

THE EMERGENCE OF MEASLES AMONG BASIC SCHOOL CHILDREN IN WAD MEDANI, IS A SECOND DOSE OF MEASLES VACCINE NEEDED ?!

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Abstract

This is a cross sectional study conducted on 3862 basic schools children from Wad Medani during the school year 2000-2001. The aim was to determine the EPI immunization coverage with emphasis on the changing pattern of measles among them. They were selected by multiple stratified proportional random sampling according to their sex and localities. The data collected from the parents of the children by trained medical personnel. They utilized a tested questionnaire through a pilot study conducted two months prior to the study. It was addressing the immunization status of the pupils as registered and the history of some common diseases including measles. The case definition of each disease including measles was clarified. The study revealed that the immunization coverage against the six childhood diseases were above eighty, it was 83% against measles but still below the target put by EPI programme (90%). 10.4% of the whole studied group reported measles however 12.4% among those who were vaccinated, reported measles. Such an increase in case despite high immunization coverage is in conformity with Gezira EPI records during 1995-2000. The fact measles affect elder children are noticed in other countries such as Egypt, this may necessitate another dose of measles at pre-school age in Sudan.

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Introduction:

Infectious diseases once expected to be eliminated, as significant public health problems remain the leading cause of death in the world(1). Despite the immunization coverage measles infection is increasing in so many countries including Sudan, not only that but there are evidences that the pattern of the disease is changing. In America noticeably the shift in age from pre-school to elder children and the spread of the disease among some members of communities who do not accept vaccination due to religious or traditional believes was reported in the first 26 weeks of 1994 measles record⁽²⁾. Measles transmission remains a problem in many African and Latin American countries despite high immunization coverage⁽³⁾. The same was reported in Egypt by Tayil in a seroepidemiological study following 15 years of compulsory vaccination in Alexandria. The study revealed that approximately 80% of children who contracted measles were vaccinated. accordingly they recommended a second dose of measles vaccine and maintenance of high vaccine coverage⁽⁴⁾. Ornstein and Hannman stated that persistent measles transmission in a community is attributed to the accumulation of susceptible persons such as children who are not protected due to primary vaccine failure or waning immunity and unvaccinated children or babies too young to be immunized⁽⁵⁾.

This study provides the epidemiological pattern of measles among Wad Medani basic schools pupils during the school year 2000. The study was based on WHO definition of measles (fever and rash).

Study objectives:

- 1- To determine the incidence of measles among Wad Medani basic schools children during the year 2000-2001.
- 2- To determine the immunization status of the studied group as registered at the time of data collection
- 3- To set a comparison between measles immunization status and the incidence of measles among Wad Medani basic schools pupils during the school year 2000-2001 that may help in deciding whether a second dose of measles vaccine at school entry in Sudan is needed.

Methodology:

This is a cross sectional study during the school year 2000-2001 to detect the magnitude of health problems among Wad Medani basic school pupils and the immunization status with special emphasis on measles. Wad

Medani ranks as the second biggest city in Sudan. It is the capital of Gezira State which lies in the middle of the country between the two Niles. It is divided into two localities east and west. The population of the city consists of mixture of Sudanese tribes and ethnic groups as well as immigrants from neighboring countries

10% of Wad Medani basic schools pupils (3862) were selected by multistage stratified random sampling according to their proportional allocations. The sample size was determined using the following equation

$$n = \frac{t^2 \frac{PQ}{d^2}}{1 + \frac{1}{N} (t^2 \frac{PQ}{d^2} - 1)} \dots\dots\dots (6)$$

The data was collected form parents of the selected pupils (3862) by trained medical personnel. They utilized tested questionnaire through pilot study conducted two months prior to the survey. It was addressing the immunization status of the selected pupils as registered in their immunization cards or from information given by their parents. The questionnaire was also addressing the history of some common diseases including measles. The study was well-coordinated with schools directorate and parents were guided in filling the questionnaire. Data from EPI administration MOH Gezira State records were used. The data was analyzed by computer using SPSS. Hypothesis and chi square test were used.

