

The knowledge and attitude towards childhood immunization among mothers attending antenatal clinic in Lagos University Teaching Hospital, Nigeria

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Abstract: Immunization remains one of the most important public health interventions and a cost effective strategy to reduce both the morbidity and mortality associated with infectious diseases. Over two million deaths are delayed through immunization each year worldwide. This present study aimed to assess the knowledge and attitude of mothers attending antenatal clinic in Lagos University Teaching Hospital (LUTH) in Nigeria, towards childhood immunization. This descriptive cross-sectional study involved 274 mothers attending antenatal clinics in LUTH from April-June 2009. The results showed that almost all (93.8%) the respondents were aware of immunization and that immunization could prevent childhood illness (98.1%). However, some of the respondents (28.8%) felt immunization will make their children brilliant. While 45.5% of the respondents thought that polio vaccines ought to be given five (5) times while only 8.6% knew it should be given four (4) times. There were significant ($P<0.05$) relationships between age of respondents, ethnicity, level of education, occupation and attitude to immunization. However, there was no significant ($P>0.05$) relationship between religion and attitude to immunization. Although majority of the mothers were aware of the existence of immunization services, their knowledge of immunization schedule of vaccine preventable diseases is poor. A better understanding of routine immunization schedule is important in the design and implementation of immunization programmes. Educating mothers about the vaccines and vaccine preventable diseases, and improving their performance are recommended.

Key words: mothers, childhood, immunization, vaccine, diseases, Nigeria

Introduction

Epidemiological study has shown that 2.5 million deaths occurred every year as a result of vaccine-preventable diseases, mainly in Africa and Asia among children less than 5 years old (GIVS, 2005). Immunization is the process of conferring increased resistance to an infectious disease by a means other than experiencing the natural infection. Typically, this involves exposure to an agent (antigen or immunogen) designed to fortify the person's immune system against that agent or similar infectious agents (active immunization). Immunization also can include providing the subject with protective antibodies developed by someone else or another organism (passive immunization). When the human immune system is exposed to a disease once, it can develop the ability to quickly respond to a subsequent infection. Therefore, by exposing an individual to an immunogen in a controlled way, the person's body will then be able to protect itself from infection later on in life (Blakemore & Jennett 2001). Medical researchers have developed diverse immunization

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processes for a vast number of diseases, beginning on a large scale about a century ago. Immunization remains one of the most important public health interventions and a cost effective strategy to reduce both the morbidity and mortality associated with infectious diseases. In line with the aforementioned, the report of World Health Organization and the earlier study of Breslow (2002) have shown that over two million deaths are delayed through immunization each year worldwide.

Childhood immunization is an act of inducing immunity to a child by applying a vaccine that almost guarantees protection from many major diseases. Childhood vaccination is widely considered to be 'overwhelmingly good' by the scientific community (GIVS, 2005; Wright, 1995). Vaccination coverage has now reached a plateau in many developing countries, and even where good coverage has been attained; reaching children not yet vaccinated has proved difficult (EPI, 1998).

The dynamics of vaccination uptake remain unclear; the critical questions that remain to be answered therefore include to what extent is vaccination accepted by the public in response to recommendations and pressure from health workers and community leaders? To what extent does an informed public actively demand it? What is the level of awareness of its benefits and importance?. Previous studies have shown that uptake of vaccination services is dependent not only on provision of these services but also on other factors including knowledge and attitude of mothers (Matsumura *et al.*, 2005; Torun & Bakirci, 2006), density of health workers (Anand & Barnighausen, 2007), accessibility to vaccination clinics, availability of safe needles and syringes and the opportunity costs (such as lost earnings or time) incurred by parents (mothers). A good attempt to address these factors may go a long way to improve vaccine utilization and subsequent protection of the children against childhood infectious diseases.

Therefore, this present study was carried out to assess the knowledge and attitude of mothers attending antenatal clinic in Lagos University Teaching Hospital, Nigeria, towards childhood immunization as the findings obtained may serve as the basis for effective intervention.

