COVERAGE AND CAUSES OF MISSED BCG VACCINATION:
A USER PERSPECTIVE STUDY

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ABSTRACT

Objectives: To find the coverage rate and factors associated with the failure of BCG vaccination in urban and rural areas of Peshawar.

Material and Methods: This cross-sectional survey was conducted in areas near Peshawar University Campus Hashtnagari, Naway Kalay and Pawaka Village in June 2010. A questionnaire was used to interview parents of 548 children, aged four years and below, about demographics, BCG vaccination status, reasons for missed vaccination and views on immunization. Data analysis was done by SPSS 16.0.

Results: Out of the 548 children, 291 (53.1%) were female and 257 (46.9%) were male. 432 (78.8%) children were vaccinated while 116 (21.2%) were not vaccinated. Urban population was 55.8% while rural population was 44.2%. The reasons for missed vaccination were lack of awareness (24.14%), family problems (20.69%), centre too far (19.83%), wrong ideas (10.34%), fear of reactions (3.44%) and child illness (6.04%).

Conclusion: Our study revealed that low vaccination coverage was mainly due to low awareness among people and poor socioeconomic conditions.

Key Words: BCG, Childhood immunization, EPI.

INTRODUCTION

Tuberculosis (TB) is a worldwide infectious disease, especially in the underdeveloped and poor countries of the world. Developed countries are currently exhibiting a low incidence of the disease (rates less than 1% per year). In 1993 the World Health Organization (WHO) declared TB to be a global emergency. In 2007, 297,108 people in Pakistan developed TB; there were an estimated 13.7 million chronic active cases, 9.3 million new cases, and 1.8 million deaths, mostly in developing countries. Pakistan ranks eighth on the list of 22 high-burden tuberculosis countries in the world according to the World Health Organization's (WHO's) Global Tuberculosis Control 2009. The emergence of multidrug-resistant (MDR) TB and TB-HIV co-infection is a growing concern in the world. In Pakistan, the incidence of all forms of TB is 181 cases per 100,000 population per year and the mortality rate is 29 deaths per 100,000 population per year. Bacillus Calmette-Guérin (BCG) is the most effective vaccine in preventing childhood tuberculosis. It is given at birth in a single dose as part of the EPI programme.

According to a study in the UK, BCG vaccination has been shown to give 84% protection to adults against Tuberculosis. Keeping in view the disease burden and instability in Khyber Pakhtunkhwa especially in tribal areas, the study was conducted in the Capital City Peshawar because Peshawar has health facilities far better than any part of the province. The study was conducted, to find out the coverage of BCG vaccination, to find out the reason of missed vaccination among people of Peshawar, to compare the coverage rate of BCG with other areas of Khyber Pakhtunkhwa and Pakistan.

MATERIAL AND METHODS

This cross sectional study was conducted from 9 to 19th of June 2010 to determine the coverage rate of BCG and find factors associated with non-immunization. The reason for doing a cross sectional study was it being the simplest variety of descriptive or observational epidemiology that can be conducted on representative samples of a population.

The study area were the urban and rural areas of Peshawar. A questionnaire was used to interview parents. All data was collected through informed consent. Through random sampling, parents of 548 children, four years and below, were interviewed. Children above four years and those who spent the first two months of life outside Peshawar were excluded. Parents were asked about the BCG immunization status, demographics, education (None,
Primary, Middle, Matric, Higher education, Traditional Madrassa), occupation and income of the family earner, health education of parents, accessibility of EPI centre in terms of distance, the behaviour of immunization staff, frequency of their visits, parents view on immunization and reason for non immunization. Immunization record was collected by cards or mother’s recall. BCG scar mark was also considered as a reliable indicator of BCG vaccination. All data was analyzed using the Statistical package for the Social science SPSS 16.0. Pearson’s chi-square test was used for statistical testing. P value of < 0.05 was considered significant.

