

Uptake Of Childhood Immunization Among Mothers Of Under-Five In Southwestern Nigeria

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Abstract

Background Immunization preventable childhood diseases are a major cause of the under five mortality in Nigeria. Objective The study was aimed at determining the awareness, attitude of mothers of under-five towards immunization and proportion of children fully immunized in the 12-28 month age. Methods The study was a descriptive cross sectional household survey of perception of mothers with children under 5 years of age to immunization in Igbo-Ora, Oyo state. A cluster sampling of the mothers were carried out. Results A total of 503 mothers were interviewed with a mean age of 27.3 years and SD of 5.7 years. The mean age of the children was 19.7 months with a SD of 14.4 months. Almost all the women interviewed (99%) were aware of the immunization with 65.7% obtaining information at antenatal clinics. A good proportion of children aged 12 to 33 months were fully immunized (76.9%), 30% were partially immunized and 0.7% were not fully immunized. Majority had good attitudes to immunization with 84.3% having attitude scores of 75% and above. Immunization of the children was not significantly associated with the socio-demographic characteristics at 5% level of significance. The reasons reported for not completing immunization include long waiting on queues (46.1%), payment at private clinics (20.2%) and distance (17.7%). Conclusion The role of antenatal clinic as a source of awareness should further be strengthened by training more health workers to work since majority of the respondents got informed about immunization in the antenatal clinics.

INTRODUCTION

Immunization is one of the most effective, safest and efficient public health interventions as it is estimated to save at least 3 million lives from vaccine preventable diseases (1). The global burden constituted by vaccine preventable diseases is immense. Globally speaking, 2.5 million children die every year from easily prevented infectious diseases. In fact, in the year 2000, measles resulted in 777,000 deaths and 2 million disabilities (2, 3). It is worthy of note that Latin America/ Caribbean as well as other industrialized countries have achieved the 90% coverage against measles and are likely to sustain these levels (2). However, Middle East and North Africa are likely to improve quickly enough to meet the target 2010 but East pacific will need to make significant improvements.

Financial commitment towards immunization would amount to \$3 billion per year in the next ten years with UNICEF investing 56% of its health funds (2). Thus, as part of the child survival programme, the expanded programme on immunization was created in 1974 by WHO with UNICEF and Rotary International as partners. This has increased the

level of immunization of the world's children from 5 to 80% in 30 years (2). Though efforts at immunization have yielded highly beneficial results with most developed countries of the world having coverage of over 90% (4). The situation is quite different for developing nations of the world especially in Africa where vaccine preventable diseases contribute significantly to under-5 mortality. Nigeria for instance has an under-5 mortality rate of 201/1000 (immunization coverage of 13%) (5). It remains one of the polio hot zones along with the India, Pakistan and Afghanistan and also one of the 11 countries that accounted for 66% of the world's measles death (6). While South Africa, Asia and Sub-Saharan Africa are substantially behind and would have improved by average annual rates of 3.2% points and 4.1% points respectively in order to reach 90% coverage by 2010 (2, 5). To this end, only 4 countries in the world are reported to have endemic poliomyelitis; Pakistan, Afghanistan, Nigeria and India. Global polio eradication has dramatically reduced polio transmission throughout the world with the eradication from western hemisphere in September, 1994 but this has suffered great set back in Nigeria especially the Northern part witnessing pandemonium and commotion with

some citizens erroneously saying OPV vaccines cause infertility.

In USA, Orenstein who served as the head of National Programmes on Immunization commented that one of the proudest accomplishments achieved was elimination of endemic measles in the United States. This took several decades of hard work. In Bangladesh, it was discovered that the knowledge, attitude and practice of parents of under five children in respect of expanded programmes on Immunization target diseases, showed that attitude towards immunization was good and improved with further education (7). They observed that increase in knowledge with regards to increase in Immunization centres and days on which services are available were significant. There is improvement in knowledge and attitude ranging from 30 to almost 100%, but improvement in acceptance of vaccine was only within 6 to 10% (7). In Singapore, awareness and acceptance of hepatitis B vaccination showed that 46.5% were aware of the long time consequences of the infection. However uptake had increased to 48.3% (8). More than 2/3rd increase in uptake rate can be attributed to a reduction in the cost of Hepatitis B vaccination and vigorous nationwide education programmes (8).