Materials and Methods

Study area and design

Lagos University Teaching Hospital is one of the largest teaching hospitals in Nigeria. It is located in Lagos State, in south-western Nigeria. Lagos is one of Nigeria's most populated states. It is the chief port, principal economic and cultural centre. The teaching hospital has 761 bed spaces and records over 9,000 patient attendances in a month out of which there are almost 200 mothers attending antenatal clinics every month. This was a descriptive cross-sectional survey that involved attending antenatal clinics in LUTH for childhood immunization from April-June 2009.

Study population

The study population includes all the 274 mothers attending antenatal clinics in LUTH that consented to be part of the study. There was initial solicitation of all the mothers attending antenatal clinic to be part of this study irrespective of their level of education or social group. This study did not coerce subjects to be part of the study without their consent. The method used for this study is the convenience sampling technique. This method entails

recruiting all the mothers attending antenatal clinic that desired to be part of this study within the study period.

Data collection

Data was collected using a standard structured questionnaire adopted from the World Health Organization with three (3) sections on socio-demography, knowledge on immunization and attitude towards childhood immunization. The study subjects were not required to write but just to tick the appropriate boxes which were provided for each option given. Names were not used for identification but coding numbers were used instead. The subjects that were illiterate were assisted to complete the questionnaire.

Data analysis

The questionnaires obtained from the study were analyzed using the Epi-Info 2002 software programme. The data was presented in frequency distribution tables with percentages. Chi square statistics was used to test the significance at $p < 0.05$ between the socio-demographical variables and awareness and attitude to immunization.

Results

The results obtained showed mothers attending antenatal clinic in LUTH to have a mean age of about 30.7 years. A total of 268 (97.8%) respondents were married, while only 4 (1.5 %) were single. Christians constituted the majority 223 (81.4 %) group of the population. Over 150 respondents (55.5 %) were Yorubas, while Ibos constituted 34.7% and 6.2 % were Hausas.

Table 1: Socio-demographic characteristics of respondents

Variable	Response	Frequency (n = 274)	Percent (%)
Age (year)	21-25	30	10.9
	26-30	98	35.8
	31-35	126	46.0
	>36	20	7.3
	Mean age	30.7 ± 4.0	
Marital status	Single Mothers	4	1.5
	Married	268	97.8
	Divorced	1	0.4
	Widowed	1	0.4
Ethnicity	Hausa	17	6.2
	Igbo	95	34.7
	Yoruba	152	55.5
	Others	10	3.6
Education	No formal	25	9.1
	Primary	20	7.3
	Secondary	52	19.0
	Tertiary	177	64.6
Occupation	Professional	91	33.2
	Intermediate	33	12.0
	Non-manual skilled	31	11.3
	Manual skilled	25	9.1
	Partly skilled	20	7.3
	Unskilled	40	14.6
	Students/Unemployed	34	12.4

About two-thirds of the respondents (64.6%) had tertiary education and larger percentages (33.2%) of them were professionals (Table 1).

Table 2: Knowledge of diseases that could be prevented by immunization

Diseases	Frequency (n = 257)	Percent
Poliomyelitis	228	88.7
Measles	239	93.0
Diphtheria	201	78.2
Tuberculosis	196	76.3
Yellow fever	227	88.3
Hepatitis	202	78.3
Meningitis	175	68.1
Tetanus	157	61.1
Malaria	125	48.6
Routes of vaccination		
Injection	212	82.5
Mouth drop	222	86.4
Syrup	142	55.3

Multiple responses given

Almost all the respondents were aware of immunization and that immunization could prevent childhood sickness (93.8%; 98.1%) respectively. However, some of the respondents felt immunization will make their children brilliant (28.8%) or grow fast (10.9%). Quite high percentages of the respondents knew that immunization could prevent Poliomyelitis, Measles, Diphtheria, Tuberculosis, Yellow fever and Hepatitis respectively (Table 3). But 48.6% of the respondents thought immunization could prevent malaria (Table 2). Although, 82.5 % and 86.4 % knew that immunization could be administered as an injectable and mouth drop, a high percentage (55.3%) thought immunization could be in syrup formulation.

