

# **LEVEL OF KNOWLEDGE OF PENTAVALENT VACCINE POSSESSED BY CHILD-BEARING MOTHERS (CBMs) IN NSUKKA LOCAL GOVERNMENT AREA OF ENUGU STATE.**

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## ***Abstract***

*The purpose of study was to determine the level of knowledge of pentavalent vaccine possessed by Child-bearing Mothers (CBMs) in Nsukka LGA of Enugu State. The study adopted the descriptive survey research design. Three research questions and two null hypotheses were formulated to guide the study. The multi-stage sampling procedure using random sampling technique of balloting without replacement was used to select 225 CBMs in Nsukka LGA. Researchers' self-developed, valid and reliable questionnaire was used for data collection. Data collected were analyzed using percentages and mean. Chi-square ( $X^2$ ) statistic was used to verify the null hypothesis at .05 level of significance. The results showed that the level of knowledge of pentavalent vaccine possessed by CBMs in Nsukka LGA was average, the level of knowledge of pentavalent vaccine possessed by the CBMs differed according to level of education and that there was no difference in the level of knowledge of pentavalent vaccine possessed by the CBMs according to age. Based on the findings, the researchers' recommended among other things that awareness campaign of new vaccines should be strengthened especially among illiterate CBMs.*

**Key Words:** Knowledge, Pentavalent, Vaccine, Child-bearing mothers, Nsukka

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### **Introduction**

Immunization against childhood killer diseases has greatly helped in reducing the rate of deaths of children below five years of age. Additionally, immunization is one of the world's most cost-effective health interventions. Since immunization programme was launched in low and middle income countries worldwide in the mid-1970s, most countries have been using the same standard package of six vaccines against six diseases which include; measles, tetanus, diphtheria, whooping cough or pertussis, tuberculosis and poliomyelitis in their national immunization schedule. These vaccines have tremendously reduced infant morbidity and mortality in many countries of the world.

A vaccine is any preparation intended to produce immunity to a disease by stimulating the production of antibodies (World Health Organization-WHO, 2009). A vaccine is a biological preparation that improves immunity to a particular disease. A vaccine typically contains an agent that resembles the micro-organism causing disease and it is often made from weakened or killed forms of the microbe. The agent stimulates the body immune system to recognize it as foreign, destroying and marking it, so that the immune system can more easily recognize and destroy any of these micro-organisms that it later encounters (News Medicine, 2012). The Nigerian National Programme on

Immunization (NPI) had in some years back introduced hepatitis B and yellow fever vaccines in addition to the six routine vaccines, making a total of eight vaccines in the routine immunization schedule. Currently, Nigeria has joined other countries in introducing another vaccine against *Haemophilus influenzae* type-b (Hib). This is a bacterium that causes serious diseases in young children throughout the world. There are six types of *Haemophilus influenzae*; (a, b, c, d, e and f) but *Haemophilus influenzae* type-b bacteria accounts for over 90 per cent of serious *Haemophilus influenzae* infections in children. In Nigeria, 98 per cent of *haemophilus influenzae* infections in children are type b-Hib (Abanida, 2012). Hib causes more than half of all cases of bacterial meningitis in children less than 5 years old. It accounts for up to one-quarter of all cases of severe pneumonia in young children (James & Wat, 2009). Hib can also cause infections of blood, joints, bones, throat soft tissues and the covering of the heart.

As part of a wider effort to reduce the deaths of children under the age of five from preventable diseases, Nigeria has introduced a new set of vaccines called the pentavalent vaccine in 12 states (Salami, 2012). Pentavalent (5-in-one) vaccine is a single dose vaccine that prevents five childhood diseases; Hib diseases, diphtheria, tetanus, pertussis and hepatitis B. This replaces the DPT (triple) and Hepatitis B

vaccines in the National Programme on Immunization routine immunization schedule. All children between the ages of six weeks and eleven months should receive three doses of pentavalent vaccine within an interval of at least four weeks between doses. The NPI routine immunization schedule has now changed from what it used to be in order to reflect the new pentavalent vaccine. The new immunization schedule currently used in all the states that have started using pentavalent vaccine include; antigens BCG, OPV0, HBV0-at birth; OPV (3 doses); pentavalent vaccine (3 doses); measles and yellow fever. Below is the new routine immunization schedule for children under one year.

