

# Prevalence of Measles Among Under Five Children at Kwangwara Town, Birnin Kudu Local Government Jigawa State of Nigeria

Nasiru Sani<sup>1</sup>, Umar Faruk Abubakar<sup>2</sup>, Haruna Abdullahi Ibrahim<sup>3</sup> and Idris Muhammed Ango<sup>4</sup>

<sup>1</sup>University Health Services Centre, Federal University Dutse Jigawa State of Nigeria

<sup>2</sup>School of Health Information Management, Aminu Kano Teaching Hospital.PMB 3452 Kano. Nigeria

<sup>3</sup>Jigawa State College of Nursing and Midwifery-Birnin-kudu. Nigeria

<sup>4</sup>Shehu Idris College of Health Science and Technology, Makarfi- Kaduna State of Nigeria

E-mail: <sup>1</sup>[nasirusanimusa@gmail.com](mailto:nasirusanimusa@gmail.com), <sup>2</sup>[faz\\_raab1968@yahoo.com](mailto:faz_raab1968@yahoo.com),

<sup>3</sup>[ahibrahim02@gmail.com](mailto:ahibrahim02@gmail.com), <sup>4</sup>[idrisangomakarfi1@gmail.com](mailto:idrisangomakarfi1@gmail.com)

**Abstract**—Measles control is yet to be achieved in Nigeria despite global effort geared towards measles elimination. The aim of this research was to determine the prevalence and describe the pattern of childhood measles among children under five years of age at Kwangwara Town, Birnin Kudu local government, Jigawa state, Nigeria. Case notes of children from Kwangwara town with measles seen at the FMC (Birnin Kudu) over a five year period (2<sup>nd</sup> March, 2011-25<sup>th</sup> July, 2015) were retrospectively reviewed. A hundred and eleven (111) cases of measles were seen at FMC. Measles constituted 2.0% of the total pediatric admissions and the peak age of the presentation was infancy 45 (47.4%). Twenty seven 27 (60.0%) of the children were less than 9 months. Majority of the children 95 (81.2%) had not received the prior measles vaccine, with a major reason given for the failure to receive the vaccine being that the child was not up to the age for immunization. Complications occurred more in the malnourished and the unvaccinated children. Of the 76 children who were admitted, there was a case fatality rate of 3.9%. Mortality was associated with bronchopneumonia, lack of vaccination and age under 2 years. Measles remain a burden in our environment, affecting mostly infants and unimmunized. It was recommended that parents should be further educated on the importance and the need for vaccination of their children against measles.

**Keywords:** Measles, children, infancy, vaccination, Jigawa, Kwangwara, Birnin Kudu, Nigeria.

## 1. INTRODUCTION AND BACKGROUND

Measles is an acute and highly contagious viral disease associated with high neutrality mainly from complication like pneumonia, diarrhea, and malnutrition. It is major causes of vaccine preventable death globally caused an estimated 548,000 death mostly among children under the age of 5 years (Global measles and Rebecca Strategy Plan 2012-2020). With case fertility rate of 3-5% in hospital setting and as high as 10% during epidemics in developing countries, measles is still

a major cause of less than 5 mortality (AFRO Measles surveillance Guidelines, 2004).

Despite the availability of a safe and effective vaccine. More than 30 million people are affected by the disease each year, mostly in developing countries, particularly Africa and Asia (AFRO measles Surveillance Guidelines, 2004). In the year 2000, measles an effort to reduce the burden of measles, measles initiative was launched in 2001 with the aim of reducing the global measles prevalence as well as mortality. This public health partnership, which later became the measles and Rubella initiative in 2012, was led by the American Red Cross, World Health Organization (WHO), United Nations Children's Emergency Fund (UNICEF), Centers for Diseases Control and Prevention and United Nations Foundation (Measles and Rubella Initiative, 2013).

Over the next decade, Global measles death dropped by 71%, from 548,000 cases in 2000 to 158,000 cases in 2011 following an increase in routine measles vaccination coverage up to 84% (Global Measles and Rubella Strategic Plan 2012-2020; Measles and Rubella Initiative, 2013; status report on progress towards measles and rubella elimination, 2012). In 2001, twenty three mass vaccination campaigns were implemented with over 117 million children between the ages of 9 months and 15 years vaccinated against measles in countries with high disease burden (Status report on progress towards measles and rubella elimination, 2012).

Despite this global progress, measles control still remains a challenge in Sub-Saharan Africa (Measles and Rubella initiatives, 2013). Though the measles vaccine is administered at 9 months under the Nigeria's Expanded Programme on Immunization (EPI) (PAN Advisory Committee on Immunization, 2012), Nigeria is still one of the 47 priority countries in the world where the burden of the disease is

highest with outbreaks of measles still being reported in various states. By 2011, 1.7 million Nigerian children had not received the 1<sup>st</sup> dose of the MCV and there were 18,843 cases of measles reported (Status report on progress towards measles and rubella elimination, 2012). With other outbreaks in 2013, where 29,000 cases of measles were reported in some states in Northern Nigeria, a nationwide emergency mass vaccination campaign was conducted targeting children between the ages of 9 and 59 months (Measles and Rubella Initiative, 2013).

