5.2)	19(6.2)	35(11.4)	
Private hospitals	54 (17.6)	72(23.5)	126(41.0)	
Religious Centre/TBA	16 (5.2)	14(4.6)	30(9.8)	
Home	5(1.6)	6(2.0)	11(3.6)	

ANC – Antenatal Care; THCC - Tertiary Healthcare Centre; SHCC- Secondary Healthcare Centre; PHCC - Private Healthcare Centre; TBA - Traditional Birth Attendant

Participants with a delay in presentation

One hundred and fifty-one (48.4%) parents arrived at UCH more than 24 hours after the onset of symptoms. Of the 151 neonates, 97 (64.2%) were males, and 54 (35.8%) were females (Table II). The median period of delay in presentation was 48 hours (IQR 34 to 96 hours). About two-thirds (95; 64.7%) came to UCH after 24 hours,

but up to 3 days; 24.5% were delayed for 4-7 days, while 16 (10.9%) experienced delays of more than a week before presentation.

Sociodemographic characteristics of participants with delay in presentation

Table Ib: Sociodemographic characteristics (n = 312)

Variables	No Delay n (%)	Delay n (%)	Total n (%)	p-value
Mother's Education				
I	54 (17.3)	54 (17.3)	108 (34.6)	0.434
II	49 (15.7)	32 (10.3)	81 (26.0)	
III	46 (14.7)	50 (16.0)	96 (30.8)	
IV	10 (3.2)	12 (3.8)	22 (7.1)	
V	2 (0.6)	3 (1.0)	5 (1.6)	
Mother's Occupation				
I	25 (8.0)	14 (4.5)	39 (12.5)	0.086
II	27 (8.7)	16 (5.1)	43 (13.8)	
III	45 (14.4)	61 (19.6)	106 (34.0)	
IV	43 (13.8)	40 (12.8)	83 (26.6)	
V	21 (6.7)	20 (6.4)	41 (13.1)	
Father's Education				
I	76 (24.4)	61 (19.6)	137 (44.1)	0.315
II	36 (11.6)	33 (10.6)	69 (22.2)	
III	39 (12.5)	44 (14.1)	83 (26.7)	
IV	10 (3.2)	9 (2.9)	19 (6.1)	
V	0 (0.0)	3 (1.0)	3 (1.0)	
Father's Occupation				
I	42 (13.5)	44 (14.1)	86 (27.6)	0.318
II	35 (11.2)	22 (7.1)	57 (18.3)	
III	58 (18.6)	50 (16.0)	108 (34.6)	
IV	24 (7.7)	33 (10.6)	57 (18.3)	
V	2 (0.6)	2 (0.6)	4 (1.3)	
Socioeconomic class				
Upper Class	11 (4.3)	15 (5.8)	26 (10.1)	0.436
Middle Class	66 (25.6)	53 (20.5)	119 (46.1)	
Lower Class	57 (22.1)	56 (21.7)	113 (43.8)	

Five (3.3%) of the 312 mothers had no formal education, out of whom 3 (60.0%) had a delay in presentation. Two of the mothers (40.0%) with no formal education had delayed health-seeking; the illness was not recognised in one case. In contrast, the mother thought the illness would resolve on its own in the other.

Half (20; 48.8%) of the 41 with unemployed mothers had a delay in presentation, and all 3 (1.0%) neonates whose fathers had no formal education had a delay in presentation.

The majority of neonates with delay were from low (56; 37.1%) and middle class (53; 35.1%) respectively (Table II). Among those with delay, 14 (9.3%) were delivered in a church or by a traditional birth attendant, while 6 (4.0%) were delivered at home (Table II).

Presenting complaints among participants with a delay in presentation

Jaundice was the most frequent (58; 38.4%) presenting complaint among babies with delay as well, followed by fever (50; 33.1%) and prematurity 33(21.9%) (Table III). Two-thirds of those who presented with poor feeding had a delay in presentation (16;10.6%). On bivariate analysis, delay in presentation was significantly associated with prematurity ($p < 0.001$), respiratory distress ($p = 0.037$), and jaundice ($p = 0.020$) (Table III).

