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CHILDREN NOT RECEIVING ADEQUATE IMMUNIZATION IN IBADAN, NIGERIA: WHAT REASONS AND BELIEFS DO THEIR MOTHERS HAVE?

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ABSTRACT

Background: Immunization coverage in most areas in Nigeria has remained low with continued high morbidity and mortality from vaccine preventable diseases.

Objectives: To identify the reasons and beliefs about immunization among mothers whose children have not received adequate immunization or not at all.

Subjects and methods: The study was a descriptive cross sectional survey that involved mothers trading in a large market in Ibadan who had children between the ages of 12 and 23 months. Data were collected by means of a semi-structured questionnaire. Mothers who did not immunize or failed to completely immunize their children were selected for analysis.

Results: A total of 248 mothers were interviewed, their mean age was 27.3 5.5 years (range 16 42yrs). The commonest reasons for incomplete immunization included: non availability of vaccines (26.2%), not being aware of need for additional doses (16.5%) and inconvenient time/venue (13.7%). Logistic regression analysis showed that Mothers with no formal education were about six times more likely than those with secondary education and higher to give reasons related to lack of motivation (95% CI OR = 1.88 17.93). Analysis of the mothers' beliefs on immunization were as follows; 186(75.0%) believed it was beneficial, 161(64.9%) believed that immunization will save the life of the child and 129(52.0%) believed that taking the child to the clinic for immunization wasted a lot of time.

Conclusion: Most mothers in this study agreed that immunization is beneficial. It is therefore recommended that routine immunization be strengthened, vaccines made readily available and mothers educated on the immunization schedule.

Key Words: Children; Inadequate immunization; Mothers' Reasons; Ibadan; Nigeria

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INTRODUCTION

The United Nations General Assembly Special Session (UNGASS) goals by 2010 is to ensure full immunization of children under one year of age at 90% coverage nationally with at least 80% coverage in every district or equivalent administrative unit.[1] Immunization surveys can show which subgroups of the population are not getting immunized and the reasons for non immunization. Such surveys would enable the underserved population to be monitored. They are also essential for monitoring of immunization programmes, identification of underserved populations and are generally a measure of utilization of health services especially child health services. As long as morbidity and mortality from vaccine preventable diseases remain high, it is necessary to carry out studies to determine the immunization status of children born within these times who are at risk of illness from lack of immunization. It is also important to determine various factors that influence immunization among them.

Immunization is one of the child survival strategies and has been identified as the most successful and cost-effective public health intervention which has led to the reduction in morbidity and mortality in childhood.[2] It has also been described as the foundation of the public health system without which other health programs would fail. It has made a spectacular contribution in the reduction in the mortality and morbidity of diseases and as such has been heralded as one of the greatest public health achievements of the twentieth century. The discovery and use of vaccines have made it possible to save approximately eight million deaths, annually, in addition to the reduction in millions of children's suffering and disability[3].

The World Health Organization (WHO) aims to eradicate Measles, Tuberculosis, Pertussis, Diphtheria, Poliomyelitis, Mumps, Tetanus and Rubella which can be prevented by immunization and therefore recommends the implementation of the

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Expanded Programme on Immunization (EPI) to all developing countries. Globally it is estimated that about 20% of children remain unimmunized[1] Nigeria has peculiar challenges in the implementation of its immunization programme. Many of the vaccine-preventable diseases still occur at unacceptable levels. It is one of the 6 nations still harbouring the wild polio virus.[2]

The National Demographic Health Survey (NDHS) of 2003 showed that only 11%of children aged 12 23months, received all the recommended vaccines by age 12 months, the age at which vaccination coverage should be complete.[4] Similarly, the immunization coverage survey 2003 report of the Nigerian National Programme on Immunization, adjudged the largest and most comprehensive immunization survey in the history of Nigeria, gave a national coverage rate of 12.7%.[5] From the same database, the coverage for Oyo state was 38.3% (crude) and 13.7% (valid).

