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Challenges of Immunization Coverage among a Semi-Nomadic Population in Kano State, North West Nigeria

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Abstract

Although immunization has been demonstrated to be the most cost effective public health intervention that reduces burden of infectious diseases for many years, childhood vaccine preventable diseases are still the major cause of morbidity and mortality in sub-Saharan Africa including Nigeria.

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Nigeria has been reported to be off track in achieving the 4th Millennium Development Goal (Reducing Child Mortality) due to poor health indicators such as Under five Mortality (U5MR) and Infant Mortality (IMR) which stand at 94 and 61 per 1000 live births respectively.

The burden of these childhood vaccine preventable diseases vary across the zone of the country with North West and North East worst affected due to multiple problems including low immunization coverage. Kano State has consistently reported low immunization coverage with about 70% of polio cases in the country in as at the third quarter of 2014. The challenges for the immunization coverage especially among rural semi-nomadic communities have not been studied; this may pose serious programmatic and services challenges. Thus the motivation behind conducting the study to establish specific challenges related to mobile Fulani communities, the findings which is expected to inform stake holders for policy and programming of immunization activities.

The study was part of a large scale cross-sectional descriptive study carried out in Tofa village, Rano Local Government Area of Kano State, Nigeria. The village is inhabited by semi-nomadic Fulani families. All the inhabitants of the village and its surrounding hamlets were invited to participate in the study.

A total of 245 mothers and care givers of under five children were studied, among whom 136 (55.51%) of the under five were females while the remaining 109 (44.49%) were males. The mean age of the under-five was 33.6 ± 14.4 months, and majority of them (107; 43.67%) were below the age of 24 months. Similar majority of the under-five have received at least one dose of immunization (172; 70.20%). However, the immunization coverage which was assessed using immunization cards shows that only 6.5% were fully immunized for age. The care givers' level of education was the only independent predictor of immunization after controlling for confounding factors with $P < 0.0001$ OR of 0.27 and 95% CI 0.14 – 0.51.

The study has shown that the immunization coverage was low among the semi-nomadic communities due to many factors such as lack of awareness of the importance of immunization as well as physical barriers. This has implication on the spread of child hood vaccine preventable diseases because of the role of these nomadic communities as bridge populations. It also indicated that level of education of mothers and care givers is a very strong positive predictor of childhood immunization.

Keywords: Challenges; Immunization Coverage; Semi-nomadic Population; Northern Nigeria.

1. Introduction

The burden of infectious diseases in developing countries like Nigeria remains a major public health problem with high morbidity and mortality despite the availability of scientifically proven and cost effective interventions like immunization. Health problems such as Malaria, Diarrhoeal diseases measles and other vaccine preventable diseases as well as acute respiratory diseases and malnutrition remain leading causes of morbidity and mortality in children [1].

The use of vaccine to provide immunity against childhood vaccine preventable disease has led to eradication of small pox and elimination of other diseases such as poliomyelitis.¹ However, despite this knowledge on the

effectiveness, the availability of these interventions especially among hard-to-reach and poor rural areas, particularly the nomadic populations, is met with serious challenges. There are studies that have shown low immunization coverage across the country with worst state in the North West Geopolitical zone including Kano State [2].

Kano state has a large proportion of morbidity and mortality resulting from endemic and epidemic Communicable Diseases, such as Tuberculosis, HIV/AIDS, Diarrhoeal diseases, measles, Cerebro Spinal Meningitis (CSM) among others still remain as diseases of Public Health importance afflicting the people of the State.³ There still exists evidence that coverage of children with immunization in Kano State is still far from desired. According to the State routine M&E report the proportion of 12-23 months fully immunized at baseline in 2009 was 51%. However, the Multiple Indicator Cluster Survey (MICS) 2011 data showed that only 7.8% of children were fully immunized. This figure further dropped to 5.3% in 2012 (MDG, 2012).⁴ The number of children reportedly immunized in 2012 according to the state M&E data was 177,040. The State has not met its 2012 target and if the 2015 target is to be achieved there is need for ensuring steady supply of vaccines, stable cold chain and intensification of activities to increase demand for routine immunization [3,4].

The nomadic communities are group of population with lack of access to basic health care services due to their mobility in search of grazing land for their livestock and location usually at hard to reach areas in remote rural areas. The main objectives of the study was to access the challenges to accessing health care particularly immunization services for their under-five.

