

*Review*

# Combating the menace of childhood immunization noncompliance among nursing mothers in Nigeria

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Vaccine preventable diseases constitute the burden of morbidity and mortality, particularly for children under 5-years in developing countries of the world such as Nigeria. Immunization is one of the most cost-effective public health interventions to date, saving millions of lives and protecting countless children from illness and disability. Numerous researches affirmed that vaccine preventable diseases account for 22% of under-five deaths in Nigeria. And poor knowledge and negative attitude on the part of parents especially the nursing mothers have been responsible for non-vaccination of children. This paper seeks to establish the fact that positive attitude and knowledge of childhood immunization is a major solution in combating the menace of childhood immunization noncompliance among the nursing mothers in Nigeria. Furthermore, the paper is aimed at recommending achievable ways of bridging the gap of health education. And emphasize the need to promotion positive attitude towards childhood immunization among parents especially the nursing mothers. Based on the findings of this study, the knowledge of childhood immunization is not adequate among nursing mothers in Nigeria. This explains the downward trend of childhood immunization compliance since 1990 and leading to skyrocketing death rate of under five children in Nigeria. To promote childhood immunization compliance, good rewards system should be in place to encourage parents whose child/children complete the childhood immunization. Usage of bulk SMS by the health care givers and stake holders as a reminder and medium of information dissemination on childhood immunization should be encouraged and also, collaborative efforts with the community and religious leaders in the area of information dissemination.

**Keywords:** Nursing mothers, immunization, childhood immunization, positive attitude.

## INTRODUCTION

The quest for ensuring healthy living and promoting well-being for all at all ages (Goal 3) is an important goal in the Sustainable Development Goals (SDGs) towards 2030. This quest has led to providing strategies to prevent or totally eliminate the spread of communicable diseases or epidemics such as polio, chicken pox, small pox, measles, among others and has being the focus of the World Health Organization (World Health Organization, 2010).

Vaccine preventable diseases constitute the burden of morbidity and mortality, particularly for children under 5-

Nigeria. According to World Health Organization/United

Nations Children's Fund (WHO/UNICEF) (2003), an estimate of 2.1 million people died of diseases preventable by vaccines such as measles (610,000 deaths), hepatitis B (600,000), Haemophilus influenza type B (388,000), pertussis or whooping cough (294,000), tetanus (213,000) and others such as yellow fever (36,000), diphtheria and polio. Out of the 2.1 million, 1.4 million were children under the age of five (World Health Organization, 2010).

These diseases are preventable and are mostly common among children and have attracted global concern because of its contribution to neonatal and maternal mortality. To combat such childhood diseases, a years in developing countries of the world such as

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major strategy deployed was the administration of vaccines (Birhanu et al., 2016). Despite the availability of vaccines to tackle preventable childhood diseases, they remain endemic in the sub-Saharan region (Antai, 2010). It has been a major expedition by individuals, communities and nations to either eliminate or prevent the continuous outbreak of preventable childhood diseases if they must enjoy the benefits of development (Babatsikou et al., 2010).

The role of the parents' attitudes toward childhood immunization cannot be over-emphasized, and negative attitude towards immunization by nursing mothers is risk factors for vaccination coverage (Brenner et al., 2011). Also, knowledge of immunization is a primary factor for immunization coverage regardless of socioeconomic categories (Selvaraj et al., 2014). According to (Birhanu et al., 2016), the objectives of Program on Immunization in many part of Sub Sahara Africa such as Nigeria has not been met because of low knowledge and poor attitude among parents regarding childhood immunization. According to National Health Demographic survey (2013), only 19% of children aged 12-23 months in Nigeria received all their basic immunization between the year 2008 and 2013. This is far below WHO recommendation which is 80%. Among the south west states of Nigeria only 24 % of 12-23 months old babies received all basic immunization in Ogun State this happened to be the least in the south region NHDS (2013).

According to the global immunization division CDC report for the World Health Organization (2009), the global parental attitude and knowledge regarding immunization services is low and parents have negative beliefs about measles and vaccination programs generally. This has made (Gust, 2004) affirm that parental attitudes and beliefs about vaccines are important in predicting child's immunization status.

The objective of this study is to emphasize the fact that positive attitude and knowledge of childhood immunization is a major solution in combating the menace of childhood immunization noncompliance among the nursing mothers in Nigeria. Also this paper is aimed at recommending achievable ways of bridging the gap of low knowledge. And emphasize the need to promote positive attitude towards childhood immunization among parents especially the mothers.

