

## A Survey on Attitude of Mothers towards Immunization of Their Children in Nigeria (A Case Study of Zuru Metropolis)

<sup>1</sup>Anas Abubakar Maiwada, <sup>2</sup>Shamsudeen Dahiru, <sup>3</sup>Gerald Ikechukwu Onwuka

<sup>1,2,3</sup>Department of Mathematics, Kebbi State University of Science and Technology, Aliero, Nigeria

Corresponding Author: Anas Abubakar Maiwada

---

### ABSTRACT

Thousands of children are dying and some are disabled because of some common diseases such as measles, polio, tetanus, whooping cough, tuberculosis etc, hence there is need to sensitize parents towards the immunization of their children. In this study, questionnaires were administered to 500 women in Zuru local government area of Kebbi state to elicit relevant information regarding their general attitudes to child's vaccination. Results from the analyses carried out using SPSS, show that mothers' locality, place of vaccination, mothers' educational status, age at vaccination, spouses educational status, mothers' religious beliefs as well as mothers' age group at birth of child are all positively associated with attitudes of mothers towards vaccination. Further results finally revealed that donation of gifts items to mothers serve as positive inducement towards improving the attitudes of mothers towards immunization of their children.

**KEYWORDS**;- Immunization, Questionnaire, Knowledge, Attitude, Survey

---

Date of Submission: 03-11-2019

Date Of Acceptance: 20-11-2019

---

### I. INTRODUCTION

In the presence of effective vaccines in the national schedule, childhood deaths from vaccine preventable diseases (VPDs), such as pneumonia, diarrhoea, and measles, accounted for about 40% of all deaths among children under-five in developing countries including Nigeria. Evidence from the National Immunization Coverage Survey (NICS) indicates that variations exist in routine immunization (RI) performance across the country's zones, with the South West (76%) and South East (91%) zones showing higher attitude, and the North West (60%) and North East (46%) showing lowest attitude. This disparity ultimately impacts on national immunization coverage.

The low or sub-optimal immunization coverage is mainly due to factors like parents' locality, parents' religious beliefs, parents' educational status, age, place of vaccination and so on (Path and Aihi, 2002). More importantly, the reported administrative coverage is bedevilled with poor data quality in the face of the large pool of susceptible under-fives, which could lead to outbreaks of vaccine-preventable diseases (VPDs) at various administrative levels, i.e., Local Government Area (LGA) and State. Consequently, this could delay or reverse the gains made through supplemental immunization activities (SIAs) for diseases that are targeted for eradication and elimination such as Polio and Measles respectively.

According to administrative coverage reports in nationwide survey, routine immunization showed consistent and increasing trend in Kebbi State, including Zuru Local Government Area (LGA). However, findings from community-level survey put in doubt the validity of these administrative figures, as there are disparities between these data sources. Perhaps, reported cases of VPDs, and sometimes outbreaks could be an indication of immunity gaps suggesting that the administrative coverage often reported may not be correct. Further, the surveillance and outbreak response reports in the state corroborated these findings. Similarly, national survey results following measles follow-up campaign in 2015 also revealed a great discrepancy between the reported administrative coverage and coverage surveys (104% versus 80.4%). Likewise, observations from community surveys during immunization supervision by senior supervisors from the state (government and partners) showed huge difference among fully immunized children compared to the high reported administrative coverage in the same catchment health facility providing services to same settlement where surveys were conducted.

In the light of the above, World Health Organization recommended consistent survey on the awareness and sensitization, knowledge, practice and attitude of mothers towards immunization of their children at different locations. Consequently, partners are making efforts to support the government to address this issue. For instance, in Kebbi State, the attention of programme managers and relevant stakeholders has been drawn to mothers' attitudes during the routine technical review meetings and supportive supervision by partner agencies.

Sadly, there was no formal assessment to specifically investigate the basis of the discrepancies and proffer possible remedies.