Presently, the Global Measles and Rubella Strategic Plan 2012-2020 has been developed with a five prolonged strategy to cut global measles death by at least 95% by 2015 compared with the 2000 levels and to achieve measles and rubella elimination in at least 5 of the 6 WHO regions by 2020 (Measles and Rubella Strategic Plan 2012-2020; Measles and Rubella Strategic Plan, 2013). Nigeria though part of the WHO region of Africa is yet to incorporate the combined Measles and Rubella (MR) vaccine into its routine immunization schedule, though it has been endorsed by the Pediatric Association of Nigeria (PAN Advisory Committee of Immunization, 2012). Recognizing the important contribution of measles to childhood mortality, its elimination and eventual eradication would contribute to the attainment of the 4<sup>th</sup> Millennium Development Goals by 2015 (4<sup>th</sup> Millennium Development Goals, 2013).

**Purpose of the Research:** To know the Prevalence and pattern of Measles Disease among under Fives at Kwangwara Town, Birnin Kudu Local Government Jigawa State.

## 2. OBJECTIVE OF THE RESEARCH

1. To identify the number of people diagnosed as having measles in Kwangwara town over the study period.
2. To find out the health problems of measles patients from Kwangwara town at the point of presentation at the facility over the study period.
3. To find out the vaccination status of all the victims seen over the period of the study.
4. To identify the factors associated with noncompliance to measles vaccination among the unvaccinated subjects.

## 3. DESCRIPTION OF PROBLEM ANALYZED:

The patients were seen either in the Pediatric Out-patient clinic or the Children's Emergency Ward and were admitted into the isolation room of the Pediatric ward. Treatment for the admitted cases consisted of broad spectrum intravenous antibiotic, chloramphenicol eye drops, and calamine.

A case fatality rate of 3.9% was reported in the present study with all the children who died being less than 2 years old. Other Nigerian studies have reported case fatality rates ranging from 2.8% (Asindi and Ani, 1984) to 34% (Osinusi

and Oyediji, 2006) in hospital settings. Reasons for the relatively low mortality from measles in this study could be due to the fact that most of the admitted children were well nourished; so had higher immune status to fight the disease than those who were malnourished (Danet and Fermon, 2013). Similar findings were noted by Asindi and Ani, 1984 but this was contrary to reports from other Nigerian authors (Osinusi and Oyediji, 1986; Fetuga and Njokanna, 2007; Ibadin and Omoigberale,

1998; Ahmed et al., 2010) who attributed the increased mortality from measles to a decline in the nutritional and socioeconomic status of Nigerian children.

## 4. METHODOLOGY

Retrospective research design was used for the study where medical records of all the patients diagnosed as having measles seen at FMC Birnin Kudu over the study period were retrieved from the medical & health record department. Records of all the subjects that satisfied the inclusion criteria were reviewed.

## 5. RESEARCH FINDINGS

Over the 5 year period, a total of 111 cases of clinically diagnosed measles were seen at the FMC. Seventy-two; 72 (65%) of these children were admitted into the isolation rooms of the pediatric ward and the remaining 39(35%) children were seen and managed on an out-patient basis.

Of the 111 children presenting with measles, the duration of illness before presentation ranged from 1 to 30 days with a mean of  $6.78 \pm 5.39$  days (95% CI 7.76- 5.79).

Majority of them; 98 (83.8%) had been ill for a week or less, 8 (6.8%) were ill for a period of 8-14 days, 7(6.0%) were ill for 15-21 days and 4(3.4%) were ill between 22 and 30 days before presentation at the hospital. The duration of hospitalization for the 76 children who were admitted ranged from 1 to 30 days with a mean of  $5.55 \pm$

4.31 days (95% CI 6.54-4.57). Majority; 66 (86.8%) of them were admitted for a week or less, 5(6.6%) for 8- 14 days, 4(5.3%) for 15- 21 days and 1(1.3%) for 22-30 days before discharge. History of contact with a person with measles was positive in 24 (20.5%) and negative in 93 (79.5%) patients. Of the 24 positive cases, 6 (25.0%) of the contacts were siblings while 18 (75.0%) were neighbors.

## 6. MEASLES VACCINATION STATUS

Out of the 111 children with measles, 22(18.8%) had received measles vaccine before the illness while 95(81.2%) had not. Among the unvaccinated children, 45(47.4%) were infants, out of which 27 (60.0%) were less than 9 months old. Out of the 22 children who had received the measles vaccine, 4 (18.2%) were aged less than 12 months, 17 (77.3%) were

between the ages of 12 and 59 months while 1(4.5%) was over 59 months of age.