### **Statement of problem**

(Ekure et al., 2013) affirmed that vaccine preventable diseases account for 22% of under-five deaths in Nigeria and poor knowledge and attitude on the part of parents have been responsible for non-vaccination of children. In addition, there is knowledge gaps and negative attitudes towards childhood immunization among nursing mothers in Nigeria (Ekure et al., 2013).

The quest to close this knowledge gap and the negative attitude towards childhood immunization has attracted much concern especially in Nigeria so as to be able to achieve development goals and objectives and reduce health challenges militating against the achievement of development goals in Nigeria- thus, the need for this paper.

### **Significance of the study**

The findings of this study would help provide highlights and ways to effectively deploy strategies to enhancing positive attitude towards childhood immunization especially in developing economies such as Nigeria. Also, it would be an eye opener to stakeholders of health development in Nigeria the importance of highlevel of knowledge and positive attitude towards childhood immunization among nursing mothers.

### **The concept of immunization**

Immunization coverage is one of the indicators used to monitor progress toward the reduction of child morbidity and mortality, as it is one of the most cost-effective public health interventions for reaching the expanded millennium goals. Immunization is the process of using a vaccine to protect people from a disease (Chaloner et al., 1996). Such vaccines contain either small parts of the bacteria which cause the disease or small amounts of the chemical they produce (Chaloner et al., 1996).

Vaccines are either administered by mouth or injection and stimulate the body to produce antibodies which will protect the person against the disease in future should they come into contact with it. The aim of giving immunization to children is to provide primary prevention against communicable diseases or killer diseases during infancy or childhood. These include polio vaccine, diphtheria, pertusis, and tetanus vaccine, measles vaccine (Federal Ministry of Health, 1995), hepatitis B and yellow fever vaccine (World Health Organization, 2005) among others. Of recent, there have been HIV/AIDs vaccines.

With a view to improving child health, the Nigerian government has introduced pentavalent vaccine into her routine immunization schedule. The current trend in National programme on immunization in Nigeria is the five-in-one, or pentavalent vaccine. It's a single vaccine that protects children against five potentially lethal diseases: tetanus, diphtheria, pertussis (whooping cough), Hepatitis B and Haemophilus Influenzae B (which causes meningitis and pneumonia). This will replace the usual DPT. With this introduction, nearly 400,000 cases of haemophilus influenza type B would be prevented with about 27,000 lives saved annually in

Nigeria. It's currently used in around 170 countries, and is increasingly being given to children in poorer countries. In 2010, UNICEF bought 97 million doses. Having five vaccines in one is also a real help for the health workers who are doing the vaccinating. It means they have fewer sorts of vaccines to carry and administer so far less data to collect when they're immunizing children. This all means their efforts can reach more children (World Health Organization, 2005).

### Immunization compliance

Immunization compliance simply implies that nursing mothers abide by immunization patterns and schedule. According to (Mojoyinola and Olaleye, 2012), immunization compliance implies that mothers will bring their children for immunizations at the specified period or interval which will definitely help in reducing rates of infant mortality. Furthermore, non-compliance with immunization schedule may predispose the children to diseases that are preventable by vaccines, thereby promoting complications and increasing rates of infant mortality (Matsui, 2005).

### Routine immunization of infants

Recommendations for the age at which vaccines are administered are influenced by several factors. These include (WHO, 2010):

- Age-specific risks of disease
- Age-specific immunological response to vaccines
- Potential interference with the immune response by passively transferred maternal antibody
- Age-specific risks of vaccine-associated complications
- Programmatic feasibility

According to WHO (2010), schedules are provided for immunization of children. These calls for all children to receive one dose of BCG vaccine, 1 dose of Hep B, 3 doses of pentavalent vaccine, 4 doses of OPV, 3 doses of PCV, 1 dose of IPV, 2 doses of Rota vaccine, 1 dose of Conjugate A CSM, 2 doses of vitamin A and two dose of measles vaccine before the first birthday. In countries with HBsAg carriage rates of 2% or more, universal infant immunization with HB vaccine is recommended. Countries with a lower HBV prevalence may consider immunization of all adolescents as an addition or alternative to infant immunization. The Nigerian Immunization schedule is as follows

- BCG – At birth or as soon as possible after birth
- Hep B- At birth
- Rota – At 6 and 10 weeks
- OPV – At birth and at 6, 10, and 14 weeks of age
- IPV- At 14 weeks
- Penta – At 6, 10 and 14 weeks of age

