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Knowledge and Immunization Uptake in Awe Local Government Area-Nasarawa State, Nigeria

[1]Ismaila Zango Mohammed &
[2]Usman Ibrahim
[1&2]Department of Sociology
Bayero University, Kano

Abstract

Immunization is one of the surest ways of maintaining a disease- free and healthy society. The World Health Organization (WHO) states categorically the numerous vaccines an infant must take if he/she is to live a healthy childhood life, which include the Oral polio vaccine, Diphtheria, Pertussis, Tetanus (DPT3), BCG, and Measles, vaccines, etc., which together consist of what is called the six immunizable vaccines that face series of challenges due to fear, mistrust and general apprehension in the Nigerian society. The main thrust of this paper is to study the knowledge and uptake of the immunization in Awe. The target groups for the study are men and women who are ever married within the age group of 15-49 years, with at least a child that is 5years old who must have received all the basic vaccinations, while the sample of the study is 360. Multi-stage cluster sampling technique was used for selecting the respondents for the study. The quantitative data generated was analyzed using the Statistical Package for Social Science (SPSS). The study finds out that immunization is favorable in the community because of the high level of knowledge in the area. It also reveals that income does not influence the practice of immunization, but other variables such as knowledge and religion do so in the study area.

Keywords:
Childhood, Diseases, Immunization, Knowledge, Uptake

Corresponding Author:
[1]Ismaila Zango Mohammed

Background to the Study

Over the years, negative perception, fear, mistrust and apprehension have led to the failure of immunization exercises in the developing nations where cases of polio and other immunizable childhood killer diseases are still endemic. These hindered the realization of the reduction of child mortality by two-thirds by the year 2015 as envisaged by the Millennium Development Goals (MDG4). Children are naturally cherished by their parents and the society in general. One of the general conceptions about children all over the world is that they are the leaders of tomorrow, which elicits their protection against diseases and possible deaths. Many children in the developing countries such as Nigeria suffer as a result of actions perpetrated by their parents, guardians, relatives, care-givers and the society due to some beliefs or perceptions on the immunization. Many early childhood deaths can be prevented by immunizing children against preventable diseases and by ensuring that children receive prompt and appropriate treatment when they become ill (NPC, 2009).

Like in many other Sub-Saharan African countries, Nigeria is still experiencing tremendous crises in health care and survival (Obioha and Ajala, 2010). These crises reflect more on under-five mortality and morbidity, which have not witnessed significant improvement over the past decade. For example, the Nigerian Demographic and Health Survey of 2013 show the under-five mortality rate of 128 deaths per 1,000 live births (NPC, 2014). This figure is very high, meaning in every six children born in Nigeria one dies before his/her fifth birthday. There is an adage that says, "health is wealth". This aptly describes the importance of health to a nation, a community as well as the family and its members. Healthy living is seen as an improved quality of life, which is the aspiration of every society.

Immunization is a proven tool for controlling and eliminating life threatening infectious diseases and is estimated to avert between 2-3 million deaths each year globally (WHO, 2011). Policies relating to immunization were designed governments to promote the common good, by ensuring that all people receive immunizing treatment to reduce or curtail the spread of certain infectious diseases in the population. Nigeria attained universal childhood immunization (UCI) with 81.5% coverage for all the antigens in 1990 (Yusuf, 2004). However, the success did not last long. By 1996, immunization coverage had declined substantially to less than 30% for DPT3 and 21% for the three doses of oral poliovirus vaccine (OPV). The National Immunization Coverage Survey (NICS) of 2003 showed a national DPT3 coverage of 24.8%, with variations from 8.8% in the North West to 45.9% in the South East geo-political zone of the country. These results further decreased to 18%, as reported in 2006. The NICS result of October 2010 indicates that 52% of Nigerian children aged 12-23 months are fully immunized, and at present the vaccine coverage rate based on the 2013 NDHS is 25% for all the antigens. This result shows that immunization in Nigeria has been characterized by intermittent successes and failures. According to Closser, Rosenthal, Maaes, Justicie, Mohammed, Dukku, Koon and Nyirazinyoye (2016) the perception od parents, workers, and LGA-level officials is that there is mismatch between poor-quality health services generally and frequent campaigns on polio eradication is a driving force behind refusals.

