

## **Predators of government initiated child immunization programme in Okpuje, Enugu State, Nigeria**

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### **Abstract**

Immunization programme in Nigeria is still untapped to save lives and protect children from illness and disease. Although vaccines are provided relatively free by government, the country still accounts for the highest prevalence of circulating wild polio virus. This work focused on the predators of government initiated child immunization programme in Okpuje town, Nsukka Local Government Area of Enugu state. The sample size of 112 was used for the study. Data generated using questionnaire were analyzed using SPSS in determining the frequency counts and percentages, while chi-square was used to test the hypotheses at 0.05 level of significance. Findings revealed that age, literacy level and consistency in utilizing immunization vaccines by nursing mothers were great predators of the government initiated child immunization programme. Recommendations were on organizing and disseminating information on health programme, recruitment of health care social workers to embark on educational advocacy programme in enlightening nursing mothers on the need for a full dose immunization service.

**Keywords:** child immunization programme, government initiated, social worker, predators

### **Introduction**

Immunization services remain one of the most cost effective public health interventions to date, but still remains untapped to save lives and protect children from illness and disability. The World Health Organization (WHO, 2018) estimates that 868,000 children under the age of five die in Nigeria yearly as a result of lack of vaccine preventable diseases such as pneumonia, diarrhoea, meningitis, measles among others. This has necessitated health governing bodies such as the World Health Organization (WHO) and the United Nation Children Fund (UNICEF) to collaborate with the government of the Federal Republic of Nigeria to initiate campaigns and promote the practice of free immunization programme in Nigeria.

Globally, immunization programme has saved millions of countless children's lives, but there are over 26 million children worldwide who do not receive routine immunization. As a result, vaccine-preventable diseases cause two million death and

disability every year (WHO, 2018). According to the UNICEF (2018) statistics, the global coverage rate for the third dose of the Diphtheria Tetanus and Pertussis vaccine (DTP3) in 2017 reached 85% from 72% in 2000 and 21% in 1980. Still progress has stalled over the current decade and 71 countries including Nigeria are yet to achieve the Global Vaccine Action Plan (GVAP) target of 90% or greater coverage by DTP3. As such, 19.9% of children under age of one year, worldwide did not receive the three recommended doses of DTP in 2017 and 20.8 million children in the same age group had failed to receive a single dose of measles vaccines. Most of these children live in developing countries such as Republic of Congo, Afghanistan, Pakistan, Ethiopia and Nigeria inclusive (UNICEF, 2018)

In Nigeria, the Expanded Programme on Immunization (EPI) initiated in 1979 was placed within the department of public health and communicable disease control of the Federal Ministry of Health (FMOH). In 1996, it became the National Programme on Immunization (NPI), following the review of EPI, Decree 12 of 1997 created NPI as a parastatal (Pediatric Association of Nigeria (PAN), 2013). The Nigerian government has succeeded in implementing routine immunization over the years. As a result, DTP3 coverage reached a level of 60% in 2010 (Mojoyniola & Olaleye, 2012). Reports from Mojoyniola and Olaleye (2012) stated that the nation currently operates the immunization schedule of the EPI which prescribe five visits as follows; at birth the child receives one dose of Bacilli Calmette Guérin (BCG), at the first visit six weeks from birth, the child will be administered with the first dose of Oral Polio Vaccine (OPV1) and first dose of Hepatitis B Vaccine (HBV). The second visit at ten weeks the child receives Pentavaent 2 (which contains Diphtheria, Pertussis, Tetanus (DPT) and Hepatitis B vaccines). At fourteen weeks which is the third visit, the child receives OPV3 and the fourth visit the child receives doses of yellow fever, measles 1 and vitamin A at nine months. At one year, the child goes for the last visit and will be administered measles 2 and vitamin A vaccines. However, report from the Nigeria Demographic and Health Survey (NDHS, 2013) stipulates that only 21% of children aged 12-23 months had received all the recommended vaccination before their first birthday while 25% of the children aged 12-23 months were fully vaccinated as at the time of the survey in 2013. It is in this vein that one might be forced to question the compliance of nursing mothers in utilizing the government initiated free immunization services in Nigeria.