Universal immunization of children against six preventable diseases (tuberculosis, diphtheria, pertussis (whooping cough), tetanus, polio and measles) is vital to reduce childhood mortality and morbidity across the world and a major public health concern in Zuru local government area. Recent statistics, however, findings reveal that there is still much work to do in these sectors. An estimated 40 percent of the country's population live below the poverty line (UNAIDS, 2001), with an estimated literacy rate of 29 percent for women and 47.6 percent for men (MoEYS, 2000). The 1998 National Health Survey (NHS) reported an infant (under 1 year) mortality rate of 89.4 per 1000 live births – compared to a regional average of 38, and child (under 5 years) mortality of 115 per 1000 live births – compared to a regional average of 50. The 2000 Demographic and Health Survey (DHS) reported that approximately only one third of children were fully immunized by 12 months, and this was similar to the NHS results. The World Health Organization (WHO) considers a child fully immunized when they have received one dose of BCG (against tuberculosis); three doses each of diphtheria, tetanus and pertussis vaccine (DTP) and oral polio vaccine (OPV); and one dose of measles vaccine, preferably by age 12 months. In 1978, the Nigerian government with support from UNICEF officially launched the Expanded Programme on Immunization (EPI). EPI activities were extended to all provinces by the end of 1987, and by early 1999 tetanus toxoid (TT) immunization was included for pregnant women. In 1995, an independent Polio Eradication Unit (PEU) was established to accelerate polio eradication activities and Nigeria was certified polio free in November 2000. Hence the need to pilot a study seeking to understand the attitude of mothers towards immunization of their children and to identify the root cause(s) as well as recommends action points towards improving the positive attitude. This study will also form a foundation for a more robust study, perhaps a state-wide assessment on this subject.

The programme “immunization” is described as the process by which disease carrying organisms that is part not infected with disease is purposely introduced into human body system for it to produce anti-bodies and protect itself from the real version of the disease. However, in 20<sup>th</sup> century, in developing world, it does not only prevent about three million children deaths annually, but also has the potential to prevent additional two million deaths if coverage improves. Immunization coverage has remained low in Nigeria, although the government provides vaccines freely (Onuzulike, 2008).

Moreover, the attitude of mothers towards immunization services is positive and relies on the efficiency of the vaccine to protect against disease, among respondents who believe that it contains anti-fertility agents, decision making of vaccination of a child lies predominantly on the father and was rejected because of rumours, non-payment or charges and priority accorded to it. Because of the attitude of mothers toward vaccination, thousands of children were dying and some become disabled as a result of common childhood diseases such as measles, polio, tetanus, whooping cough, tuberculosis and so on (Osakwe, 2010).

These as a result brought about the introduction of immunization programme by united nation children fund (UNICEF). The programme “immunization” which can be described as the process in which a disease carrying organisms' part which is not infected with disease is purposely put into system so that your body produce anti-bodies and protect itself from the real version of the disease. The word immunity refers to the body's ability to defend itself against a particular disease, vaccines stimulate the body's defence mechanism to provide the receipt with immunity to specify disease diseases organism (WHO, 2001).

When the programme on immunization was launched in 1978, less than five percent of world's children were immunized in the first year of campaign against the killer diseases. Today, a certain percentage of children who received this life saving vaccines, and increasing number are protected by new and under used vaccines (Babalola, 2005).

The attitude of most mothers towards immunization service is positive and relies on the efficacy of the vaccine to protect against disease, there was a poor attitude towards polio immunization among respondent who believe that it contains anti-fertility chemicals. Decision-making on immunization of a child lies predominantly on the father, and if vaccination was rejected because of the rumour and the priority accorded to parents' preference to more severe disease. Mothers' knowledge, attitude and practice play an important role in achieving complete immunization before first birthday of the child, the previous parent factors are also contributing to success or failure of immunization program (Adewuyi, 2007).

