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Caregivers' Satisfaction with Routine Immunization Services in Primary, Secondary and Tertiary Health Institutions in Sokoto Metropolis, Nigeria

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Abstract

Background: Caregivers' satisfaction is one of the most frequently used outcome measures for quality of care offered by routine immunization (RI) service providers. It has been shown to positively influence compliance of caregivers with subsequent RI visits. This study assessed caregivers' satisfaction with RI services in primary, secondary and tertiary health facilities in Sokoto metropolis, Nigeria

Materials and method: A descriptive cross-sectional study was conducted in three health facilities in Sokoto metropolis. A structured questionnaire was used to collect data from 217 caregivers who were selected via multistage sampling technique.

Results: Mean age of respondents was 27 years ±5.49 and majority were Hausa-Fulani [183(84.3%)]. Majority of the caregivers in all the three categories of health facilities (HFs) surveyed spent more than 30 minutes to immunize their children (median total clinic wait time = 48 minutes). Caregivers were largely satisfied with most activities of the clinics; overall, 91.7% (n=199) of them were satisfied. Several factors were associated with caregivers' satisfaction; however, the significant predictors were tribe, providing adequate information about vaccine given to the child and availability of vaccines at all times ($p<0.05$).

Conclusion: Up to three-fourth of the caregivers spent more than half an hour to receive RI services however, the overall satisfaction was excellent. The main predictors of caregivers' satisfaction were tribe, provision of information regarding the vaccine and availability of vaccines at all times.

There is need for more efforts to be made by heads of the HFs and service providers to reduce waiting time at the RI clinics and also ensure vaccines are available at all times.

Keywords: Caregivers, Waiting time and Satisfaction, Routine Immunization Clinic.

Introduction

Routine immunization (RI) is often considered as the most cost-effective public health interventions that can be used to reduce morbidity and mortality from vaccine-preventable diseases (1). As recommended by the World Health Organization's (WHO) Global Vaccine Action Plan (GVAP), the coverage rates for all vaccines included in the national immunization schedule should reach at least 90% at the national level and at least 80% at the district level (2). Immunization coverage rates have been observed to be mostly high in regions where the health care providers perform sufficiently and this is largely because the caregivers are satisfied with the services given to their children by RI service providers (3).

Maternal satisfaction is one of the most frequently used outcome measures for quality of care, and it needs to be addressed to improve the quality and efficiency of health care service provision within the health system (4). It helps to provide important feedback on the quality of service based on perception of clients and what changes might be required to meet the clients' expectation. (4,5).

Patients/caregivers' satisfaction refers to their value judgments and subsequent reactions to what they perceive in the health environment just before, during, and after the course of their inpatient stay or clinical visit (6). In the context of caregivers, it is the appraisal of their desires and expectation of healthcare. As an important indicator of quality of care, hospitals worldwide measure patient satisfaction in order to improve the quality of services offered to patients. In RI clinics, caregivers are the main focus because they are the ones who bring children to health facilities (HFs) for vaccination (7). A satisfied caregiver is more likely to have a good rapport with the RI staff at the HF, which will likely result to better compliance with subsequent visits, better immunization coverage and positive health outcomes (8).

Caregivers' satisfaction has been observed in different settings, often with significant variations across the globe. In Iraq, a study revealed that 72.3% of the clients were satisfied with immunization services (1), in Iran (7), satisfaction rate of 66.7% was reported and in Guatemala, 70.4% was observed in a study (9). In Africa, a study on maternal satisfaction with childhood immunization reported high level of maternal satisfaction (95.2%) in Egypt (10). In Nigeria, varying levels of satisfaction were observed among mothers attending maternal and child health clinics. A study conducted in Calabar (Cross Rivers state) revealed that 43.6% of the mothers were satisfied with childhood immunization services provided at a Primary Health Care Centre (PHC) (11). In Lagos state (south-west Nigeria), 62.5% of the caregivers were reported to be very satisfied in a study (12) and in Sokoto, a study conducted by Timane et al. observed

up to 75% of the caregivers attending MCH clinic to be satisfied with the services (13).

Patient satisfaction feedback helps healthcare providers identify potential areas for improvement, which in turn can increase the effectiveness of healthcare systems. Satisfied patients are important to hospitals as they are more likely to return, to comply with medical treatment and to recommend the hospital to others (14).