Nigeria like many countries in Africa is making efforts to strengthen its health system especially the routine immunization so as to reduce the burden from vaccine preventable diseases. This is against the backdrop of poor routine immunization coverage of 13% (5). In Northern Nigeria, on the perception, beliefs and practices towards measles and measles vaccination showed 1 of 500 mothers interviewed believed that measles is prevented by immunization, 16% believed that it is contagious, 26% believed that it is caused by evil spirit, witch craft, and heat. 25% has never heard of measles immunization, 27% said that they did not believe immunization was effective and 4% were not allowed to go for immunization by their husbands (9). Senegal is changing the face of immunization in West Africa using innovative system and process which have resulted in immunization coverage from 51 to 91% (2). Factors such as lack of political will, lack of motivation, and infrastructure have been attributed to the low level of immunization in Nigeria.

This gloomy picture prompted this study using Igbo-Ora, a town in the southwestern Nigeria as a case study.

METHODS

Study site and population: Igbo-Ora, the headquarter of the

Ibarapa central Local Government of Oyo State, Nigeria has an estimated population of 60,000 inhabitants. It is made of 3 wards and 6 blocks namely; Idofin, Isale Oba, Oke-Iserin, Sagun, Pako-Pembo, and Igbole.

Study design: We carried out a cross-sectional household survey of mothers with children under-5 years of age between 12th February to 6th April, 2008

Sample Size: A minimum sample size of 124 was obtained which was oversampled to 503 and was used for the study to allow for greater precision.

Participant selection and Survey instrument: A cluster random sampling technique was used at the study sites and the data were collected via interviewer administered 35-item questionnaires.

Recruitment: Permission to administer questionnaires was obtained at the various centres. A verbal consent was obtained from the respondents after they had been fully counseled about the study via a written consent.

Validity: The questionnaire was developed in English, translated to Yoruba and back translated to English and was pre-tested in one of the blocks following which the post pre-tested questionnaire was reviewed and validated.

Data analysis: The statistical analysis was done with SPSS version 12 software. Chi-square test and fisher exact test were used for categorical variables as appropriate. T-test was used to compare means of continuous variables and logistic regression for multi-variate analysis. Level of statistical significance was set at $p=0.05$.

Limitation: It was difficult in some cases to obtain information from the respondents as many of them did not know the names of the vaccines, and some could not find their immunization cards.

RESULTS

Demographics: A total of 503 mothers were interviewed with a mean age of 27.3 years and standard deviation of 5.7 years. 10 (2%) of the mothers were single, 486 (96.6%) were married while 7 (1.4%) were divorced. 341 (68.6%) of the families were monogamous. 260 (51.8%) had at least secondary school education. Majority, 310 (61.8%) of the respondents were Muslims. 56.7% were traders. Other occupations included teaching, artisans, and hair dressing while unemployed respondents constituted 5.6% of those interviewed.

The mean age of the children was 19.7 months with a standard deviation of 14.4 months. Less than half (45.6%) were females. 16 (3.2%) children were delivered at home or church mission, 209 (41.6%) were delivered at the local government primary health care centre, 116 (23.1%) were delivered at a private clinic and 161 (32.1%) were delivered at the general hospital.

Figure 1

Table 1: Socio-demographic characteristics of respondents and children

	frequency	%
Marital Status		
Single	10	2.0
Married	486	96.6
Separated/divorced	7	1.4
Educational status		
None	52	10.4
Some primary	17	3.4
Completed primary	173	34.5
Some Secondary	68	13.5
Completed	125	24.9
Secondary	67	13.3
Tertiary		
Religion		
Christianity	192	38.2
Islam	310	61.8
Occupation		
Trading	285	56.7
Teaching	33	6.6
Artisan	28	5.6
Hairdresser	25	5.0
unemployed	28	5.6
Place of delivery		
Home/ Church	16	3.2
mission	209	41.6
Local government		
primary health care	116	23.1
Private clinic	161	32.1
General Hospital		
Family type		
Monogamous	341	67.9
Polygamous	156	31.1
Child's gender		
Female	273	54.4
Male	213	45.6

Awareness: Almost all the women interviewed (99%) were aware of immunization. The commonest source of knowledge was antenatal clinic (65.7%) followed by health educator (19.2%).