Result:

3862 (10%) of Wad Medani basic school children responded to the questionnaire (The younger responded through their parents). The incidence of measles among the study gorup was 10.4% and 12.4% among those who were vaccinated against measles.

Table (1) : Shows the immunization coverage among Medani Basoc School Children as it had been reported during the year of the study 2000-2001 . It was 83% for measles .

Table (2): shows The frequency of measles among vaccinated and not vaccinated school children is more or less equal. P value is more than 0.05 which means that there was no significant difference between those who were vaccincated and unvaccinated.

Table (1) Immunization coverage among Medani Basic School Childrer: 2000 – 2001.

Type of vaccine	<i>completed</i>		<i>not completed</i>		<i>total</i>	
	Freq.	%	freq.	%	Freq.	%
BCG	3459	89.6	403	10.4	3862	100
Polio vac.	3156	82	706	9	3862	100
DPT	3186	82.8	676	10.7	3862	100
Measles	3228	83.6	634	16.4	3862	100

Table (2) The frequency of measles disease among vaccinated and not vaccinated school children (sample 3862), Medani 2000-2001

Measles	measles vaccine		total
	Yes	No	
Yes	401	77	478
No	2827	557	3384
Total	3228	634	3862

$X^2 = .038$
($P > 0.05$)

$P = .846$

Fig. 1 shows the shift of measles infection from younger age group to elder age group with obvious predominance among females.

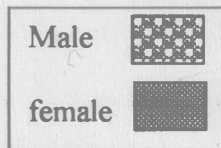
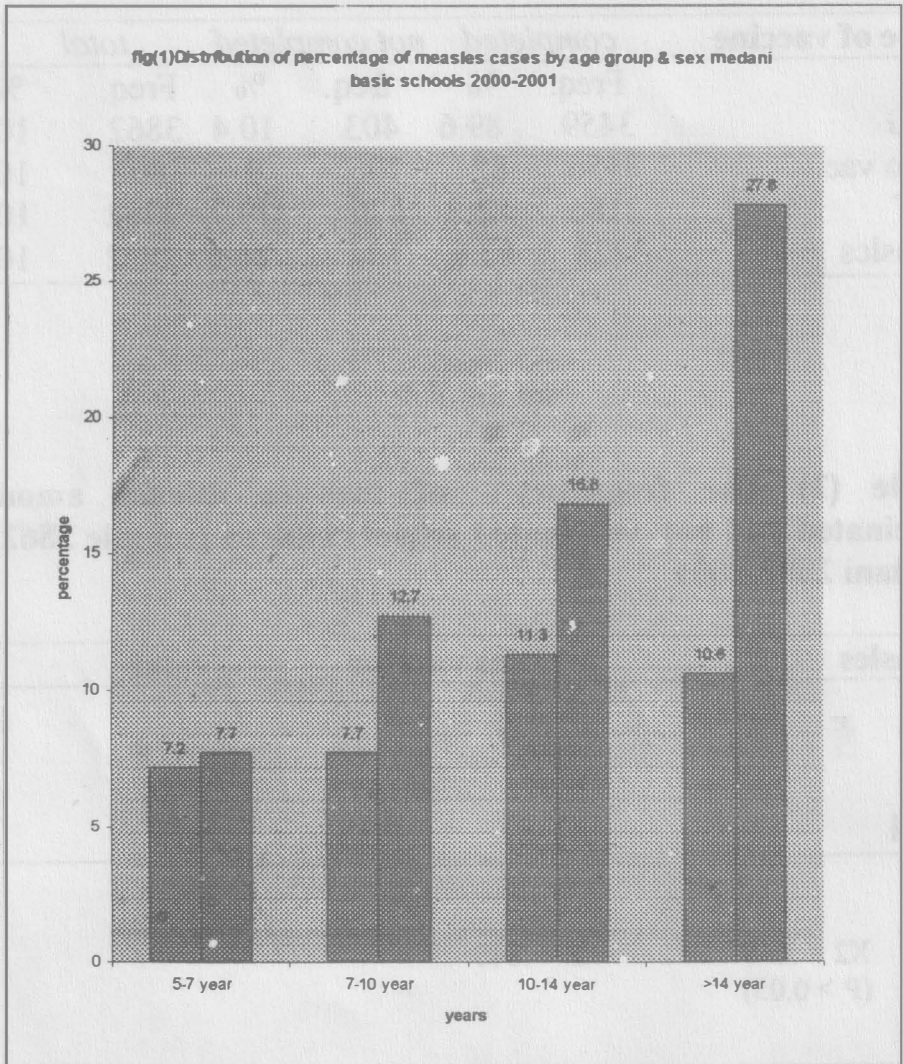
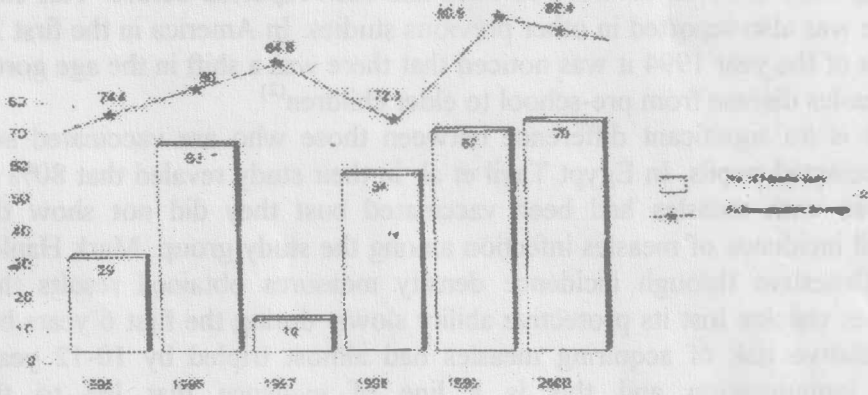