- Measles – At 9 and 12 months of age
- Vitamin A at and 12 months
- Yellow fever at 9 months
- Conjugate A CSM at 9 months

### Attitude towards childhood immunization among Nigerian women

(Birhanu et al., 2016) in their study, knowledge, attitude and practice of mothers towards immunization of infants in health centers at Addis Ababa, Ethiopia found that women have positive and high attitudes towards immunization. However, according to the (World Health Organization, 2009), in the global immunization division CDC report found that the global parental attitude towards immunization services is low and parents have negative beliefs about measles and vaccination programs. According to (Yousi et al., 2013), parental attitudes towards childhood immunization shown that majority of the parents agreed that childhood immunization is important.

Most women considered immunization to be more beneficial than harmful and stated that vaccines are safe. Also, parents stated that childhood immunization is not prohibited in religion and the administration of vaccines is associated with side effects respectively. Few parents were not sure if the child becomes infected after immunization with the disease/s against which they was vaccinated or not. Most of the parents stated that compliance to immunization schedule is important and immunization keeps the child healthy (Yousif et al., 2013).

Moreover, (Ekure et al. 2013) noted that in Nigeria, laziness of mothers and negative attitude are major problems affecting immunization services. Also, (Ekure et al., 2013) found that over 30% of women in their study would not take their child back for immunization if he/she develops mild fever, moderate to high fever and soreness/redness at injection site and convulsions. In addition, (Ekure et al., 2013) also found that over 40% of women would not accept polio vaccination for the children during National Immunization Days (NIDs). Also, 28 percent spent over 2 hours to get child immunized and 61.1% felt the time spent is not too much. This shows a very high negative attitude towards vaccination among women in Nigeria.

According to (Omiunu, 2015), investigating awareness of epidemics is not much pronounced especially in the developing countries such as Nigeria where attitude could be so important because according to (Harrell, 2005), attitude is everything. Attitudes refer to one's positive or negative judgment about a concrete subject which in this study is childhood immunization. According to (Ajzen and Fishbein, 1980), attitudes are determined by the analysis of the information regarding the result of an action and by the positive or negative evaluation of these results.

With regard to Health Belief Model (HBM) which predicts health behaviors of pregnant women, attitudes and beliefs of individuals which are products of their knowledge of vaccination/immunization are important. Providing lasting solution to the perennial problem of bad attitudes and knowledge among parents on the use of vaccination has attracted a lot of concern and debate among stakeholders of development.

### **Knowledge of childhood immunization among Nigerian women**

(Birhanu et al., 2016) state that mothers' knowledge Immunization of Infants is a key tools to decrease dropout rates and to prevent or control infectious diseases. This was why (Stefanoff et al., 2010) stated that information has to be tailored to the public about the level of knowledge about diseases and the benefits and possible adverse effects following when vaccination are not taken. Furthermore, according to (Yousif et al., 2013), some parents had good knowledge on aspects related to the general role of vaccination in prevention of some infectious diseases, timing of the first dose in vaccination schedule. However, poor knowledge was documented among parents in aspects like the importance of administration of multiple doses of the same vaccine to child immunity, administration of multiple vaccines at the same time have no negative impacts on child immunity, vaccination of children against seasonal influenza and contradiction to vaccination. This implies that parents do not really have adequate knowledge of childhood immunization.

According to (Yousif et al., 2013) more than one third of the parents knew that concomitant administration of multiple vaccines have no negative impacts on child immunity. Nearly 75% of the parents agreed with the importance of vaccinating children during immunization campaigns. Also, approximately 46% agreed that it is recommended to vaccinate children against seasonal influenza and 70% denied that there is association between immunization and autism. Common colds, ear infection, and diarrhea were considered as contraindications for vaccination by 38% of the parents.

Also, (Birhanu et al., 2016) found that knowledge of Immunization of Infants is not adequate enough among African mothers which Nigeria is a part. According to the World Health Organization (2009), in the global immunization division CDC report found that the global knowledge of parents of vaccination/immunization services is low and parents have negative beliefs about measles and vaccination programs. Also, (Ekure et al., 2013) investigated community knowledge, attitude and practice of childhood immunization in Southwest Nigeria: Data from a Paediatric Association of Nigeria town hall meeting and found that among Nigerian parents, knowledge about immunization is inadequate.