Contact	Minimum Target Age of Child	Type of vaccine	Dosage	Route of administration	Site
1 <sup>st</sup>	At birth	BCG	0.05ml	Intra dermal	Left upper arm
		OPV0, HBV0	2 drops, 0.5ml	Oral, Intramuscular	Mouth, Antero-lateral aspect of thigh
2 <sup>nd</sup>	6 weeks of age	Pentavalent1 (DPT, HBV and Hib)	0.5ml	Intramuscular	Antero-lateral aspect of thigh
		OPV1	2 drops	Oral	Mouth
3 <sup>rd</sup>	10 weeks of age	Pentavalent 2 (DPT, HBV and Hib)	0.5ml	Intramuscular	Antero-lateral aspect of thigh
		OPV2	2 drops	Oral	Mouth
4 <sup>th</sup>	14 weeks of age	Pentavalent 3 (DPT, HBV and Hib)	0.5ml	Intramuscular	Antero-lateral aspect of thigh
		OPV3	2 drops	Oral	Mouth
5 <sup>th</sup>	9 months	Measles	0.5ml	Subcutaneous	Left upper arm
		Yellow Fever	0.5ml	Subcutaneous	Right upper arm

**Immunization schedule for under one children. (National Primary Health Care Agency, 2012).**

According to Muanya (2012), Nigeria will now be able to prevent five diseases at once, preventing 396,000 cases of haemophilus influenza type b and save 27,000 lives yearly with the newly introduced pentavalent vaccine. In addition to the fact that many lives will be

saved, it will also save the infants from many needle pricks and reduce the cost of hospital visits. Mothers need to be fully aware of the new vaccine and its safety.

Introduction of new vaccine is always faced with many challenges including level of acceptance among care givers or mothers. Pentavalent vaccine, being 5-in-one vaccine may face some challenges of misunderstanding and misinterpretation by parents especially mothers. It is only severe lack of understanding that is capable of making parents to refuse a vaccine that will protect their children from many diseases (Ali, 2012). Hilton (2005) also asserted that there is a need for a campaign that concentrates on giving parents factual information about the risks, symptoms, potential complications and severity of some of the diseases that are included in the childhood immunization programme. This will help give parents accurate information so that they can assess the importance and relevance of current immunization policy. He further found out that there were some potentially serious misunderstanding and gaps in knowledge about many of the diseases, which generally led to a diminished sense of urgency for the combined vaccination.

Mothers often question the safety of combining several antigens into one vaccine. They are concerned about the child's immune system's capability to withstand many antigens in one. Some mothers had since been

skeptical over the triple vaccine (DPT) and now another higher, penta-(5-in-one) vaccine is being introduced. This implies increase skepticism to innovation. The importance of adequate information and awareness campaign about this new pentavalent vaccine cannot be over-emphasized.

Knowledge is the information, understanding and skills that you gain through education or experience (Hornby, 2010). Mothers need accurate information regarding the new vaccine, the five diseases it protects children against, safety of the vaccine and how they can continue with the new vaccine even if they have started with the separate DPT and HBV which pentavalent vaccine has now replaced. There is no doubt that one's level of knowledge about something influences his or her readiness to accept that thing. As an innovation, pentavalent vaccine must be well understood before mothers will fully accept to bring their children for immunization. Introduction of new vaccine may pose a serious challenge to routine immunization. In order to address this challenge, there should be continuous awareness promotion to all parents to protect their children (Ali, 2012). Subsequently, this should be followed by assessing the level of knowledge of CBMs, hence on the subject matter.

Child-Bearing Mothers (CBMs) are mothers within the ages of 18-45years. These are the mothers who may likely in one time or

the other to have children below five years who are eligible for pentavalent vaccine. CBMs need accurate and adequate information on pentavalent vaccine especially as it concerns its safety and effectiveness. Since the introduction of pentavalent vaccine, CBMs have been asking several questions on the safety and effectiveness of a five-in-one vaccine. Unclear answers to these questions may influence their willingness to accept the vaccine while clear answers and elaborate clarifications will positively influence their level of acceptance. Some CBMs seem to be ignorant of the five vaccines contained in the pentavalent vaccine, the corresponding diseases they protect against, doses required for full protection and safety of the vaccine. This paper therefore, sought to find out the level of knowledge of pentavalent vaccine among CBMs in Nsukka LGA of Enugu State.

