

# Assessment of Measles Immunization in Children 1-2 Year Age in District Peshawar, Khyber Pakhtunkhwa Pakistan

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## ABSTRACT

**Objectives:** To determine vaccination coverage against measles and the factors predicting it.

**Study Design:** Cross sectional, Analytic

**Place and Duration of Study:** This study was conducted at Peshawar District Khyber Pakhtunkhwa, Pakistan and the duration was 1<sup>st</sup> June 2014 to 20<sup>th</sup> June 2014.

**Materials and Methods:** The study was carried on sample of 210 children in District Peshawar, Khyber Pakhtunkhwa, Pakistan. The district was first divided into clusters of 105. Out of these 21 clusters were randomly selected. Sample of 10 children aged 1-2 were randomly taken from each cluster. Cluster sampling technique was used and the data was collected by face to face interview using structured Questionnaire as tool.

**Results:** Overall vaccination coverage was 57.6% with a male to female ratio of 50.4% and 49.6% respectively. Mother's Education with vaccination status of Children suggests a strong relationship. Mothers with no education (illiterate) vaccinated 36.3% and mother with education (Literate) vaccinated 82.5% of their children. The Chi-square test is significant ( $X^2=45.605$ ; p-value .000).

**Conclusions:** Parents Education, Household Income and knowledge of mothers about measles vaccination age were found important predicting factors for vaccination status of children.

**Key Words:** Measles, Parents Education, Household Income

## INTRODUCTION

Measles vaccine became available in 1963. It is a live attenuated vaccine, before this measles was considered a life event. Before 1963 each year 3-5 million cases of measles occurred in United States, with deaths tolls of approximately 500. Epidemic cycles of the disease occurred every 2-3 years and affected half of the population by six years of age and 90% by age of 15 years<sup>(3,4)</sup>. After the measles vaccine became available in United States, the number of cases dropped dramatically by 90%.<sup>(1, 5)</sup> Measles is a well known infectious communicable viral disease of global nature affecting children particularly in the age group of 1-5 years. Symptoms include fever, cough, runny nose, red eyes and a generalized Maculopapular Erythematous rash. Measles is spread through respiration (contact with fluids from an infected person's nose and mouth, either directly or through aerosol transmission) and is highly contagious – 90 % of people without immunity sharing living space with an infected person will catch it<sup>(2)</sup>. The infection has an average incubation period of 14 days (range 6-19 days) and infectively lasts form 2 – 4 days prior, until 2 – 5 days following the onset of the rash. Complications of measles are relatively mild and less serious diarrhea, to pneumonia and encephalitis (sub-acute), corneal ulceration leading to scarring. Complications are usually more severe amongst adults who catch the virus. The vaccine for measles is a live attenuated type and the 1<sup>st</sup> dose is given at the age 12-

15 months<sup>(8)</sup>. It gives 95% immunity against measles but a booster dose is now recommended between age of 12 and 19 years to ensure protection of the remaining 5% children. The primary objectives of the study are to estimate the vaccination coverage of children and determine the factors affecting vaccination status of children<sup>(7)</sup>. The variable of study Parents education, Household income and mother knowledge about the age of measles vaccination were evaluated<sup>(8, 9)</sup>. Analytic cross-sectional study design was used. Samples were collected through random cluster sampling. Data was selected using interview with structured Questionnaire. The data was analyzed by using SPSS version 17.

## MATERIALS AND METHODS

The Study Design is Analytic, Cross-Sectional Study. The sampling method used is Cluster Sampling while the sample size is  $n = 210$ . The data collection technique used is Interview schedule using structured Questionnaire and the data was analyzed using SPSS version 17. The study was carried out in district Peshawar Khyber Pakhtunkhwa Pakistan between 1<sup>st</sup> June to 20<sup>th</sup> June 2014. The district was first divided into clusters of 105. Out of these, 21 clusters were randomly selected. Sample of 10 children aged 1 – 2 years were randomly taken from each of 21 clusters. The data was collected by face to face interviews using a structured Questionnaire, consisting of questions about age and sex of child, father education, household

income, mother's education, mother knowledge about the age of measles vaccination and the vaccination status of child, the information on vaccination status of the child was collected from history by mother depending on her recall. For analysis the variables were categorized as, household income of up to Rs. 5000 / moth Cat1, Rs. 5001 to Rs. 10,000 / month Cat 2, Rs. 10,001 and above Cat 3. The education of father was given categories as, no education Cat0, 1 – 5 years of education Cat1, 5 – 10 years of education Cat 2, 11 years of education and above Cat 3. Education of the mother was given categories as, illiterate Cat 0, Literate Cat 1. Yes / No answer to the questions were given the categories of Yes Cat 1, No Cat 2.

