

# Immunization Status-Coverage and Practices among Children in Perinthalmanna, Kerala

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## Introduction

Immunity is the ability of the body to shield itself from infectious disease and also against cancer. Being vaccinated means a less chance for getting infected, a large shield against micro organisms. The “Herd immunity” is logical approach where the unvaccinated individual when residing in a majorly vaccinated population is protected from the infection [1]. Hence, when three fourth of the population are vaccinated, there is less probability for the rest of the population to get into trouble.

Immunization for disease prevention began in the late 1790s, when inoculation with cowpox was used to provide immunity against smallpox. The success rate was quiet surprising and later on similar vaccines were prepared for eradicating diseases which were contagious [2].

Immunization being one of the most cost effective, safest and efficient public health interventions and can be defined as rendering a person protection from an infectious agent through administration of immunoglobulin and from vaccination, also can be acquired by exposure to the disease or by transfer of antibodies from the mother to fetus [3]. The body is activated as soon after the vaccination and subsequently antibody recognizes invading organisms from that of self and acts against them to destroy or neutralize them. Immunization prepares the immune system to ward off a disease.

National surveys has estimated that 44% of infants in India are fully immunized, which is much less than the desired goal of achieving 85% coverage [4]. Only 43.5% children in India received all of their primary vaccines by 12 months of age [5]. Of the 10 million children who died during the year, among them about 2.5 million children (25%) died from vaccine preventable diseases (VPD) [6].

Under the National Immunization Programme, infants are immunized against 6 VPDs namely tuberculosis, diphtheria, pertussis, poliomyelitis, measles and tetanus. Kerala-God's Own Country-lies in the south western corner of the Indian peninsula with a population of 3.406 crores. Universal Immunization Programme was introduced in the State with all determination and vigor along with National

Launching of the Scheme and could achieve set goals ahead of other States in the country, despite a progressive a progressive trend in health related parameters including death rate in the state which is 6.8 against National rate of 7.4 as per 2001 census.

However, the results of National Family Health Survey 3 shows that the state has gone down in vaccination coverage due to many reasons. As a result, the latest coverage evaluation survey shows that 87.9 % of children are fully immunized though the percentage of full immunization by age 12 months is 82.9%. Even though Kerala is a highly literate state, there are areas where people show resistance to immunization on religious basis in some regions. Perinthalmanna is a municipality located in the district of Malappuram, Kerala; one of the states having significantly reduced vaccination rates as compared to the total state average. Though there are many programmes currently in the state to provide awareness and reduce vaccination abstinence, they address only the generic issues. Studies on statistically significant sample sizes can be advantageous in estimating the factors which are causing decline in the rates and can be utilized for judicious planning of methods to combat these issues. The study was aimed at assessing the immunization status of children in Perinthalmanna region and to find reasons of not taking immunization.

## Aim

The aim of the study is to identify and quantify the reason stated for not vaccinating children in Perinthalmanna, a region in Malappuram District, Kerala.

## Materials and Methods

The cross-sectional survey was performed to assess the immunization status of children under the age of 10 at Perinthalmanna Municipality of Malappuram district in Kerala. The study was conducted for duration of 3 months. The sample size was determined using n-Master software for sample size determination. Cluster sampling method from Perinthalmanna municipality was used to select the subjects. The primary tool used for the survey was a structured and pre-validated questionnaire in the regional

language of Malayalam, which consisted of 23 questions. The scope of questionnaire encompassed demographic details, religious details, educational qualifications of parents, details of delivery, immunization status of both mother and child, the reasons for abstinence from immunization and details on vaccinations taken. The survey was carried out by the students, with the help of health care workers of each ward. The statistical analysis was performed using SPSS software.

## Results

A total of 174 families were randomly selected as the sample for the survey. Of these, 77.595 (n=135) families had been immunized in comparison to 22.41% (n=39), which were not immunized. There were 251 children; of whom, 80.48% (n=202) were immunized and 19.52% (n=49) were non-immunized. The evaluation of immunization status in children among families with respect to their religious inclinations evidenced a proportionately lower immunization rate in Muslims as compared to the Hindu and Christian counter-parts as depicted in figure 1.