Literature reviewed in this section show a mix result on knowledge of childhood immunization. These however, provide justifiable evidence for investigating the level of knowledge of childhood immunization especially among Nigerian women- this is a major gap this study seeks to fill.

### **Immunization coverage in Nigeria and challenges**

The history of immunization activities started in Nigeria in 1956 before the small pox eradication campaign. Furthermore, this expanded and became the Expanded Program on Immunization (EPI), and was responsible for routinely delivering immunization in the late 1970s (USAID, 2007). The Federal Government of Nigeria through the Federal Ministry of Health has continued to place high priority on immunization with the aim of providing immunization service to all children below 24 months of age against these childhood preventable diseases such as Tuberculosis, Whooping Cough, poliomyelitis, Diphtheria, Measles, Yellow Fever, Tetanus, Neonatal Tetanus, Cerebro-Spinal meningitides, Hepatitis B and Diseases of women of child bearing age.

According to (Folliden, 2005) Immunization is coordinated by the National Programme on Immunization (NPI), a parastatal of the Federal Ministry of Health in collaboration with the State Ministries of Health and local government health centers, UNICEF and WHO. It was established by the Federal Government of Nigeria in 1997 (Folliden, 2005). Nigeria has 774 local government areas subdivided into 5,450 districts, within which there are villages and 9,555 wards. These vast areas are expected to be covered for immunization programmes. Previously, the programme was co-ordinate by expanded programme on immunization with multinational donor agencies. Immunization coverage in Nigeria has become a major challenge in the context of child survival strategy (Folliden, 2005). The Nigerian immunization coverage is far below some countries in conflict. The DPT3 immunization coverage varied from 5% in 1984 to 29% in 2000 with peak coverage of 57% attained in 1990. A dramatic decline to 28% was observed in 2001.

World Health Organization argues that drop-out rate of more than 10% is not acceptable and is dangerous for any country. The national immunization coverage reported in 2003 was 12.7% indicating further decline from 28% reported in 2001. Sources of immunization in 2003 were as follows: government 75.6%, private 8.4%, non-governmental agencies 1.7%. Reasons for non-immunization were non-availability of vaccines, distant and unknown immunization sites, fear of adverse reactions from vaccines, rumours, lack of trust in immunization and mother not having time for immunization. (Folliden, 2005) has it that about 23% of children were fully immunized in 2008, while those without any immunization was 29%.6.

Fully immunized children were highest in south-eastern zone (43%) and least in north-western zone (6%).

Significant variations were noted between urban and rural areas, with more coverage observed among urban population (38% versus 16% respectively). UNICEF reported coverage of 69% for DPT3 in 2010 but insisted Nigeria must intensify her campaign, as some states had poor coverage (World Health Organization 2011). NPI has been faced with the challenge of storage, distribution of vaccines, monitoring and evaluation of immunization activities, along with the submission of its annual report on immunization coverage to WHO. NPI budget in 2005 was \$226 per fully immunized child which is the most expensive of all developing countries of the world. Yet failure of service delivery is implicated for poor immunization coverage. Logistics, ranging from personnel and infrastructure, appear to limit the efficiency of the parastatal (Folliden, 2005). It was reported that cold chain facilities at the state levels were poorly equipped and managed, with over half of the refrigerators being worn-out in 2005. Collaboration of staff at different levels has also been a major challenge. Migration was implicated as a risk factor for non-immunization in affected children. Outbreaks of poliomyelitis were reported in Europe and were linked to importation from endemic countries (Antai, 2010).

From 2006 to 2010, Nigeria nearly tripled the proportion of children covered by routine immunization, according to the National Immunization Coverage Survey (NICS), conducted in October 2010. The increase took place against the backdrop of aggressive supplementary immunization campaigns to eradicate polio. The results of the 2010 NICS indicate that 52% of Nigerian children aged 12-23 months are reported to be fully immunized, compared with just 18% in 2006. In 2003, when the first baseline study was undertaken, the corresponding figure stood at just 13% (NDHS 2013).

The NICS aims to estimate the levels of immunization coverage at national, regional and state levels. The survey is regarded by the Nigerian Government and international partners as the most accurate measure of routine immunization services, providing important insights into community and individual attitudes towards immunization. More than 19,000 households in selected settlements of every state were visited in October 2010 by trained representatives of an independent research company. Coverage was determined by vaccination card and the child's history as recounted by the family at 52 weeks of age. Coverage of DPT3 – a measurement of the number of children who are fully protected against three killer diseases Diphtheria, Pertussis and Tetanus and the most common measurement of basic routine services – increased nationally from 25% in 2006 to 68% in the 2010 study (NDHS 2013).