Studies have shown that Nigeria still accounts for the highest prevalence of circulating wild polio virus in the world and the country is among the ten countries in the world with vaccine coverage below 50% (Agbeyegbe, 2007; Alfred, Yomi & Alfred, 2012; Odusanya, Alufohai, Meurice & Ahonkhai, 2008; Oke & Okueso 2016; Oladipo & Ejembi 2013). Also, Morakinyo and Fagbamigbe (2017) reported that cases of infant mortality in Nigeria have been relatively high, pegged at over one tenth per 1000 birth. This implies that nursing mothers do not effectively utilize the government initiated

immunization programme. Certain factors must have necessitated the low uptake of immunization programme in Nigeria; which includes age of nursing mothers, literacy level, cultural belief, lack of effective immunization campaign, consistency in utilization, absence of social workers to dispense educative and advocate roles, among others (Shen, Fields & McQuestion, 2014; Tagbo, Uleanya, Nwokoye, Eze & Omotowo, 2012).

In most African countries, it is perceived that age at first birth for women is between the ages of 15-30 years. In Nigeria, many nursing mothers give birth too soon and frequently. This could be associated with early marriage, high fertility and sexually active stage in life (Tagbo, Uleanya, & Omotowo, 2013). Due to their young age most nursing mothers are not knowledgeable on the essence of obtaining complete doses of the immunization vaccines. They also encounter poor communication and inadequate knowledge on the objectives of the programme not only as a result of their young age, but also their low educational status resulting in early marriage (Agbeyegbe, 2007).

Based on several survey findings by different researchers, there is a consistent agreement that one's level of education plays a great role in influencing the attitude, perception and participation of polio immunization programme (Alfred et al, 2012; Awodele, Oreagba, Akinyede, Awodele & Dolapo, 2010; Oyefera, 2014). Nursing mothers with secondary and tertiary education qualification fully immunized their children and were likely to receive full immunization doses, compared to nursing mothers who had primary or no formal education (Iliayase et al, 2014). Also in respect to their educational status, literate nursing mothers may not easily give room for religious and cultural belief as a predator of government initiated immunization programme (Oke & Okueso, 2016).

Beliefs of people are the most influential factor that determines the success of innovation and adoption of programme like polio immunization and the utilization of modern medicine (Awodele et al, 2010). For instance, some nursing mothers believe that some modern medicine are chemicals and may have adverse effect on their children. This type of belief can have effect on the effectiveness of immunization programme. This is the position of the Health Belief Model (HBM) which is used to predict health related behaviours especially with respect to health service utilization (Janz & Marshall, 1984). In this study, the model was used to understand nursing mothers and access to government initiated immunization programme. Nursing mothers may engage in immunization programme partly to derive the benefit to prevent child killer diseases. Hence, to benefit from this programme nursing mothers may encounter certain barriers and exhibit certain attitudes (such as age, educational attainment, inconsistency in level of utilization, among others) which may hamper their fully utilizing the free health service. To ensure the effectiveness of the government initiated immunization programme, there is the need to bridge the gap in utilization

and certain hindrances by embarking on effective campaign on immunization programme and involving the assistance of specifically trained health and social workers.

Social workers as change agents work all systems levels. They assist in seeking solution to the problems, challenges and providing new information on treatment and prevention of child killer diseases (Ngwu, 2014). The belief that the fullness of life is the birth right of every person and that if this birth right is not attain by the individual concerned, it is the duty of others to help attain it. In this context, social workers are expected to draw up programmes for nursing mothers and their support networks. It is imperative to note that in the event of health service community outreach, social workers are often at the very fore, bargaining, notifying and preparing the minds of community members towards utilizing health service programmes provided free for them (Ngwu, 2014). They also ensure that corruption is not embedded within, which could manifest in areas of informal payments, pricing fraud, among others (Agwu, 2018) They could equally organize counselling and discourse sessions for support networks of nursing mothers; as well as providing services through linkages and professional advices that will empower nursing mothers, particularly those who are educationally disadvantaged (Okafor, Onalu, Ene & Okoye, 2017). This could be done through helping in the process of discharge planning, enabling and mobilizing vaccines, collaborating with relevant professionals among other roles (Alenoghena, Aigbirenolen, Abjegali & Ejemai, 2014).