Several factors have been shown to influence clients' satisfaction with services at the immunization clinic which include clinic waiting time, availability and quality of care given by service providers, socioeconomic status of clients etc. (15,16,17,18). Determination of the degree of client satisfaction will provide evidence as to whether or not the right immunization services are being provided at the right time, in the right place, in the right way and by the right personnel. This study set out to determine the level of caregivers' satisfaction with childhood immunization services and the factors associated with their satisfaction in primary, secondary and tertiary health facilities in Sokoto metropolis, Nigeria.

Materials and Methods

Study Area

The study was conducted in three health facilities (primary, secondary and tertiary) within Sokoto metropolis in Sokoto State. Approval to conduct the study was obtained from the Ministry of Health Sokoto State Nigeria. Sokoto metropolis is made up of four local government areas (LGAs) which include Sokoto North (SN), Sokoto South (SS), Wamakko (WMK) and Dange-Shuni (DGS). The metropolis has a projected population of 1,286,854 people ([updated to 2022 based on projection from 2006 census using the formula P =P * (1+r) *t] (19). Health services in Sokoto state are provided by the federal, state and local government authorities operating synergistically at three different levels in the provision of services with support from development partners and the civil society organizations. HFs within the metropolis include one tertiary health institution, which is the Usmanu Danfodiyo University Teaching Hospital (UDUTH), six (6) secondary health facilities, 48 Primary Health Centers, military hospitals and over 38 private health facilities. All the type 1 PHCs, the secondary and the tertiary HFs offer routine immunization services to children under the age of five years.

The study was conducted among caregivers attending primary, secondary and tertiary health facilities in Sokoto Metropolis, Sokoto State. Only caregivers who brought their children for at least one routine immunization in primary, secondary or tertiary health facility in Sokoto metropolis were included. Those caregivers who fulfilled the inclusion criteria but were sick, were excluded from the study.

A cross-sectional study design was used. The sample size was estimated using the Cochrane formula for estimating sample size in descriptive studies (20).

$n = Z^2pq/d^2$

Where:

n = Minimum sample size in a population greater than 10,000,

z = Standard normal deviate at alpha probability (95% CI) =1.96,

p = Prevalence of the factor under study; 84% was used as the estimated proportion of caregivers satisfied with RI services in a previous study (15).

q = Complementary factor=1-0.84 =0.16

d = Precision= 5% (0.05),

n = (1.96)2× 0.84× 0.16=0.51631104

=0.51631104/0.0025

=206.524416

Using the above formula, a sample size of 207 was obtained

A response rate of 95% was anticipated

Thus, adjustment of non-response to get final sample size (Ns) was done as follows

Ns=n/response rate

Ns=206.52/0.95

=217.389

=217

Therefore, 217 participants were recruited for the study

Multistage sampling technique was used to select the study participants as follows:

In stage 1 (Selection of health facility), the list of all the health care facilities in Sokoto metropolis was obtained and were then stratified based on the level of care they provide; i.e., primary, secondary and tertiary institutions. Since there is only one tertiary health facility (UDUTH) in the metropolis, the HF was automatically selected. From the secondary health facilities, Maryam Abacha Women and Children Hospital was selected using simple random sampling technique. From the primary health facilities, PHC YarAkija was selected using simple random sampling technique.

Thereafter, proportionate allocation of questionnaires to the selected HFs was done based on the number of children that are provided with RI services. The number of children provided with RI services was obtained from the immunization registers in each of the selected health facilities.

In stage 2 (Selection of respondents), from each selected health facility, respondents were selected using systematic sampling technique, after calculating the sampling interval. Sampling interval

was calculated as follows:

$$K = \frac{\text{Average number of children immunized / Health facility / Clinic Day}}{\text{Minimum required sample size / Health facility}}$$

Where, K is the sampling interval

Data were collected using a pretested structured questionnaire; the questionnaire had four sections as follows:

Section A: Sociodemographic profile of respondents

Section B: Waiting time of caregivers during routine immunization services.

Section C: Satisfaction of caregivers with routine immunization services.

Section D: Factors influencing the overall satisfaction of caregivers during routine immunization services.