Advances were recorded in all regions of the country. This progress in Nigeria is tempered by the survey finding that almost one in four children do not receive any routine

immunization. The country's ability to bring this figure down will determine whether or not Nigeria can interrupt polio and deliver on its pledge to meet health-related Millennium Development Goals by 2015.

### **Attitude towards and compliance with childhood immunization**

According to (Jheeta and Newell, 2008) and (Birhanu et al., 2016), mothers' attitude is a key tool to decrease dropout rates and to prevent or control infectious diseases through childhood immunization. According to (World Health Organization, 2009), in the global immunization division CDC report, the global parental attitude regarding childhood immunization has been low and parents have negative beliefs about measles and vaccination programs. Parental attitudes and beliefs about vaccines have been known to be important factor in predicting childhood immunization status (Gust, 2004). In their study, (Birhanu et al., 2016) found that attitude of mothers about childhood vaccination was not adequate in Africa which Nigeria is part. Despite this inadequacy, 84.0% of mothers had good practice of childhood immunization. More so, (Birhanu et al., 2016) stated that it would be of good benefit if health education is introduced and used to promote attitude toward immunization practice in Africa such as Nigeria. Merging the result of (Birhanu et al., 2016), (World Health Organization, 2009) and (Selvaraj et al., 2014), it could be deduced that the poor attitude toward childhood immunization is high among nursing mothers in Africa such as Nigeria.

In Nigeria, the study of (Ekure et al., 2012) found that vaccine preventable diseases account for 22% of under-five deaths in Nigeria and poor attitude have been responsible for non-vaccination of children. In addition, (Ekure et al., 2012) found that there were erroneous beliefs about the contraindications for immunization and mothers were entrusted with the sole responsibility of getting children immunized. Although most of the respondents had immunized their children, they identified negative attitude as a major barriers to patronage of immunization services. Also, about a third of the nursing mothers in (Ekure et al., 2012) study would not be willing to take their children back for immunization if they developed common side effects of immunization such as mild fever and soreness at the injection site.

According to (Ekure et al., 2012) Significant proportions of mothers study would not take their child for immunizations for several conditions that were not contraindications such as antibiotics use, recent recovery from illness, family history of convulsions, mental challenges etc. This portrayed a poor attitude toward childhood immunization among nursing mothers in Nigeria. The implication of this is that children's immunizations would be avoidably missed and even if the schedule is

completed it could be at ages older than required because of missed opportunity. These delays in immunization expose children to various preventable diseases. According to Kimmel, Burns, Wolfe and Zimmerman (2007), negative attitude which include mothers' fear from vaccination was found to be significantly affecting the immunization status of their children.

### **Knowledge and compliance in childhood immunization**

According to (Jheeta and Newell, 2008); (Selvaraj et al., 2014) and (Birhanu et al., 2016), mothers' knowledge of immunization is a primary factor for immunization coverage regardless of socioeconomic categories. Also, introduction of newer vaccine into the community needs lot of efforts in disseminating the knowledge to the community and getting their consent for appropriate implementation (WHO, 2005). In their study, (Selvaraj et al., 2014), knowledge on routine pentavalent vaccines and socioeconomic correlates among mothers of children aged younger than 5 years in Urban Puducherry and found that even though mothers had poor knowledge on the schedule of the vaccines, of 215 mothers 172 of them knew when to take their child for next immunization. Also, 96.3% of nursing mothers had received immunization for their children from government health center, most commonly (80%) from urban health center, and 3.7% had received from private hospitals (Selvaraj et al., 2014).

In addition, World Health Organization (2009), in the global immunization division CDC report, affirmed that the global parental knowledge regarding childhood immunization has been low and parents have negative beliefs about measles and vaccination programs. Parental knowledge on vaccines have been known to be important factor in predicting childhood immunization status (Gust, 2004). Also, (Birhanu et al., 2016) found that knowledge of mothers about childhood vaccination was not adequate in Africa which Nigeria is part. Despite this inadequacy, a very high percent of mothers had good practice of childhood immunization. However, (Birhanu et al., 2016) stated that it would be of good benefit if health education is introduced and used to promote knowledge of immunization practice among nursing mothers especially in Africa such as Nigeria.