Chi-square test was applied, the number of immunized and non-immunized were equal in different religious groups for the data represented in figure 1, yielding a value of 52.311 (p<0.0001) which showed significant difference. Relative Risk for non-immunization in Muslims was estimated as 43.62 (Figure 2).

The children were categorized on immunization status with respect to gender proved result which was 80.81% (n=80) and 80.26% (n=122) among a total of 99 male and 152 female children respectively. The gender of the subjects was compared with their immunization status for statistical significance using Chi-square test and there was no difference between distribution of male *versus* female in immunized and non-immunized groups.

Categorization of the immunization status in children in comparison to their educational level of their parents has been depicted in table 1. Hypothesis testing of the data depicted in table 1 using Chi-square yielded value of 2.497 ( p=0.2869), there was no difference in the

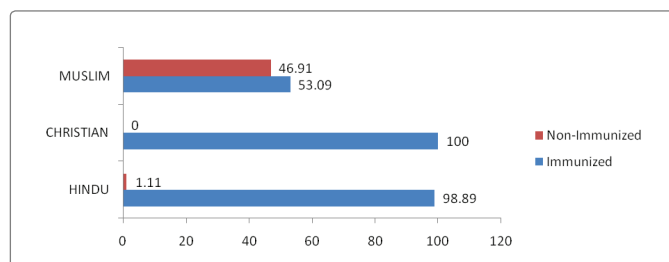


Figure 1: Immunization status in different religious groups.

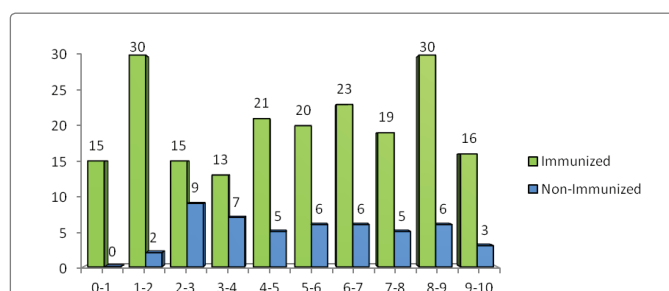


Figure 2: Immunization status of children with respect to their age.

Table 1: Immunization status in children *versus* educational level of their parents.

Education	Immunized	Non-Immunized
Upper Primary	19 (95%)	1 (5%)
High School	81 (73.64%)	29 (26.36%)
Higher Studies	35 (79.55%)	9 (20.45%)

Table 2: Reasons for abstinence from immunization.

Reason for abstinence	Frequency	Percentage*
Fear of side effects (itching, nausea, fever, pain, swelling child cries a lot )	8	20.51
Opposition from parents, relatives& friends	7	17.95
Lack of immunization among family members	7	17.95
Misconception propagated through social medias	6	15.38
Father of child is abroad	6	15.38
Loss of immunization card	6	15.38
Faith in prevention than proliferation	5	12.82
Reason that it is non-mandatory	4	10.26
Lack of awareness about immunizations and their importance	3	7.69
Busy work schedule of parents	3	7.69
Lack of Polio cases reported in locality	3	7.69
Suggestions and advices which lead to non-compliance	2	5.13
Misconception that they had immunization before	2	5.13
Less of involvement of private hospitals	2	5.13
Have experienced any side effect during prior immunization	1	2.56
Geographical and travel difficulties	1	2.56
Abiding by the words of spiritual leaders	1	2.56
Persuasion by relatives	1	2.56
Lack of knowledge of prior immunization	1	2.56
Wrong advice from prior immunized persons	1	2.56
Lack of monitoring benefit as it is free	1	2.56
Due to immunization is free in different days	1	2.56
High standard of living	1	2.56

\*From the total 39 non immunized families

number of immunized and non-immunized children when compared with their parent's education levels.

The impact of the child's delivery setting on immunization status was assessed, which indicated that 95.69% (n=89) children were immunized when their delivery setting was at government hospital as compared to 73.03% (n=111) in private settings. Of the 6 children born in setting other than the mentioned above i.e. government and private hospitals, the proportions of immunized and non-immunized were 33.23% (n=2) and 66.67% (n=4) respectively. The number of immunized and non-immunized children were equal in different

delivery settings using Chi-square test, the value obtained was 27.574 ( $p=0.0000103$ ).