Bradford ford et al[6], examined the immunization status of children entering school in two selected school districts in the United States; the reason identified by a large number of parents for missing vaccines in their children was that they did not know further vaccines were needed. A study of the use and non-use of preventive health services in a South African village showed that 47% of the women indicated a belief in the health benefits of immunization, but the remainder viewed them as potentially dangerous. The reason for incomplete immunization from the study was that women had no idea of the desirable number of immunizations for optimal protection.[7] Among children 0-2yrs in Iraq, the most common causes of incomplete immunization were unawareness and ignorance.[8]

Reasons for the difficulties in eradicating polio in Northern Nigeria were studied and it was reported that there were beliefs that the vaccine was contaminated by anti-fertility substances; the focus on polio was questioned when measles and malaria were considered more harmful.[9] It was further reported that the claims about the safety of Western biomedicine were distrusted.

This study which was part of a larger immunization survey was carried out to identify the reasons and beliefs about immunization among mothers whose children were not completely immunized in order to better address the needs of mothers in this population.

SUBJECTS AND METHODS

The study was a part of a descriptive cross sectional immunization survey that involved mothers who had children between the ages of 12 and 23 months trading in a large market in Ibadan, selected as it has a fair representation of the different socio-demographic groups in Ibadan. The market was arranged into five blocks from which three Blocks were selected by balloting. From each of these blocks, stalls were selected using systematic random sampling. With the aid of a pilot survey that was carried out on 30 consecutive stalls in the market, a sampling interval of five was estimated. Therefore, by systematic sampling a mother was recruited in every 5th stall. Where there was no eligible mother, the next stall was visited. If there was more than one eligible mother in the stall, one was selected by simple random sampling.

Data were collected by means of a semi-structured, pre-tested questionnaire, which was administered to the mothers by trained interviewers. Mothers who did not immunize or failed to completely immunize their children were selected for analysis. Complete immunization according to the National schedule was for the following vaccines; BCG, OPV and DPT (three doses), measles, Hepatitis B (three doses) and Yellow fever. The information obtained included the demographic characteristics, immunization data and reasons for non-immunization of their children. Their beliefs and attitudes on immunization were also assessed.

Permission had been obtained to carry out the study from the Chairman of the Market Traders Association and ethical approval obtained from the ethical committee of the State Ministry of Health. Informed consent was obtained from mothers who participated in the study after explaining the purpose of the study and what it entailed. Those who did not want to participate had a right to decline being interviewed. Confidentiality and anonymity were maintained during the conduct of the study by using serial numbers only and not names. All the children were referred to the nearest primary health care centre for immunization.

The data obtained were entered into a computer, cleaned and analyzed with SPSS version 11.0. Variables were summarized using frequencies, proportions, means and standard deviation. The reasons for none or incomplete immunization were divided into those related to mothers' lack of information/motivation (mothers having no faith in the vaccines, not being aware of the programme or need for additional doses).and obstacles (long waiting times, vaccines not available, and child being sick).[10] This was cross tabulated with mothers' characteristics and the chi square test used to test for significance. Logistic regression analysis was then used to identify significant predictors and odds ratios were reported. Level of significance was set at 5%.

RESULTS

Data of 248 mothers whose children had incomplete or no immunization were analyzed, their mean age

was 27.3 5.5 years (range 16 42yrs). Thirty-five (14.1%) had no formal education, half (50.4%) had primary education while 88 (35.5%) had at least secondary education. Majority of the women were married (96%). The proportion of women in monogamous marriages was 68.5%. The mean age of the children was 17.6 months (SD=3.5). Forty three (17.3%) mothers had no other child while 21%, 27.4% and 34.3% had one, two and three or more other children respectively. The highest proportion of the children was delivered in government health facilities (44.8%) followed by private hospitals (28.2%) and church (11.7%). Other places include home (10.5%) and mission hospitals (4.8%).

Reasons for none or incomplete immunization

The major reasons for none or incomplete immunization as shown in table 3 included: non availability of vaccines; 64(26.2%), mothers not being aware of need for additional doses; 41(16.5%) and "inconvenient time/venue"; 34(13.7%).