Merging the result of (Birhanu et al., 2016), (World Health Organization, 2009) and Selvaraj et al., (2014), it could be deduced that the low level of knowledge about childhood immunization is high among nursing mothers in Africa such as Nigeria. In Nigeria, the study of (Ekure et al., 2012) found that vaccine preventable diseases account for 22% of under-five deaths in Nigeria and poor knowledge have been responsible for non-vaccination of children. According to (Bedford and Lansley, 2007), parental decision on infant immunization is influenced by their knowledge of the

infectious disease being prevented and the likelihood their child will become infected. Also, (Bakhache et al., 2013), exposure to disease information which in this study refers to as knowledge of the infectious disease significantly augmented parental acceptance by increasing the percentage of parents who would likely accept co-administration of vaccine as well as the percentage of parents who would schedule a separate office visit to receive vaccine. Also, high percentage stated that knowledge influenced parental decisions about vaccination (Bakhache et al., 2013).

According to (Montasser et al., 2014), research on parental health beliefs and knowledge often assumes that parents who decline immunization are simply less knowledgeable and persistent in the health care setting. This misperception was partially due to ignoring the fact that some parents lack access of well-child care (Ashley et al., 2007). (Zagminas et al., 2007) assessed parents' knowledge on immunization and noted that most of the respondents can be characterized as having a positive opinion about vaccination, although 20-40% of respondents indicated insufficient knowledge on this issue. In addition, greater concern about the safety of vaccines was expressed by older parents, residents of towns and highly educated individuals (Rogalska et al., 2010). On the other hand researchers in developed world found parents' attitudes and beliefs to have little effect on their children's immunization levels (Strobino et al., 1996).

### **Source of information of childhood immunization**

According to World Health Organization (2005), sources of immunization and knowledge about immunization were as follows: government (76%), private (8%), and non-governmental agencies (2%). Also, (Selvaraj et al., 2014) added that source of knowledge about immunization were obtained from pamphlets, hoardings, and newspapers are few other sources listed by participants, which showed information on pentavalent vaccine. Also, (Montasser et al., 2014) found that the main source of information about vaccination was obtained from physician and nurse.

Consistently, in the study of (Rogalska et al., 2010), physician, general practitioners, and nurses were found to be the most important and the most reliable source regarding vaccination knowledge. In addition, (Abbas and Chowdhury, 2005) stated that the mass media are the major sources of awareness regarding immunization. In addition, among the poor households and those of middle economic categories, radio is the most used source of information. Among the upper economic level households, TV is the main source of information. Other sources of information are neighbors, community health workers, friends, local village leaders and family members (Ministry of Health, Rwanda and United Nations Children's Fund in Rwanda, 2014).

Kio et al., 2016) stated that nursing mothers get their information from the health workers.

## CONCLUSION

Studies affirmed that knowledge of childhood immunization is not adequate among mothers in Nigeria. This explains the downward trend of childhood immunization compliance since 1990. This phenomenon contributed to the skyrocketing death rate of under five children in Nigeria.

Positive attitude and knowledge of childhood immunization is a major solution in combatting the menace of childhood immunization noncompliance among the nursing mothers in Nigeria. Numerous studies have shown the association between low level of knowledge, and immunization noncompliance. If Nigeria will achieve the sustainable development goal 3 in the year 2030, the stake holders of health developments in Nigeria needs to urgently intensify the implementation of policies on Childhood immunization. The Nigerian Government needs to place more priority on the implementation of policies on national childhood immunization programme across the country. Because there seems to be poor political will on the part of the political office holders and the decision makers in ensuring childhood immunization.

In motivating the parents to appreciate and exhibit positive attitude towards childhood immunization the government and health care givers needs to do more on information dissemination on childhood immunization.

Improved knowledge and attitude on childhood immunization will no doubt enhance better childhood immunization compliance. Therefore, improving the health status of the under five- children in Nigeria.

## RECOMMENDATION

The following are my recommendations

- Usage of bulk SMS by the health care givers and stake holders as a reminder and medium of information dissemination on childhood immunization.
- Collaborative efforts with the community and religious leaders in the area of information dissemination.
- Governments at all levels and health care givers should intensify on exploring more avenue to disseminate information other than traditional health educations that the mothers receive during infant welfare clinic e.g. IV adverts, flyers on childhood immunization, more radio adverts on childhood immunization, usage of town criers especially in the villages.
- Good rewards system should be in place to encourage parents whose child/children complete the childhood immunization.

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