Factors Associated with Seroconversion of Oral Polio Vaccine among the Children under 5 Year in District Mirpurkhas, Pakistan 2015

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Abstract : Background: Pakistan is one of the two remaining polio-endemic countries, posing a significant public health challenge for global polio eradication due to failure to interrupt polio transmission. Country specific seroprevalence studies help in the evaluation of immunization program performance, the susceptibility of population against polio virus and identification of existing level of immunity with factors that affect seroconversion of the oral polio vaccine (OPV). The objective of the study was to find out factors associated with seroconversion of the OPV among children 6-59 months in Pakistan. Methods: A Hospital based cross-sectional serosurvey was undertaken in May-June 2015 at District Mirpurkhas, Sindh-Pakistan. Total 180 children aged 6–59 months were selected by using systematic random sampling from Muhammad Medical College Hospital, Mirpurkhas. Demographic, vaccination history and risk factors information were collected from the parents/guardian. Blood sample was collected and tested for the detection of poliovirus IgG antibodies by using ELISA Kit. The IgG titer <10 IU/ml, 50 to <150 IU/ml and >150 IU/ml was defined as negative, weak positive and positive immunity respectively. Pearson Chi-square test was used to determine the difference in seroprevalence in univariate analysis. Results: A total of 180 subjects were enrolled mean age was 23 months (7 -59 months). Off these 160 (89%) children were well and 18 (10%) partially protected against polio virus. Two (1.1%) children had no protection against polio virus as they had <10 IU/ml poliovirus IgG antibodies titer. Both negative cases belong from the female gender, age group 12-23 months, urban area and BMI <50 percentile. There was a difference between normal and the wasting children; it did attain statistical significance ($\chi2=$ 35.5, p=0.00). The difference in seroconversion was also observed in relation to the gender ($\chi2=6.23$, p=0.04), duration of breast feeding ($\chi2=18.6$, p=0.04), history of diarrheal disease before polio vaccine administration ($\chi2=7.7$, p=0.02), and stunting ($\chi2= 114$, p=0.00). Conclusion: This study demonstrated that near 90% children achieve seroconversion of OPV and well protected against polio virus. There is an urgent need to focus on factors like duration of breast feeding, diarrheal diseases and malnutrition (acute and chronic) among the children as an immunization strategy.

Keywords : seroconversion, oral polio vaccine, Polio, Pakistan
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