Immunization Coverage at a Military Station

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Abstract

A study was conducted at a military station from Dec 2000 to Feb 2001, to study the exact immunisation coverage for six vaccines under Expanded Programme of Immunization (EPI Vaccines) and Hepatitis B vaccine and to find out unimmunized children. A house to house search was conducted and all the children below five years of age were included in the sample. Children of officers were excluded from the study. Overall 84.2% children were completely immunized for six EPI vaccines and 22.4% children were found to be immunised against Hepatitis B. The coverage for individual EPI vaccines is BCG (93%), DPT/OPV (91%), Measles (88%), DPT/OPV(B) (83%). The immunization coverage declined progressively for the vaccines given at higher ages from 93% for BCG given at birth, to 83% for DPT/OPV (B) given at 18 months of age. The immunisation coverage increased progressively with rank, being lowest in Sepoys (80.3%) and highest among Junior Commissioned Officers (97%). No statistically significant difference was found between static and field units, and the presence or absence of a Regimental Medical Officer in a unit for the immunization coverage. The study indicates that immunization coverage in the station is satisfactory, however efforts are needed to increase the vaccine coverage in the station.

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Key Word : Expanded programme of immunization; Hepatitis B; Immunization coverage

Introduction

Immunization is one of the important public health measures to prevent diseases. It is due to the virtues of efficient immunization that a large number of killer diseases have been tamed to quite an extent. Eradication of small pox is a glaring example of the success of immunization. The minimum coverage required to interrupt transmission of a disease is around 80% [1]. It is postulated that after this level of coverage, the disease transmission is interrupted so severely as to provide a degree of protection even for unimmunized children due to herd effect. Maintenance of a high level of immunization is a continuous process. Laxity in coverage may again lead to the resurgence of a disease as it happened in the Russian Federation, Ukraine and other countries of former USSR, where an epidemic of diphtheria was reported [2].

In Armed Forces, health services are efficient, easily accessible and given free of cost to all eligible. Unit(s) (a basic administrative set up of army) are dedicated to immunize their children. Thus the coverage is expected to be very high. Studies dealing with immunization coverage in a military population are lacking, though studies have been carried out in the cantonments involving civil population. It is widely perceived that the coverage is almost 100%. This study intends to fill up this gap and present an objective assessment of immunization coverage in a military station and provide base line for future studies.

Material and Methods

This cross sectional study was carried out at a medium sized military station. The aim of the survey was two fold.

Firstly, it intended to assess the immunization coverage in the given station and secondly to find out the children who were still unimmunized, so that the parents and the Commanding Officers of the units could be advised accordingly. The population was nomadic, as rapid turnover of families occurred every year, due to transfers, availability and expiry of the period of government accommodation, etc. The vaccination services were provided every Saturday at the Well Baby Clinic run by the Station Health Organisation. Vaccines given under Expanded Program of Immunization (EPI vaccines) were provided free of cost and Hepatitis B at a nominal cost. The clinic was centrally located at a distance of 0.5 to 5 km. The road communication was very good. In addition, units also arranged transport centrally for vaccination of the children. The study was conducted between Dec 2000 and Feb 2001. A house-to-house search was carried out and all the houses with children under five years of age were included in the study. Houses found locked during the first visit were visited again and excluded if found locked during second visit. A total of 337 houses were included for the study. Children of commissioned officers were excluded from the study. The immunization status was evaluated from the mother on a pre-tested format by the staff of Station Health Organisation (SHO). Wherever possible, the information was crosschecked from the road to health cards, if available with the mothers. A child was defined as immunized, if he had received all the vaccines appropriate to his age group as per immunization schedule. For example, if a one year child had received immunization up to measles, and a two year old child vaccines up to OPV/DPT-B, he/she was considered as immunized. Children immunized late were included in the definition of the immunized child. Vaccination coverage of individual vaccines was worked out on the basis of children eligible to receive a particular vaccine as per their age group. For e.g. a four year child was eligible to receive all the vaccines,

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while a one year child was eligible to receive up to measles and a newborn baby was eligible only for BCG/OPV-0.

Immunization coverage for individual vaccines was evaluated as per criteria mentioned above. Immunization status was compared in well known traditional socioeconomic groups of Army, i.e. various ranks, Sepoy, Lance Naik, Naik, Havaldar and Junior Commissioned Officer (JCO). Immunization status was also compared between field units and static units, and the presence or absence of a regimental medical officer (RMO) in a particular unit. Factors like mother's educational status, caste, religion etc. were not included as they are supposed to operate universally. Also caste and religion do not have much significance as far as army is concerned.

