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CONTENTS

CAUSES OF INCOMPLETE IMMUNIZATION AMONG UNDER-ONE YEAR OLD IN ILORIN SOUTH LOCAL GOVERNMENT AREA, KWARA STATE, NIGERIA

O.A.ONIFADE *(Ph.D.)*,
Email: onifadelasun@yahoo.com Tel.: 08056624872,
OLOGELE IBRAHIM *(Ph.D.)*
Email:ologele2010@gmail.com Tel.: 08063679928,
J. F. JAMES
&
Q .O. ABDULRASAQ
Department of Health Promotion and Environmental Health Education, Faculty of Education, University of Ilorin, Ilorin, Nigeria.

Abstract

Incomplete immunization has led to increase in the number of infections which children suffer from and which could have been prevented if completed. This study investigated the causes of incomplete immunization among under-one year olds in Ilorin South Local Government Area of Kwara State.

A descriptive research design of survey type was adopted. The population of the study comprises of all the nursing mothers resided in Ilorin South Local Government Area of Kwara State. A sample of 220 nursing mothers selected from routine immunization centers were the respondents for the study. Multi-stage sampling techniques of purposive, stratified and simple random sampling were used to select the respondents. Researchers designed questionnaire validated by 3 experts in the area of study was used for the study. A test re-test method was used to ascertain the reliability of the inst ument, a correlation coefficient of 0.70r. was obtained Four trained research assistants helped in data collection while chi-square statics was used to test the hypotheses set for the study at 0.05 alpha level of significance.

The findings showed that:

1. *poor access to immunization centers had no significant influence on incomplete immunization of under-one year olds (12.45 < 16.92);*
2. *non availability of material resources had no significant influence on incomplete immunization of under-one year olds (13.55 < 16.92); and*
3. *poor utilization of immunization services had significant influence on incomplete*

immunization of under-one year olds (18.14 > 16.92).

It was concluded that poor access of mothers to immunization centers was not the causes of incomplete immunization among under one year old in the study area, non availability of material resources at the immunization centers was not the causes of incomplete immunization among under one year old and poor utilization of immunization services by mothers is the causes of incomplete immunization of under-one year old in the area. It was recommended among others that the health workers should create good rapport with the mothers and educate them on side effects of immunization in order to sustain their interest in completing their children immunization.

Introduction

Historically, infectious diseases are the leading cause of death until the last half century. However, infectious diseases still remain foremost causes of illness, disability and death in most developing countries. Many sub-Saharan African countries, Nigeria for example has a high burden of infectious diseases that are of public health concerned. The diseases include; malaria, measles, cerebrospinal meningitis, cholera, yellow fever, lassa fever, tuberculosis, HIV/AIDS, diarrhoea and pneumonia (Federal Ministry of Health, 2009).

Nearly 30 million children born every year are not fully immunized. The great majorities of un-reached children or 28 million live in developing countries and of those 25 million are in the poorest countries (Mudasiru, 2000). Immunization is one of the most cost-effective of all health services. It remains tragically under utilized. In the developing world, less than 40% of infants receive a third dose of Diptheria, Pertusis and Tetanus (DPT) and polio, these coverage levels still permit over 3 million children to die annually from measles, neonatal tetanus and whooping cough and over a quarter of a million children to be crippled by poliomyelitis. (Mandi, 2002).

In Nigeria, children under five years of age constitute a significant twenty percent (20%) of the total population. Common childhood diseases (particularly pneumonia), diarrhoea, malnutrition and Vaccine Preventable Diseases (VPDs) especially measles are the leading causes of mortality and morbidity in Nigeria. These diseases are estimated to contribute to over seventy percent(70%) of deaths in children less than five years of age. (National Population Commission, 2008). The proportion of child deaths that occurs due to childhood preventable vaccine still persists and the Millennium Development Goal (MDGs) for child survival cannot be met without substantial reductions in child preventable diseases. Every year an estimated four million babies die in the first four weeks of life (the neonatal period).

A similar number are still born and 0.5 million mothers die from pregnancy-related causes. Three-quarter of neonatal deaths happen in the first week, the highest risk of death are on the first day of life. The 2008 Nigeria Demographic and Health Survey (NDHS) reported that 23 percent of children aged 12-23 months received all vaccinations. Fifty percent of children received Bacillus Calmette Guerin (BCG) vaccination, and forty one percent were vaccinated against measles. The coverage of the first dose of DPT vaccine and polio one was 52 % and 68 % respectively. However, only 35 % of children received third dose of DPT vaccine and 39 % received the third dose of polio vaccine (National Primary Health Care Development Agency (NPHCDA), 2010).