In Nasarawa State however, the basic vaccines coverage rate is 20.1% which is lower than the national coverage with variations on the categories of the vaccines. For instance the national average for some vaccines shows that BCG has 62.3%, DPT[1] 60.1%, DPT[2] 42.6%, DPT[3] 34.1% (DPT 45.9%), Polio[1] has 65.2, polio[2] 42.2, polio[3] 25.8 while measles has 45.4% coverage (NPC, 2014). This however shows that there is a wide gap between Nasarawa State being the area of study and the Federal Capital Territory that is in the same geopolitical zone and which has a coverage rate of 60.9%. Many factors are responsible for this, including the fact that children became sick after being injecting with vaccines especially DPT and measles that are inject able. This made parent to reject the second and the third round of the vaccines. Another factor relates to the fact that Awe community is bordered by three states; Taraba, Plateau and Benue and some of the inhabitants of the community are nomadic Fulani herdsmen who are difficult to reach due to their transhumant nature. In recognition of the above, this study is conducted to determine the level of immunization coverage in the study area

Literature Review and Theoretical Framework

Immunization refers to the deliberate administration of antigens into the body of an individual against the incoming infection or foreign agents that are pathogenic. It is also the process of preventing child difficulties, especially those that are under-five years of age or whom their immunity is less to fight against the infections of pathogenic micro-organisms (Obiona, 2007). In the same vein, Joseph (2006) further defined it as the process of administering antigens inform of vaccines into the body in order to stimulate the production of specific antibodies to fight against the foreign infectious agents. It is also a technique used to create an immune response that results to the resistance of a specific disease, using killed or live attenuated microbes. Similarly, according to Pasteus (2006), immunization is the process of immunity production in an individual against infectious diseases by an inactivated agent in the body to fight and defend the body against diseases.

The World Health Organization (WHO, 2011) states categorically the numerous vaccines an infant must take if he or she is to live a healthy and disease-free childhood life, which include Oral polio, Hepatitis B, Pertussis, Diphtheria vaccines etc. Albert (2012), a health expert, itemizes some of these vaccines which should be administered under the supervision of a paediatrician or other qualified health care professionals. These include Hepatitis B at birth, the Polio(virus) vaccine, beginning at age 2 months, the Haemophilus influenza type B vaccine at age 2 months, Diphtheria, Tetanus and Pertussis (whooping cough) at age 2 months and Pneumococcus (bacteria) beginning at age 2 months. Others he said are measles, mumps, and rubella or "MMR," beginning at age 1, Hepatitis A (virus) at age 1, Meningococcus (to prevent illness, such as meningitis, from the bacteria Neisseria meningitides). In addition, the influenza vaccine may be administered beginning at age 6 months. At age 5,through intranasal administration of the vaccine, live and attenuated influenza vaccine is an acceptable alternative to the intramuscular trivalent inactivated influenza vaccine. Therefore, immunization remains one of the strongest measures towards preventing child mortality and ensuring child health and survival.