RESULTS

Out of 548 children, 291 (53.1%) were female and 257 (46.9%) were male. The urban population was 55.8% while rural population was 44.2%. In 41.1% cases, the family earner who was in most cases the father, had received no education at all. The monthly income of families ranged from Rs. 2000 to 31,000 but the majority were concentrated between Rs. 3000 and 10,000.

The immunization coverage of BCG was 78.8%. The reasons for no vaccination were many with the lack of awareness being the highest followed by family problems (Figure 1). Only 52.6% parents could produce immunization cards. When asked whether immunization was beneficial, 91.2% answered yes. Negative views about the importance of vaccine were; thinks not effective (n=15), fear of reaction (n=14), having wrong ideas about vaccine e.g. sterility (n=13) and bad experience (n=4).

When asked about the frequency of visits by the health workers, most of them answered often (42.3%) however, a significant number answered never (13.9%). When asked how well the health worker/vaccinator informed them about vaccination, most answered good (34.9%) but a significant number answered poor (10.8%) and very few answered excellent (1.8%). A mixed response was found about the behaviour of the vaccinator; most thought it was good (39.6%) or very good (29.3%), a small portion answered poor (6.0%) and very few answered as excellent (2.6%). Parent’s knowledge was assessed; most had little knowledge on immunization (34.1%) followed by enough (30.5%); a significant number had no knowledge at all (11.7%) while few knew everything important on immunization (6.6%) the remaining admitted to having “moderate” knowledge. When asked about place and time suitable for immunization, most answered home (56.4%) and morning (72.8%).

Cross tabulation between education of parents and the immunization status is shown in (Figure 2) mothers having government jobs were much more likely to have their children immunized (83.3%) as compared to house wives (77.2%) (P=0.054).

The income had a great effect on the immunization status of the child (Figure 3). The distance had no significant effect on Immunization status of the children when below 13 km but it had a clear effect on immunization of the children when > 13 km (Figure 4).
DISCUSSION

The BCG coverage in children of four years and below was found to be 78.8% in Peshawar. In another study conducted in Karachi, including children less than one year old revealed 76% BCG coverage. In another study conducted in Hyderabad, Pakistan in 1-3 year old children, BCG coverage was reported to be 71.6%. In these studies, the BCG coverage was also found to be greater than other vaccines in the EPI Programme. The reason behind this could be the schedule of the vaccine as it is given only once at birth. The coverage needs to be increased because the disease prevalence in a poor country like Pakistan, is high. The causes of non-vaccination in our study are consistent with studies conducted in other regions of Pakistan. A qualitative study conducted in Karachi, reported similar causes along with others like forgetting scheduled dates, low quality services and inaccessibility of government dispensaries, vaccine cost and prevailing myths about immunization. Our study found that most parents had little knowledge about immunization and this was consistent with other studies.

The frequency of visits by health workers was frequently (40.3%) and this could be a reason of high BCG coverage in Peshawar. This rate was a little higher than what was found in a similar study in Pakistan and much lower than studies in other areas of Khyber Pakhtunkhwa. No significant relation was found between gender and immunization. A study in Sindh showed the same result indicating that gender may not have a role in children when availing free services like immunization. High immunization rates were found in urban areas due to availability and accessibility of centres, hospitals and better socioeconomic conditions. Families where house workers visited frequently had more knowledge about immunization and the coverage was more. The results match with a study conducted in India.

Several methodological issues are to be considered in cross sectional studies like this. Such a study does not allow an interpretation of a clear relation between the associated factors found in it and lack of immunization; also many of the associated factors in same population are either interdependent or have summation or synergistic effect (e.g. low income, low literacy, lack of information) making it difficult to build a clear relationship between individual variables due to lack of strict control. This indicates that improving one factor can improve the other.

CONCLUSION

Health education, easy access to EPI centers and improving the socioeconomic condition of people would definitely increase the rate of immunization in Peshawar.

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