The questionnaire was pretested among caregivers who came for immunization at PHC Arkilla. Necessary amendments were made thereafter. The instrument was found to be valid.

Personnel used for data collection constituted the co-researchers with the help of two research assistants. The research assistants were 400 level medical students who received training on the objectives of the study and how to apply the study instruments.

The questionnaire was designed and deployed unto a web-based account created on https://kobo.humanitarianresponse.info/. The deployed questionnaire was then accessed by downloading Open Data Kit (ODK) app on Android devices and was used for data collection.

Data was retrieved from the ODK server, exported to Microsoft excel 2016 and then transferred to IBM SPSS version 23 software for analysis. Categorical variables were analyzed and presented as frequencies and percentages while quantitative variables were analyzed and presented as summary measures in form of measures of central tendency and their corresponding measures of dispersion. Pearson chi square test was used to determine the factors associated with caregivers' satisfaction with RI services. Binary logistic regression model was used to identify factors that predicted satisfaction with RI services. Level of statistical significance for all inferential statistical analysis set at 5% ($p<0.05$)

Prior to recruitment, informed consent of all study participants was sought

Results

A total of 217 questionnaires were administered to the participants; 90 questionnaires were administered in UDUTH, 101 in Maryam Abacha Women and Children Hospital, and 26 in PHC Yar Akija. All the questionnaires were completed, giving a response rate of 100%.

Majority of the respondents [142(65.4%)] were aged between 20-29 years with mean age of 27 years. Up to 183(84.3%) were Hausa-Fulani, 93.1% were Muslims and [84(38.7%)] belonged to the lower socioeconomic class (Table 1).

Table 1. Socio-demographic characteristics of the respondents

Variable	Frequency (%) N=217
Age group (Years)	
< 20	8 (3.7)
20-39	142 (65.4)
30-39	59 (27.2)
40-49	8 (3.7)
Mean age (±SD)	**27±5.49**
Sex	
Male	75 (34.5)
Female	142 (65.4)
Tribe	
Hausa/Fulani	183 (84.3)
Yoruba	13 (6.0)
Igbo	12 (5.5)
Others	9 (4.2)
Religion	
Islam	202 (93.1)
Christianity	15 (6.9)
Marital status	
Married	215 (99.1)
Single	1 (0.5)
Widow	1 (0.5)
Relationship with the child	
Mother	214 (99.0)
Father	1 (0.5)
Uncle/aunt	1 (0.5)
Socioeconomic status of mother	
Upper class	57 (26.3)
Middle class	76 (35)
Lower class	84 (38.7)
Father	
Upper class	161 (74.2)
Middle class	43 (19.8)
Lower class	13 (6.0)
Health Facility	
Tertiary	90 (41.5)
Secondary	100 (46.1)
Primary	27 (12.4)

The total time spent at the clinic ranged between 2 – 185 minutes. Majority (95.9%) of the caregivers spent less than 30 minutes in the waiting area (median time = 30 minutes) before they were called into the vaccination area and while in the vaccination area, up to 69.6% of the caregivers spent between 5-10 minutes to have their children vaccinated (median time = 5 minutes). Overall, the total clinic waiting time for up to 74.2% of the caregivers was more than 30 minutes (median time = 48 minutes) (Table 2).

Close to half (48.9%) of the caregivers in tertiary HF spent less than 30 minutes at the RI clinic, whereas in the secondary and primary HFs, only 10.0% and 7.4% respectively spent less than 30 minutes at the RI clinic ($X2=42.867$; $p<0.001$) (Figure 1).

Table 3 shows that caregivers were generally satisfied with the various components of the RI clinic services. More than 80% of the caregivers were satisfied with

most of the components of the clinic services; the lowest satisfaction rating was on the condition of toilets facilities at the clinic (55.6%).

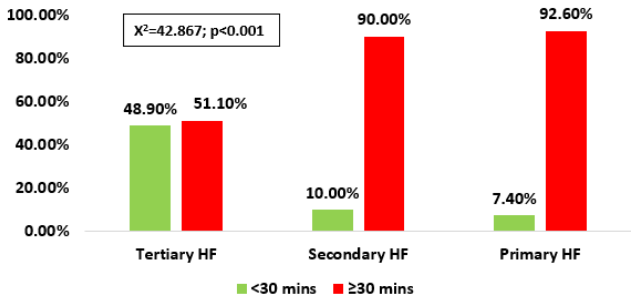

Figure 1. Caregivers' waiting time according to the type of health facility (HF).