Table 3: Percentage of respondents with correct Knowledge of immunization

Age at immunization	Response	Frequency (n = 257)	Percent
At birth	BCG	124	48.2
	DPT1	34	13.2
	OPV2	12	4.7
	Don't know	87	33.9
6 week	DPT1	120	46.7
	DPT2	19	7.4
	HBV2	1	0.4
	OPV2	30	11.7
	Don't know	87	33.8
9 month	DPT2	2	0.8
	Measles	99	38.5
	Yellow fever	69	26.8
	Don't know	87	33.9

Of the 257 respondents, 48.2% knew that BCG could be given at birth while 13.2% and 4.7% thought DPT and OPV2 could be given at birth, respectively. Also, 46.7% knew that DPT1

could be given at 6 weeks after birth but 7.4% also thought DPT2 could be given at 6 weeks. In addition, 38.5% and 26.8% knew that measles vaccine and yellow fever vaccine could be given at 9 month after birth while 33.9% had no exact idea of when immunization could be given (Table 3).

A large percentage of the respondents (62.6%) knew that immunization ought to be given at a specific period, 66.5% were convinced that immunization is necessary for their children, 64.2 % of the respondents were ready to ensure their children are immunized irrespective of the cost while 65.4% of the respondents believed they can advise their fellow women to receive immunization for their children. Only a few thought giving a child immunization can cause HIV/AIDS (1.5%) and it was possible to take immunization in a community pharmacy (3.9%). A large percentage of the respondents (45.5%) thought that polio vaccines ought to be given five (5) times, 1.6% thought it should be given three (3) times, 7.8% thought is should be given 6 times and 2% thought it should be given 7 times. Only 8.6% knew it should be given four (4) times, which is the standard number of times polio vaccine should be given. Eighty-six (33.5%) of the respondents did not know the specific number of times it should be given. The mean number of times respondents thought a child should receive a polio vaccine was 4.9 ± 0.9 times.

Table 4: Associations between socio-demographic variables of respondents and awareness of immunization

Variable	Response	Awareness of immunization (%), n = 274			X ²	df	p-value
		Aware	Not aware	Total			
Age (year)	21 – 25	29 (96.7)	1 (3.3)	30	0.93	3	0.82
	26 – 30	92 (93.9)	6 (6.1)	98			
	31 – 35	118 (93.7)	8 (6.3)	126			
	>35	18 (90.0)	2 (10.0)	20			
Ethnicity	Hausa	12 (70.6)	5 (29.4)	17	19.54	3	0.0002
	Igbo	88 (92.6)	7 (7.4)	95			
	Yoruba	148 (97.4)	4 (2.6)	152			
	Others	9 (90.0)	1 (10.0)	10			
Religion	Christianity	211 (94.6)	12 (5.4)	223	0.74	1	0.39
	Islam	46 (90.2)	5 (9.8)	51			
Education	No formal	20 (80.0)	5 (20.0)	25	10.03	3	0.02
	Primary	18 (90.0)	2 (10.0)	20			
	Secondary	50 (96.2)	2 (3.8)	52			
	Tertiary	169 (95.5)	8 (4.5)	177			
Occupation	Professional	87 (95.6)	4 (4.4)	91	2.01	1	0.82
	Intermediate	32 (97.0)	1 (3.0)	33			
	Non-manual skilled	28 (90.3)	3 (9.7)	31			
	Manual skilled	23 (92.0)	2 (8.0)	25			
	Partly skilled	19 (95.0)	1 (5.0)	20			
	Unskilled	36 (90.0)	4 (10.0)	40			
	Student/Unemployed	32 (94.1)	2 (5.9)	34			
Total	Total	257 (93.8)	17 (6.2)	274			

*Fisher exact p-value, level of significance (p<0.05)

Forty-nine percent (126) of the respondents agreed that children should be brought for immunization at the appointment time while 10.5% thought immunization should be taken at one's convenient time; 33.5% of the respondents did not know when their children should be brought for immunization while 7% would bring children for immunization when they had money. The results further showed that there were no significant relationships between the ages of respondents and awareness of immunization and between religion and awareness of immunization. However, significant ($P<0.05$) relationships were observed between ethnicity and awareness of immunization and between level of education and awareness of immunization (Table 4). The results showed that there were significant ($P<0.05$) relationships between age of respondents; ethnicity; level of education; occupation and attitude to immunization however, there was no significant relationship between religion and attitude to immunization (Table 5).