Results

1. Coverage of individual vaccines. The coverage of individual vaccines is summarized in Table 1.
2. Immunisation status as per rank profile of the father. It is summarized in Table 2.
3. Immunisation status in static and field units. It is summarized in Table 3.
4. Immunisation status as per presence or absence of RMO in the unit. It is summarised in Table 4.

Table 1

Immunization status of individual vaccines

Vaccine	Total eligible children	No of children immunized (%)	No of children unimmunized (%)
BCG	689	645 (93.6%)	44 (6.4%)
DPT/OPV-1	670	614 (91.6%)	56 (8.4%)
DPT/OPV-2	665	609 (91.6%)	56 (8.4%)
DPT/OPV-3	657	601 (91.4%)	56 (8.6%)
Measles	602	530 (88.0%)	72 (12.0%)
DPT/OPV-B	521	435 (83.5%)	86 (16.5%)
Hepatitis B	689	155 (22.4%)	534 (77.6%)

Table 2

Immunization status as per rank of the father

Rank	Immunized	Unimmunized	Total
Sepoy	118 (80.3%)	29 (19.7%)	147 (100%)
LNk/Nk	275 (81.6%)	62 (18.4%)	337 (100%)
Havaldar	154 (90.0%)	17 (10.0%)	171 (100%)
JCO	33 (97%)	1 (3.0%)	34 (100%)
Total	580 (84.2%)	109 (15.8%)	689 (100%)

$X^2 = 12.04$, $df = 3$, $p < 0.01$ (highly significant)

Table 3

Immunization status as per the status of units in which father was serving

Unit type	Immunized	Unimmunized	Total
Field units	383 (85.8%)	63 (14.2%)	446 (100%)
Static units	197 (81.0%)	46 (19.0%)	243 (100%)
Total	580 (84.2%)	109 (15.8%)	689 (100%)

$X^2 = 2.71$, $df = 1$, $p > 0.5$ (not significant)

Table 4

Immunization status as per the presence/absence of RMO(s) in the units

Presence of RMO	Immunized	Un-immunized	Total
Present	348 (82.5%)	74 (17.5%)	422 (100%)
Absent	232 (86.8%)	35 (13.2%)	267 (100%)
Total	580 (84.2%)	109 (15.8%)	689 (100%)

$X^2 = 2.4$, $df = 1$, $p > 0.05$ (not significant)

Discussion

Overall 84.2% children were found to be immunized against six Vaccine Preventable Diseases (VPD) and 22.4% were found immunized against Hepatitis B. For BCG, DPT/OPV, Measles, DPT/OPV-B, 93.6%, 91%, 88% and 83.5% respectively were found immunized. A gradual decline in the coverage was noticed for the vaccines given at higher age, being highest for BCG (93%) given at birth and lowest for DPT/OPV-B (83%) given at 18 months of age, indicating dropouts. Immunization coverage improved significantly with ranks, being lowest among the Sepoys (80%) and highest among JCOs (97%). Efforts are required to create awareness among the lower ranks by an intensive health education campaign to get the child immunized as per the present recommendations and prevent dropouts. The immunization coverage is higher as compared to all India level coverage, as reported by Singh and Yadav (2000) [3]. Due to this level of coverage no indigenous case of VPD has been reported for last 3 years at least, in the station. 15% children were found to be unimmunized. There was no statistically significant difference in the immunization coverage between field/static military units and units with/without a posted RMO. This may be primarily due to highly mobile population with rapid turnover of families within a year or more. In a cross sectional study like this, such a result can be expected, because a large number of children join the station every day from the villages, unimmunized. It clearly indicates that unit administration, responsible for the health of its troops is giving due attention to this aspect of health care. A further prospective study would give us a true picture.

The study has certain limitations. Being retrospective, it is primarily based on recall especially for older children (though the information has been verified by road to health cards as far as possible). The sensitivity and specificity of recall method for immunization status has been found to be 41.3% and 79.5% by Ramakrishna et al (1999) [4]. The under five age group was included in this study, whereas in most of the studies 12-23 month old children have been included. However, this study gives us an objective assessment of the immunization

coverage at the military station. Though the coverage is much higher than all India average, efforts are required to further increase the coverage. In view of mobile nature of the population due to turn over of families in the station, one good way to keep a check on the immunization status of the children is physical verification by RMO/AMA on arrival of the family in a station. The paediatrician at Military Hospital should include immunization history in all OPD cases and advise mothers accordingly. In addition annual family health/immunization checkup drives should be undertaken. This study provides a base line data about immunization coverage at a military station. More studies at regular

intervals are required to monitor the trends in the immunization coverage.

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