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# Assessment of Immunization Status of 12-23 Month Children in Urban Slums in Solapur Maharashtra, India

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## ABSTRACT

**Background:** Immunization is a proven tool for controlling and even eradicating disease. The vaccination coverage at present with EPI vaccines is far from complete despite the long-standing commitment to universal coverage.

**Aim and objectives:** To assess immunization status and to study factors associated with it among 12-23 months children.

**Material and methods:** It was community based descriptive cross sectional study conducted during January 2010 to December 2011 at Urban Health Centre of the Department of Preventive and Social Medicine. All 280 children of 12-23 months residing in slums of urban field practice area were included. Data was analyzed using SPSS software 16 version and openEpi Software Version 2.3.

**Results:** 81.4% study subjects were fully immunized and 18.6% were partially immunized. Proportion of study subjects fully immunized differs significantly from those partially immunized with respect to religion and socioeconomic status. No significant association was observed between gender, type of family, mother's education and birth order of child with immunization status.

**Conclusion:** Majority of children were fully immunized indication good immunization coverage. There is need to evaluate different aspects of religion and socioeconomic status which are responsible for significant difference in immunization coverage.

**Key words:** Immunization status, Children

## INTRODUCTION

Immunization is one of the greatest medical success stories in human history. Universal child immunization against vaccine-preventable diseases is recognized as one of the most cost-effective ways of reducing infant and child mortality in developing countries.[1]

India was one of the first countries to adopt the World Health Organization's Expanded Programme of Immunization (EPI). Since its inception, considerable progress has been made in terms of reduction in disease burden. Despite these achievements and tremendous advances in economic and technological spheres in recent years, the burden of vaccine-preventable diseases remains unacceptably high, in comparison to developed countries and many developing countries.[2]

Roughly 3 million children die every year of vaccine preventable diseases (VPDs) and a significant number of these live in developing countries. Recent estimates suggest that approximately 34 million children are not completely immunized, almost 98% of them living in developing countries.[3]

Urban poor, many residing in slums, comprise about one-fourth of India's 285 million urban populations. 60% of the children aged 12-23 months in urban India are fully immunized; coverage among urban poor children is a dismal 43%.[4]

Second largest state of India which called Maharashtra, it shows a completely dismal picture in full immunization coverage that made considerable progress between 64 percent in 1992–1993 to 78 percent in 1998–1999, while decline in during 59 percent in 2005–2006.[5,6] Moreover, In spite of manifold increase in expenditure, there was a drastic decrease in full immunization was noticed in Maharashtra.[6]

Even if national immunization coverage levels are sufficiently high to block disease transmission, pockets of susceptibility may act as potential reservoirs of infection. It is therefore essential to know if under-vaccination is a problem in specific population group, which involves determining inequalities in coverage level. [7]

Thus, the present cross sectional study was undertaken to assess immunization coverage and various socio-demographic factors affecting the same in an urban slum population of Solapur, India.

## MATERIAL AND METHODS

The study was undertaken in urban field practice area of the Department of preventive and Social Medicine. The Urban Health Center is located in Guru Nanak Chowk opposite to Sadhu Vaswani Garden which is 2 kms away from medical college having 2 kms radius.

It was community based descriptive cross sectional study conducted from January 2010 to December 2011 among 12-23 month children residing in slums of urban health centre. All 280 children residing in slums of urban field practice area for more than 1 year were included in the study. Data was collected using a semi structured and predesigned questionnaire schedule by personal interview method.

Institute Ethical committee approval was taken prior to the study. A single interviewer collected data by conducting personal interview of the mothers of eligible children by house to house visit. Mothers of the children were explained the purpose of the study by the use of Respondent Information Sheet, which was prepared in two languages namely Marathi and Hindi in simple words. Informed consent was obtained prior to the study which was signed by the mothers and interviewer.

The information of children regarding age, sex, religion, type of family, and educational status of mother was collected. Detailed information was obtained regarding socio-economic class, birth history and feeding habits were also collected.