According to the World Health Organization (WHO), a child is considered fully vaccinated if he or she has received a BCG vaccination against tuberculosis, three doses of DPT vaccine to prevent diphtheria, pertusis, and tetanus (DPT), at least three doses of polio vaccine and one dose of measles vaccine, these vaccinations should be received during the first year of life. In Nigeria, BCG and zero polio vaccine should be given at birth, DPT 1 and Polio 1 vaccines should be given at six weeks and measles and yellow fever vaccine should be given at nine months or soon after the child reaches nine months of age. It is also recommended by World Health Organization that, children should receive the complete schedule of vaccinations before their first birthday and that the vaccinations be recorded on a health card given to the parent or guardians (NPC, 2008). Contrary to this recommendation, the DPT national coverage for the year 2010 was 6 7.73% where the coverage by card was only 23.43%. The rate of fully immunized children by 1 year of age as it was showed in National Immunization Coverage Survey (NICS) 2010, shows a national average of 9.83%, the South East-zone with 14.02% has the highest average among the zones while the North West zone with 8.59% has the lowest average (NPH CDA, 2010).

Nigeria's universal child immunization coverage has remained low over the past decade. The reasons for the persistent low coverage can be attributed to weak health structures and systems, inadequate funding by government at all levels and over-dependence on donor funds, lack of ownership at community levels, amongst others (National Programme on Immunization, 2006).

Table 1: Immunization Coverage by Antigen

Antigen	Coverage by card and history	Coverage by card only
BCG	76.41%	
OPV 3	73.95%	23.43%
HBV 3	64.27%	
DPT 3	67.73%	24.74%
Yellow fever	60.12%	
Measles	63.55%	Received at 9 months 33.76%
Fully immunized by 1 year of age		35.38%

Source: National Immunization Coverage Survey (2010)

The National Immunization coverage survey (NICS) of 2010 showed a National DPT 3 coverage of 67.73 %, with the South East Zone having the highest coverage of 91.18% and the North East Zone had the lowest coverage of 46.16%. The coverage by card was as low as 24.74% as against 67.73% by card plus history. The national OPV 3 coverage was 73.95% with South East had the highest coverage of 86.63% and the North East as the lowest with 60.22%. The coverage by card was only 23.43% as against 73.95% by card plus history. Access to infant immunization as generally improved across the country when compared to the access rate reported for the 2006 NICS. A slight increase in access to immunization services was noted at the national level from 70.71% in 206 to 73.41% in 2010. Despite the high coverage in DPT 3 of 67.73% , it is still worry that the coverage by card is only 24.74% and the total number of children fully immunized by one year of age valid is 35.38% (NPHCDA, 2010).

This poor performance of routine immunization has increased the burden of vaccine preventable diseases. The general slow progress became a threat to various disease control initiative and the realization of one of the Millennium Development Goals (MDGs) of reducing child mortality by two-thirds in 2015 (Bello, 2009).

Abdulraheem, Onajole, Jimoh and Oladipo (2011) opined that, the expanded program on immunization aims at delivering the primary immunization series to at least 90% of infants. However, inadequate levels of immunization against childhood diseases remain a significant public health problem in resource - poor countries like Nigeria, the reasons for this are poorly understood. Nigeria like many countries in

the African region is making efforts to strengthen its health system and routine immunization services in particular to reduce disease burden from vaccine preventable diseases. This is against a backdrop of poor routine immunization coverage of 35.38% (fully immunized by 1 year of age) as it was showed in 2010 National Immunization Coverage Survey. Routine immunization remains a particular concern for the government of Nigeria and its development partners including World Health Organization. The government of Nigeria has put routine immunization high on the agenda and is committed to reverting this negative trend. It is anticipated that this effort will significantly contribute towards achieving the Millennium Development Goals (MDGs) of having child mortality reduction by 2015. At least 95% of immunization coverage is necessary for the sustained control of vaccine preventable diseases.

Immunization coverage in Kwara State was low and DPT3 coverage data was used to monitor overall coverage progress in immunization. Percentage of DPT3 coverage from year 2002 to2005 was (12 to 48)% with less than 50% of the LGAs recording 50% above for DPT3 coverage, except in 2005 when just 50% of the LGAs recorded 50% and above for DPT3 (WHO, 2006). Also, the result obtained from National Immunization Coverage Survey (NICS) 2010 of Kwara State showed that, DPT3 coverage was 73.13% where coverage by card was just 15.63% and number of children fully immunized by 1 year of age was only 4.17% (NPHCDA, 2010).