**RESULTS**

The frequency distribution, cross tabulation and Chi-square results of the factors I have analyzed and discussed are given below.

**Table No.1.1: Sex of Child**

		Frequency	Percent
Valid	Male	113	53.8
	Female	97	46.2
	Total	210	100.0

**Table No.1.2: Frequency distribution for vaccination status of children**

		Frequency	Percent
Valid	Yes	121	57.6
	No	89	42.4
	Total	210	100.0

**Table No.1.3: Sex of Child \*Vaccination Status of Child**

			Vaccination Status of Child		Total
			Yes	No	
Sex of Child	Male	Count % within vaccination	61 50.4%	52 58.4%	113
	Female	Count % within vaccination	60 49.6%	37 41.6%	
total	Total	Count % within vaccination	121 100.0%	89 100.0%	210 100.0%

Chi-Square Test value for this association of household income with vaccination status of Children is 37.380 and a p-value of .000.

**Table 3.1: Frequency Statistics Father's Education**

		Frequency	Percent
Valid	No Education	46	21.9
	1-5 years	40	19.0
	6-10 year	54	25.7
	11 year and above	70	33.3
	Total	210	100.0

**Table 3.2: Father's Education \*Vaccination Status of Child**

			Vaccination Status of Child		Total
			Yes	No	
Fathers Education	No Education	Count % within Father Education	7 21.9%	25 78.1%	32 100.0%
	1-5 Years	Count % within Father Education	57 51.8%	53 48.2%	
	6-10 Years	Count % within Father Education			
	11 Years	Count % within Father Education	57 51.8%	11 16.2%	
Total		Count % within Father Education	121 57.6%	89 42.4%	210 100.0%

Chi-Square Test value for this association is 44.890 with a p-value of .000 for the relation of father's education with vaccination status of children.

**Table No.4.1: Frequency Statistics Mother's Education**

		Frequency	Percent
Valid	Illiterate	113	53.8
	Literate	97	46.2
	Total	210	100.0

**Table 4.2: Mother's Education, Vaccination Status of Child**

			Vaccination Status of Child		Total
			Yes	No	
Mother's Education	Illiterate	Count % within Mother's Education	41 36.3%	72 63.7%	113 100.0%
	Literate	Count % within Mother's Education	80 82.5%	17 17.5%	
Total		Count % within Mother's Education	121 57.6%	89 42.4%	210 100.0%

Chi-Square Test value for this association of mother's education with vaccination status of children is 45.605 with p-value of .000.

**DISCUSSION**

According to this study the overall Vaccination Coverage against measles was found to be 57.6% with a male to female ratio of 50.4% and 49.6% respectively

<sup>(1)</sup>. Tables 1.2 and 1.3. Sex of Children was not having important association with vaccination coverage of 50.4% for male and 49.6% for female respectively. Table 1.3 Chi-square value for the association is 1.325 with a p-value of .250 which is not significant. Table 2.2 indicates that in the lower income group the vaccination coverage is 21.9%, in the middle income 51.8% and in the upper income group 83.8% which shows a strong association of income with vaccination status of children. This difference is statistically significant ( $X^2 = 37.380$ ;  $p .000$ ). Father Education level is a strong contributing factor towards vaccination status of children as with no education the vaccination rate is 50.0%, with 1-5 year of education it is 30.0%, with 6-10 years of education it is 44.4% and with education of 11 years and above it goes up to 88.6% <sup>(2,3,5)</sup>. Table 3.2. The Chi-Square value for this association is 44.890 with a p-value of 0.000. Table 4.2 of cross tabulation for the mother's education with vaccination status of children suggests a strong relationship. Mothers with no education (illiterate) vaccinated 36.3% and mothers with education (Literate) vaccinated 82.5% of their children <sup>(9)</sup>. The Chi-Square test value for this relationship is 45.605 with a p-value of .000, which shows a significant association between mother's education and vaccination of children.

## CONCLUSION

This study indicates that Fathers Education, Household Income, Mothers Education and the Mothers knowledge about measles vaccination age are important factors affecting the vaccination status of children. In this study sex of child did not influence vaccination status of children and was found insignificant by Chi-Square test of significance.

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