Table IIa: Characteristics of respondents with delay (n = 151)

Variables	Frequency (%)
Age	
< 7days	93 (61.6)
7 -28days	58 (38.4)
Sex	
Male	97 (64.2)
Female	54 (35.8)
Tribe	
Yoruba	130 (86.1)
Igbo	13 (8.6)
Hausa	1 (0.7)
Others	6 (4.0)
Family Type	
Monogamous	137 (90.7)
Polygamous	4 (2.6)
Unmarried	3 (2.0)
Religion	
Christianity	95 (62.9)
Islam	55 (36.4)
Birth Order	
1 – 2	5 (3.3)
3 – 5	129 (85.4)
>5	15 (9.9)
Place of ANC	
THCC	11 (7.3)
SHCC	27 (17.9)
PHCC	29 (19.2)
Private hospitals	70 (46.4)
Religious Centre/TBA/Home	12 (7.9)
Place of Delivery	
THCC	10 (6.6)
SHCC	28 (18.5)
PHCC	19 (12.6)
Private hospitals	72 (47.7)
Religious Centre/TBA Home	14 (9.3)

ANC – Antenatal Care; THCC - Tertiary Healthcare Centre; SHCC - Secondary Healthcare Centre; PHCC - Private Healthcare Centre; TBA - Traditional Birth Attendant

Table IIb: Characteristics of respondents with delay (n = 151)

Variables	Frequency (%)
Mother's Education	
I	54 (35.8)
II	32 (21.2)
III	50 (33.1)
IV	12 (7.9)
V	3 (2.0)
Mother's Occupation	
I	14 (9.3)
II	16 (10.6)
III	61 (40.4)
IV	40 (26.5)
V	20 (13.2)
Father's Education	
I	61 (40.4)
II	33 (21.9)
III	44 (29.1)
IV	9 (6.0)
V	3 (2.0)
Father's Occupation	
I	44 (29.1)
II	22 (14.6)
III	50 (33.1)
IV	33 (21.9)
V	2 (1.3)
Socioeconomic class	
Upper Class	15 (9.9)
Middle Class	53 (35.1)
Lower Class	56 (37.1)

Table III: Association between presenting symptoms and delay (n = 151)

Symptoms	n (%)	p-value
Jaundice	58 (38.4)	0.020
Fever	50 (33.1)	0.612
Prematurity	33 (21.9)	<0.001
Poor cry	30 (19.9)	0.684
Feeding	16 (10.6)	0.161
Respiratory distress	17 (11.3)	0.037

Care given before presentation

Ninety-two of the 151 (60.9%) neonates who had a delay in presentation, some had presented at a health facility before UCH. Of those who visited a health facility, 21 (22.8%) received oxygen therapy, 20 (21.7%) received antibiotics, 18 (19.6%) received IV fluids and 18 (19.6%) were referred without intervention. Of the 59 (39.1) who had no contact with any health care provider before presenting, 29 (19.2%) came from home,

21 (13.9%) had been given drugs bought over the counter by parents, 4 (2.4%) sought patent medicine, while 5 (3.3%) sought religious remedies.

Participants with delayed health-seeking (DHS) behaviour

There were 257 neonates with complete records; 164 (63.8%) were males, and 93 (36.2%) were females.

Table IVa: Relationship between the characteristics of respondents and delayed health seeking (n = 63)

Variables	No DHS n (%)	DHS n (%)	Total n (%)	p-value
Age				
< 7days	158 (61.5)	35 (13.6)	193 (75.1)	<0.001
7 -28days	36 (14.0)	28 (10.9)	64 (24.9)	
Sex				
Male	121 (47.1)	43 (16.7)	164 (63.8)	0.399
Female	73 (28.4)	20 (7.8)	93 (36.2)	
Tribe				
Yoruba	164 (64.3)	55 (21.6)	219 (85.9)	0.676
Igbo	16 (6.3)	6 (2.4)	22 (8.6)	
Hausa	4 (1.6)	0 (0.0)	4 (1.6)	
Others	8 (3.1)	2 (0.8)	10 (3.9)	
Family Type				
Monogamous	164 (68.0)	57 (23.7)	221 (91.7)	0.697
Polygamous	9 (3.7)	3 (1.2)	12 (5.0)	
Unmarried	7 (2.9)	1 (0.4)	8 (3.3)	
Religion				
Christianity	127 (49.8)	40 (15.7)	167 (65.5)	0.853
Islam	66 (25.9)	22 (8.6)	88 (34.5)	
Birth Order				
1 – 2	9 (4.7)	1 (1.6)	10 (4.0)	0.124
3 – 5	109 (57.1)	44 (71.0)	153 (60.5)	
>5	73 (38.2)	17 (27.4)	90 (35.6)	
Place of ANC				
THCC	10 (4.0)	5 (2.0)	15 (5.9)	0.117
SHCC	61 (24.1)	9 (3.6)	70 (27.7)	
PHCC	31 (12.3)	13 (5.1)	44 (17.4)	
Private hospitals	73 (28.9)	28 (11.1)	101 (39.9)	
Religious Centre/TBA Home	16 (6.3)	7 (2.8)	23 (9.1)	
Place of Delivery				
THCC	9 (3.6)	4 (1.6)	13 (5.2)	0.035
SHCC	65 (25.9)	9 (3.6)	74 (29.5)	
PHCC	19 (7.6)	9 (3.6)	28 (11.2)	
Private hospitals	73 (29.1)	27 (10.8)	100 (39.8)	
Religious Centre/TBA Home	15 (6.0)	11 (4.4)	26 (10.4)	