Ahonkhai (2008) stated immunization remains one of the most important public health interventions and a cost effective strategy to reduce both the morbidity and mortality associated with infections disease. They asserted that over two million deaths are delayed through immunization each year worldwide. The researchers further explained that despite the above assertion, vaccine mortality within an estimated three million death.

Mukherjee (1988) defined attitude to one's feelings, thoughts, and predisposition to behave in some particular manner towards some aspect of one's environment.

According to him, attitudes are best expressed when individuals make statement about their feelings or option about certain objects, issues or things.

## **II. OBJECTIVE OF THE STUDY**

This study aims at assessing knowledge, attitude and practice of mothers towards children's obligatory immunization in Zuru Metropolis, Kebbi state of Nigeria. The objectives are to find out the;

- i.* Attitude of mothers towards immunization against childhood killer diseases.
- ii.* Immunization practice of mothers against childhood killer diseases.
- iii.* The extent to which the mothers educational level influence the practice of immunization against childhood killer diseases.
- iv.* The extent to which the mothers age influence the practice of immunization against childhood killer diseases.

## **III. METHODOLOGY**

The sampling elements of the study area are women (mothers). Simple random sampling scheme was used in selecting the sample size of five hundred (500) respondents from different parts of Zuru local government area of Kebbi state. The respondents were to respond to the questionnaires for the purpose of this study. Since the study is more of software-based, all the analysis and computations are carried out using SPSS statistical software.

### **Methodology**

Zuru Metropolis is one of the twenty one (21) local government areas of Kebbi state. The area is located at the extreme southeastern part of Kebbi state and covers an area of approximately 32,626 square kilometers. The area is bordered in the Northwest by Fakai local government area, in the east by Danko-Wasagu local government area, in the southeast by Sakaba local government area, and in the south by Rijau local government area of Niger State (KBSG, 2003). The estimated population of the area is one hundred and sixty five thousand, five hundred and forty seven (165, 547) people as at 2006 population census (NPC, 2006).

## **IV. DATA COLLECTION**

The study was conducted using a primary data. A semi-structured questionnaire was used to collect primary data from the respondents (mothers), which contain questions relating to personal data, geographical and immunization data of each respondents as well as questions relating to age, number of children, sex of the child, immunization of children and so on. The questionnaires were made short and succinct with limited number of questions needed for this study.

## **V. DATA ANALYSIS**

The data analysis in this study was analyzed using chi-square statistic with p-values recorded to test whether the attitudes of mothers towards immunization is independent of the factors under study. The primary data from all sources were summarized, analyzed and presented in tables and graphs while comparisons and conclusions made from summaries. Data analysis was made after developing thematic framework using responses, coded, compiled and summarized manually, then complemented with the quantitative results of primary data sources. Finally, the findings from the data were presented in narrations and tables. The p-value will be compared with 5% level of significance. The formula for the chi-square statistic used in the chi square test is given as;

$$X_c^2 = \sum \frac{(O - E)^2}{E}$$

The subscript 'c' is the degrees of freedom while 'O' is the observed values and 'E' is the expected values.

### **Ethical Consideration**

We obtained consent from all the mothers and their spouses (where necessary), and some districts heads at LGA level who participated in the study, after explaining the purpose of the study to them. We also got ethical clearance from the Research and Ethical Committee of the Kebbi State Ministry of Health.