Nigeria is a signatory to all global immunization targets of reaching 80% DPT[3] coverage in 80% of the districts in developing countries by the year 2005, as set by several international bodies, such as the World Health Assembly (WHA), the Global Alliance for Vaccines and Immunization (GAVI), the United Nations General Assembly Special Session (UNGASS), the Global Immunization Vision and Strategy (GIVS) and the Task Force on immunization (TFI). These goals have renewed the commitment of the partners and countries to ensure that every country implements immunization activities focusing on the Reaching Every District (RED) strategy, so that all eligible children benefit from immunization. Nigeria's universal child immunization coverage has remained low over the past decade. The NDHS 2013 shows the percentage of children age 12-23 months who received specific vaccines at any time from 2003 to 2013. The result shows that in 2003, only 12.9% of children received all the basic vaccinations, 22.7% in 2008 while in 2013 only 25.4% received all the basic vaccinations in Nigeria (NPC, 2014). These results show that the progress recorded in vaccination for a decade is not enough to meet up with the global target. 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, withdrawal of such donor funds used in the conduct of ad-hoc immunization campaigns, lack of ownership and acceptance at the community levels.

The Former Nigerian Minister of Health, Nwosu (2003), asserted that every year, more than three million Nigerian children under-five die from diseases linked to the environment inwhich they live, learn and play. Similarly, the Director of Primary Health Care Development Agency (2011) posits that 1.5 million children in Nigeria die before the age of 2; because about 6 million babies are expected annually in Nigeria and one quarter of them hardly celebrate their second birthday, meaning that many of them die within seven days, some within the first month while others within the first year due to poor immunization coverage and rejection (Kurfi, 2011).

Smith (2005) maintains that people of various religious denominations reject the practice of immunization on the basis of religious doctrines. The issue of compulsory immunization allows the state to strip people of their constitutional rights to freedom of religion because it is supposedly justified by public health concerns. Mandatory vaccination dictates what people can or cannot do with their bodies. This governmental interference with the bodies of its citizens violates civil liberties and has many audible opponents.

A study conducted on the knowledge, perception and beliefs about childhood immunization and attitudes towards the uptake of the poliomyelitis immunization in Northern Nigeria by a team of community physicians and medical consultants drawn from Bayero University, Kano and Ahmadu Bello University, Zaria (2006) commissioned by the National Programme on Immunization, identified important reasons for immunization low coverage as "those problems arising from knowledge, attitude and perceptions regarding vaccination in the north that is predominantly Muslim".

This study uses the Health/Epidemiological Transition theory and the Rational Choice theory as frame of reference. Abdel Omran's 1971 theory of epidemiological transition is an attempt to account for the extra-ordinary advances in health care made in industrialized countries since the eighteen century. According to Omran, all societies experience three "ages" in the process of modernization: the "age of pestilence and famine", during which mortality is high and fluctuating, with an average life expectancy of under 30 years, the "age of receding pandemics", during which life expectancy rises considerably, from under 30 to over 50; and the "age of degenerative and man-made diseases", during which the pace of the mortality decrease slackens, while the disappearance of infectious diseases increases the visibility of degenerative diseases, and man-made diseases become more and more frequent. The "cardiovascular revolution" of the 1970s launched a new period of progress. However, Jay Olshansky and Brian Ault (1986), followed by Rogers and Hackenberg (1987), without criticizing the basic premises of the theory of epidemiologic transition, introduced the idea of a "fourth stage" during which the maximum point of convergence of life expectancies would seem to increase due to the achievements in the treatment of cardiovascular diseases. Jay Olshansky et al (1990) set this new maximum at 85 years. Based on the above theoretical postulation, Nigeria is in the second stage of Omran's categorization whereby most of the diseases are preventable, but due to inadequate preventive measures, they tend to cause the excessive deaths of children or people. Moreover, in terms of life expectancy, Nigerian's figure at present is 51 years.

The Rational choice theory also known as the Choice theory or the Rational action theory is a framework for understanding and often formally modelling social and economic behaviour. Rationality is widely used as an assumption of the behaviour of individuals and the analysis of human decision-making. Rational choice is premised on a utilitarian belief that actions are based on a conscious evaluation of the utility of acting in a certain way. In terms of immunization here, rational choice posits that individuals weigh the potential benefits and consequences associated with vaccinating children and then make a rational choice on the basis of this evaluation. This means that if an individual perceives the cost to be too high, the act to be too risky, or the payoff to be too small, they will choose not to engage in the act. Therefore, immunization is premised along this belief that the benefit of it is child health and survival while the perceived consequences for not immunizing children include illnesses and possible death.

