

Evaluation of immunization coverage among children aged 12-23 months in Surendranagar city

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ABSTRACT

Background: Infectious diseases are a major cause of morbidity & mortality in children. One of the most cost effective & easy methods for child survival is immunization. In May 1974, the World Health Organization (WHO) officially launched a global immunization programme known as Expanded Programme of immunization (EPI) to protect all the children of the world against 6 Vaccine Preventable Diseases by the year 2000. It was later redesignated as Universal Immunization Programme (UIP) since 1985. The objectives of this study were to assess the dropout rate and primary immunization coverage of children aged 12-23 months in Surendranagar city and to know the various reasons for partially or not immunizing the child.

Methods: A community-based cross-sectional study. Thirty clusters were selected out of a total of 282 blocks of Surendranagar using the cluster sampling method. Cluster sampling method was used for sample selection and the proforma designed by UNICEF was used as a study tool. Sample size was 210 children (7 Children from each cluster) of aged 12-23 months. The obtained data were analyzed using appropriate statistical tests like Z test and X^2 test.

Results: Out Of the 210 surveyed children, 121(57.62%) were males and 89(42.38%) were females. Immunization card was available for 69.52% of children and fully immunized were 70.47%. Coverage was highest for BCG (95.71%) followed by OPV3 (82.85%), DPT3 (79.52%) and lowest for measles (75.23%). As far as the dropout rate is concerned, it was 21.39%, 10.21%, and 9.37% for BCG to measles, DPT₁ to DPT₃, and OPV₁ to OPV₃, respectively. Amongst the various reasons main reasons for dropout or unimmunization of children were ignorance in about 64% and lack of information regarding time, place and schedule (21%).

Conclusions: Improvement should focus on reducing the dropout rate from DPT2/OPV2 to DPT3/OPV3 and improving coverage of measles and also Vitamin A.

Keywords: Immunization coverage, Cluster sampling, Dropout rate

INTRODUCTION

Infectious diseases are a major cause of morbidity & mortality in children. One of the most cost effective & easy method for child survival is immunization. In May 1974, the World Health Organization (WHO) officially launched a global immunization programme known as Expanded Programme of immunization (EPI) to protect all the children of the world against 6 Vaccine Preventable Diseases by the year 2000. It was later redesignated as Universal Immunization Programme (UIP) since 1985.¹

The current scenario depicts that immunization coverage has been steadily increasing but the average levels remain far less than desired. Still only 44% of infants in India are fully immunized as per NFHS-3 which is much less than the desired goal of achieving 85% coverage.²

UNICEF report ranks India 49th in child mortality. Nearly 2.4 million Indian Children perished due to pneumonia, diarrhea, measles, tetanus & whooping cough.³

The present study was therefore conceptualized to evaluate the immunization coverage of children in the

city and to suggest necessary interventions for its improvement.

Aims & Objectives

1. To assess the dropout rate and primary immunization coverage of children aged 12-23 months in Surendranagar city and 2. To know the various reasons for partially or not immunizing the child.

METHODS

Study Design: It was a community-based cross-sectional study. All the blocks (282) in the city were enumerated & from that 30 clusters were selected using the cluster sampling method.

Study Tool: Cluster sampling method was used for sample selection and the Proforma designed by UNICEF was used as a study tool.⁴

Sample Size: Nearly 210 children (7 Children from each cluster) of aged 12-23 months were selected for the study.

Statistical Analysis: The obtained data was analyzed using appropriate statistical tests like Z test and X² test.

Following criteria was used for categorization of full, partial and no immunization.¹

Full Immunization: Child 1-2 years of age, who received 3 doses of DPT & OPV each, 1 dose to BCG & measles each.

Partial Immunization: Child, who missed any 1 or more of above doses.

No immunization: Child who has not received even a single dose of vaccine.

RESULTS

A total of 210 children from 30 clusters were assessed for immunization coverage from Surendranagar city.

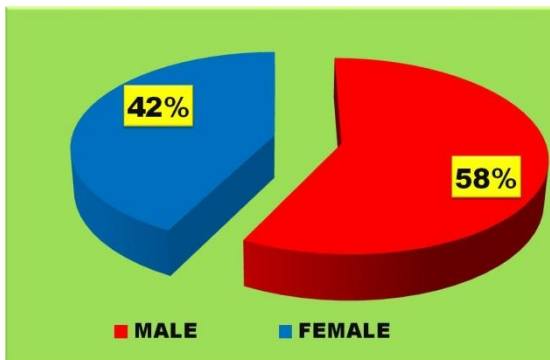


Figure 1: Distribution of the subjects sex wise (N=210).

The above figure shows that nearly 58% of the subjects were females.



Figure 2: Distribution as per availability of immunization card (N=210).

The above figure shows that majority of the respondents (70%) did have an immunization card at the time of visit.

Table 1: Table showing the present immunization status of subjects (N=210).

| Vaccination | No. | Percentage (%) |
|---------------------|-----|----------------|
| BCG | 201 | 95.71 |
| POLIO (zero dose) | 128 | 60.95 |
| DPT-1 | 186 | 88.57 |
| DPT-2 | 159 | 75.71 |
| DPT-3 | 167 | 79.52 |
| OPV-1 | 192 | 91.42 |
| OPV-2 | 159 | 75.71 |
| OPV-3 | 174 | 82.85 |
| MEASLES | 159 | 75.71 |
| VIT. A-1 | 151 | 71.90 |
| VIT. A-2 | 98 | 46.66 |
| VIT. A-3 | 44 | 20.95 |
| Fully Immunized | 148 | 70.47 |
| Partially Immunized | 53 | 25.24 |
| Not Immunized | 09 | 4.29 |

The above table shows that nearly 70% of the subjects were fully immunized and the remaining 25% partially immunized. Only about 4% of the subjects were completely unimmunized.