Nigeria is strongly influenced by their socio-cultural and religion norms and values of their ethnic origin. A clear understanding of these factors that influence the behaviour, knowledge and attitude about health and disease is necessary for effective health programme to make any meaningful impact. Recent survey indicated that effective immunization of children in Nigeria is yet to be achieved. Several factors have been responsible for not completing immunization program of children such as long waiting time of mother in the health centre, far distance, lack of money for transportation and poor attitude of health workers (Bates & Wolinsky, 2008).

Incomplete vaccination or dropouts are the people who begin the vaccination schedule but fail to complete it. If a child does not receive all doses for a specific vaccine required for full protection against a specific disease, the resources that have been used are generally regarded as being wasted. World Health Organization (WHO) recommended dropout in a well-managed programme should not exceed 10%. If monthly dropout rate of health facility above 10%, this indicate that something is going wrong, which could be as a result of problem of access or utilization (NPI, 2004).

Out of 125million children born each year, about two thirds are in the

developing countries. It is estimated that about 5 million of these children die from diphtheria, whooping cough, tetanus, poliomyelitis, measles and tuberculosis. In addition, many are disabled through deafness, blindness and malnutrition. This heavy toll of morbidity and mortality is completely preventable by receiving immunization for children which are available and safe for them (FMOH, 2007).

Measles, diphtheria, pertusis, tetanus, poliomyelitis and tuberculosis are major causes of disability and death among children in most developing countries. In order to decrease the morbidity and mortality associated with these diseases it will be necessary to ensure that virtually all infants are to be fully immunized. The main causes of these low coverage rates continue to be inadequate provision of vaccine materials and poor utilization of immunization services (Marks, Halpin, Irvin & Johnson, 2004).

Federal ministry of Health (2007) pointed out that, there are two major causes of incomplete immunization among eligible children in Nigeria. These are poor access and poor utilization.

Poor Access: The main reason for poor access is barriers to the services, and those barriers are as follows:

1. Geographical barrier: distance, topography (River, Hills etc), inconvenient time for the sessions.
2. Economic barrier: - cost of transport, cost of services; artificial cost (illegal fees).
3. Religious barrier: - Non compliance due to religious belief.
4. Political barrier:- Non compliance due to political problem.
5. Social barrier:- lack of knowledge of community of importance of vaccination, dates for sessions.
6. Cultural norms/practices that do not favour immunization.

Poor Utilization:- This results mainly from poor service provision:

1. High incidences of Adverse Event Following Immunization (AEFI) (injection abscess, deaths following vaccination etc).
2. Lack of information on schedule of immunization (many parents do not know that multiple visits to the clinic is necessary).
3. Poor attitude of health workers to clients.
4. Artificial cost (illegal fees)
5. Supply shortage (vaccines and injection devices).
6. Incorrect contraindications applied.
7. Irregular sessions
8. Long waiting time

Mandi (2002) pointed out some measures needed to take in reducing drop-out rate between first and last immunizations. The measures recommended are to;

1. Determine the dropout rate through systematic review of health facility records or surveys.
2. Identify reasons for non-participation and adopt measures to solve problems.

Action may include:

a. Strengthening the participation of communities in immunization programmes, including the public, private and voluntary sectors and schools.
b. Providing immunization services more convenient times and places and increasing the use of regularly scheduled outreach clinics.
c. Better informing parents of the need to return to further immunization and of the times and places for doing so.
d. Better identifying children who are eligible for immunization and actively seeking out those who are missed.

Statement of the Problem

The problem of the study was to examine the causes of incomplete immunization among under one- year old in Ilorin South Local Government Area of Kwara State. Inadequate levels of immunization against childhood diseases remain a significant public health problem in Nigeria. Bobaniyi and Spiegil (2010) explained that, many mothers lives long distance from vaccination posts or health centre, and on arrival, following a very long walk if they were unable to afford the cost of transport, would face a long wait in stifling heat before their child was attended to. Some mothers are unwilling to take such trouble if the child was well, so develop negative attitude towards immunization.

Low coverage on immunization have permit over 3 million children to die annually from measles, neonatal tetanus and whooping cough and over a million children to be cripple by poliomyelitis. Glauber (2003) explained that, incomplete vaccination among eligible children was one of the reasons that make burden of vaccine preventable diseases high in Nigeria. However, the best way to protect children from these diseases is to receive all immunization within recommended intervals. The study examine whether poor access of mothers to immunization centers or non availability of material resources at the immunization centers or poor utilization of immunization services by mothers responsible for incomplete immunization of their children.