ANC – Antenatal Care; THCC - Tertiary Healthcare Centre; SHCC - Secondary Healthcare Centre; PHCC - Private Healthcare Centre; TBA - Traditional Birth Attendant

Table IVb: Relationship between the characteristics of respondents and delayed health-seeking (n = 63)

Variables	No DHS n (%)	DHS n (%)	Total n (%)	p-value
Mother's Education				
I	62 (24.1)	26 (10.1)	88 (34.2)	0.281
II	60 (23.3)	11 (4.3)	71 (27.6)	
III	57 (22.2)	20 (7.8)	77 (30.0)	
IV	12 (4.7)	4 (1.6)	16 (6.2)	
V	3 (1.2)	2 (0.8)	5 (1.9)	
Mother's Occupation				
I	30 (11.7)	3 (1.2)	33 (12.8)	0.168
II	27 (10.5)	10 (3.9)	37 (14.4)	
III	62 (24.1)	25 (9.7)	87 (33.9)	
IV	48 (18.7)	19 (7.4)	67 (26.1)	
V	27 (10.5)	6 (2.3)	33 (12.8)	
Father's Education				
I	87 (33.9)	28 (10.9)	115 (44.7)	0.786
II	47 (18.3)	13 (5.1)	60 (23.3)	
III	47 (18.3)	15 (5.8)	62 (24.1)	
IV	12 (4.7)	6 (2.3)	18 (7.0)	
V	1 (0.4)	1 (0.4)	2 (0.8)	
Father's Occupation				
I	52 (20.2)	15 (5.8)	67 (26.1)	0.590
II	42 (16.3)	9 (3.5)	51 (19.8)	
III	65 (25.3)	25 (9.7)	90 (35.0)	
IV	32 (12.5)	12 (4.7)	44 (17.1)	
V	3 (1.2)	2 (0.8)	5 (1.9)	
Socioeconomic class				
Upper Class	93 (36.2)	32 (12.5)	125 (48.6)	0.629
Middle Class	100 (38.9)	30 (11.7)	130 (50.6)	
Lower Class	1 (0.4)	1 (0.4)	2 (0.8)	

The mean age was 5.06 ± 6.49 days. The majority (192; 74.7%) were less than 7 days old, while 64 (25.3%) were aged 7-28 days. Delayed health-seeking was discovered in 63 (24.5%) of the neonates. Among those with delay, 61 (23.7%) belonged to mothers with no or low education, 57 (22.2%) had unemployed or unskilled mothers, 62 (24.1%) had fathers with low education, and 61 (23.7%) had fathers with low occupational status (Table IV).

The most frequent complaints among those with DHS were jaundice (27; 42.9%), fever (15;

23.8%), and poor cry (12; 19.0%). Other symptoms included prematurity (11/17, 64.7%), respiratory distress (6/17, 35.3%), and poor feeding (3/17, 17.6%) (Table V).

A total of ten main themes were identified as reasons for delay (Figure 3). Among those with DIP, the most common theme was previous treatment obtained (48; 31.8%), followed by the primary caregiver's lack of awareness of the illness or its severity (46; 30.5%), and the belief that the illness would resolve by itself with time (33; 21.9%).

