

Fact from Fiction: Comparison of Health Status in Immunized and Non-immunized Children

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Abstract

Background: Several studies had been conducted in order to find out the effectiveness of various vaccines against respective diseases but the comparison of health status of immunized and non-immunized children had not been done in this study group.^{1,2}

Objectives: To assess whether immunizing a child helped to improve his health or not and whether there was any difference in the occurrence and severity of diseases in a non vaccinated child as compared to the immunized child.

Study Design: Descriptive cross sectional study.

Place and Duration of the Study: Services hospital Lahore, May – June 2010.

Methods: 100 children aged 3 to 5 years were assessed for immunization and health status.

Results: The remarkable findings confirmed the effectiveness of vaccination. 23 out of the 24 children

(96%) not vaccinated against measles, had the disease. Vaccination against Hepatitis B showed a 100% prevention rate, with no cases reported in children who were vaccinated. No definite pattern could be identified in the status of general health and the existence (or the absence thereof) of a history of vaccination.

Conclusion: Although the effectiveness of vaccination in precluding preventable diseases has been confirmed in this study but the general health status of immunized and non-immunized children is independent of the status of vaccination.

Key words: Immunization, EPI.

Introduction

Disease prevention is the key to public health. Infectious diseases are the leading cause of death in children in developing countries.³ In 2002, WHO estimated 1.4 million deaths among children below 5 years of age due to diseases that could have been prevented by routine vaccination. This represents 14% of the total mortality rate in children below five years of age in the world.⁴ In Pakistan EPI Program was started by WHO in 1974 to prevent six communicable diseases. In 1982 review of the program showed coverage of 2 – 6%, while the target was 50% coverage therefore the government decided to accelerate the program.⁵ Vaccinations have reduced infant mortality from a precedent 2.5 million deaths annually. However, according to the WHO report, 90 per cent of immunized under five children are from developed countries.⁶ Whereas in developing countries, in spite of the success of immunization, people are still reluctant to get their child vaccinated because of certain ill beliefs based on the lack of education and awareness. Keeping in view the above issues, it was decided to conduct a research to compare the health status of children who had been

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vaccinated to those who had not, and to use this information to educate and encourage the people to get their children vaccinated.

Material and Methods

This descriptive cross sectional study was performed during the months of May and June 2010 at Services Hospital, Lahore. A total of 100 children aged 3 to 5 years were included in the study to assess their status of immunization and health. The study group was selected using non-probability sampling. It was ensured that immunized and non-immunized children were included in order to draw comparison in the two groups. A pre-tested questionnaire was used for data collection, and Epi info version 3.0.5 software, was used to calculate the sample size. All information was obtained after taking an informed consent of the accompanying guardian. Immunization status was assessed using the EPI schedule compliance and a child was considered completely immunized if the entire schedule had been followed including booster doses.

Results

Out of 100 children, 54 were boys and 46 girls. The completely immunized group in our study was 15% of the total participants with 24% children who had not been vaccinated at all. The rest of them had received at least some vaccination at various stages after birth.

A statistically significant difference (p -value = 0.0006) was found in the number of children having suffered tuberculosis when comparing children who either had or had not received the BCG vaccine at birth (Table 1).

Other vaccine preventable diseases assessed were polio and tetanus with only 1 and 2 cases respectively. Ironically these cases also confirmed having been vaccinated in the past against these diseases. However, these findings were not statistically significant (p -value for polio = 0.5722, p -value for tetanus = 0.2945).

As regards the general health of the children, any history of past significant illnesses other than vaccine – preventable diseases was also recorded to establish growth, development and immunity of the child. And it was recorded that, 71% children did not have any abnormal GPE findings. 10 of the 24 non-immunized children had some abnormal finding such as sore throat and / or palpable lymph nodes. 14% children had some known disease which can be correlated to the fact that many children enrolled for the study were selected in hospital wards. Almost all of these children were vaccinated either partially (11 out of 14) or completely (2 out of 14).

