



MEASLES MORTALITY IN BAYELSA STATE, NIGERIA: 2008-2012

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ABSTRACT

During 2008-2012, an average of 35.4% measles-related deaths were recorded each year; one death for every 1,000 measles cases reported. Measles mortality rate was highest in children under 1 year of age, as was the death-to-case ratio. Mortality rates were higher in non-metropolitan than in metropolitan cities. Measles mortality rates were inversely related to median family income.

Keywords: Measles, Mortality, morbidity

INTRODUCTION

Since its licensure in 1973, the widespread use of measles vaccine has resulted in a greater than 90 per cent reduction in reported measles incidence in the United States. Comparable declines have been seen in reported deaths due to measles Barkin (1974) studied death certificate data for measles mortality for a pre vaccine period (1958-1963) and during the vaccine era (1965-1970). Highest measles mortality rates of 1.2 was observed for children 6-11 months of age in areas with fewer than 10,000 people, and in counties where more than 60 per cent of the population had incomes below poverty level. The death-to-case ratio was highest for children who developed measles when less than 1 year of age, lowest in children ages 8-15 years, and rose again in persons over 25 years of age. This report reviews death certificate information recorded for the period 2008-2012.

MATERIALS AND METHODS

Demographic data on deaths attributable to measles in the Federal Medical Center (FMC), Yenagoa which is the Metropolitan and densely populated State Capital and the data from the Niger Delta University Teaching Hospital (NDUTH) Okolobiri, were obtained from the mortality records for the period 2008-2012

In 2007, only a 50 per cent survey of mortality was done so the data for that year is incomplete. Hence, although a total of 177 deaths were attributed to measles during the period 2008-2012.

Data on reported measles cases were obtained from weekly reports of measles cases obtained by FMC and from Niger Delta University Teaching Hospital (NDUTH) situated in the Rural Local Government Area of Yenagoa Council, which in this study is Non- Metropolitan where only 5 Measles cases were reported at the beginning of 2010.

RESULTS

A total of 177 deaths due to measles were recorded within the five-year period (2008-2012) an average of 35.4 per year (Table I). Death rates due to measles have reported measles case rates (Figure 1) and have a striking decline since the licensure of measles vaccine 1963.

The average death-to-case ratio was one death per reported cases (Table I). Eighty-two deaths attributed to measles occurred

Table 1: Reported Measles Morbidity and Mortality in Yenagoa Metropolis in year 2008-2012

Year	Reported Measles Cases	Reported Measles Deaths	Death Rate per 1000 Population	Deaths Per1000 Report Measles,
2008	75,290	90	.44	1.20
2009	32,275	24	.12	0.74
2010	26,690	23	.11	0.86
2011	22,094	20	.09	0.90
2012	24,374	20	.09	0.82
Annual	36,144.6	35.4	.17	0.98

Residents of Metropolitan Yenagoa at the State Capital and the residents of Okolobiri, the Non-metropolitan Rural Area (Table 1). However, since the population in Metropolitan Yenagoa is nearly three times that of Non-metropolitan Okolobiri, measles death rate was nearly three times higher in the Metropolitan than Non-metropolitan location.

There was an inverse correlation between annual family income of residents of the Rural Community and measles death rates. Measles death rates being nearly 10 times higher in the Rural Area where family income was less than #15,000. than in the State Capital where average family income was over #50,000 per month.

For the period 2008-2012, the highest death rate due to measles and the highest death-to-case ratio were seen in those less than one year of age. Of the 13 deaths in children under one year of age, 11 Occurred in the less than 11 month age group. Both the death rate and the cases of measles declined with increasing age. The death-To-case ratio followed a V-shaped pattern with the trough being in the 5-9 age group.

Table 2: Deaths Attributed to Measles

County	Deaths	Population'	Deaths per Million Population
Metropolitan	82	972.000	.54
Non-metropolitan	83	600,000	1.49
Unknown	12--	506.000	
Total	177	2,78000	.84
Annual Average	35.4		

Table 3-Deaths due to measles by 2008- 2012 Related to Income

Median Family income	Deaths	Population	Death Per 1000 population
#50,000	43	972,000	0.46
#15,000-#20,000	103	600,000	0.99
#10,000	15	506,000	4.20
(Unknown)	(16)		

DISCUSSION

The licensure and widespread use of live measles virus Vaccine has led to a decrease of greater than 90 per cent in both the incidence of reported measles cases and in reported measles death rates. Since the deaths reported include only those in which measles was listed as the underlying cause of death, the reported rates represent a minimum estimate of deaths in which measles was a significant factor. Measles death rates were three times higher in non-metropolitan areas than in metropolitan areas. A similar observation was made by Puffer and Serrano in a review of Measles-related deaths in Latin America.⁷ They speculated that the difference might be due to poorer nutritional status in children living in rural areas. In the United States, it is not known what factors are responsible for these differentials, although decreased access to or acceptance of preventive medical services may play a role.

As in previous studies, the highest mortality rate and death-to-case ratio is seen in children less than one year of age and the lowest death-to-case ratio is seen in those 5-9 years of age.

The observed high death rate and high death-to-case ratio in those less than one year of age with almost all deaths occurring in those 6-11 months of age would support the recommendations of vaccination of infants as young as six months of age when there is a risk of exposure and the use of immune globulin in those who have been exposed to measles cases. Children vaccinated before one year of age should be revaccinated when 15 months of age or older.

The data available do not permit analysis of other factors which might have contributed to measles deaths, such as underlying neoplasm, chronic illness, etc. Additionally, the data available did not permit an estimate of the possible occurrence of measles deaths in those 12-14 months of age; an analysis which might be of benefit in assessing the impact of the subsequent decision to raise the age of primary immunization from 12 to 15 months.

Table 4. Age Distribution of Cases, Case Rates, Deaths, Death Rates. and Death-to-Case Ratio in Yenagoa and Okolobiri 2008-2012

Age Group	Number of Deaths	Deaths per 1000 Population	Number Cases	Cases per 1000 Population	! Deaths per 1000 'reported Measles Cases
<1	13	4.22	2,415	784.34	5.38
1-4	21	1.54	8,652	634.54	2.43
5-9	10	0.55	14,109	779.29	0.71
10-14	11	0.53	13,891	767.25	0.79
15-19	4	0.19	4,783	232.74	0.84
20+	4	0.03	1,231	9.18	3.25
Unknown	0	-	28,077		
Total	63	0.30	73,158	347.70	0.86
Annual Average	21	0.10	24,386	115.90	0.86

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