Up to 199 (91.7%) of the caregivers were satisfied with the routine immunization services (Figure 2).

In table 4a, factors significantly associated with overall satisfaction include tribe (p=0.01); religion of respondents (p=0.026) and relationship with child (p< 0.004). Other factors such as age, sex of child, marital status and SES of the respondents were not significantly associated with overall satisfaction (p>0.05).

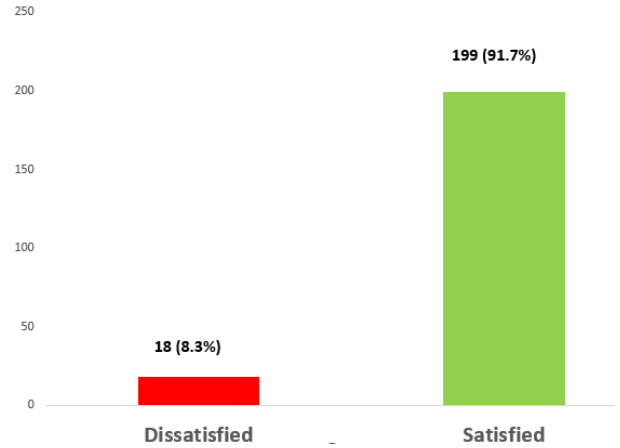

Figure 2. Caregivers' overall satisfaction with routine immunization services.

Registration waiting time and total waiting time in the clinic were significantly associated with overall satisfaction (p=0.004 and p=0.047 respectively) (Table 4b)

Factors significantly associated with caregivers' satisfaction were reception of adequate information on the type of vaccine given to child (p=0.001), reception of information on side effect of the vaccine (p<0.001) and availability of vaccines on each visit

Table 2. Waiting times in different sections of the RI clinic

Variables	Frequency (%)
How long did you wait to get registered? (min)	
<30	134(61.8)
≥30	83(38.2)
Median = 30.0 minutes	
How long did you wait after registration before you were called to the vaccination area? (min)	
<30	208(95.9)
≥30	9(4.1)
Median = 10.0 minutes	
How much time did you spend in the vaccination area? (min)	
<5	47(21.7)
5-10	151(69. 5)
>10	19(8.8)
Median = 5.0 minutes	
What is the average time you spent with the nurse giving the vaccination? (min)	
<5	81(37.3)
5-10	134(61.8)
>10	2(0.9)
Median = 5.0 minutes	
Total Waiting Time (min)	
<30	56(25.8)
≥30	161(74.2)
Median = 48.0 minutes	

(p=0.009). Other factors such as development of side effect after previous vaccination and access to toilet were not significantly associated with caregivers' satisfaction (p>0.05) (Table 4c).

Table 3. Caregivers' satisfaction with various components of RI clinic services

Variables	Dissatisfied N (%)	Satisfied N (%)
Reception received	24 (11.1)	193 (88.9)
Waiting time in the waiting area	40 (18.5)	176 (81.5)
Registration process	23 (10.6)	193 (89.4)
Time spent in the vaccination area	17 (7.9)	199 (92.1)
Attitude of the Staff	22(10.2)	194 (89.8)
Health workers explanation	34 (15.7)	182 (84.3)
Condition of the vaccination room	21 (9.7)	196 (90.3)
Vaccination process	14 (6.5)	200(93.5)
Sanitation and hygiene of the clinic	23 (10.6)	193 (89.4)
Condition/comfort of the waiting area	23 (10.6)	193(89.4)
Toilet facilities at the clinic	52(44.4)	65 (55.6)
Caregivers rating of overall satisfaction	14 (6.5)	203(93.5)
Overall satisfaction	18 (8.3)	199 (91.7)

Table 4a: Factors associated with caregivers' satisfaction with Immunization Service