Factors Associated with Delayed Presentation of Sick Neonates at a Nigerian Tertiary Facility

A total of ten main themes were identified as reasons for delay (Figure 3). Among those with DIP, the most common theme was previous treatment obtained (48; 31.8%), followed by the primary caregiver's lack of awareness of the illness or its severity (46; 30.5%), and the belief that the illness would resolve by itself with time (33; 21.9%). Delay at the source of referral (SOR) was experienced by 28 caregivers (18.5%), and 23 (15.2%) cited financial constraints as the reason for delay. Other reasons stated included

religious issues (10; 6.6%), reassurance by private healthcare providers (8; 5.3%), family structure (7; 4.6%), transportation difficulties (7; 4.6%), and limited bed spaces (6; 4.0%). Among those with DHS, the leading causes included the belief that the illness would resolve (22; 34.9%), the mother not being aware of the illness severity (20; 31.7%), previous treatment obtained elsewhere (14; 22.2%), and other reasons, as depicted in Figure 1.

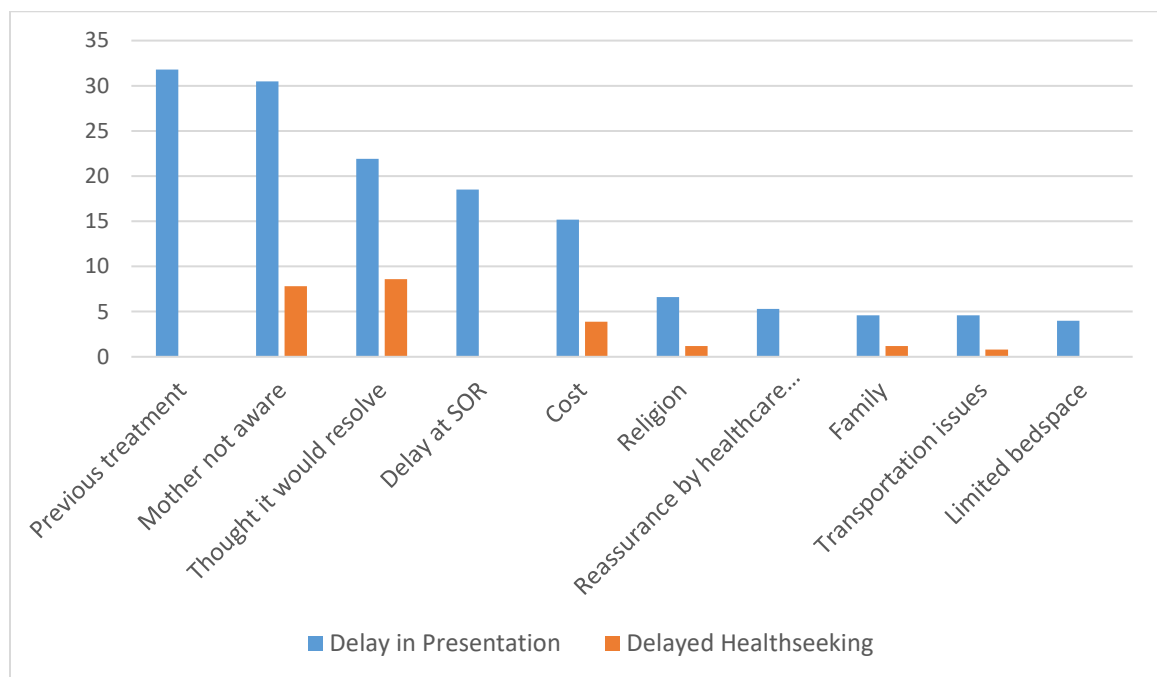


Figure 1: Reasons for delays in presentation and delayed healthcare-seeking

Table V: Presenting symptoms and DHS

Symptoms	n (%)	p- value
Jaundice	27(42.9)	0.021
Fever	15(23.8)	0.352
Prematurity	11(17.5)	0.002
Poor cry	12(19.0)	0.491
Feeding problems	3(4.8)	0.422
Respiratory distress	6(5.9)	0.046

SOR - Source of Referral

Reasons given for DHS and DIP as described by the caregivers

Previous treatment given

"The doctors wrote some drugs for him when he was discharged home. When I saw the fever, I continued the medication given to us"

"When he started sneezing, we took him to the PHC, and they gave him some drugs. We continued those drugs because we thought it would take care of the cough".