Table 5: Associations between socio-demographic variables of respondents and attitude to immunization

Variable	Response	Attitude to immunization (%), n = 257			X ²	df	p-value
		Necessary	Not necessary	Total			
Age (year)	21 – 25	14 (48.3)	15 (51.7)	29	10.88	3	0.01
	26 – 30	63 (68.5)	24 (31.5)	92			
	31 – 35	77 (65.3)	41 (34.7)	118			
	>35	17 (94.4)	1 (5.6)	18			
Ethnicity	Hausa	8 (66.7)	4 (33.3)	12	38.84	3	0.00
	Igbo	45 (51.1)	43 (48.9)	88			
	Yoruba	118 (79.7)	30 (20.3)	148			
	Others	-	9 (100)	9			
Religion	Christianity	135 (64.0)	76 (36.0)	211	2.85	1	0.09
	Islam	36 (78.3)	10 (21.7)	46			
Education	No formal	18 (90.0)	2 (10.0)	20	9.17	3	0.03
	Primary	15 (83.3)	3 (16.7)	18			
	Secondary	34 (68.0)	16 (32.0)	50			
	Tertiary	104 (61.5)	65 (38.5)	169			
Occupation	Professional	59 (67.8)	28 (32.2)	87	47.81	6	0.00
	Intermediate	31 (96.9)	1 (3.1)	32			
	Non-manual skilled	12 (42.9)	16 (52.2)	28			
	Manual skilled	11 (47.8)	12 (52.2)	23			
	Partly skilled	19 (100)	-	19			
	Unskilled	14 (38.9)	22 (61.1)	36			
Student/Unemployed	25 (78.1)	7 (21.9)	32				

*Fisher exact p-value, level of significance ($p<0.05$)

Discussion

Immunization is an important public health interventions strategy to reduce the morbidity and mortality associated with infectious diseases. Over two million deaths are delayed through immunization each year worldwide (WHO, 2003). Despite this, vaccine preventable diseases remain the most common cause of childhood mortality with an estimated three million deaths each year (CGD, 2005). Uptake of vaccination services is dependent not only on provision of these services but also on other factors including knowledge and attitude of

mothers (Matsumura *et al.*, 2005; Torun & Bakirci, 2006), density of health workers (Anand & Barnighusen, 2007), accessibility to vaccination clinics and availability of safe needles and syringes.

This present study showed that a high proportion of the respondents had tertiary education and thus had good knowledge and awareness of immunization. As earlier mentioned, the majority of the respondents had good knowledge of immunization and that immunization could prevent childhood diseases, this may be in order with the study of Freeman *et al.* (1992) that showed the relationship between mothers' education and knowledge of the diseases immunization could prevent. However, a small proportion of the respondents felt that immunization will make their children brilliant, more so, about half of the respondents thought immunization will prevent malaria fever. These proportions of incorrect responses by the respondents is significant and it is an indication that some mothers still have poor understanding of the concept of immunization and this may go a long way to affect the uptake of immunization and thus cause a set back in the millennium development goals.

This present study has also shown that about half of the respondents did not know the formulation type of vaccine. Thus, they felt vaccine could come in syrup formulation. This may seem not important but it could create a wrong impression especially mothers thinking their children are receiving immunization when being given syrup medication for other purposes. The implication of this is that such mothers may give a wrong immunization history in the future at times when their child is ill thus complicating the physician's diagnosis.

The findings of this present study revealed that most mothers do not know appropriately the time schedule for vaccine administration. These results may be consistent with the findings of Freeman *et al.* (1992) that showed 58% of the respondents did not know the exact time to commence immunization and 48% did not know the time schedule for immunization. It may be interesting to report that this study has shown women to be interested in ensuring that their children are immunized and more so, they could encourage their co-mothers to take immunization for their children.

A significant relationship was observed between ethnicity and awareness of immunization, between level of education and awareness of immunization and between age and attitude to immunization. These are consistent with the study of Freeman *et al.*, 1992 and Roodpeyma *et al.* (2007). In conclusion, although majority of the mothers had good knowledge of immunization and that immunization could prevent childhood diseases, their knowledge of immunization schedule as well as of vaccine preventable diseases is poor. A better understanding of the immunization schedule is important in the design and implementation of immunization programmes. Educating mothers about vaccines and vaccine preventable diseases are recommended.

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