Associations of reasons for failing to immunize and socio-demographic factors

The reasons given for not immunizing or failing to completely immunize were grouped as lack of information, lack of motivation and obstacles from multiple response questions. Separate logistic regression analyses were carried out for each as a dependent variable and the results are shown in table 4. For lack of information, none of the variables significant on cross-tabulation such as mother's age, education, family type and children by same mother were significant. Education and religion of the woman were significant for lack of motivation. Those with no formal education were about six times more likely than women with secondary education and higher (95% CI OR = 1.88, 17.93) while Muslim women were about three times more likely to give motivation related reasons (95% CI OR =1.2, 7.813). Number of children by same mother was not significant

Mothers with female children were about three times more likely than those with males to give reasons classified as obstacles to immunization (95% CI OR = 1.217, 7.353). Mother's age, education, religion, place of delivery and ethnicity were not significant.

Beliefs and attitudes on immunization

Immunization was believed to be beneficial by 186(75%) of the women, 161(64.9%) believed that immunization will save the life of the child and 129(52.0%) believed that taking the child to the clinic for immunization wasted a lot of time. Only 81(32.7%) women felt that immunization could harm the child and 156 (62.9%) felt that there is enough public enlightenment on childhood immunization (Table 5).

Table 1: **Demographic Characteristics of Mothers.**

Characteristic	No (248)	%
Age (years)		
15-19	22	8.9
20-24	57	23.0
25-29	87	35.1
30-34	54	21.8
=35	28	11.3
Religion		
Christianity	101	40.7
Moslem	146	58.9
Traditional	1	0.4
Marital status		
Single	8	3.2
Married	238	96.0
Divorced/Separated	2	0.8
Level of Education		
None	35	14.1
Primary School	125	50.4
Secondary School	87	35.1
Post Secondary	1	0.4
Family Type		
Monogamous	170	68.5
Polygamous	78	31.5

Table 2: Demographic Characteristics of the Children.

Characteristic	No	%
Sex		
Male	145	58.5
Female	103	41.5
Age (months) Mean (SD)	17.6(3.5)	
No of other siblings		
0	43	17.3
1	52	21.0
2	68	27.4
>2	85	34.3
Place of delivery of index child		
Government health facility	111	44.8
Private health facility	70	28.2
Missionary hospital	12	4.8
Church	29	11.7
Home	26	10.5

Table 3: **Most Important Reason For Incomplete or No Immunization.**

Reason	No	%
Vaccines not available	65	26.2
Not aware of the need for additional dosages	41	16.5
Inconvenient day/time/venue	34	13.7
Long waiting times	28	11.3
Child was sick	25	10.1
Fear/rumor of adverse side effects	16	6.5
Not aware of programme	10	4.0
Have no faith in the vaccines	8	3.2
I traveled out of town with the child	6	2.4
Vaccination was over by the time we reached	6	2.4
Service provider not friendly	4	1.6
Cost	2	0.8
Nobody was there to take the child to the center	2	0.8
Session not held	1	0.4
Total	**248**	**100**

Table 4: Logistic Regression Analysis of Reasons for Incomplete Immunization (Classified as Three Outcomes) on Respondents' Characteristics.

Reason for incomplete immunization	Odds ratio	95% CI OR	P value
Lack of information			
Mother's education			
None	2.393	0.956 – 5.991	0.062
Primary	1.061	0.604 – 1.866	0.836
Secondary and higher (Ref)			
Mother's age (years)			
<=30 vs above 30	0.787	0.403 – 1.536	0.482
Family type			
Monogamy vs polygamy	0.633	0.345 – 1.161	0.140
Children by same mother			
<3 vs 3 and above	0.803	0.424 – 1.522	0.502
Lack of motivation			
Mother's education			
None	5.950	1.875 – 17.927	0.002
Primary	1.150	0.428 – 3.093	0.781
Secondary (Ref)			
Religion			
Islam vs Christianity	3.058	1.200 – 7.813	0.019
Children by same mother			
<3 vs 3 and above	0.792	0.347 – 1.808	0.580
Obstacles			
Mother's education			
None	0.430	0.135 – 1.374	0.155
Primary	0.567	0.226 – 1.420	0.226
Secondary			
Mother's age			
<=30 vs above 30	1.240	0.543 – 2.835	0.610
Religion			
Islam vs Christianity	0.627	0.289 – 1.361	0.238
Ethnicity			
Yoruba vs Others	2.286	0.877 – 5.955	0.091
Place of delivery			
Others vs Home	1.246	0.402 – 3.865	0.704
Gender of child			
Female vs Male	2.985	1.217 – 7.353	0.017