VI. RESULTS

Table 1: Data Presentation and Analysis

FACTORS		EVER VACCINATED		TOTAL	P-VALUE
		NO	YES		
Marital status	Single	50	75	125	0.001
	Married	35	105	140	
	Divorced	65	68	133	
	Widowed	48	54	102	
Mother's age group	15 years or less	24	45	69	0.010
	16-30 years	98	100	198	
	31-50 years	77	101	178	
	51 years and above	35	20	55	
Spouse age group	15 years or less	24	45	69	0.008
	16-30 years	98	100	198	
	31-50 years	77	101	178	
	51 years and above	35	20	55	
Mother's educational status	Not educated	70	25	95	0.001
	Primary	91	105	196	
	Secondary	42	68	110	
	Higher level	13	33	46	
	Islamic School	40	13	53	
Spouse educational status	Not educated	70	25	95	0.001
	Primary	91	65	156	
	Secondary	20	100	120	
	Higher level	13	87	100	
	Islamic School	16	13	29	
Mother's religion	Muslim	100	225	325	0.001
	Christian	50	85	135	
	Tradition	35	5	40	
	Others	-	-	-	
Spouse religion	Muslim	100	200	300	0.003
	Christian	40	95	135	
	Tradition	35	30	65	
	Others	-	-	-	
Mother's locality	Rural area	250	80	330	0.001
	Urban area	70	100	170	
Spouse locality	Rural area	200	125	325	0.001
	Urban area	65	110	175	
Mother's occupational status	Civil servant	33	167	200	0.001
	Self employed	47	53	100	
	Private worker	50	50	100	
	Unemployed	70	30	100	
Spouse occupational status	Civil servant	43	157	200	0.001
	Self employed	57	64	121	
	Private worker	66	73	139	
	Unemployed	25	15	40	
Total number of children		321	179	500	
Child's age	0-1 year	25	100	125	0.057
	2-3 years	23	77	100	
	3-4 years	59	166	225	
	More than 5 years	20	30	50	
Age at vaccination	0-1 year	20	85	105	0.001
	2-3 years	25	100	125	
	3-4 years	70	110	180	
	6 years and above	80	10	90	
Presented last child	Yes	27	223	250	0.001

	No	223	27	250	
Received full vaccine for last child	Yes	30	270	300	0.001
	No	150	50	200	
Sex of last child	Male	150	205	355	0.001
	Female	180	65	245	
Frequency of vaccination	1-2 times	70	22	92	0.001
	2-3 times	55	36	91	
	3-4 times	44	90	134	
	6 or more times	53	130	183	
Place of vaccination	Home	105	35	140	0.001
	Hospital	41	225	266	
	Market	34	12	46	
	Road	40	8	48	
Do you receive gifts	Yes	225	105	330	0.001
	No	70	100	170	

A total of 500 mothers with infants participated in this study. One hundred and forty (28%) of the study participants were married, one hundred and thirty three (26.6%) were divorced, one hundred and two (20.4%) were widowed and one hundred and twenty five (25%) were single. Regarding mothers' age group, of this, 69 (13.8%) are of the age 0-15, 198 (39.6%) are of the age 16–30, 178 (35.6%) of them are of age 31-50, and only 55 (11%) are between the age of 51 and above.

Literate mothers who attend Islamic school 53 (10.6%), primary school 196 (39.2%), secondary school 110 (22%), and higher education 46 (9.2%) are more likely to be knowledgeable than illiterate respondents. Literate respondents who attend primary school were more than two times (39.2%) and whereas mothers who achieved secondary education were almost two times (22%) had positive attitude towards infant immunization than illiterate respondents (19%).

Regarding mothers' religious beliefs, Muslim mothers were more than eight times (39.2%) and whereas Christian mothers who are Christians were almost four times (27%) had positive attitude towards infant immunization than mothers with traditional beliefs (8%).

Regarding mothers' locality, urban mothers are more likely to have positive attitudes than rural respondents. This might be as a result of their low exposure to civilization compared to their urban counterparts who are more civilized and exposed but in this study; the result we obtained revealed the opposite, where the rural mothers were almost two times (66%) had positive attitude towards their children's immunization than the urban respondents having only 34%.

On mothers' occupational status, 40% of mothers were civil servants, who were two times more in showing positive attitude towards their infants immunization than the self-employed mothers (20%), private-workers mothers (20%), and house wives (20%) equally.

Mothers who had infants aged from 3-4 years were two times or more 225 (45%) significantly associated with positive attitude about infant immunization program than mothers having infants in the age group less than 3-4 years and mothers having infants in the age group more than 3-4 years respectively.