Failure to recognise illness or its implications

"I thought it was normal for a baby to be breathing fast"

They thought it would resolve.

"I didn't think it was serious because the temperature became normal after breastfeeding"

Delay at the source of referral (SOR)

"There was a delay in getting the laboratory results for two days before they decided to refer us"

"After they decided to refer us, we had to wait till the next day to settle all the bills"

Financial constraints

"We didn't have any money for the hospital, so my husband had to go and find some money before we could come"

Religious reasons

"We took him to church for prayers, and he initially got better, but later became worse, and we had to bring him here"

Family structure and cultural dynamics

"We wanted to do naming ceremony before coming"

"My husband was not available, and I couldn't bring the baby without his permission"

"We wanted to make sure the baby had been properly bathed at home".

Transportation issues

"When we wanted to come, it was in the evening; we tried to find transport, but there was none"

"The gate of our estate is locked and does not open till 6 am"

Limited bed space

"When we got to the general hospital we were referred to, there was no bed space and the staff there told us to go back home and check the next day"

"We checked UCH as we were referred there, but there was no bed space, so we decided to go home and check the next day again."

Factors predictive of delay on logistic regression

Neonates aged <7 days were more likely to experience DIP and DHS (AOR = 0.316, CI = 0.19-0.52), and (AOR = 0.285, CI = 0.15-0.53), respectively. Prematurity protected against DIP (AOR = 0.437, 95%CI = 0.26-0.72) but increased the likelihood of DHS (AOR = 2.794, CI = 1.36-5.73). Birth order greater than 5 was predictive of DIP, with neonates with birth order >5 nearly three times more likely to present late (AOR = 2.791, 95% CI: 1.456–5.350, $p = 0.002$).

Discussion

This study found that delays in seeking healthcare for ill neonates remain a major concern. Nearly Half of the babies studied had a delay in presentation. The most common reasons for delay in this study were previous treatment elsewhere, lack of awareness of the severity of illness in mothers and the suspicion that the illness might resolve without treatment. About a quarter of the families studied had delayed health-seeking behaviour. The predictors of delay in presentation included age less than 7 days, absence of prematurity, and birth order greater than five.

Table VI: Logistic regression analysis of factors related to delays in healthcare seeking

Characteristic/Symptom	AOR	95%CI	P-Value
Age			
0 – 7days	1	-	< 0.002
7 – 28days	0.338	0.200 – 0.570	
Birth Order			
1 – 2	1	-	-
3 – 5	1.542	0.434 – 5.480	0.504
>5	2.791	1.456 – 5.350	0.002
Place of ANC			
THCC	0.335	0.037 – 3.010	0.329
PHCC	0.486	0.119 – 1.985	0.315
SHCC	0.329	0.065 – 1.665	0.179
Private	0.658	0.165 – 2.625	0.553
Missions/TBA	1	-	-
Place of Delivery			
THCC	2.347	0.246 – 22.419	0.459
PHCC	2.895	0.744 – 11.269	0.125
SHCC	1.409	0.321 – 6.198	0.650
Private	2.003	0.610 – 6.582	0.252
Missions/TBA	1	-	-
Home	2.212	0.416 – 11.755	0.352
Prematurity	0.437	0.26 – 0.72	0.001
Jaundice	1.566	0.95 – 2.60	0.081
Respiratory Distress	0.607	0.31 – 1.18	0.141

In this study, the frequency of DIP was nearly 50%, similar to reports from Ghana, which showed that 50% of the mothers sought care after 24 hours following the onset of illness.²¹ Additionally, the frequency of DHS was about 25%, similar to findings from Enugu and Ethiopia, which showed a frequency of delay as 24.2%.⁸ In addition, the average delay duration was 46 hours for DIP and 33 hours for DHS, indicating that ill neonates may not commonly receive medical care for more days after exhibiting symptoms. This high frequency of DIP and significant length of delay is worrisome, as early intervention for conditions which can lead to mortality and significant neuro-disability, such as neonatal jaundice, has been shown to improve outcomes.^{22, 23}

The majority of the mothers first sought care at a health facility; this appears to be in keeping with

a Pakistani study, in which 82% of caregivers chose the option of a hospital when seeking healthcare for their neonate. This is opposed to seeking orthodox treatments at patent medicine shops, although this may not translate to actual visits when faced with a sick neonate.²⁴ Similarly, Tette *et al.* in Ghana found that almost all (87.6%) neonates first presented to a health facility. This may suggest good acceptance of orthodox medicine among these caregivers, implying that when the causes of delay are identified and addressed, most caregivers will present earlier. It also appeared that some of the healthcare facilities visited first contributed to delays in some situations. Some caregivers reported that health workers reassured them; some reported delays for various reasons after the decision to refer to a tertiary centre was made; and some were referred without any intervention.