Table 5: **Mothers Beliefs and Attitudes on Immunization.**

No		Agree (%)	Don't Know (%)	Disagree (%)	Total (100%)
1	Immunization is not necessary as the child is healthy	24(9.7)	38(15.3)	186(75.0)	248
2	Immunization will save the life of the child	161(64.9)	64(25.8)	23(9.3)	248
3	Taking the child to the clinic for immunization wastes a lot of time	129(52.0)	36(14.5)	83(33.5)	248
4	Immunization can harm the child	81(32.7)	54(27.8)	103(41.5)	248
5	There is not enough public enlightenment on childhood immunization	6(2.4)	86(34.7)	156(62.9)	248

DISCUSSION

The most common reason given by majority of the mothers for not completing or immunizing their children was that vaccines were not available (26.2%). This was followed by those who were not aware of the need for additional dosages (16.5%). It is evident from this study that the major reasons for low immunization coverage in this population are related to availability of vaccine at the health facility level and lack of awareness of multiple dosing of some vaccines. Efforts at improving coverage then has to be intensified in the direction of making vaccines available in addition to improved distribution up to the health facility level. Perhaps if the purchase of vaccines was decentralized and there are inputs from other sectors, vaccine supply and distribution may improve. The Nigerian government, the media and health care givers also have a responsibility to educate and persuade parents on the major benefits attributable to vaccination, and on the schedules through frequent immunization campaigns.

Another important reason given by 34 (13.7%) of the mothers was that the time and venue not being convenient, meaning that if scheduled outreach posts were established, the immunization coverage may be increased among the study population. In only 2(0.8%) of mothers, was cost considered a reason for inadequate immunization. This could be interpreted to mean that the government policy of free vaccines for all eligible children was being implemented. This is a laudable policy considering the benefits of childhood immunization. From other parts of the world, the most commonly cited barrier to immunization in a US study was concern about the side effects of vaccines[11] and **a**mong children 0 2yrs in Iraq, the most common causes of incomplete immunization were unawareness and ignorance.[12]

The most common reasons for non-immunization in a study of children in an urban, low-income group in India were migration to a native village, domestic problems and the immunization center located too far and child unwell when the vaccination was due.[13]

Mother's lack of motivation to immunize the child was found to be lower among women with high level of education. The reasons in this category include when immunization sessions did not hold and mothers having no faith in the vaccines.[10] Higher levels of maternal education had been found to be associated with complete immunization in previous studies.[4, 8] The importance of maternal education cannot be overemphasized as this has been associated with knowledge of when to start childhood immunizations, the number of times that children should be immunized and the ability of mothers to name the diseases which immunization prevents.[14]

Regarding the attitude of mothers towards immunization, most mothers in this study agreed that immunization is beneficial as has been previously reported by Gust et al.[15] In the United States, among the parents surveyed, Gellin et al[16] also reported that 87% of respondents deemed immunization an extremely important action that parents can take to keep their children well. It is noteworthy however that a significant proportion (52%) felt that taking the child for immunization wastes a lot of time. This finding further strengthens the fact that mothers will benefit from outreach immunization services to the locations including market places where many of the women trade, and in the long run, immunization coverage will improve This can be interpreted to mean that more efforts should be made to address those factors which affect the utilization and delivery of immunization services in static immunization sites in health facilities.

More efforts should be made at public enlightenment campaigns to increase awareness about immunization, with the aid of the mass media, town announcers to ensure that parents are well informed concerning the importance and scheduling of immunization activities. Immunization sessions should be scheduled to be convenient for caregivers, reflecting the current needs of the community with both epidemiological and practical considerations. Missed opportunities should be limited by screening children for completeness of immunization at every opportunity including sick children who present to the health facilities.

CONCLUSION

The major reasons for none or incomplete immunization were unavailability of vaccines and mothers not aware of the need for additional vaccines. It is therefore recommended that routine immunization should be strengthened, vaccines made readily available in a health facilities and mothers should be educated on the immunization schedule and benefits of immunization. Outreach services should also be established to improve immunization coverage.

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