Regarding their last Child, 245 (49%) were females and 355 (71%) were males. Age of infants ranged from 1 year to 6 years and above. More than one third, 180 (36%) infants found in the 'age at vaccination' group of 3-4. 250 (50%) mothers presented their last Childs for vaccinations and same thing happened in the case of mothers who didn't present their last Childs. 300 (60%) mothers received full vaccine for their last Childs while 200 (40%) didn't received full vaccine for their last Childs.

Regarding place of vaccination, 266 (53.3%) mothers were always bringing their infants for immunization according to the schedule given by health professionals in hospitals, followed by 140 (28%) mothers who received vaccination for their infants at home while 46 (9.2%) and 48 (9.6%) mothers received vaccination for their children at market and road respectively.

Out of the total of 500 mothers with infants who participated in this study, 330 (66%) mothers receive gifts while 170 (34%) mothers have not received any gift. Mothers who receive gifts are more likely to practice infant immunization than mothers that did not receive any gifts.

## VII. DISCUSSION

This dissertation has tried to identify the Attitude and Practice of mothers about immunization of their infants in Zuru municipal, Kebbi state, Nigeria. Over all, in this study 110(22%) of mothers had good knowledge and this is lower than the study finding from Nnamdi Azikiwe University hospital, Nigeria which

revealed that, 215(70.0%) of mothers had good knowledge (Okafor et al, 2012). The inconsistency may be due to sample size difference or educational back grounds of the participants.

Moreover, immunization practice in the present study (53.13%) is also a bit greater than EDHS 2011 and Ethiopia ministry of health 2011 annual health and health related indicator reports (which are both similar studies with different case studies) which represent 49% and 44.4% of infants were fully vaccinated, respectively. The variation is due to a study design difference (institution in this study and national based survey in comparison studies). Nearly 266 (53.3%) of respondents in this study always bring their infants for immunization according to the scheduled time. From the total of 225 infants aged 3-4 years, 26.8% of them received vaccines appropriate to their age where as from 275 infants aged less than 3-4 years and above, were not fully vaccinated. This is consistent with a cross sectional study done in India, that 98% and 93% of children completely immunized and had been immunized on the schedule, time, respectively (Andarabi et al, 2012). In the contrary, inconsistencies had been seen with other findings. For example, in Congo, mothers' immunization practice based on immunization card showed about 37% (Mapatamo, 2008) and in Ambo, Ethiopia only 35.6% of infants completed all the recommended vaccines (Etana and Deressa, 2012). The discrepancy may be due to social or cultural reasons, and study setting differences.

The present study also tried to identify predictors of maternal attitude and practice towards infant immunizations, literate mothers attended primary schools were more than two times (39.2%) more likely to have good knowledge of immunization than illiterate mothers. Similarly, other study findings conducted in Enugu (Nigeria) mothers attending secondary or higher educational status was significantly associated with good knowledge and acceptance of immunization (Tagbo et al, 2012). In addition to literacy status, mothers who had infants aged from 3-4 years were two times or more 225 (45%) significantly associated with positive attitude about infant immunization program and more likely to have good knowledge of immunization than mothers having infants in the age group less than 3-4 years. This might be due to the fact that mothers could get information from health professionals and add knowledge of immunization with repeated vaccination visits than mothers who couldn't visit immunization clinics repeatedly. Mothers who gave births two times and above were also about two times more likely to have good knowledge of infant immunization than respondents who delivered only once. Similarly, a study conducted in Kinshasa (Democratic Republic of Congo), showed that mother's experience of an EPI-targeted disease emerged as significant predictors of knowledge of immunization (Mapatamo, 2008). Inconsistencies regarding birth order of infants were also seen between this study and other study findings which were conducted in Arab Emirates, (Bernsen et al., 2011). The inconsistency might be due to differences in study design, sample size or study participants' educational status.