Studies done by scholars have investigated on the knowledge and attitude of mothers towards immunization of infants (Birhanu, Anteneh, Kibie & Jejaw, 2016; Tagbo, et al, 2013; Tagbo, Uleanya, Nwokoye, Eze & Omotowo, 2012). In all these studies, the link between the predators of government initiated immunization programme and the need for social work intervention is still lacking. To bridge this gap in knowledge, the following research questions were addressed; (1) Is there a relationship between the age of nursing mothers and their their utilization of the government initiated immunization programme? (2) Is there a relationship between educational status of nursing mothers and their utilization of free immunization programme? (3) Is there a relationship between religious belief and utilizing immunization programme? (4) What implication will the findings hold for social work practice in Nigeria?

### **Materials and methods**

The study adopted a survey research design. The cross sectional survey research design which aimed at collecting information on certain socio-demographic variables in the study at one point in time was also utilized (Adefila, 2012). The area selected for the study was Okpuje town in Nsukka Local Government Area, Enugu state. Okpuje town was purposively selected for this study because of the researcher's relative familiarity with the socio-cultural structures of the town. However, the target population studied

were mothers to children aged two weeks to two years (23 months). The essence of selecting this set of mothers for the study was because they were mothers to children who must have received the first dose Bacilli Calmette Guanine (BCG) at first week of birth and are receiving the remaining doses of immunization vaccines.

The population for the study consists of all the 1,118 nursing mothers to children registered for post-natal care services in the seven major health facilities in Okpuje town from March to April 2018 (Office of the Monitoring and Evaluation Unit, Health Department Okpuje). A sample size of 112 respondents was chosen, representing approximately 10 percent of the total population of post-natal mothers. The sample size was drawn by the use of purposive sampling technique on post-natal clinic day (Tuesdays) to select 16 mothers from each of the seven registered private and public health facilities (each week for each health facility). This procedure gave 112 mothers for the study. A researchers' structured questionnaire designed by the researcher termed Salient Points on Immunization Programme Questionnaire (SPIPQ) was used for data collection with the help of two research assistants. The instrument comprised two sections. Section A solicited information on personal data of the respondents' age, marital status, religious affiliation, occupation, income and educational level while Section B sought information on salient issues to immunization programme. The data collected was analyzed using Statistical Package for the Social Sciences (SPSS) version 21. The frequency tables and percentages were used to answer research questions. Chi-square statistics was used to test the hypothesis at 0.05 level of significance.

## **Results**

Table 1 showed the summarized socio-demographic characteristics of the respondents with the frequency and percentage. It is imperative to note that all the respondents were nursing mothers who currently have children within the age range of two weeks to two years (23 months), have been registered for the routine post-natal care, are still receiving immunization vaccines and are all residing in Okpuje town, Nsukka L.G.A., Enugu State.

**Table 1: Socio-demographic characteristics of the respondents**

<b>Age of respondent</b>	<b>Frequency</b>	<b>Percentage %</b>
15-25	31	27.7
26-35	51	45.5
36-45	26	23.2
46 and above	4	3.6
<b>Marital status of respondents</b>		
Single	28	25.0
Married	61	54.5
Divorced	11	9.8
Widowed	12	10.7
<b>Religious affiliation</b>		
Christian	55	49.1
Islam	49	43.8
Traditional Religion (Pagans)	8	7.1
<b>Occupation of respondents</b>		
Trading	48	42.8
Civil servant	32	28.6
Students	18	16.1
No occupation	14	12.5
<b>Income of respondents</b>		
0-9,000 naira	42	37.5
10,000-20,000 naira	27	24.1
21,000-30,000 naira	24	21.4
31,000 and above	19	17.0
<b>Educational attainment of respondents</b>		
No formal education	2	1.8
FSLC	53	47.3
SSCE/WASC	47	42.0
OND	6	5.3
HND/first degree	4	3.6
<b>Total</b>	<b>112</b>	<b>100</b>