Fig. 2 shows Gezira state measles cases and immunization coverage from year 1995 to 2000. It clearly indicates that measles infection is increasing despite high measles immunization coverage

Fig. 2 Gezira state measles cases and immunization coverage from 1995-2000



Discussion:

The study revealed that there is a high immunization coverage for the six infectious diseases in Gezira state, but inspite of this fact the incidence of measles is increasing, and females are affected more than males, not only that but there is an obvious shift in the age group of children who are affected by the disease. It is now more predominant among elder children contrary to what has been reported before. This shift in age was also reported in other previous studies. In America in the first 26 weeks of the year 1994 it was noticed that there was a shift in the age group of measles disease from pre-school to elder children⁽²⁾.

There is no significant difference between those who are vaccinated and unvaccinated pupils. In Egypt Tayil et al in their study revealed that 80% of children with measles had been vaccinated but they did not show the overall incidence of measles infection among the study group. Mark Haplen and Ornestein through incidence density measures obtained results that measles vaccine lost its protective ability slowly during the first 6 years but the relative risk of acquiring measles had almost tripled by 10-12 years after immunization and this is a line of evidence that led to the recommendation that children should be revaccinate at the age of 5 or 6 years⁽⁸⁾.

Our study is in conformity with their studies and another dose of measles vaccine should be recommended in the Sudan.

The EPI Gezira State records during 1995 as shown in Fig. 2 is similar to the graph of WHO in their guidelines for epidemic preparedness and response to measles outbreak⁽⁷⁾. This is also emphasize the need for a second dose at pre-school age in the Sudan.

Recommendations:

Our findings raise concern about vaccination failure. Report of large numbers of cases of measles among vaccinated children risks loss of confidence in the immunization programme and may lead to lack of community motivation seeking and supporting vaccination programme. Hence the following recommendations may need to be considered by health policy makers and field researchers:

- 1- Further investigation through field research to identify the causes of changing pattern of measles infection and its shift from pre-school age to elder age group .
- 2- The introduction of second-dose measles vaccination at the age of almost susceptibility as indicated by follow up serological studies should be considered

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