Table 2: Immunization status comparison in males & females (N=210).

| Status Of Immunization | Sex | | | | Total | |
|------------------------|------|-------|--------|-------|-------|-------|
| | MALE | | FEMALE | | NO. | % |
| | NO. | % | NO. | % | | |
| Fully Immunized | 92 | 76.03 | 58 | 65.17 | 148 | 70.45 |
| Partially Immunized | 25 | 20.66 | 26 | 69.21 | 53 | 25.24 |
| Unimmunized | 4 | 3.31 | 5 | 5.62 | 9 | 4.29 |
| Total | 121 | 100 | 89 | 100 | 210 | 100 |

Table 3: Table showing association of Immunization status with the social class of the subjects (Modified Prasad`s Classification 2009, N=210)⁵.

| Social Class | Immunization Status | | | | | | | |
|----------------|---------------------|-------|---------------------|-------|---------------|------|-------|-------|
| | Fully Immunized | | Partially Immunized | | Not Immunized | | Total | |
| | NO. | % | NO. | % | NO. | % | NO. | % |
| Class 1, 2 & 3 | 102 | 82.93 | 18 | 14.63 | 3 | 2.44 | 123 | 58.57 |
| Class 4 & 5 | 46 | 52.87 | 35 | 40.23 | 6 | 6.9 | 87 | 41.43 |
| Total | 148 | 70.45 | 53 | 25.24 | 9 | 4.29 | 210 | 100 |



Figure 3a: Figure depicting the dropout rate from BCG to Measles (N=210).



Figure 3b: Figure depicting the dropout rate from DPT 1-3 & OPV 1-3 (N=210).

The dropout rate found out was 21.39% from BCG to measles. Nearly 96% of the individuals were vaccinated with BCG but for measles it was found to be 75%.

The dropout rate from OPV1-3 is about 10% and similar dropout rate was found for DPT1-3.

The first dose of all vaccines like BCG, DPT and OPV had a very high coverage of nearly 90% and above.

It can be seen from the above table that the percentage of males who were fully immunized was much higher than their female counterparts (Table 2). Whereas in partially and unimmunized, both sexes showed similar picture.

When a significant difference was sought between the proportions of males & females in all 3 groups using chi square test, the difference was not found statistically significant ($X^2=3.032$, $df=2$, $p=0.2196$).

The social class of the subjects was assessed using the Modified Prasad`s Classification 2009 with AICPI of Rs. 741/-⁵.

When the variables were associated, it was found that the higher social class had much higher immunization coverage as compared to lower social classes. The association was proved statistically significant using Chi square test ($X^2=41.051$, $df=2$, $p<0.0001$).

Table 4: Reasons for drop out or non immunization of children (N=210).

| Reasons | No. | % |
|---------------------------------------------|-----|-------|
| Child too young for immunization | 10 | 16.13 |
| Unaware for need of immunization | 41 | 66.13 |
| Unaware of the place & time of immunization | 21 | 33.87 |
| Fear of side effects | 34 | 54.84 |
| No faith in immunization | 08 | 12.9 |
| Services not within reach | 26 | 41.94 |
| Family problems including mother's illness | 06 | 9.68 |
| Child was ill | 12 | 19.35 |
| Do not remember | 09 | 14.51 |

The above table shows the importance of IEC activities for UIP as nearly 66% of the individuals were not aware of the need for immunization & 55% felt the fear of adverse events following immunization (Table 4). About 42% felt that the services were too far away/ not within reach & 33% not aware of date & time of immunization, which reiterates the importance of strengthening outreach services. Nearly 17% had myths like child too young for immunization etc.

DISCUSSION

In a study conducted by Yadav S et al it was seen nearly 70% which is almost similar to present study.¹ In the same study nearly 26% were partially immunized which is similar to present study. In the same study, the major reasons for non-immunization were ignorance (80%) which is little higher than the present study (60%).

In a study conducted by Sharma R et al, it was seen nearly 25% which is much lower to present study.² In the same study nearly 52% were partially immunized which is much lower than present study. In the same study, BCG to measles dropout rates were 60% which was much higher than present study, where the dropout rates of the same were 22%.

In MICS 1998, 300 children were assessed for immunization coverage and the rates were 75%, 76.3% and 51.3% for BCG, DPT3 and OPV3 respectively. In the

present study the rates of the three were 96%, 80% and 82% respectively. This difference could be because of the better functionality of the UIP services in a large city like Surat.⁶

In this study fully immunized children were 70.47%, whereas as per NFHS III & DLHS III only (44%, 54%) children were fully immunized in India and (45.2%, 54.9%) in Gujarat, but it was lower than the Surendranagar district (86% fully immunized) as per a report from CDHO office 2010-11.⁷⁻⁹

CONCLUSION

Improvement should focus on reducing the dropout rate from DPT₂/OPV₂ to DPT₃/OPV₃ and improving coverage of measles and also Vitamin A.

The remaining deficiencies can be taken care of by generating awareness among the community by holding mother's meetings and extensive IEC programs, inviting opinions and suggestions from them, and enhancing community participation.

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