Figure 2

Table 2: Source of knowledge about immunization

	Number	Percentage
Family	11	2.2
Health care provider	31	6.2
Health educator	96	19.2
ANC	328	65.7
Media	24	4.8
Others	9	1.8
Total	499	100

72.9% of respondents believed that immunization is for healthy baby followed by 65.3% respondents who believed it is for well breast fed baby. The majority of the respondents believed immunization to be highly protective against all childhood diseases.

Figure 3

Table 3: Distribution of knowledge of appropriateness of immunization

	Yes	No	Don't know
A sick child	112(22.4%)	355(70%)	34(6.8%)
A healthy baby	365(72.9%)	127(25.3%)	9(1.8%)
A poorly breastfed baby	206(41.3%)	219(43.9%)	74(14.8%)
A well breastfed baby	326(65.3%)	167(33.5%)	6(1.2%)
Only male children	10(2.0%)	484(96.8%)	6(1.2%)
Only female children	8(1.6%)	487(97.4%)	5(1%)
The first born alone	7(1.4%)	489(98.0%)	3(0.6%)

135 (27%) respondents believed that a child with fever should still be immunized while 26 (5.2%) believed that local herbs are good substitutes for immunization. Assessment of their knowledge on the vaccine-preventable diseases revealed that 41.3% of the mothers erroneously believed that immunization prevents HIV, while 84.6% held the same opinion for diarrhea.

Attitude to immunization: Almost all mothers, 488(97.6%) mothers attended antenatal clinic while 498(99.4%) thought their child should be immunized. 8.2% of the respondents believed that immunization causes fever while 5% believed it causes deformity.

Immunization status of children aged 12-23 months (table 4): 76.9% of the children were fully immunization while 22.4% partially immunized. 0.7% was not immunized at all.

Figure 4

Table 4: Distribution of immunization status of children

	Number	Percentage
Fully immunized	103	76.9
Partially immunized	30	22.4
Not immunized	1	0.7
Total	134	100.0

50(42%) received most of their vaccination at the

government hospital, 70(53.4%) received theirs at the local government primary health care centre and 6(4.6%) received immunization at private clinics. The BCG scar was seen in 77 (61.1%) children, not seen in 37 (29.4%) children and 9 (7.1%) children were not available for verification of the scar (table 5).

Figure 5

Table 5: Immunization indices

Vaccine	Percentage given	Percentage of card as source of information
BCG	92.4	55.0
DPT 1	94.7	56.2
DPT 2	97.7	54.7
DPT 3	97.5	58.2
OPV 0	98.5	54.6
OPV 1	98.4	54.7
OPV 2	96.0	56.5
OPV 3	96.7	56.9
HBV 1	96.0	56.0
HBV 2	96.8	55.6
HBV 3	95.0	56.3
Measles	94.2	55.0
Yellow fever	93.5	54.1

Factors influencing utilization of immunization services: 99.6% of the respondents agreed that their culture permits immunization. Also, 99.4% said their husbands support it. During their last visit for immunization, 64 mothers (12.9%) waited for less than an hour, 149 mothers (30%) waited for 1-2 hours, 236 mothers (47.5%) waited for 3-5 hours, and 48 mothers (9.7%) waited for over 5 hours. 46.1% of mothers attributed the reason for not completing immunization to waiting a long time on queue. Other reasons given were

paying for vaccines (20.2%) and travelling a long distance (17.7%).

About 2% of the respondents viewed eligibility for immunization with a bias to the baby's gender.

Figure 6

Table 6: Association between immunization status and certain socio-demographic characteristics (n=134)

Characteristics	Fully vaccinated No. (%)	Partially vaccinated No. (%)	χ^2	P-value
Child's gender			1.116	0.291
Male	54 (74.0%)	19 (26.0%)		
Female	49 (81.7%)	11 (18.3%)		
Mother's educational status			0.240	0.624
≤ Primary school	48 (75.0%)	16 (25.0%)		
≥ Secondary school	55 (78.6%)	15 (21.4%)		
Type of family			3.386	0.066
Monogamous	68 (81.9%)	15 (18.1%)		
Polygamous	34 (68.0%)	16 (32.0%)		
Place of birth			0.795	0.372
Government hospital	75 (78.9%)	20 (21.1%)		
Others	28 (71.8%)	11 (28.2%)		
Number of children			0.030	0.863
≤ 2	58 (76.3%)	18 (23.7%)		
≥ 3	45 (77.6%)	13 (22.4%)		