The major reasons given for the failure to vaccinate the 95 children were (i) the children were less than 9 months and not yet up to the age for immunization; 19 (20.0%) and (ii) the lack of vaccines and/or the health worker at the Health Care center; 7 (7.4%)

**7. PRESENTING COMPLAINTS OF THE 111 CHILDREN WHO PRESENTED WITH MEASLES**

| Presenting complaints                           | Total (of 111) | Percentage (%) |
|---|----------------|----------------|
| Fever   | 111            | 100.0          |
| Skin rashes                                     | 105            | 95.0           |
| Cough   | 101            | 91.0           |
| Crazy   | 65             | 58.0           |
| Poor appetite                                   | 69             | 62.2           |
| Conjunctivitis                                  | 52             | 47.0           |
| Vomiting ± diarrhea                             | 47             | 42.2           |
| Oral sores                                      | 30             | 27.0           |
| Weight loss                                     | 35             | 31.0           |
| Fast breathing                                  | 23             | 21.0           |
| Seizures ± loss of consciousness ± irritability | 23             | 21.0           |

**8. DISCUSSION OF FINDING**

Measles constituted 2.0% of the pediatric post-neonatal admissions. This is similar to 2.3% and 2.0% reported by Ibadan and Omoigberale, 1998 and Ahmed et al., 2010 respectively, but lower than figures reported in other Nigerian studies (Etuk et al., 2003; Fetuga and Njokanma, 2007; Onyiruika, 2011; Adeboye et al., 2011). Despite this low prevalence rate, the high contact history suggests an increased disease burden and low herd immunity in the environment. The lower prevalence of measles cases from mid-2009 to mid-2011 is at variance with the reported increase in prevalence in Nigeria and other parts of Africa due to outbreaks in 2009 and 2010 (Status report on progress towards measles and rubella elimination, 2012). This could be explained by the poor orthodox health seeking behavior of some mothers, and their preference for alternative medical treatment thus leading to under reporting (Adika et al., 2013).

Odoemele et al., 2008) in Nigerian children. With the introduction of the measles vaccine in 1963, children born to vaccinated mothers have been noted to have lower antibodies than those of mothers who had the natural infection (Danet and Fermon, 2013; Caceres et al., 2000). Other studies have documented a decreased placental transfer of maternal antibodies in relation to prematurity, HIV and malaria (Caceres et al., 2000) which are all endemic problems in Nigeria. Oyedele et al., 2005 in their study found that 58% of

Nigerian infants lose their maternal antibodies by 4 months and 97% between 6 and 9 months.

Ahmed et al., 2010; Onyiruika, 2011). In our study, more cases of measles were noted during the rainy season, which is at variance with reports of seasonal prevalence of measles cases during the dry season from other parts of Nigeria (Osinusi and Oyedeji, 1986; Etuk et al., 2003; Asindi and Ani, 1984; Fetuga and Njokanma, 2007; Onyiruika, 2011; Adetunji et al., 2007; Adeboye et al., 2011).

Ahmed et al., 2010) who attributed the increased mortality from measles to a decline in the nutritional and socioeconomic status of Nigerian children.

**9. CONCLUSION**

The burden of measles in Nigeria remains high despite global efforts targeted at elimination, with infants and the unvaccinated being the most susceptible. A review of the administration of the measles vaccine in the Nigerian EPI to an early 2 dose schedule in infancy is advocated. Governments’ commitment to improving vaccine potency and availability should be made a priority to ensure increased vaccine coverage and prevent missed opportunities. Health education of mothers as well as training and retraining of the health workers on childhood measles should be emphasized at all levels.

**10. REFERENCES**

- [1] Ladapo TA, Etal (2013) Measles and Rubella initiative .University press London.
- [2] www.measlesrubellainitiative.org/measles-outbreaks-mid-year-2013-update. Accessed December 2014.
- [3] Njie-Jobe J, Nyamweya S, Miles DJ et al. ?provides authors names (2012). Immunological impact of an additional early measles vaccine in Gambian children: Responses to a boost at 3 years. *Vaccine*, 30 2543-2550.
- [4] Nnebe-Agumadu U (2005). "Measles control in Nigeria: the case for a 2 dose vaccine policy", *Nig J Paed*, 32(3) 41-45.
- [5] Onyiruika AN (2011). "Clinical profile of Children presenting with measles in a Nigerian secondary health care institution", *J. infect. Diseases and immunity* 3(6) 112-6.
- [6] Osinusi K, Oyedeji CO (1986). "Measles at the University College hospital Ibadan: an update", *Nig J Paed*, 13(2) 53-57.
- [7] Oyedele OO, Odemuyiwa SO, Ammerlaan W, Muller CP, Adu FD (2005). "Passive immunity to measles in the breast milk and cord blood of some Nigerian subjects", *J Trop Pediatr*, 51(1) 45-48
- [8] *Lancet* S. WHO Measles Vaccine (2009). WHO Position paper. *Wkly Epidemiolrec*, 84 (35) 349-360.