2. Materials and Method

Kano State is one of the 36 states in Nigeria, located in North Western geopolitical zone. It is the most populous state in the country inhabited by predominantly Hausa-Fulani Muslim. The Study area, Tofa Village is made up about 8 settlements within Rano Dawaki ward, one of the 10 political wards in Rano Local Government. The local government is located about 60kilometers south of Kano, inhabited by predominantly semi-nomadic communities [5].

The study was a large scale descriptive cross-sectional study conducted among the general public in Tofa village, Rano Local Government Area of Kano State, Nigeria. This article is focusing on the mothers and care givers of under-five component of the study. All the inhabitants of Tofa and the surrounding hamlets were invited to participate in the study. The settlements are remote, without basic social amenities and predominantly inhabited by the semi-nomadic fulani. Quantitative data was obtained using semi-structure interviewer administered questionnaire which consist of socio-demographic information of both care givers and one of their under-five as well as anthropometric measures of the index child.

2.1 Ethical Issues

Ethical approval was obtained from the Research Ethics Committee of Kano State Hospitals Services Management Board, Kano State Primary Health Care Management Board. A courtesy call was paid to the Chairman Rano Local Government and Village Head of Tofa in the presence of other traditional leaders, where

their consent to carry out the study was obtained. In addition, an informed consent was obtained from all the participants in the study. The study conformed to the principles outlined in the Declaration of Helsinki, on the ethical principles for medical research involving human subjects.

3. Result

A total of two hundred and forty five (245) respondents were interviewed for the pediatrics component. These includes mothers and care givers who had under-five children. The socio-demographic characteristics of the respondents as well as that of their under-five were all recorded followed by information regarding immunization status of the under-five. Immunization coverage was assessed using Diphtheria Pertussis and Tetanus (DPT3) as proxy for complete immunization.(2)(4) For other children below the age of 9 months, their full immunization was assessed. The record was obtained only among those with immunization cards and the immunization coverage was reported as 6.5% [4].

Table 1: Socio-demographic information of Care Givers

Variable	Frequency	Percentage
Age of Care givers(yrs)		
15-25	86	35.10
26-35	103	42.04
36-50	56	22.86
Mean and SD		
Care Givers Highest Level of Education	29.4 ± 8.2	
Primary	152	62.04
Secondary	76	31.02
Quranic	13	5.31
None	4	1.63
Marital Status of Care Givers		
Married	175	71.43
Un-married	70	28.57
Care Givers Median Monthly Income		
0-5,000	226	92.24
6,000-10,000	4	1.63
11,000-20,000	5	2.04
21,000-30,000	10	4.08
Median and Range	0 (0-30,000)	

This table show majority of the care givers were between the ages of 26-35years (42.04%) with mean age of 29.4 ± 8.2 years. Primary school was the highest level of education by majority of them (62.04%). Although, majority of care givers were married (71.34), their median monthly income was very low with majority earning less than 5,000 Naira per month.

Table 2: Socio-demographic information of under five

Variables	Frequency	Percentage
Age of Under five (months)		
0-24	107	43.67
25-42	65	26.53
45-59	73	29.80
Mean and SD	33.6 ± 14.4	
Weight of Under five (kg)		
5-15	118	48.16
16-25	87	35.51
26-35	40	16.33
Mean and SD	16.9 ± 8.4	
Sex of Under five		
Male	109	44.49
Female	136	55.51
Ever Received any form of Immunization		
Yes	172	70.20
No	73	29.80
Reasons for None immunization of Child		
No reasons	172	70.20
Un aware of Importance	48	19.59
Fear of side effects	15	6.12
Religious Belief	4	1.63
Others	6	2.45
Source of Information for Immunization of Under five		
Verbal Reporting	202	82.45
Immunization Card	43	17.55
Place where immunization was received		
General Hospital	55	22.45
Primary Health Care Centre	76	31.02
Health Post	17	6.94
Home	97	39.58
Distance to Place of Immunization		
Less than 5Km	106	43.27
More than 5Km	139	56.73

This table shows majority of the under five were females and less than 24 months, 55.51% and 43.67% respectively.