Some parents in Ilorin South Local Government Area choose to vaccinate their children with certain vaccines and exclude others, vaccinate just some of their children, or decide that they will not vaccinate at all. Some parents may choose to

modify the vaccination schedule, deciding to delay vaccination until their children are older due to concerns about the safety of vaccination or concerns about the health of a child. Parker, Staggs & Dayan (2006) explained that, out of 66 cases of measles reported in the United State in 2005, slight over half were attributed to one unvaccinated individual who acquired measles during visit to Romania. This individual returned to a community with many unvaccinated children. The resulting outbreak infected 34 people, mostly children and virtually all unvaccinated. 9% were hospitalized, a major epidemic was averted due to high rates of vaccination in the surrounding communities.

Research Questions

The research questions raised to guide this study were as follows:

a. Will poor access of mothers to immunization centers influence incomplete immunization of under one year old child?
b. Will non availability of material resources at the immunization influence incomplete immunization of under one year old child?
c. Will poor utilization of immunization services by mothers influence incomplete immunization of under one year old child?

Research Hypotheses

The research hypotheses formulated for this study were as follows:

Ho_1: Poor access of mothers' to immunization centers will not significantly influence the incomplete immunization of under one year old child.

Ho_2: Non-availability of material resources at the immunization centre will not significantly influence the incomplete immunization of under one year old child.

Ho_3: Poor utilization of immunization services by mothers will not significantly influence the incomplete immunization of under one year old child.

Research Methodology

Descriptive research survey was used for the study. The research population comprised of all nursing mothers residing in Ilorin South Local Government Area that have children between ages 0-1 year. Multi-stage sampling techniques of purposive, stratified and simple random sampling procedure were used to select routine immunization centers and respondents for the study. First stage, purposive sampling procedure was used to select thirty three routine immunization centers out of ninety health centre operating in the study area. Second stage, stratified random sampling was used to select one routine immunization centre out of each ward and eleven centre were used for the study. Third stage, simple random sampling

procedure was used to select twenty mothers from each of the selected centre and two hundred and twenty (220) respondents used for the study.

The instrument used for the study was a structured questionnaire, validated and tested for reliability. Using Pearson Product Moment Correlation method, the co -efficient for reliability was 0.70r. The researcher with the aid of four trained research assistants administered the instrument on the respondents. Inferential statistics of chi-square was used to analyses the result of data collected.

Results and Discussion of Findings

The results obtained from three hypotheses used for the study were showed on the tables below:

Hypothesis 1: poor access of mothers to immunization centre will not significantly influence the incomplete immunization of under one year old .

Table 1: Chi-Square analysis showing influence of poor access of mothers to immunization on centre on incomplete immunization of under one year old

S/N	Variable	Number	df	Calculated x^2 value	Critical value	Decision
1.	Far distance of routine immunization centre to my resident is a barrier to immunization of my child	220	9	12.45	16.92	Ho_1 accepted
2.	Poor road network of my resident to immunization centre is a barrier to my child immunization					
3.	Problem of insecurity in my area to immunization center is a barrier to my child immunization					
4.	immunization scheduled to hold at my opponent house or compound against the rule of my political party/ community.					

P < 0.05

The result obtained from table one shows the calculated ch-square value of 12.45 against the critical chi-square values of 16.92 at 0.05 alpha level with 9 degree of freedom. Since the calculated chi-square value is lower than chi-square

critical value, the stated hypothesis is hereby accepted. This means that incomplete immunization among under one year old in the study area was not as a result of poor access of mothers to immunization centre. This finding disagree with the finding of the National Primary Health Care Development Agency (2010) in Nigeria on 19,551 children between the age of twelve and twenty three months old to determine infant immunization showed that far distance of mothers to immunization centres was the major reason (12.05%) for failing to immunize children by the respondents. This reason is tenable considering that over 70% of Nigerians live in rural areas where there may be no health centre located within the community and no outreach service coverage. Also the reason with the lowest rate was no money for transportation which corroborates the far distance issue. The ultimate effect is reduction of accessibility to immunization services.

The result of this finding could be as a result of the fact that, most of the routine immunization centres in the study area were within the reach of the mothers. "Based on national recommendation that, fixed post should not be more than 5 kilometer distances, outreach centre should not exceed 10 kilometer distances and mobile centre should not be more than 15 kilometer distances" (FMOH, 2007).