From the two theories so far, one would understand the fact that, the health transition shows the movement in the causes of deaths in society overtime which is from preventable to non-preventable causes. This therefore, indicates a movement from the poor health condition to improved health condition leading to reduction in the mortality level. In this direction, immunization is considered to be one of the preventive measures that aid such reduction in the causes of deaths. On the hand, rational choice is more of the psychological belief of parents to either accept or reject vaccination based on the rationality of the parents in assessing the benefit and the cost of their action.

Materials and Methods

The study was conducted in Awe Local Government area of Nasarawa State. Awe was created in 1976 by the then military administration of General Murtala Ramat Mohammed as a result of the reform that was carried out that year. It was subsequently reconstituted in May 1989 and saw the emergence of Doma out of Awe local government area.In 1996, Keana Local Government was created out of Awe by the then military administrator, General Sani Abacha.

Awe occupies an area of 3,750 square kilometres. It shares boundaries with Taraba State to the East, Benue State to the South and Plateau state to the West. It also shares a boundary with Obi and Keana local government areas of Nasarawa State in the Northwest (Focus on Awe, 1991). In terms of ethnic composition, Awe is a heterogeneous society, which consists of Hausa, Fulani, Jukun, Gwandara, Tiv and Ankwe, etc. All these ethnic groups have their culture and tradition distinct from those of others. However, today almost all of these ethnic groups seem to assimilate the cultures and tradition of each other through religion and intermarriages. Three hundred and sixty (360) questionnaires were administered to the respondents and only three hundred and twenty four(324) were retrieved successfully answered, while twelve (12) were retrieved unanswered and twenty four (24) were not successfully returned.

The target groups for the study are men and women within the age group of 15-49 years, who are married with at least a child who is not less than five years old, Focal persons, the NPI manager, the Disease Surveillance and Notification Officer and other health personnel dealing with immunization in Awe local government area of Nasarawa State. Others are the traditional and the religious leaders (Imams, Pastors, Bishops, Reverend Fathers, etc.).The sample of the study consists of 200 men and 160 women. The reason for more men than women is the patriarchal nature of the area of study. Women have to seek for the acceptance and permission of their husbands before they can take their children for vaccination.

Multi-stage cluster sampling technique and purposive sampling were used for selecting the respondents. Five political wards were selected using lottery method namely, Galadima, Madaki, Kanje/Abuni, Akiri and Wuse. The names of all the political wards were written on small pieces of paper, squeezed thoroughly and removed without replacement. Secondly, two locations were selected within the wards to give ten locations, within the locations two streets were further selected making a total of twenty streets using the same method. Furthermore, systematic sampling method was adopted and used to select household using skip method. Seventy two (72) respondents were selected from each of the ward, 36 from each location, while 18 respondents from each street using the same technique.

Purposive sampling techniques was used in selecting ten medical personnel/traditional or religious leaders for in-depth interview among which include the NPI manager, Cold chain officer, focal persons, disease surveillance and notification officer, traditional and

religious rulers, and other health personnel within the unit. The quantitative data generated were analyzed using the Statistical Package for Social Science (SPSS), while the qualitative data were analyzed in narrative form to compliment and integrate the quantitative data gathered.

Results and Discussions

Table 1: The Socio-Demographic Features of the Respondent

Gender	**Frequency**	**Percentage**
Male	182	56.2
Female	142	43.2
Total	**324**	**100.0**
Age		
15-19	21	6.5
20-24	62	19.1
25-29	80	24.7
30-34	59	18.2
35-39	43	13.3
40-44	31	9.6
45-49	28	8.6
Total	**324**	**100.0**
Marital Status		
Married	293	90.4
Divorce	20	6.2
Widow	11	3.4
Total	**324**	**100.0**

Source: (Fieldwork 2014)

Table 1 above shows that 56.2% of the respondents are males, while 43.8% are females. In addition, majority (62%) of the respondents are young within the age of 20-34 years. Overwhelming majority (90.4%) of them are married. Since the issue of uptake of vaccination involves people with children and the general belief in many Nigerian societies is that if you are not married you cannot get a child.

