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Research Article

**VACCINATION STATUS OF CHILDREN PRESENTING
WITH MEASLES: A SINGLE CENTER STUDY**¹Noor Arshad, ²Maryam Abbas, ³Sana Iqbal,Women Medical Officer, Children Hospital Faisalabad, **E-mail:** narshad4@gmail.com² Women medical officer, Basic Health Unit, Chiniot, **E-mail:** maryambbs4@gmail.com³ Women Medical Officer, Government General Hospital, Faisalabad,**E-mail:** si2351994@gmail.com**Article Received:** May 2020**Accepted:** June 2020**Published:** July 2020**Abstract:**

Measles is one of the leading causes of death among young children even though a safe and cost-effective vaccine is available. Measles is caused by a virus in the paramyxovirus family. The measles virus normally grows in the cells that line the back of the throat and lungs. Measles is still common in many developing countries particularly in parts of Africa and Asia.

Objective: *The objective of the study was to determine the frequency of vaccinated children among measles cases coming to a Tertiary Care Hospital*

Setting: *The study was conducted in Department of Pediatric Medicine, the study was conducted in Department of Pediatric Medicine, Children Hospital, Faisalabad*

Study design: *Descriptive Cross Sectional*

Study duration: *Six months after approval of synopsis*

Results: *In our study, 81.54%(n=106) were between 1-6 years of age while 18.46%(n=24) were between 7-12 years of age, mean \pm SD was calculated as 4.55 \pm 2.24 years, 59.23%(n=77) were male while 40.77%(n=53) were females, frequency of vaccinated children in measles was recorded in 64.62%(n=84).*

Conclusion: *We concluded that the frequency of measles is high among vaccinated children. So, it is recommended that every patient who present with measles, should be sort out for vaccination history. However, it is also required that every setup should have their surveillance in order to know the frequency of the problem.*

Keywords: *Children, measles, vaccination, frequency*

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INTRODUCTION:

Measles is a highly contagious viral illness characterized by fever, malaise, rash, cough, coryza, and conjunctivitis,¹ more common in pre-school age group.² According to the World Health Organization (WHO), measles is a leading cause of childhood mortality. Globally, measles fell 60% from an estimated 873,000 deaths in 1999 to 345,000 in 2005. Estimates for 2008 indicate deaths fell further to 164,000 globally, with 77% of the remaining measles deaths in 2008 occurring within the South-East Asian region.³ In Pakistan, estimates show that 20,000 children die from measles annually.⁴

Pakistan is one of 47 priority countries targeted by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) for accelerated sustainable measles mortality reduction activities and makes up a large proportion of measles deaths in the Eastern Mediterranean Region and worldwide.⁵

Despite universal use of measles vaccines in recent decades, epidemics of the disease continued to occur. Understanding the role of primary vaccine failure (failure to sero-conversion after vaccination) and secondary vaccine failure (waning immunity after sero-conversion) in measles epidemic is important for the evaluation of measles control programmes in developing countries. In our country measles vaccine is given free as a single dose through EPI at 9 months, while many affording parents take it through private pediatricians by paying for vaccination.⁶

Previously in 2002, frequency of vaccinated children in measles cases was determined and recorded as 71.6%.⁷

The rationale of the study is that in our clinical experience in last two years a great number of children presenting with measles are recorded in our population while no data was recorded regarding the status of their vaccination, however, it is necessary to record the frequency of measles in vaccinated children, as the previous reported frequency is 11 years old⁷ while after that no study is conducted to record the frequency of measles in vaccinated children.

MATERIALS AND METHODS:

The objective of the study was to determine the frequency of vaccinated children among measles cases coming to a Tertiary Care Hospital Measles was determined on clinical examination on basis of presence of typical maculopapular rash or pathognomonic koplik's spots, fever and any of these coughs, coryza or conjunctivitis. Children who received vaccination for prevention of measles

confirmed on history and medical record were labeled as vaccinated children.

The descriptive cross-sectional study was conducted in Department of Pediatric Medicine, Children Hospital, Faisalabad. Through non-probability consecutive sampling technique 130 cases were included in the study. Sample size of 130 cases was calculated with 95% confidence level 5.7% margin of error and taking expected %age of measles in vaccinated children i.e. 71.6%.

Inclusion Criteria

1. All diagnosed cases of measles (according to operational definition)
2. Age 1-12 years
3. Gender (Male/Female)

Exclusion Criteria

1. Children who developed measles within 4 weeks of measles vaccination (on history and medical record)
2. Immunocompromised children and children with other causes of rash like drug induced, roseola, rubella and others as evidenced by history and clinical examination
3. Children who developed complications like meningitis, pneumonia or diarrhea

A total of 130 cases fulfilling the inclusion/exclusion criteria were enrolled from the Department of Pediatric Medicine. An informed consent of the parents of the children was taken to include their data in the study. Detailed history and clinical examination for measles considering their medical record regarding vaccination status was done. The frequency of vaccinated children among measles cases was noted, all this information was recorded by the researcher herself on a pre-designed proforma.

Data was entered and analyzed in SPSS version for 16.0. Mean and standard deviation was calculated for quantitative variable like age of the children. Frequencies and percentages were calculated for qualitative variables like gender and frequency of vaccinated children in measles. Stratification for age and gender was recorded to address the effect modifiers. Post stratification chi square test was applied. P value ≤ 0.05 was taken as significant.