Variables	Satisfaction with services		Test statistic
	Dissatisfied N (%)	Satisfied N (%)	
Type of Health Facility			
Tertiary	6 (6.7%)	84(93.3)	X^2=0.661
Secondary	9(9.0)	91 (91)	P=0.719
Primary	3(11.1)	24 (88.9)	
Age group (years)			
<20	0 (0)	8 (100)	X^2=1.588
20-29	13 (9.2)	129 (90.8)	P=0.662
30-39	5 (8.5)	54 (91.5)	
40-49	0 (0)	8 (100)	
Sex of child			
Male	7 (9.3)	68 (90.7)	X^2=0.162
Female	11 (7.7)	131 (92.3)	P=0.797
Tribe			
Hausa-Fulani	10 (5.5)	173 (94.5)	X^2=24.044
Yoruba	3 (23.1)	10 (76.9)	**P=0.001**
Igbo	5 (41.7)	7 (58.3)	
Others	0 (0)	9 (100)	
Religion			
Islam	14 (6.9)	188 (93.1)	X^2=7.150
Christianity	4 (26.7)	11 (73.3)	**P=0.026**
Marital status			
Married	18 (8.4)	197 (91.6)	X^2=0.183
Single	0(0)	1 (100)	P=0.913
Widow	0(0)	1 (100)	
Relationship with the child			
Mother	17 (7.9)	197 (92.1)	X^2=11.133
Father	1 (100)	0(0)	**P=0.004**
Uncle /aunt	0(0)	1 (100)	
Socioeconomic status (SES) of mother			
Upper class	7 (12.3)	50 (87.7)	X^2=2.653
Middle class	7 (9.2)	69 (90.8)	P=0.265
Lower class	4 (4.8)	80 (95.2)	
Socioeconomic status of father			
Upper class	16(9.9)	145(90.1)	X^2=5.320
Middle class	0(0.0)	43(100)	P=0.070
Lower class	2(15.4)	11(84.6)	

Tribe, religion and availability of vaccine were the significant predictors of overall satisfaction; those who are Yoruba were about 8 times less likely to be satisfied compared to the Hausa-Fulani (OR=0.913, p=0.025, 95% CI= 0.046-0.812); Muslims were about 5 times more likely to be satisfied than the Christians (OR=4.883, p=0.014, 95% CI=1.376-17.330). Similarly, caregivers are about 4 times more likely to be satisfied if vaccines are available at all times (OR=3.766, p=0.041, 95% CI=1.057-13.412) (Table 5).

Discussion

In this study, higher proportion of the respondents were aged between 20-29 years and similar observations were made in previous studies (1,21). The fact that majority of the respondents in this study were aged between 20-29 years is not surprising because this age group is known to be the most sexually active, thus more likely to have children within the target age for routine immunization. Moreover, according to the NDHS 2018 report, women within the age of 20-29 years constitute the highest proportion of women within reproductive age group in Nigeria (22).

Respondents' total clinic wait time varied extensively ranging between 2 to 180 minutes and this include time spent before completing registration, time spent in the waiting area and time spent in the vaccination area. Caregivers that arrived late spent shorter time because majority of the caregivers

Table 4b: Factors associated with caregivers' satisfaction with Immunization Service

Variables	Satisfaction		Test statistic
	Dissatisfied N (%)	Satisfied N (%)	
Registration time (min)			
<30	5 (3.7)	129 (96.3)	X^2=9.592
≥30	13(15.7)	70 (84.3)	**FE=0.004**
Clinic Waiting time (min)			
<30	17 (8.2)	191(91.8)	X^2=0.098
≥30	1 (11.1)	8 (88.9)	FE=0.548
Vaccination Waiting time (VWT) (min)			
<5	1 (2.1)	46 (97.9)	X^2=6.435
5-10	13 (8.6)	138 (91.4)	P=**0.040**
>10	4 (21.1)	15 (78.9)	
Vaccination Time (VT) (min)			
<5	4 (4.9)	77 (95.1)	X^2=2.197
5-10	14 (10.4)	120 (89.6)	P=0.333
>10	0(0)	2 (100)	
Total Clinic Waiting Time (TCWT)			
<30	1 (1.8)	55(98.2)	X^2=4.204
≥30	17 (10.6)	144 (89.4)	**FE=0.047**