This suggests that some of these centres may require scaling up of services and resources, as well as training on recognition of neonatal illnesses and immediate treatment steps.

The next most frequent reasons for DIP were themes that suggest a low level of knowledge and awareness of signs of neonatal illness and their implications. About a third of the caregivers reported that they were unaware of the severity of illness, and another one-fifth thought that the illness would resolve without intervention. Although the present study did not specifically test for knowledge of newborn danger signs, studies from Nigeria and other parts of the world have reported the contribution of low awareness of danger signs in neonatal illnesses to delay.^{13,24,25} This suggests that awareness programs are required to improve caregivers' knowledge of danger signs in neonates and the necessary care-seeking steps.

Fifteen per cent of caregivers cited financial constraints as their reason for delay, while Ekwochi *et al.* in southeast Nigeria reported that 25% of caregivers cited cost as their reason for delay.²⁶ This slightly higher figure may be due to the study from southeast Nigeria, which included caregivers from rural areas.⁸ This calls to fore the need for health insurance schemes to be widely publicised and their uptake extended to pregnant women, especially in rural areas and slums. Despite the location of the present study's urban setting, some families cited transportation challenges as the reason for delays. This is similar to the findings reported by Gondwe *et al.*²⁷ in suburban Malawi. This may be a call to action for the government to improve the transportation services and introduce innovative ambulance services.

Contrary to the submission of Bogale *et al.*,²⁸ who highlighted the significance of low ANC uptake and home delivery as predictors of delay,

we noted that delay was experienced even among mothers who had ANC and delivered in the health facilities. This suggests that the content and quality of health education provided to mothers during ANC, especially health education on neonatal danger signs, may be as important as ANC attendance. As the majority of mothers had ANC, the antenatal visits could serve as an opportunity to teach and improve the knowledge of mothers and caregivers on the signs of neonatal illnesses.

In the present study, we found that neonates aged less than 7 days were significantly more likely to experience DIP and DHS compared to those aged 7–28 days. This could be due to cultural activities: for instance, one mother mentioned that her reason for delay was "the child had not been properly bathed", while another said, "we wanted to have a naming ceremony first." These suggest that cultural influences play a role in neonates' care-seeking behaviours. A study from the Niger Delta region of Nigeria also reported that sick neonates often experienced delays due to post-delivery rituals such as giving little alcohol to the child and sprinkling palm wine and coconut water on the child to prevent measles and other illnesses.²⁹ Structured home visits by trained community health professionals during the first month of life, especially between days 7 and 28, could foster early presentation of sick neonates at the hospital within the first week of life. Also, mass media jingles and community health promotion activities centred around discouraging harmful neonatal practices may likely reduce delays and improve neonatal outcomes.

The present study relied on caregiver self-report, leaving it vulnerable to recall bias, especially regarding when illnesses began and when decisions were made. Responses could also have been influenced by social desirability bias, as some caregivers would have underreported traditional care-seeking, cultural practices, or home remedy use.

Additionally, the study was conducted in a tertiary health facility in southwest Nigeria. Although the findings are contextual, they may not be generalisable to Nigeria or to other low-resource settings with different health system configurations or cultural perceptions. Sensitivity to these limitations is of relevance in interpreting results as well as planning future research that can better address these domains.

Conclusion

Delay in seeking healthcare among caregivers of neonates remains a prominent public health problem. The main reason for the DIP was distraction by a previous treatment received elsewhere. In contrast, the main reasons for DHS were caregivers' failure to recognise illness or its severity and perceptions that the disease would resolve without intervention. To further reduce preventable neonatal morbidity and mortality, efforts are required to improve caregivers' recognition of neonatal illnesses and the danger signs. Development of community-based education and health system response will play a huge role in mitigating the challenge of delay in health-seeking.

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