Table 2: Socio-Economic Features of the Respondent

Level of Education		
No education	17	5.2
Qur'anic	81	25.0
Primary	41	12.7
Secondary	89	27.5
Tertiary	96	29.6
Total	**324**	**100.0**
Knowledge of immunization		
Yes	276	85.2
No	48	14.8
Total	**324**	**100.0**
Children immunized		
Yes	313	96.6
No	11	3.4
Total	**324**	**100.0**

Source: (Fieldwork 2014)

Table 2 indicates that a significant percentage (57.1%) have at least secondary level of education. This means many of the respondents are literate who can read or write in at least one language. It is evident from the table that 85.2% of the respondents have knowledge of the immunization exercise in the study area. The uptake of immunization depends largely on the people's knowledge of the importance attached to the vaccination. This becomes possible through different sources of information given to the respondents sponsored by different international agencies, such as the World Health Organization, UNICEF, etc. These reflect on the respondents 'acceptability of the uptake of vaccinating their children in the community with 96.6% of the respondents indicating that their children are immunized. This shows that there is higher uptake of the immunization in Awe community because immunization is generally acceptable in the area.

Table 3: Children Uptake of Immunization in Awe

Polio	**Frequency**	**Percentage**
Yes	303	93.5
No	21	6.5
Total	**324**	**100.0**
Measles		
Yes	235	81.3
No	54	18.7
Total	**289**	**100.0**
DPT		
Yes	113	45.7
No	134	54.3
Total	**247**	**100.0**
BCG		
Yes	141	53.4
No	123	46.6
Total	**264**	**100**

Source: (Fieldwork 2014)

Table 3above indicates the type of immunization children ever received. It is clear that 93.5% of the respondents indicated their children have received polio immunization, 81.3% indicated their children were ever immunized against measles. It is evident that only53.4% and 45.7% indicate the children received BCG and DPT vaccines respectively. Thus, Diphtheria, Pertussis, Tetanus(DPT) have poor uptake because of the fact that they are inject able vaccines which causes fever to the children for some hours if injected with, therefore, parent reject the vaccines to avoid such effect. The NDHS (2008) shows that 50% of Nigerian children received vaccinations for BCG against tuberculosis.

Two health workers during separate interviews confirmed this by saying;

> *Parents do accept the vaccine but not all and it depends on the level of sensitization and education. Other parents are careless, because you have to follow them in their houses before they accept the vaccine. Of course others reject it previously because of the belief that it causes sterilization while others said their children cry over night due to fever, etc. (Focal person, Madaki ward).*
>
> *Formally we use fixed post but due to poor uptake we changed to mobile post...This therefore results in an increase in the uptake of vaccination though few people still reject the vaccines (Focal person, Kanje/Abuni Ward).*

In essence, taking vaccination to the door steps of the people has increased the vaccines uptake in the area as indicated above.

Table 4: Friendly Attitude of the Health Personnel During Vaccination

Attitude	Frequency	Percentage
Friendly	300	92.6
Unfriendly	23	7.1
No response	1	0.3
Total	**324**	**100.0**

Source: (Fieldwork 2014)

Table 4 shows that health personnel in Awe were friendly during immunization which transforms to the general acceptability of the immunization in the area.