FE= Significant Fishers exact

Table 4c: Factors associated with caregivers' satisfaction with immunization Service

Variables	Dissatisfied	Satisfied	Test statistics
Was your child able to get vaccinated?			
Yes	18 (8.3)	199 (91.7)	Not applicable
No	0(0)	0(0)	
Did the health care provider give you adequate information on the type of vaccine your child has taken?			
Yes	9 (5.0)	170 (95.0)	X^2=14.946
No	9 (24.3)	28 (75.7)	**FE=0.001**
Were you given adequate information on when you are to return for the next vaccination?			
Yes	15 (7.3)	190 (92.7)	X^2=4.660
No	3 (25)	9 (75)	P= 0.066
Did you receive Information from the health care providers regarding side effects of the vaccines your child was given?			
Yes	4 (3.0)	130 (97)	X^2=15.024
No	14 (18.7)	61 (81.3)	**FE=0.001**
Did your child develop any side/adverse effect after the previous vaccination?			
Yes	1 (2.6)	37 (97.4)	X^2=1.962
No	17 (9.6)	161 (90.4)	P=0.210
Did you have access to toilet in the clinic?			
Yes	5 (6.3)	75 (93.8)	X^2=0.582
No	2 (7.4)	25 (92.6)	P=0.747
I don't Know	10 (9.3)	98 (90.7)	
Are vaccines always available at the clinic			
Yes	9 (5.3)	161 (94.7)	X2=9.474
No	5 (20.8)	19 (79.2)	**P=0.009**
I don't Know	4 (17.4)	19 (82.6)	
Has your child ever had AEFI?			
Yes	0(0)	31 (100)	X^2=3.271
No	18 (9.7)	168 (90.3)	FE=0.083

FE = Fishers exact

that came earlier had left the clinic, thus, they didn't have to queue up for registration or wait in the waiting area. In a study conducted in south west Nigeria by Ekhaguere et al, longer total clinic wait time was reported (57-235 minutes) (23), thus none of the caregivers spent less than 30 minutes at the clinic. In this study, up to a quarter of the caregivers spent less than 30 minutes at the clinic. The long wait time observed in the study by Ekhaguere et al was attributed to workflow delays by clinic staff waiting for a significant number of clients to arrive before starting the essential health education talk or opening specific vaccine vials. Health talk is an essential clinic activity which helps in providing useful information regarding immunizations and other maternal, and child health issues (24). A

similar study in Cameroon also observed that long clinic wait time was caused by waiting until health talk is completed before commencing vaccination (25). In all the clinics surveyed in this study, health talks are usually conducted between 9.00-9.30 am and immunization follows immediately irrespective of the number of clients present at the clinic; this therefore, shortens the total clinic wait time. Very long clinic wait times could have negative consequences on compliance of caregivers with subsequent visits. This was observed in a study conducted in Mozambique where significant proportion of the mothers mentioned long waiting time among the reasons for incomplete vaccination of their children (26). In a country like Nigeria where significant proportion of the populace live below the poverty line (27), caregivers are likely to become impatient if they have to wait for long before they access healthcare if they believe it is going to affect their economic pursuit.

Most of the caregivers gave an overall high rating of satisfaction for the service received. This is in line with previous studies carried out in Jos (28) and Ibadan (29) in Nigeria, and in Egypt (30) which all documented similarly high satisfaction figures. Satisfaction may be associated with such factors as being happy with the hospital staff and the work environment of the hospital, staff attitude, cost, and waiting time (10,31).

Majority of the caregivers were generally satisfied with the various components of the RI clinic services; the lowest satisfaction rating was on the condition of toilet facilities at the clinic (55.6%). This is not surprising considering the fact that the study was conducted in three categories of health facilities including a Primary Healthcare Center, which might be lacking some basic amenities. Moreover, this is not unexpected in a developing country like Nigeria. A similar observation was made in a study in Ethiopia (32) where only about half of the respondents said they were satisfied with the toilet facility of the health facility. This calls for improvement, especially given the fact that majority of the caregivers are women and some of them wait for up to three hours at the clinic before seeing a service provider.