In respect to respondents' attitude on immunization, literate respondents who attend elementary school or higher education were about two times more likely to have positive attitude towards infant immunization than illiterate mothers. This is consistent with results of different articles reviewed by global immunization division centers for disease control and prevention from 1999-2009 (WHO, 2009). The possible explanation might be, literate mothers may have more opportunities to understand about vaccination and its importance than illiterate mothers and this may create favorable attitude towards infant immunization than illiterates. On the other hand, study conducted from Oromia zone of Amhara region of Ethiopia which showed no association between maternal education and favorable attitude towards immunization (Ashene, 2006). The discrepancy may be due to educational back ground difference between the two study respondents since only 19% of mothers in the present study and the majority 80% of the study participants in Oromia zone, Amhara region were illiterates, respectively. It may be also due to study period difference and could be associated with the efforts of health extension workers since the comparison study was conducted six years ago. Similar to knowledge association with infants' age, mothers who had infants aged from 3-4 years were two times more likely to develop positive attitude about infant immunization program than mothers who had infants aged 0-1 year. This may be due to frequent contact of immunization sessions.

Moreover, place of delivery and vaccination was also significantly associated with infant immunization practices. In the present study, 266 (53.3%) mothers were always bringing their infants for immunization according to the schedule given by health professionals in hospitals, followed by 140 (28%) mothers who received vaccination for their infants at home while 46 (9.2%) and 48 (9.6%) mothers received vaccination for their children at market and road respectively.

Regarding the objectives of this study, from the analysis we have seen that the results in tables above, the  $p$  – values (0.010) and (0.001) are less than  $\alpha$  value (0.05) hence; we accept the null hypothesis and conclude that there is no significant difference in the mother's age group with respect to vaccination and there is no significant difference in mother's educational status with respect to vaccination, respectively.

## VIII. SUMMARY

In this study, only 53.0% of respondents had good practice and attitude towards immunization of infants. Despite inadequate knowledge and attitude of mothers towards infant immunization, the majority 84.0%

of mothers had good practice of infant immunization. From this point of view, it is possible to conclude that mothers' immunization practice was not really based on their knowledge and attitude regarding immunization of infants. Maternal education and birth order were significantly associated with good knowledge. Similarly, Mothers' education, infants' aged from 3-4 years was significantly associated with favorable attitude towards immunization of infants. Good infant immunization practice was significantly associated with mothers education who have ever heard information about vaccination, who know correctly the time when infants should begin immunization, who know correctly the number of sessions needed, who know the time when infants should complete immunization and place of delivery.

## **IX. CONCLUSION**

The analysis of the study revealed that there is significance relationship between mothers' locality, mothers' religious group, place of vaccination, mothers' educational status, age at vaccination, frequency of vaccination, spouse educational status as well as giving gifts to mothers. It shows that the factors mentioned above are the main factors that contributed to the attitude of mothers towards immunization. This gives an indication that those factors should be considered and maintained as early as possible in Kebbi state of Nigeria.

## **X. RECOMMENDATION**

This study found that the developed questionnaire was a reliable and valid tool for assessing the attitudes of mothers towards immunization of their children in Zuru metropolis. This questionnaire should be used in future researches on immunization for better understanding of the association between the immunization of mothers and their children vaccination status.

In conclusion the results of the present survey showed that parents had good knowledge and positive attitudes on some aspects related childhood immunization. However, gaps in both studied domains were identified. Educational interventions are needed to upgrade parents' knowledge with special emphasis on less educated and residents of rural areas.