The immunization status of the child was assessed by vaccination card and by mothers recalls where vaccination card was not available. The immunization status of the children was categorized as follows: • Fully immunized: When the child had received Bacillus Calmette–Guérin (BCG), three doses of diphtheria, pertussis (whooping cough), and tetanus (DPT), and three doses of oral polio vaccine (OPV) and measles vaccine • Partially immunized: When the child had received some but not all vaccines • Not immunized: When the child had not received any of the vaccine.[7]

Data was analyzed using SPSS software 16 version and OpenEpi Software Version 2.3. Vancouver system of listing and citing of references was used. As per this system, the references were numbered and listed consecutively in the order in which they are first cited in the text.[8]

## RESULTS

**Socio-demographic profile**: Among 280 children of 12 – 23 months 158 (56.4%) were male and 122 (43.6%) were female. Majority study subjects were Hindu by religion 136 (48.6%) followed by Muslim 116 (41.4%). Only 26 (9.3%) were Buddhist and 2 (0.7%) were Christian. 108(38.6%) were from joint family while 172 (61.4%) belong to nuclear family. 192(68.6%) study subjects were in class V according to BG Prasad socioeconomic classification followed by 62 (22.1%) in class IV. Only 20 (7.1%) mothers were illiterate while majority mothers had received secondary education 166(59.3%). 8(2.9%) mothers were postgraduate. 146 (52.1%) study subjects had first birth order, 100 (35.7%) were second by birth order and 28 (10%) were third by birth order.

**Immunization status**: Out of 280 study subjects, no child remained unimmunized. 228(81.4%) study subjects were fully immunized and 52(18.6%) study subjects were partially immunized.

**Socio-demographic factors associated with immunization status:** Among 280 study subjects, 79.6% male were fully immunized as compared to 83.6% female. Proportion of study subjects fully immunized did not differ significantly from those partially immunized with respect to gender. 80.2% children from nuclear family and 83.3% children from joint family were fully immunized. Immunization status among study subjects showed no significant difference according to type of family. Full immunization was noticed 80% among children with illiterate mother while 100% among children with postgraduate mother and 91.7% among graduate one. But the immunization status among study subjects showed no significant difference according to mother's education. No significant association was observed between birth orders of child with immunization status.

**Table 1: Socio-demographic profile of 12-23 months children**

| Socio-demographic Variables | Children (%) |
|---|---|
| Gender | |
| Male | 158(56.4) |
| Female | 122(43.6) |
| Religion | |
| Hindu | 136(48.6) |
| Muslim | 116(41.4) |
| Buddhist | 26(9.3) |
| Christian | 2(0.7) |
| Type of Family | |
| Nuclear | 172(61.4) |
| Joint | 108(38.6) |
| Socioeconomic Status (BG Prasad Classification) | |
| I | 6(2.1) |
| II | 2(0.7) |
| III | 18(6.4) |
| IV | 62(22.1) |
| V | 192(68.6) |
| Education of Mother | |
| Illiterate | 20(7.1) |
| Primary | 14(5.0) |
| Secondary | 166(59.3) |
| Higher Secondary | 48(17.1) |
| Graduate | 24(8.6) |
| Post graduate | 8(2.9) |
| Birth order | |
| 1 | 146(52.1) |
| 2 | 100(35.7) |
| 3 | 28(10) |
| > 4 | 6(2.1) |

**Table 2: Socio-demographic factors associated with immunization status of 12-23 months children**

| Socio-Demographic factors | Immunization Status (%) | | P value |
|---|---|---|---|
| | Fully immunized | Partially immunized | |
| Gender | | | |
| Male | 126(79.6) | 32(20.3) | 0.410 |
| Female | 102(83.6) | 20(16.4) | |
| Religion | | | |
| Hindu | 124(91.2) | 12(8.8) | 0.000 |
| Muslim | 76(65.5) | 40(34.5) | |
| Buddhist | 26(100) | 0(0.0) | |
| Christian | 2(100) | 0(0.0) | |
| Type of Family | | | |
| Nuclear | 138(80.2) | 34(19.8) | 0.516 |
| Joint | 90(83.3) | 18(16.7) | |
| Socioeconomic Status | | | |
| I | 6(100) | 0(0.0) | 0.012 |
| II | 2(100) | 0(0.0) | |
| III | 18(100) | 0(0.0) | |
| IV | 56(90.3) | 6(9.7) | |
| V | 146(76) | 46(24) | |
| Mothers education | | | |
| Illiterate | 16(80) | 4(20) | 0.264 |
| Primary | 12(85.7) | 2(14.3) | |
| Secondary | 128(77.1) | 38(22.9) | |
| High. Sec. | 42(87.5) | 6(12.5) | |
| Graduate | 22(91.7) | 2(8.3) | |
| Post. Grad. | 8(100) | 0(0.00) | |
| Birth order | | | |
| 1 | 116(79.5) | 30(20.5) | 0.675 |
| 2 | 84(84) | 16(16) | |
| 3 | 22(78.6) | 6(21.4) | |
| > 4 | 6(100) | 0(0.0) | |