Discussion

In our results, it was clear that the incidence of vaccine preventable disease in vaccinated children was

Fig. 1: Vaccine Effectiveness Against Preventable Diseases.

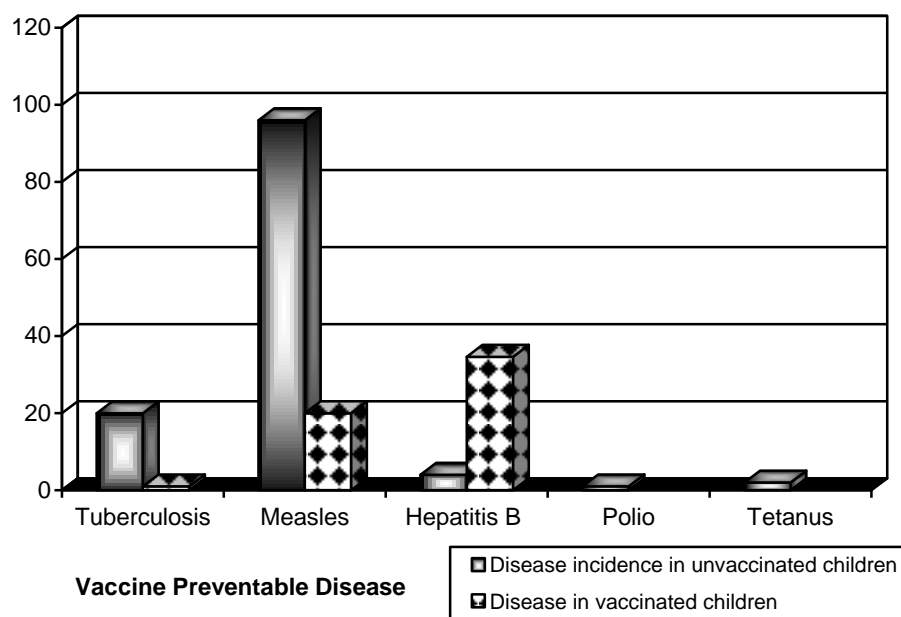


Table 1: Effect of immunization on incidence of tuberculosis.

Immunization of BCG	History of Tuberculosis		Total
	No	Yes	
BCG not given at birth	23	6	29
BCG given at birth	70	1	71
Total	93	7	100

Table 2: Effect of immunization on incidence of measles.

Immunization of Measles	History of Measles		Total
	No	Yes	
Vaccine not given at 9 months	24	23	47
Vaccine given at 9 months	43	10	53
Total	67	33	100

Table 3: Effect of immunization on the incidence of hepatitis B.

Immunization Against Hepatitis B	History of Hepatitis B		Total
	No	Yes	
Vaccine not given	47	4	51
Vaccine given	49	0	49
Total	96	4	100

markedly reduced. For instance, a statistically significant difference (p-value = 0.0006) was found in the number of children having suffered tuberculosis. Out of a total of 7 children with a history of TB, 6 had not been vaccinated (table 1). Similarly, in our study, it was encouraging to discover only one or two cases of polio and tetanus in children which has also been attributed to the effectiveness of vaccination for these diseases.^{7,8} Ironically these cases also confirmed having been vaccinated in the past against these diseases. However, these findings were not statistically significant (p-value for polio = 0.5722, p-value for tetanus = 0.2945). These findings serve as a confirmation to the success of vaccination that has been demonstrated in previous studies.⁵

When the general health of vaccinated and non-vaccinated children was assessed, no specific association could be identified in the health of the child and immunization status. 71% children did not have any abnormal GPE findings. The statistics thus obtained did not show definitive correlation of vaccination with any abnormal finding on the health exam of the child.

Conclusion

The present study successfully illustrated the effectiveness of vaccination in preventing specific diseases as had been previously demonstrated.⁹

Although different conclusions have been drawn from previous studies in other populations¹⁰ it was found in this study group that vaccination did not have any specific role in the general health of the child for better or for worse.

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