Figure 7

Table 7: Relationship between immunization status and place where immunization was received

Venue of immunization	Freq of fully immunized	Freq of partially immunized	Total
Government hospital	99(79.2%)	26(20.8%)	125(100%)
Private clinic/missionary	2(33.3%)	4(66.7%)	6(100%)
Total	101(77.1%)	30(22.9%)	131(100%)

P-value = 0.025

DISCUSSIONS

Majority of the mothers interviewed (65.7%) got their

awareness of immunization at the antenatal clinics. General awareness was good (98.1%) from several sources. This can be attributed to a more enlightened society that emerges with passage of time. This result was similar to that of a study done in the University of Columbia on the uptake behavioral and attitudinal determination of immunization of hepatitis B among infants which showed that immunization was significantly associated with recommendation from health care professionals (10). Parental behavior regarding immunization was strongly influenced by supportive recommendation from either a nurse or Doctor.

Misconception about the recipients of immunization still abound, as 70.9% of the respondents felt that a sick child was not entitled. On the hand, 25.3% of the respondents held the opinion that healthy babies could be exempted from immunization. 43.9% of the women felt that a poorly-breast fed baby should be excluded, while 33.5% held the same opinion for well breast fed babies. About 2% of the respondents viewed eligibility for immunization with a bias to the baby's gender. These misconceptions may be due to presumptions that the health educators have directly addressed to the mothers.

Assessment of their knowledge on the vaccine-preventable diseases revealed that 41.3% of the mothers erroneously believed that immunization prevents HIV, while 84.6% held the same opinion for diarrhea. This may be due to the fact that some Health educators do not specifically state that not all childhood diseases are vaccine-preventable, hence some mothers are left to assume that it confers an all-round protection. 5.2% of the respondents believed that local herbs were a good substitute for immunization. 97.8% of the women immunized their children because in its efficacy underscoring the importance of health education.

2% of the mothers volunteered that immunization could cause infertility. Other ill-effects of immunization as thought by the mothers are fever (8.2%), deformity (5%), convulsions (2.4%), and diarrhea (2.2%). This may be due to misinformation from friends or relatives.

Yuan et al in 2000 observed that the major barrier to immunization is waiting too long on the queue (11). This was reported by 46.1% of the respondents in this study, but it did not affect the practice. 94.6% of the respondents volunteered that they liked the way they were treated by the health care attendants. Our study showed no correlation between immunization status of their children and the age of the mother, the sex, religion and the type of home of the

child.

Cutts et al in 1990, in a study to evaluate immunization in Guinea, showed that delivery in a hospital affected whether the child began immunization (12). This was not the finding in this study, as there is no significant correlation between immunization status and the place of delivery. This could be due to the fact that majority of the women were aware of immunization whether or not they gave birth in the hospital. A study conducted by the Department of International Development and the Federal Ministry of Health on the factors influencing immunization uptake showed a rise in the uptake with socio-economic status and formal education (13). This is at variance with this study that showed no significant association between the immunization status and the occupation of the parents or educational status. This may be due to the fact that intense health education has made immunization appear customary irrespective of social class.

An assessment of the utilization of immunization services by the children aged 12-23 months revealed that 76.9% of the children were fully immunized. This is higher than a value of 26% obtained by the National Demographic Health Survey (NDHS) in 2003. This may be due to the enabling environment, increased awareness and the correction of erroneous beliefs

CONCLUSION

Awareness was very good. Majority have good attitude towards immunization. Although a greater percentage of the respondents immunized their children based on the health care giver but a smaller percentage still complained of long distance from immunization centre, long waiting on the queue and the payment they had to make when they immunized their children at privately owned health centres. Despite a good uptake in immunization, there were some children who were partially immunized or not immunized at all. Based on these findings, we therefore deemed it necessary to make the following recommendations:

- The role of antenatal clinic as a source of awareness should further be strengthened by training more health care workers since majority of the respondents got informed about immunization in the antenatal clinic,
- The training of more health care workers will also ease the burden of long waiting hours spent at immunization centres,

- There should be creation of more immunization centres to solve the problem of traveling long distances to immunization centres,
- There should be adequate health education so that the belief by a small percentage of the respondents that there are substitutes for immunization like concoctions and also the wrong notion that HIV/AIDS and malaria are immunization preventable diseases can be totally banished into the sea of forgetfulness.

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