RESULTS:

A total of 130 cases fulfilling the inclusion/exclusion criteria were enrolled to determine the frequency of vaccinated children among measles cases coming to a Tertiary Care Hospital.

Age distribution of the patients was done which shows that 81.54%(n=106) were between 1-6 years of age while 18.46%(n=24) were between 7-12 years of age, mean \pm sd was calculated as 4.55 \pm 2.24 years. (Table No. 1)

Gender distribution of the patients was done which shows that 59.23%(n=77) were male while 40.77%(n=53) were females. (Table No. 2)

Frequency of vaccinated children in measles was recorded in 64.62%(n=84) while remaining

35.38%(n=46) had no history of vaccination. (Table No. 3)

Stratification for age shows that out of 84 cases of measles 70 were between 1-6 years while remaining 14 were between 7-12 years of age, p value was calculated as 0.47. (Table No. 4)

Stratification for gender shows that out of 84 cases of measles 50 were male while remaining 34 were females, p value was calculated as 0.92. (Table No. 5)

TABLE No. 1: AGE DISTRIBUTION (n=130)

Age(in years)	No. of patients	%
1-6	106	81.54
7-12	24	18.46
Total	130	100
Mean+SD	4.55+2.24	

TABLE No. 2: GENDER DISTRIBUTION (n=130)

Gender	No. of patients	%
Male	77	59.23
Female	53	40.77
Total	130	100

TABLE No. 3: FREQUENCY OF VACCINATED CHILDREN IN MEASLES (n=130)

Vaccination	No. of patients	%
Yes	84	64.62
No	46	35.38
Total	130	100

TABLE No. 4: STRATIFICATION FOR FREQUENCY OF WITH REGARDS TO AGE

Age (in years)	Measles (n=84)		P value
	Yes	No	
1-6	70	36	0.47
7-12	14	10	

TABLE No. 5: STRATIFICATION FOR FREQUENCY OF WITH REGARDS TO GENDER

Gender	Measles (n=84)		P value
	Yes	No	
Male	50	27	0.92
Female	34	19	

DISCUSSION:

Measles is one of the leading causes of death among young children even though a safe and cost-effective vaccine is available. Measles is caused by a virus in the paramyxovirus family. The measles virus normally grows in the cells that line the back of the throat and lungs. Measles is still common in many developing countries particularly in parts of Africa and Asia.

The reason behind this study was that in our clinical experience in last two years a great number of children presenting with measles were recorded in our population while no data was recorded regarding the status of their vaccination, however, it become necessary to record the frequency of measles in vaccinated children, as the previous reported frequency is 11 years old⁷ while after that no study was conducted to record the frequency of measles in vaccinated children.

In our study, 81.54%(n=106) were between 1-6 years of age while 18.46%(n=24) were between 7-12 years of age, mean±sd was calculated as 4.55±2.24 years, 59.23%(n=77) were male while 40.77%(n=53) were females, frequency of vaccinated children in measles was recorded in 64.62%(n=84).

The findings of our study are consistent with a previously study by Basheer F and others in 2002, frequency of vaccinated children in measles cases was determined and recorded as 71.6%.⁷

From 1985 to 1988 there were a median of 47 outbreaks among school-age populations and only 8 outbreaks among preschool populations; 42% of the affected children had been appropriately vaccinated for measles.⁸ In 1989, the number of outbreaks among school-age children swelled to 170 and the number of total reported measles cases increased to more than 18,000, with 41 deaths. The epidemic continued unabated through 1990, when 27,786 cases were reported, with more than 60 deaths.⁹ The overall incidence rate in 1990 surged to 11.2/100,000 population, compared with a low of 0.6/100,000 in 1983. In 1989, the majority of reported cases were in school-age or college-age individuals and a minority were in preschool children. Outbreaks among school-age children

compared with preschool children were both more numerous and larger (median, 25 cases).¹⁰ Approximately 80% of the affected school-age children were appropriately vaccinated. Studies have documented that epidemics of measles can be sustained in school-age populations despite their having very high vaccination rates.

The results of study are similar to those of study by Masoud et al in Egypt where 79.4% cases of measles were previously vaccinated.¹¹ Similar results were obtained by Nsungu M in Zimbabwe where 69% of the cases during a measles outbreak were vaccinated.¹² Like wise Chaudhry MZ found 50% of cases to be vaccinated in a study carried out at Allied Hospital Faisalabad.¹³

According to a recent survey in our country, most patients belonged to the poor class making 61.90 %, rest of the patients belonged to middle and lower middle class, moreover most of the patients studied were vaccinated according to the EPI schedule and rests were partially vaccinated, non-vaccinated, vaccine was not available to them, they did not have awareness and some parents were careless regarding vaccination.

However, our data is primary in recent years, some other trials should also be done to validate our findings. Moreover, vaccine quality and the risk factors involved in making vaccine in-effective may also be ruled out in further trials to control this morbidity in young children.

CONCLUSION:

We concluded that the frequency of measles is high among vaccinated children. So, it is recommended that every patient who present with measles, should be sort out for vaccination history. However, it is also required that every setup should have their surveillance in order to know the frequency of the problem.

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