Table 1 showed the distribution of respondents by age, marital status, religious affiliation, occupation, income and educational attainment. It can be deduced that nursing mothers aged 26-35 years constitute the highest population (45.5%). For marital status, a good number of the respondents (54.7%) were married. With respect to religious affiliation, 49.1% were Christians, 43.8% Muslims while 7.1% of the respondents practiced traditional religion. With regards to occupation of the respondents 42.8% of the nursing mothers were traders, 28.6% civil servants, while 16.1% and 12.5% were students and full time house wives respectively. For the income level of the nursing mothers, 37.5% earned less than 9,000 naira, 24.1% and 21.4%

earned 10,000-20,000 and 21,000- 30,000 respectively while only 17% earned 31,000 and above. A look at the educational attainment of the nursing mothers shows that 47.3% of the respondents had obtained their First School Leaving Certificate (FSLC), 42% Secondary Certificate Examination (SSCE)/ West Africa School Certificate (WASC), 5.3% Ordinary National Diploma (OND) Certificate while 3.6% had higher education certificate (HND/first degree).

**Table 2: Salient issues on immunization exercise**

<i>Variables</i>	<i>Frequency</i>	<i>Percentage (%)</i>
<b>Responses on extent of consistency in utilizing vaccines</b>		
Large extent	77	68.8
Some extent	30	26.8
Not at all	2	1.7
Not certain	3	2.7
<b>Responses on means of information on utilization</b>		
Mass media	21	18.8
Public announcement	18	16.1
Health facilities	62	55.3
All of the above	11	9.8
<b>Responses on effectiveness of services</b>		
Extremely effective	62	55.3
Effective	34	30.5
Not effective	11	9.8
Not certain	5	4.4
<b>Responses on free immunization services</b>		
Strongly agree	88	78.6
Agree	22	19.6
Disagree	2	1.8
<b>Responses on benefits of services</b>		
Never	2	1.8
Often	46	41.1
Always	64	57.1

Table 2 indicated that majority (68.8%) of the respondents were to a large extent consistent in utilizing free immunization vaccines while 26.8%, 1.7% and 2.7% respectively had low consistency in utilizing free immunization vaccines. Data from the table above shows that over half of the nursing mothers (55.3%) responded that they heard of immunization programme in the health facilities whereas 18.8% and 16.1% of the respondents heard of the programme through mass media and public announcement. On the effectiveness of the service, 55.3% responded extremely effective, 30.5% responded effective while 9.8% and 4.4%) responded not effective and not certain respectively. On responses to free immunization services, a large proportion of the nursing mothers (78.6%) strongly agreed that it is free, few respondents (19.6%) agreed that it is free, while only 1.8% disagreed that it was. With respect to the benefits of the services, more than half of the respondents (57.1%) replied

that they always benefit, 41.1% stated they often benefit while 1.8% responded that they had never benefitted.

Table 3 showed a cross tabulation of some significant independent variables (such as age, educational attainment and religious affiliation of nursing mothers) with the dependent variable (response to extent of consistence in utilizing vaccines) and the calculated chi-square values. The ages of the respondents were merged into two categories; younger age (15-35 years) and older age (36 and above). The educational attainment of the respondents were grouped into lower education (no formal education, FSLC and SSCE/WAEC) and higher education (Ordinary/Higher National Diploma or Degree Certificate (OND/HND/B.Sc.)). The third variable, religious affiliation of the respondents was grouped into two categories, Christians and non-Christian. Also the dependent variable which is consistency in utilizing immunization vaccines was grouped into two categories; large extent and low extent (for respondents who responded to some extent, not at all and not certain respectively).