### **Research Questions**

Three research questions guided the study.

1. What is the level of knowledge of pentavalent vaccine (PV) possessed by CBMs in Nsukka LGA of Enugu State?
2. What is the level of knowledge of PV possessed by CBMs according to level of education?
3. What is the level of knowledge of PV

possessed by CBMs according to age?

### **Hypotheses**

Two null hypotheses were postulated to guide the study.

**H<sub>1</sub>** There is no significant difference in the level of knowledge of pentavalent vaccine possessed by CBMs in Nsukka LGA based on level of education.

**H<sub>2</sub>** There is no significant difference in the level of knowledge of pentavalent vaccine possessed by CBMs in Nsukka LGA based on age.

### **Methods**

The study adopted the descriptive survey research design. The population of the study comprised 2,225 CBMs accessing infant welfare services in the thirty-five public primary health facilities in Nsukka LGA of Enugu State. Random sampling technique was used. Simple random sampling was used to select 225 CBMs for the study. Researchers' self-developed questionnaire in line with the research questions was used for data collection. The instrument was validated and subjected to reliability test which gave a value of .80. Two hundred and twenty (220) duly completed copies of the instrument were retrieved. Data generated were analyzed using percentages. Chi-square( $X^2$ ) statistic was used to test the null hypothesis at .05 level of

significance. Ashur's (1977) criteria were used to determine the level of knowledge. Less than 40 per cent of the respondents who indicated correct responses in any aspect of the variable investigated were considered low level of knowledge, a score of 40-59 per cent was considered average level of knowledge, while a score of 60-80 per cent was considered high level of knowledge. A score above 80 per cent was considered very high level of knowledge.

## **Results**

The results are hereby presented in tables as they relate to each research question and hypothesis.

**Table 1**

**Knowledge of Pentavalent Vaccine (PV) Possessed by CBMs in Nsukka LGA**

<b>Knowledge of PV</b>	<b>N</b>	<b>X%</b>	<b>Decision</b>
1. Knowledge of components of PV	220	49.4	Average
2. Knowledge of diseases PV protects against	220	47.28	Average
3. Knowledge of doses of PV	220	72.72	High
4. Knowledge of safety of PV	220	63.63	High
<b>Grand Mean Per cent</b>		<b>58.26</b>	<b>Average</b>

Table 1 shows that the level of knowledge of components of PV (49.4%) and knowledge of diseases PV protects against (47.28%) was average, while knowledge of doses of PV (72.72%) and knowledge of safety of PV (63.63%) was high respectively. The table further shows a grand mean of 58.3 per cent, which implies that the CBMs in Nsukka LGA possessed average level of knowledge of PV.

**Table 2**

**Knowledge of Pentavalent Vaccine Possessed CBMs in Nsukka LGA According to Level of Education**

Knowledge of PV	No formal education (N=18)		Primary education (N=48)		Secondary education (N=104)		Tertiary education (N=50)	
	X%	DE	X%	DE	X%	DE	X%	DE
Knowledge of components of PV	48.1	A	52.8	A	71.2	H	76.6	H
Knowledge of diseases PV protects against	46.3	A	47.2	A	61.4	H	63.3	H
Knowledge of doses of PV	66.7	H	68.8	H	74.0	H	80.0	H
Knowledge of safety of PV	63.9	H	65.6	H	74.5	H	82.0	VH
<b>Grand Mean Per cent</b>	<b>56.3</b>	<b>A</b>	<b>58.6</b>	<b>A</b>	<b>70.3</b>	<b>H</b>	<b>75.5</b>	<b>H</b>

Key: A= Average, H= High, VH= Very High, DE= Decision.

Table 2 shows that CBMs with no formal education (56.3%) and those with primary education (58.6%) had average level of knowledge of PV respectively. CBMs with secondary (70.3%) and tertiary education (75.5%) had high level of knowledge of PV. This implies that there was difference in the level of knowledge of PV possessed by the CBMs according to level of education.