The questionnaire was also employed for evaluating the reasons which culminated in abstinence from immunization and the results obtained has been represented in table 2.

On statistical analysis, the immunization status was equal in all age groups of children.

The reasons for abstinence from immunization were obtained through the questionnaire and have been depicted in table 2.

## Discussion

The vaccination coverage reported in the current study was 77.6%, which is comparatively lower than the Coverage Evaluation Survey, i.e., the estimated total vaccination coverage in Kerala as (87.9%) [7]. This deviation clearly highlights the below par immunization coverage in the Perinthalmanna which is pseudonymously called as “hospital city of Malabar region”. Religion was identified as a predisposing factor to this deviation as was evident from the statistically significant immunization rates among various religious groups. 46.9% children born in Muslim families were not having adequate immunization coverage with relative risk of 43.62 in comparison to non-Muslims. Educational level of the parents which is widely regarded as a highly influencing factor towards the immunization status of children was not found to have any statistically significant effect in the current population. In comparison to children born in private hospitals, government hospital was having significantly higher positive immunization status. This can be attributed to the fact that immunization in government hospitals was free of cost in contrast to private settings, where it was charged from the subjects. The study had also made an attempt at identifying the major negative contributing factors on immunization status of the child. The major reason identified was that- parents were fearful of their children contracting side effects such as nausea, fever, swelling, pain, etc. Upto 21% of the parents cited this factor as preventing them from immunizing their child. The studies conducted by Chaturvedi M, et al., and Ahamad J, et al., cited the same reason as the major abstinence factor with the estimates of 6.8% and 38%, respectively [8,9]. These parents either had a bitter experience after immunizing their first child or were informed so from their relatives and neighbors. Lack of support from elders and relatives of the child’s parents was another major issue evident from the collected data. 17.95% children were not immunized citing this as the reason in the current study and is proportionately similar to the study conducted by Ahamad J, et al. [8]. Absence of any diseases despite the lack of immunization among family members was the reason quoted by the elders which had a negative impact on the mind-set of parents on vaccinating their children. Misconceptions propagated through media were the third most influencing factor (15.38%). Study conducted by M. Chaturvedi, et al., had reported the same as an influencing factor in 3.8% subjects [9]. The havoc created by media on small misshapen during mass-immunization programmes are considered to have a negative effect towards immunizing the children especially among the illiterate groups and in rural areas. The factor that father of child was working abroad and incapability of the mother to take decision on immunizing the child single-handedly against the views of elders was a relatively novel reason as compared to other similar studies. The factor was having moderate influence in the regions because in majority of houses, the working-age males were employed in middle East countries. Loss of immunization card had prevented 15.38% from giving further immunization to their children and could be countered by computerizing the immunization scheme at government level.

## Conclusion

India is a leading producer and exporter of vaccines, still the country is home to one-third of the world’s unimmunized children. The overall result of the study has implicated a similar situation in the region under the study in comparison to the overall trend in Kerala. This implies an urgent need for improvement in the immunization programme in Perinthalmanna region. The major abstinence factors for immunization was found to be fear of side effects, opposition from parents, relatives and friends, lack of immunization among family members, misconceptions propagated through social medias, loss of immunization card, busy work schedule of parents, abiding by the words of spiritual leaders, geographical and travel difficulties . Many of the factors which has been detected to have an implication in the immunization status in the current study is specific for the region and may seldom be found in other studies in a different location. The current measures by government at national are inadequate to tackle region specific issues and identifying such regional variables can help to plan resources and personals adequately to tackle them rather than using the resources on issues of regional insignificance. The government authorities and health department have to implement awareness program and methods like implementation of computerized system instead of vaccination card so as to eliminate lack of immunization due to loss of the document. Vaccination help desk, mobile vaccination unit, vaccination alert booth etc can be set up in an organized and systematic manner to simplify the overall vaccination programme. Another landmark intervention can be the inclusion of clinical pharmacists along with ASHA workers in health education team. Implementation of mandatory requirement for submission of vaccination data at the time of school admission can impart a structural legal support to the coverage of immunization programme. Composing a vaccination team which composes teachers, religious leaders, social workers for awareness and counseling can also promulgate a significant improvement in the awareness and counseling. The implementation of at least some, if not all recommendations can help to improve the status of immunization and achieve the desired goal from immunization programme.

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