## **REFERENCE**

- Abdulraheem I. S. Reasons for incomplete vaccination and factors for missed opportunities among rural Nigerian children. *Journal of Public Health and Epidemiology* 2011 3(4):194-203.
- Adewuyi, R. (2007). Health education in the Nigerian home: The mother's role. Omega Publishers.
- Ahonkhai, V. I. (2008). Determinants of vaccination coverage in rural Nigeria. *Journal of Biomedicine Central Public Health*, 381(8), 1471-1523.
- Akuba, P. (2010). Health check and promotion. Your Personal Guide to a long active life Enugu: Snaap Press.
- Ame, N. (1993). Child health in the developing countries, *Journal of World Health Forum*. 10 (6) 35 – 40.
- Anjum Fazli, Rohul Jabeen, and Dr. Syed Arshad Hussain Andrabi. Immunization of Children in a Rural Area of North Kashmir, India: A KAP Study. *Journal of Health and Allied Sciences* 2012; 11(1).
- Antai, D. (2010). Inequitable childhood immunization uptake in Nigeria: A multilevel analysis of individual and contextual determinants. *Biomedical Central Infectious Diseases*, 9:181.
- Ashene N. Assessment of quality of expanded program on immunization in Oromia Zone of Amhara region, Ethiopia, 2006.
- Babalola, S. (2005). Determinants of the Uptake of the Full Dose of Diphtheria-Pertussis-Tetanus Vaccines (DPT3) in Northern Nigeria: A Multilevel Analysis. *Maternal Child Health Journal*, 13:550-558.
- Babalola et al. (2009). Report on factors influencing immunization uptake in Nigeria: theory based research in six states. Abuja: Partnership for Transforming Health System in Nigeria (PATHS);
- Bamisanye, D., et al. (2015) A systematic review on factors affecting community participation towards polio immunization in Nigeria, *Mediterranean Journal of Social Sciences*, 6 (2), 408-415
- Bathersby, D. (2002). Political violence, ethnic conflict and contemporary wars: Broad implications for health and social well-being. (155) 175 – 90.
- Clement, K. (1988). Preventive and social medicine ((19th Ed). Jabalpur: M/S Banarsidas Bhanot.
- Etana B. and Deressa W. Factors associated with complete immunization coverage in children aged 12–23 months in Ambo Woreda, Central Ethiopia. *BMC Public Health* 2012;12:566 doi: 10.1186/1471-2458-12-566).
- Ethiopian Demographic and Health Survey, EDHS. Preliminary Report; Central Statistical Agency Addis Ababa, Ethiopia, 2011.