100% Buddhist, 100% Christians and 91.2% Hindu children were fully immunized. Among Muslim 65.5% children were fully immunized. Significant difference was observed in immunization status of children with respect to religion. 100% children were fully immunized among socioeconomic class I, II and III and 90.3% in class IV while 76% in class V. Proportion of study subjects fully immunized differ significantly from those partially immunized with respect to socioeconomic status.

Thus, proportion of study subjects fully immunized differs significantly from those partially immunized with respect to religion and socioeconomic status. No association was observed between gender, type of family, mother's education and birth order of child with immunization status.

## DISCUSSION

In present study, among 280 study subjects, no child remained unimmunized. 228(81.4%) study subjects were fully immunized and 52(18.6%) study subjects were partially immunized.

Immunization coverage similar to present study was reported among studies from different regions of Maharashtra carried out by Sharma Bhuvan et. al.[7] at urban slums of Mumbai (81%), Wagh Sanjay et. al.[9] at rural areas of Wardha(84.9%) and Gupta Pankaj et. al.[10] at rural areas of Pune (86.67%). In a study carried out by Vohra Rajat et. al.[3] at urban and rural areas of Lucknow, Uttar Pradesh 62.7% children were fully immunized, 24.4% partially immunized and 12.9% remained unimmunized. In a study by Sharma Rashmi et al[11] in urban slums of Surat, Gujarat only 25% children were fully immunized. Rajasthan and Karnataka also reported comparatively less prevalence of fully immunized children as compared to Maharashtra. Proportion of children fully immunized was 76.19% at rural areas of Jaipur, Rajasthan[12] and 34.84% among urban slums of Bijapur, Karnataka.[13] So immunization coverage varies among studies carried out in different areas may be due to geographic variation & survey technique.

There was significant association between immunization status of the children and socioeconomic status and religion. Immunization coverage among Muslims was significantly lower than immunization coverage among children with other religions (Hindus, Buddhist and Christians). Taboos, rituals and cultural beliefs vary among various religions

and these all may have significant effect on immunization practices in that religion. Higher socioeconomic status may be associated with higher affordability of immunization services and better level of awareness of benefits of immunization for children. Thus significant variation may be noticed among immunization coverage as per socioeconomic status. No significant association was observed between gender, type of family, mother's education and birth order of child with immunization status. Similar to present study significant association between religion and immunization status of children was reported in study by Datta et al[14] at rural areas of Tripura. A study done by Angadi et al[13] at urban slums of Bijapur and Datta et al[14] at rural areas of Tripura found no significant association between maternal education, gender, birth order and child immunization status.

In contrast to present study significant association between birth order, maternal education and child immunization was revealed in studies by Sharma Bhuvan et al[7] at urban slums of Mumbai and Pande Laxmi et al[12] at rural area of Jaipur, Rajasthan.

## CONCLUSION

Immunization programmes are mainly focused on providing the resources for immunization but health education that in direction of different religion and their cultural values also has prevailing role in improving the prevailing scenario of immunization in the country. Only (81.4%) of children from urban slums were fully immunized and 18.6% were partially immunized. Still urban poor are lagging behind 85% immunization coverage level. Immunization coverage is significantly lower among Class IV and Class V socioeconomic status children indicating need to further evaluate various components responsible for non utilization of even free immunization services by poor peoples. No significant association was observed between gender, type of family, mother's education and birth order of child with immunization status.

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