Overall, up to 91.7% of the caregivers were satisfied with the RI services they received. Studies conducted within and outside Nigeria also showed similar findings where large proportion of caregivers were satisfied with RI services. For example, a study conducted in south east Nigeria reported that, up to 95.9% of the caregivers were satisfied (33) Other similar findings include 95.2% in Suez governorate Egypt (34) and 90% in Lucknow District, India (35). These are encouraging findings because caregivers who are very satisfied with RI services are more likely to comply with their routine visits thereby significantly increasing routine immunization coverage. Lower satisfaction rates were however, reported in some studies; 63% in Egypt (36), 61.5% in Bangladesh (37), 50.2% in Iraq (38), 68.9% in Ondo State (39) and 43.6% in Calabar, south-south Nigeria, (40) These variations might be due to real difference in the quality of services provided, the expectation of caregivers, the level of education or type of health care facilities etc.

On bivariate analysis, tribe and religion were found to be significantly associated with caregivers' satisfaction. This is probably because majority of the respondents were Muslims from a particular ethnic group (mostly Hausa-Fulani). On multivariate logistic regression, those from Yoruba ethnic group were about 8 times less likely to be satisfied compared to the Hausa-Fulani. Since this study was conducted in an area predominantly inhabited by Hausa Muslims, a

Table 5: Binary logistic regression analyses for predictors of caregivers' satisfaction with immunization services

Predictors	P-value	OR	95% CI	
			Lower	Upper
Tribe				
Yoruba vs Hausa -Fulani*	**0.025**	0.193	0.046	0.812
Igbo vs Hausa -Fulani*	**<0.001**	0.081	0.022	0.301
Religion				
Islam vs Christianity*	**0.014**	4.883	1.376	17.330
Registration Time				
<30 mins vs ≥30 mins*	0.145	3.166	0.672	14.913
Total Waiting time				
<30 mins vs ≥30 mins*	0.535	2.176	0.187	25.351
Provision of information regarding side effects of vaccine				
Yes vs No*	0.038	4.009	1.082	14.858
Availability of vaccine at the RI clinic				
Yes vs No*	**0.041**	3.766	1.057	13.412

*Reference group

high proportion of the service providers are likely to be Hausa Muslims also, therefore caregivers who understand local language of service providers are more likely to understand any explanation given by service providers and therefore more likely to be satisfied with services provided. This therefore, suggests the need to always ensure that service providers that are posted to RI clinics understand the local language of the majority of their clients.

Other factors associated with caregivers' satisfaction were registration time, total clinic waiting time, providing information on vaccine given and availability of vaccines. Among these factors however, availability of vaccines and providing information regarding the vaccine and its side effects were the only predictors of caregivers' satisfaction. We observed that, caregivers are about four times more likely to be satisfied if vaccines are available at all times. This underscores the need for service providers and vaccine logistic officers to ensure the availability of vaccines at all times. Caregivers who received information about the vaccine given to their children were also about four times more likely to be satisfied than those who were not provided with such information. Up to 78.7% of the caregivers in this study were satisfied with the information given by health workers about vaccines. This finding is comparable with study results in Kombolcha (41) and India (35). As most caregivers might not be familiar with the specific vaccines that their children receive, the infections they prevent and side effect of the vaccine, service providers should take time to explain all these during RI sessions in order to enhance caregivers' satisfaction. Information provided by primary health care providers can be very important in influencing higher vaccine uptake which eventually improves coverage

One of the limitations of this study especially regarding waiting time assessment is that, the methodology used relied on caregivers' estimation of time spent at the clinic before and after registration, which may likely be affected by their perception of time. Further studies should be conducted to measure the actual waiting time at various sections of the RI clinic and then correlate it with overall satisfaction. This will also enable comparison between caregivers' satisfaction based on their perceived waiting time and actual waiting time.

Conclusion

In conclusion, waiting time at the RI clinic was a bit long, as majority of the caregivers waited for more than 30 minutes to receive RI service, however, the caregivers were generally satisfied with most of the activities of the clinic. Provision of relevant information to caregivers and availability of vaccines at all times were the main predictors of caregivers' satisfaction.

In light of our findings in this study, there is a need for more efforts to be made by heads of the HFs and service providers to reduce waiting time at the RI clinics and also ensure vaccines are available at all times. Service providers should provide the caregivers with adequate information regarding vaccines given to their children.

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