- Jenna E. (1996). The future of immunization registries. *Am. J. Prev. Med.* 13(2):122–25 (Suppl.)
- Holland, R. (1990). A qualitative investigation of vaccine risk perception amongst parents who immunize their children: a matter of public health concern. *J PublicHealth Med*, 25:161-4.
- Jegede, A. (2002). What Led to the Nigerian Boycott of the polio Vaccination Campaign?  
*PLoS Med* 4(3): e73. doi:10.1371/journal.pmed.0040073 .
- Kabir, M. (2006). Knowledge of nurses in Kano on epidemiology, clinical features, treatment and prevention of Severe acute respiratory syndrome (SARS). *Nigerian Journal of Basic and Clinical Sciences* 2004;1(1):26-9
- Katz, H. (1991). NCQA external reporting and monitoring activities for health plans; preventive services programs. *Am. J. Prev. Med.* 11:393–96
- Kebbi State Government (KBSG), (2003). Official Diary. Directorate of Information, Kebbi State, Nigeria, 26Pp.
- Mapatano MA. Immunization-related knowledge, attitudes and practices of mothers in Kinshasa, Democratic Republic of the Congo. Original Research, available at [www.safpj.co.za](http://www.safpj.co.za) SA Fam Pract 2008; 50 (2):61.
- Maxwell, D. (1997). Participatory concept mapping to understand perceptions of urban malnutrition. *PLA Notes* 30 (October): 11–16.
- Meyers, F. (1996). Positive effects of prenatal and early childhood interventions. *J. Am. Med. Assoc.* 280:1271–73
- MoEYS (2000) Ministry of Education Youth and Sports) Assessment of Functional levels of Literacy Levels of the Adult Population. Phnom Penh.
- Moronkola, O. (2013). Factors influencing compliance with immunization regimen among Mothers in Ibadan, Nigeria. *Journal of Nursing and Health Science.* 2 (2). 1-9.
- Mukherjee, S. (1998). Determinants of the use of maternal health services in rural bangladesh. *Health Promotion Int.* (18) 327 – 337.
- Mukherjee, W. (1988). Verification and validation procedures for immunization registries. *Am. J. Prev. Med.* 13(2):62–65 (Suppl.)
- National Population Commission (NPC). (2006). Nigeria Demographic and Health Survey. Maryland: National Population Commission and ORC Macro.
- Obionu, C.N., (1996). Primary health care for developing countries. Delta Publishers.
- Okafor, R.U. (1991). Sexual knowledge and sources of sexual information of secondary School Students in Anambra State, Nigeria: *Health and Movement Education Journal*, 1(1) 9 – 19.
- Okuyoyibo, O. (2005). Passive immunity to measles in the breast milk and cord blood of some Nigerian subjects. *Journal of tropical paediatrics* 51(1), 45-48
- Omotara, K., et al. (2009). Detection of hepatitis B surface antigen in pregnant women attending a public hospital for delivery: implication for vaccination strategy in Nigeria. *Am J Trop Med Hyg* 59: 318-22.
- Onuzulike, N. M. (2008). Health care delivery systems (2nd Ed). Owerri: Mega soft publishers.
- Onwuzulike, N. (1988) Sero-prevalence of hepatitis B surface antigen (HBsAg) in pregnant women in Owerri, Imo State of Nigeria. *Res J Biol Sci* 2: 178-82.
- Osakwe, C. (1986). Writing research report. The Guide for Researchers in Education, the social sciences and humanities. Enugu: Press Time Ltd.
- Osakwe, C. (2010). Determinants of vaccination coverage in rural Nigeria. *Biomedical Central Public Health*, 8(381):2458-.
- Reber, V. (1988). Blood, coughs, and fever: tuberculosis and the working class of Buenos Aires, Argentina. *Soc Hist Med* 1988;12:73-100
- Roos M. Bernsen, et al. Knowledge, attitude and practice towards immunizations among mothers in a traditional city in the United Arab Emirates. *Journal of Medical Sciences*; 2011; 4(3): 114-121.
- Tagbo BN et al. Mothers' knowledge, perception and practice of childhood immunization in Enugu. *Niger J Paed* 2012; 39(3): 90-96.
- Travers, L. (1997). Proc. Natl. Immun. Conf., 31st, Detroit, p. 93. Atlanta: CDC
- Ubajaka F.C., Ukegbu A.U., Okafor N.J., and Ejiofor O. The Prevalence of Missed Opportunities for Immunization among Children Utilizing Immunization Services in NNAMDI AZIKIWE University Teaching Hospital, NNEWI. *Journal of Biology, Agriculture and Healthcare* 2012; 12(6).



- UNAIDS (2001) The National HIV/AIDS/STD Situation and the National Response in the Kingdom of Cambodia. Country profile, fourth Edition. Phnom Penh.
- Webster, M. (1995). Vaccinations in the Third World: A consideration of Community demand. *Journal of social science Medicine* , 41:617-632.
- Werner, D. (1993). Health Hazard. User fee. *New Internationalist* 331, 2. Jan/Feb.
- World Health Organization (WHO), (2001). *Global Immunization and strategy, 1996-2000*. Geneva, Switzerland and New York, USA.
- World Health Organization (WHO) (2010). Department of Vaccines and Biological. *WHO Vaccines for Preventable Diseases: Monitoring system* .

Yousuo Digieneni Anas Abubakar Maiwada "A Survey on Attitude of Mothers towards Immunization of Their Children in Nigeria (A Case Study Zuru Metropolis)" *The International Journal of Engineering and Science (IJES)*, 8.11 (2019): 31-38