In order to examine the possible relationship between the respondents' knowledge and the uptake of immunization, the two factors are subjected to cross-tabulation (X^2) test. The contingency data showing the distribution of the respondents by knowledge and the uptake of immunization from which the statistical results used in this analysis are derived are presented in table 5 below:

Table 5: Respondents' Knowledge by Uptake of Immunization

Knowledge	Uptake of immunization in the last two years		Total
	Yes	No	
Yes	259 (93.8%)	17 (6.2%)	**276 (100%)**
No	41 (85.4%)	7 (14.6%)	**48 (100%)**
Total	**300 (92.6%)**	**24 (7.4%)**	**324 (100%)**

Source: (Fieldwork 2014)

Chi-square value = 4.230
Degree of freedom = 1
Critical table value = 3.841
P value = 0.05
Cramer's V =.114

A critical study of the contingency table above reveals a number of facts about the relationship between the two factors that are cross tabulated. By the result of the chi-square that is presented in table 4, the respondent knowledge has been shown to be related with the practice of immunization (X^2=4.230, df=1; P<0.05). We arrived at this conclusion because the X^2 statistics presented above reveal that the X^2 value of 4.230 is greater than the table value at 0.05 with1 degree of freedom. The X^2 result shows that there is relationship between the respondents' knowledge and the uptake of immunization. In order to determine the strength of the relationship, Cramer's V was employed and arrived at a value of .114 indicating a weak relationship.

From the findings of this study, it is clear that an overwhelming majority (85.2%) of people in the study area have knowledge of the immunization exercise. It is evident that the uptake of immunization largely depends on the people's knowledge of and importance attached to immunization. Furthermore, the study reveals that people tend to be selective on the type of vaccination to be given to their children. This is because some of the vaccines, especially inject able vaccines like DPT, BCG and Measles cause excessive pain to their wards (kids), forcing them to stop crawling or working for some hours or days. Parents therefore, do reject the vaccines on the second and the third round. Once such vaccines are rejected the chances of healthy life by the children may not be guaranteed and there is possibility of the outbreak of such infectious diseases in the community and beyond which may not augur well to other children, community, local government, the state and the country at large.

Cross tabulated data on the findings of the study indicate that knowledge is a determining factor for the uptake of immunization despite the fact that the relationship between the two variables is weak using Cramer's V. In other words, for people to be able to know the impact of immunization they must have the knowledge, which if combined with the uptake would enhanced the survival of children and healthy childhood life.

Conclusion

Knowledge and uptake of immunization are important sources of reducing children's vulnerability to infectious diseases and subsequent improvement of the health conditions of babies and their survivorship. Therefore, this study can be concluded with the fact that a major change has occurred in terms of the way communities tend to perceive immunization from the controversial way of an attempt to sterilize the African/Muslims population towards improving the health standard of children in Nigeria. Immunization is found to be highly favourable in the study area because of the high level of knowledge and uptake despite the fact that there are cases of incomplete dosages of the vaccines. This is as a result of previous experience and the fact that some resident of the area are Nomadic Fulani that move from one place to another in search of pasture. Another reason is that some parts of the study area are bordered by three states (Nasarawa, Benue and Taraba). Therefore, some of the residents of this area tend to move from one state to another.

Recommendations

1. Government should put more priority to the health sector because of the slogan that says, “health is wealth”. Therefore, they should equip their clinics with more personnel, equipment and vaccines. Thus, government should show more political, economic and social commitment to the health sector so as to enhance its effectiveness in the delivery of services.
2. The service providers should be well trained and properly motivated by ensuring their welfare package and the availability of the vaccines in the rural communities where immunization service is hard to reach, especially those Tiv and Fulani settlements in the remote areas of Jangargari town.

3. The waiting period for the vaccination of pregnant women and newly born babies, which is once in a week, should be minimized by increasing the number of service providers or increasing the number of days for immunization in the various health facilities or centres that provide such services. Through this process immunization would be improved in the community.
4. The use of radio, television and other means of communication become imperative for effective mass enlightenment campaigns to educate parents and the care givers on the importance and the effectiveness of immunization than the traditional means of disease prevention used by most communities in the study area.

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