Hypothesis 2: will non-availability of material resources at the immunization centre influence the incomplete immunization of under one year old.

Table 2: Chi-Square analysis showing influence of non-availability of material resources at the immunization centre on incomplete immunization

S/N	Variable	Number	df	Calculated x^2 value	Critical value	Decision
1.	Shortage of vaccines at the immunization centre responsible for not completing immunization of my child	220	9	14.45	16.92	Ho_2 accepted
2.	Shortage of needles and syringes at the immunization centre responsible for not completing immunization of child					
3.	Lack of fund for collection of vaccines from National Programme of Immunization Office (NPI) by routine immunization officer responsible for not completing immunization doeses of my child					
4.	Lack of cold chain equipment for preserving vaccines collected from National Programme for Immunization Officer at the routine immunization centre responsible for not completing my child immunization					

P < 0.05

The result of tested hypothesis two showed that the calculated chi-square value of 14.35 against the critical chi-square value of 16.92 with 9 degree of freedom and at 0.05 alpha level. Since the calculated chi-square value is lower than the critical chi-square value, hypothesis two is hereby accepted. This indicated that incomplete immunization among under one year old in the study area was not as a result of non availability of material resources at the immunization centers. The result of this finding disagree with the finding of Sturm and Mays (2012) who opined that stock out of vaccines and immunization materials at the immunization centers on immunization day was due to lack of regular funding, lack of storage capacity, poor ordering and distribution system. When parents missed work, travel long distances, wait for long hours and then denied services because of lack of

resources, they are unlikely to be encouraged to continue to bring back their children for vaccination.

The result of this submission could be carved around the fact that, majority of routine immunization centers in the study area received adequate immunization materials and vaccines from local government National Programme of Immunization Office (NIP) and most of these centers have equipment for keeping their vaccines such as freezer, refrigerator and solar.

Hypothesis 3: poor utilization of immunization services by mothers will not significantly influence the incomplete immunization of under one year old.

Table 3: Chi-Square analysis showing influence of poor utilization of immunization services by mothers on incomplete immunization of under one year old.

S/N	Variable	Number	df	Calculated x^2 value	Critical value	Decision
1.	Poor attitude of health workers during immunization discourage me from completing immunization of my child	220	9	18.14	16.92	Ho_3 rejected
2.	Long waiting time in the health centre during immunization by mothers result to poor utilization of immunization service					
3.	Fear of vaccine reaction after immunization responsible for not utilizing immunization services.					
4.	Poor utilization of immunization services was a result of unaware of need to return for subsequent doses.					

P < 0.05

The result of tested hypothesis three showed the calculated chi-square value of 18.14 against the critical chi-square value of 16.92 at 0.05 alpha level with 9 degree of freedom. Since the calculated chi-square value is greater than critical chi-square value, hypothesis three is hereby rejected and alternative hypothesis upheld that,

there is a significant influence of poor utilization of immunization services by mothers on the incomplete immunization of under one year old. The result of this finding agree with the finding of Monika & Michael (2009) who explained that attitudes and behaviour of health staff are one of the most important and frequently cited factors that discourage full immunization of children. Some health workers treat mothers in an unfriendly, disrespectful or even abusive manner when they commit errors such as forgetting the child's card, arriving late to the vaccination centers, missing a scheduled vaccination appointment or having a dirty, poorly dressed or malnourished child. Mothers feel humiliated and this discourages them from coming back to the health centre for further immunizations. Some of these health workers often communicate little and poorly with mothers so that many mothers leave not knowing when to return and what to do about side effects.

Conclusion

Based on the findings of this study, the following conclusions were drawn:

1. Poor access of mothers to immunization centre was not the causes of incomplete immunization of under one year old in the study area.
2. Non-availability of material resources at the immunization centre was not responsible for the incomplete immunization of under one year old. .
3. Poor utilization of immunization services by mothers is responsible for the incomplete immunization of under one year old in the study area.

Recommendations

Based on findings and conclusion of this study, the following recommendations were made:

1. The local government health department should create more routine immunization centers so as to make immunization services more closer to mothers..
2. The United Nation Children Emergency Funds (UNICEF) and Federal Ministry of Health should sustain the constant supply of immunization materials so as to achieve complete elimination of childhood diseases in the study area.
3. The health workers should create good rapport with the mothers and educate them on side effects of vaccines in order to sustain their interest in completing their children immunization.

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