**Table 3**

**Knowledge of Pentavalent Vaccine Possessed by CBMs in Nsukka LGA According to Age**

Knowledge of PV	18-30years (N=98)		31-45years (N=102)		46 and above (N=20)	
	X%	DE	X%	DE	X%	DEs
Knowledge of components of PV	59.2	A	62.4	H	66.7	H
Knowledge of diseases PV protects against	55.8	A	61.1	H	56.7	A
Knowledge of doses of PV	72.4	H	76.5	H	70.0	H
Knowledge of safety of PV	71.9	H	75.5	H	70.0	H
<b>Grand Mean Per cent</b>	<b>64.8</b>	<b>H</b>	<b>68.9</b>	<b>H</b>	<b>65.9</b>	<b>H</b>

Table 3 shows that all the age groups (18-30years=64.8%, 31-45years=68.9%, 46years and above=65.9%) had high level knowledge of PV. This implies that there is no difference in the level of knowledge of PV possessed by the CBMs according to age.

**Table 4**

**Summary of Chi-square ( $X^2$ ) Analysis of the level of Knowledge of Pentavalent Vaccine Possessed by CBMs in Nsukka LGA According to their Level of Education**

Variable	n	cal $X^2$	tab $X^2$	df	p	decision
Level of education	220	2.63	16.92	9	.05	accepted

Table 4 shows that the calculated chi-square (cal $X^2$ ) value of 2.63 is less than the table chi-square (tab $X^2$ ) value of 16.92 at df 9 and .05 level of significance. Therefore, the null hypothesis was accepted. This implies that there is no significant difference in the level of knowledge of PV possessed by the CBMs based on level of education.



**Table 5**  
**Summary of Chi-square ( $X^2$ ) Analysis of the Level of Knowledge of Pentavalent Vaccine Possessed by CBMs in Nsukka LGA According to Age**

Variable	n	cal $X^2$	tab $X^2$	df	p	decision
Age	220	0.713	12.59	6	.05	accepted

Table 5 shows that the calculated chi-square (cal $X^2$ ) value of 0.713 is less than the table chi-square (tab $X^2$ ) value of 12.59 at df 6 and .05 level of significance. The null hypothesis was therefore accepted, implying that there is no significant difference in the level of knowledge of PV possessed by the CBMs based on age.

### Discussion

The findings of the study in Table 1 showed that the level of knowledge of pentavalent vaccine possessed by CBMs in Nsukka LGA was average. This result was not surprising but in line with Salami (2012) which asserted that pentavalent vaccine is a single dose vaccine that prevents five childhood diseases; Hib diseases, Tetanus, Pertussis, Diphtheria and Hepatitis B. Though, findings in this table did not show high level of knowledge, they were still contrary to Hilton's (2005) findings which stated that there were serious misunderstandings and gaps in knowledge of parents on the new combined vaccination and the diseases it protects against. This may be as a result of inadequate information dissemination prior to introduction of the new combined vaccine.

Findings in Table 2 showed that CBMs with no formal and primary education had

average level of knowledge of PV, while those with secondary and tertiary education had high level of knowledge of PV. These findings were expected and in line with UNFPA (2012) assertion that levels of women's education are strongly associated with both lower infant mortality and lower fertility. Zahid (2004) opined that educated mothers tend to have a better understanding of diseases and child health management processes, and to seek medical attention on time than non-educated ones. The chi-square ( $X^2$ ) statistic analysis showed that there was no significant difference in the level of knowledge of pentavalent vaccine possessed by the CBMs based on level of education. The null hypothesis was therefore accepted.

Findings in Table 3 showed that all the age groups had high level of knowledge of PV. The chi-square ( $X^2$ ) statistic analysis

showed also that there was no significant difference in level of knowledge of pentavalent vaccine possessed by the CBMs based on age. This result was not surprising because maternal age may not affect the care she gives to her child especially when it concerns the health of the child. This finding supports Onwunaka's (2011) assertion that awareness programmes could make mothers across ages to be amenable to new ideas and adopt changes in health care practices.

### **Conclusion**

Based on the results and discussion of the study, the following conclusions were made.

1. CBMs in Nsukka LGA possessed average level of knowledge of pentavalent vaccine.
2. The level of knowledge of pentavalent vaccine possessed by CBMs in Nsukka LGA differed according to level of education.
3. There was no difference in the level of knowledge of pentavalent vaccine possessed by CBMs in Nsukka LGA according to age.

### **Recommendations**

1. Awareness campaign of new vaccines should be strengthened especially among illiterate CBMs.
2. Health educators should be employed in all health facilities to ensure adequate

information dissemination.

3. Government should introduce free adult education in all communities to enable rural women access to education.

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