**Table 3: Summary of Chi-square analysis on socio-demographic variables and response to extent of consistency in utilizing vaccines**

Socio demographic Variable	Response on extent of consistency in utilizing vaccines					Decision
	Large extent	Low extent	Total	P-value	d Critical	
<b>Age group</b>						
Younger age	56(50.4%)	26(22.8%)	82(73.2%)	3.964	0.049	Accept
Older age	21(18.4%)	9(8.4%)	30(26.8%)			
Total	77(68.8%)	35(31.2%)	112(100%)			
<b>Educational attainment</b>						
Lower education	70(62.7)	32(28.4%)	102(91.1%)	5.121	0.007	Accept
Higher education	7(6.1%)	3(2.8%)	10(8.9%)			
Total	77(68.8%)	35(31.2%)	112(100%)			
<b>Religious affiliation</b>						
Christian	37(33.8%)	17(15.3%)	55(49.1%)	2.2941	0.587	Reject
Non-Christians	40(35.0%)	18(15.9%)	57(50.9%)			
Total	77(68.8%)	35(31.2%)	112(100%)			

Level of significance: 0.05

Information on Table 3 indicated that majority of the nursing mothers (50.4%) were between 15-35 years and to a large extent were consistent in utilizing the free immunization vaccines. In the same vein, some of these younger nursing mothers (22.8%) had low consistency in utilizing the free immunization programme, probably as a result of their age or other hindrances. However, older nursing mothers to a large

extent were consistent in utilizing the free immunization vaccines (18.4%) while nursing mothers in the same age category (8.4%) had low consistency in utilizing the immunization vaccines. From the Table, the Chi-square( $X^2$ ) value =3.964 at  $df=1$  and  $p$ -value= 0.049 was obtained. The critical chi square value at 0.05 with  $df=1$  is 3.841. This is less than the calculated chi square value. Therefore first research question that there is a relationship between age of nursing mothers and their utilization of the government initiated immunization programme is upheld. Though data from the Table indicated that there is a weak relationship.

Also, data in Table 3 indicated that over half of the respondents (62.7%) with low education to a large extent were consistent in utilizing government initiated immunization programme while 28.4% in the same education category had low consistency in utilizing the government initiated free immunization programme. Additionally, 6.1% of respondents who had higher education to a large extent were consistent in utilizing the immunization programme while 2.8% of the respondents in the same education category had low consistency in utilization of immunization programme. From the Table, the Chi-square( $X^2$ ) value =5.121 at  $df=1$  and  $p$ -value= 0.007 was obtained. The critical chi square value at 0.05 with  $df=1$  is 3.841. This is less than the calculated chi square value. Therefore the second research question which stated that there is a relationship between educational status of the nursing mothers and their involvement in government initiated immunization programme is accepted. The Table shows a strong relationship between the variables.

Further, data represented in Table 3 showed that 49.1% of the respondents were Christians, while half of the respondents (50.1%) were non-Christians. Information from this data also indicated that 33.8% of the Christians and 35.0% of the non-Christian respondents were to a large extent consistent in utilizing the immunization programme. Also 15.3% of Christians and 15.9% of non-Christians were to a little extent consistent in utilizing the immunization programme. From the Table, the Chi-square( $X^2$ ) value =2.294 at  $df=1$  and  $p$ -value= 0.587 was obtained. The critical chi square value at 0.05 with  $df=1$  is 3.841. This is more than the calculated chi square value. This result indicated that the third research question, that religious affiliation of nursing mothers influence their involvement in government initiated immunization programme is rejected. Therefore religious belief does not influence utilization of immunization programme by nursing mothers.