Similarly only about 30% of the under five have been reported to have received any form of immunization in the past. Majority of the care givers did not report any reasons for not immunizing their children 70.2%. Verbal report was the source of information for the immunization, which also took place at home in majority of cases 82.45% and 39.58% respectively.

Table 3: Association Between Care givers level of Education and Child Ever Received any form of Immunization

Variables	Child ever received Immunization		Total
	Yes	No	
Level of Education			
Primary	91	61	152
Secondary	64	12	76
None	13	4	17
Total	168	77	245

** $\chi^2 = 22.1$, df =3, P= 0.0001

There was a very strong association between the level of education of care givers and immunization status of children.

Table 4: Association between care givers monthly income and immunization of under five

Variables	Child ever received Immunization		Total
	Yes	No	
Care givers income (₦)			
< 5,000:00	159	60	219
>5,000:00	19	7	26
Total	178	67	245

* $\chi^2 = 9.8$, df= 1, P=0.02,

The monthly income of care givers was also found to be associated with having immunized children.

Table 5: Association between distance to place of immunization and child receiving immunization

Variables	Child ever received Immunization		Total
	Yes	No	
Distance			
<5Km	79	27	106
>5Km	93	46	139
Total	172	73	245

$\chi^2=1.7$, df=1, P=0.2

Table 6: Association between care givers marital status and child ever receiving immunization

Variables	Child ever received Immunization		Total
	Yes	No	
Marital Status			
Married	120	55	175
Un-married	52	18	70
Total	172	73	245

$$\chi^2 = 0.78, df = 1, P = 0.38$$

There was no association between marital status of care givers and having immunized their children

The study have revealed that majority of mothers and care givers of under five were between the ages of 26-36 years with mean and SD of 29.4 ± 8.2 . This is similar to findings in others studies from the same environment. Similarly as seen in other studies, mothers and care givers in rural areas have low level of education, with over 62% of responders having only primary school as the highest level of education. The median monthly income of care givers was also reported to be low, (< 500permonth) this is similar to the report on the per-capita income of Nigerians that shows over 70% of Nigerian are leaving below one dollar per day [5,6].

The study also shows that majority of the under five were females 55.51% compared to 44.49% that were males, giving a sex ration of 1:1.8. The percentage of children who have not received any form of immunization was shown to be 29.8%. This finding was comparable to that of National Demographic and Health Survey NDHs 2003 and 2008 which shows 27% and 29% respectively [6]. Majority of care givers do not also keep the child immunization card, 82.45% one of the most important tools for immunization coverage surveys. Thus a limitation for the accuracy and reliability of information obtained from the caregivers.

The study also highlighted that majority of under-five have received their immunization at home 39.58%, this is most probably regarding polio immunization which have received great attention because of the polio eradication initiatives which is characterized by period house-house vaccination of all under five with the oral polio vaccine during the immunization plus days. However, the distance to place of immunization may also play a role. This is because up to 56.73% of care givers have to travelled more than 5Km to reach the nearest health facility for immunization. This is in contrast to the recommendation by Primary health care to locate health facilities within 5Km radius or 30minutes working distance from where people leave and work [7].

The study has revealed large number of unimmunized under five children among the semi-nomadic communities in the local government. The immunization coverage of 6.5% in this study is similar to the report of proportion of 12-23 year old fully immunized of 7.8%, and 5.3% from 2011 Multiple Indicator Cluster Survey (MICs) and 2012 Millennium Development Goals (MDGs) reports respectively [8].

At multivariate level of analysis, the study shows strong association between the care givers level of education and median monthly income and wither child ever receiving any form of immunization. This similar to findings from other studies in the state.[refs] This may be attributed to the similarities in the study subjects. But

surprisingly there was no association between the marital status of care givers and distance to place of immunization. After controlling for confounders, a logistic regression analysis shows that only care givers level of education is a strong positive predictor of childhood immunization $P < 0.0001$ with Odds Ratio of 0.27 and 95% CI 0.14 – 0.51.

4. Conclusions

The study has identified low immunization coverage among under five in rural semi-nomadic community. The challenges for the low coverage includes among other things include lack of awareness on the importance of immunization, fear of side effects of the vaccines as well as physical barriers to accessing immunization services. The level of education of care givers has also been shown to be a predictor of childhood immunization.

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