## **Discussion**

Findings of this study revealed that the extent of consistency of nursing mothers in availing their children of immunization vaccines is still low. According to Mojoyinola and Olaleye (2012), the immunization schedule of the EPI prescribes five consecutive visits. Hence, some nursing mothers may probably not perceive the importance of administering the other doses after receiving the first two doses of similar vaccines. Hence, Mojoyinola and Olayele (2012) reported that DPT3 coverage in Nigeria is about 60% in 2010 while UNICEF (2018) stated that the global coverage rate of this third vaccine in 2017 is about 85%, and has not achieved the GVAP target of 90%. However, reports from the NDHS (2013) stated that only 21% of infants aged between 12-23 months were fully vaccinated. The resultant effect of this inconsistency in receiving the immunization vaccine is high level of infant mortality.

This is in accordance with the views of Morakiyo and Fagbemigbe (2017) that cases of infant mortality in Nigeria has been relatively high owing to the fact that nursing mothers are not consistent in ensuring that their children receive the prescribed doses of the vaccine, according to the recommended number of visits. Hence, when infants do not receive consistent administration of the vaccine according to the prescribed number of visits, the effect is that the previous doses administered will no longer be effective. However, the inconsistent attitude displayed by nursing mothers could be explained with the Health Belief Model (Janz & Marshall, 1984). This model is used to understand health related attitudes particularly with respect to utilizing health services in spite of the fact that the vaccines are administered free to all infants. As such most nursing mothers may not be consistent in utilizing health services probably as a result of their age or literacy level.

The result from this study also revealed that age of the respondents is a predictor to government initiated immunization programme. In the views of Tagbo et al (2013) most developed countries in Africa, Nigeria inclusive have high birth rate. This could be associated with early marriage, high fertility, and sexually active stage in life. Most of the young nursing mothers may not be knowledgeable on the importance of obtaining complete doses of the immunization vaccines. This effect may not only be attributed age but also to poor communication and dissemination of information and even their level of education.

From the findings, it can be deduced that a good number of the nursing mothers (91.1%) had low education. This indicates that the level of education is a strong predictor to government initiated immunization programme. This is in accordance with the views of Alfred, Yomi and Alfred (2012), Awodele et al (2010) and Oyefere (2014) who reported that in most developing countries, infants whose mothers had higher education may receive complete doses of the immunization vaccines compared to

infants whose mothers had lower education. Hence, this significant barrier necessitates the need for inclusion of social workers in health care settings.

Social workers as agent of social change will assist in providing information and techniques in ensuring that nursing mothers are consistent in availing their children the opportunity to receive the full doses of the immunization vaccines (Ngwu, 2014). In the event of health service community outreach, social workers are often at the very fore, bargaining, notifying and preparing the minds of community members towards utilizing health service programmes provided free for them. They can achieve this by providing counselling services, education and discussion sessions for nursing mothers particularly on the essence of being consistent and the dangers of inconsistency to immunization vaccines. They are also obliged to ensure the efficiency of the programme such that corruption is not embedded within and that immunization vaccines are administered free to infants (Agwu, 2018). It is equally important to know that social workers can assist in the process of discharge planning, enabling and mobilizing vaccines, collaborating with relevant professionals among other roles (Alenoghen, et al, 2014).

### **Conclusion**

Based on the result of the study, it can be deduced that nursing mothers still exhibit inconsistency in the utilization of immunization programme. This is in spite of the fact that the vaccines have been made free for their children. This implies that nursing mothers do not yet understand the need to consistently avail their children for routine immunization probably as a result of certain predators. Hence, there were significant differences between consistency in utilizing immunization vaccines and socio-demographic variables (such as age and literacy level) studied.

This study had some limitations, one of which is that it based its analysis on data obtained from a purposively selected small number (112) of nursing mothers in a rural town of Okpuje. Perhaps a more representative sample that will include data from urban areas and other senatorial zones in the state may allow for a bigger and better picture of predators of the government initiated immunization programme. Another major limitation is that a large proportion of the respondents (91.1%) had low education. This made it difficult to administer the instrument for data collection and as such they required the assistance of the researcher and research assistants to explain the information in their local dialect.

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