



EVALUATION OF IMMUNIZATION AND VACCINE COVERAGE IN CHILDREN AGED 0-7 YEARS

Pharmaceutical Science

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ABSTRACT

Background: Immunization is the procedure of administering a vaccine to protect a person from life-threatening disease. Vaccines contain a form of the disease-causing agent, by UNICEF and WHO, to reduce the death rate among children under five making vaccination accessible to all eligible individuals. **Objective:** To find out the unimmunized and partially immunized children among study population and assess the reasons for this. **Methods:** This is a cross-sectional study carried out in the paediatric OPD at SVRRGGH, Tirupati for a period of 3 months among 160 children. Data was collected from the mothers of these children using structured proforma and analysed by using MS excel and SPSS. **Results:** In the study, 69 (43.13%) were male and 91 (56.87%) were female children. The mean age of the children was 3.5 years & SD=2.16. Immunization status of under 7 years children is 132 (82.3%) were fully immunized, 24 (15%) were partially immunized, 4 (2.5%) were unimmunized. Among 160 participants, age and gender association were found to be statistically significant ($p < 0.05$) with the immunization status and vaccine coverage of the children. **Conclusion:** In our study most of children were fully immunized, but still there were partially and unimmunized children and with delayed vaccination.

KEYWORDS

Fully immunization, Partial immunization, Un-immunization, Immunization Schedule.

INTRODUCTION

Immunizations prepare the immune system to combat a disease. To immunize against viral infections, the virus in the vaccine is weakened or killed. When a healthy immune system detects invasive bacteria and viruses, it creates chemicals called antibodies that either kill or neutralize them. [1]. Under India's National Immunization Program, babies receive vaccinations against seven vaccine-preventable diseases (VPDs): poliomyelitis, tetanus, measles, pertussis, TB, and hepatitis B. In addition to the DPT and Hepatitis B vaccines, Hemophilus influenza type B (Hib) is a new inclusion given in combination, known as Pentavalent. A fully vaccinated child is one who has gotten all the immunizations recommended in the National Immunization Schedule by the age of one year. Though vaccination is offered for free, the coverage remains low, children between 12 to 24 months age are fully vaccinated according to National Family Health Survey (NFHS) [2]. Despite of all efforts put by the government institutes for 100% immunization there is still clusters of low coverage. Based on this, the present study is intended to evaluate the immunization status and vaccine coverage of children aged 0-7 years in the urban area, Tirupati and study the possible sociodemographic factors influencing it.

Objectives

- To determine the immunization status of children between the age group of 0-7 years.
- To find out the unimmunized and partially immunized children among study population.
- To assess the reason for un-immunization and partially immunization.

Methodology

Study Design: Cross-sectional study

Study Site: Paediatrics department at SVRRGGH, Tirupati.

Study Duration: 3 months

Study Population: 160 Patients

Study Material: Patient data collection proformas, Microsoft Excel SPSS

Study Criteria:

Inclusion Criteria:

Children in the age group of 0 to 7 years attending pediatric outpatient department and who had completed immunization schedule with or without missed dose, Mothers of under seven years children who were willing to participate and presence of immunization card at the time of data collection were included in the study.

Exclusion Criteria:

- Pregnant woman.
- Children enrolled during previous visit.
- Patients admitted to ICU and NICU.
- Preterm labor.

Method of Data Collection

A cross-sectional study was carried out in the pediatric department of Sri Venkateswara Ram Narayana Ruia Government General Hospital, Tirupati. The study was started after obtaining permission from the institutional ethical committee, Sri Padmavathi School of Pharmacy, Tiruchanoor, Tirupati, A.P., India. The study subject details were collected from immunization cards through a specially designed proformas which includes patient demographics, mother's literacy and occupation, place of immunization, children immunization schedule, reason for partial and un-immunization for each patient.

160 cases were collected from pediatric OPD according to study criteria. We obtained our study results with the help of Microsoft Excel and interpreted them by statistical analysis by using SPSS software (i.e., Paired t-test and Fisher's-test).

RESULTS

A total of 160 children were enrolled in the study during study period with informed consent form of their accompanying adult. In the study, 69 (43.13%) were male and 91 (56.87%) were female children. The mean age of the children was 3.5 years and SD=2.16. Majority of the children were the age group of 0-12 months i.e., 76(47.5%). All children in our study were immunized at government centers like Anganwadi centers, primary health care / sub centers. Anganwadi centers were the place of immunization for majority of children.

Majority of children's mother were literate 102 (63.75%) and from nuclear families 107 (66.87%). Immunization card was available with only 147 (91.87%). 154 (96.25%) had BCG scar and 6 (3.75%) did not have BCG scar. According to modified kuppuswamy scale, none of the respondents are belong to upper socioeconomic status. Out of 160 participants, 76(47.5%) were in the age group of 0-1 years, 34 (21.25%) were 1-2 years, 10 (6.25%) were 2-3 years, 3 (1.875%) were 3-4 years, 19 (11.875%) were 4-5 years, 5 (3.125%) were 5-6 years, 13 (8.125%) were 6-7 years respectively. Among 160, under 7 years children 132 (82.3%) were fully immunized, 24 (15%) were partially immunized, 4 (2.5%) were unimmunized. Regarding the immunization coverage of individual vaccines among 160 participants, highest coverage was seen for BCG, OPV zero dose with 97% followed by 1st dose of OPV-1, Hep-B, Penta-1, IPV-1, ROTA-1, PCV-1 with 96.8% coverage, OPV-2, Penta-2, IPV-2, ROTA-2 with 93.75% coverage of 2nd dose. OPV-3, Penta-3, PCV-3 with 91.25% coverage followed by MMR 74.3%, JE 71.4%, Vit-A 71.4% coverage. Least coverage was seen for Hep-A 17.5%, 35.6% for DPT booster dose. A total of 160 participants, 24 (15%) children are partially immunized and 4 (2.5%) children were unimmunized. These includes a sick child at the time of vaccination 7 (29.166%), a lack of knowledge about the vaccination of next dose 3 (12.5%), Transport issue 11 (45.833%), Vaccine shortage 2 (8.333%), Vaccination considered either unnecessary/harmful 1 (4.166%). In our study age and gender association were found to be statistically significant ($p<0.05$) with the immunization status and vaccine coverage of the child.

Table.1 Socio-demographic Factors and Their Association with Immunization Status

Factor	Fully Immunized no.& %	Partial/ Unimmunized no.&%	Total no.&%	P value
Gender				
Male	58(36.25)	11(6.875)	69(43.125)	0.0259
Female	74(46.25)	17(10.625)	91(56.875)	**
Religion				
Hindu	117(73.125)	27(16.875)	144(90)	0.408*
Muslim	11(6.875)	1(0.625)	12(7.5)	*
Christian	4(2.5)	0(0)	4(2.5)	
Mothers' literacy status				
Literate	86 (53.75)	16(10)	102(63.75)	0.122*
Illiterate	46(28.75)	12(7.5)	58(36.25)	*
Mothers working status				
Working	44(27.5)	7(4.375)	51(31.875)	0.153*
Home maker	88(55)	21(13.125)	109(68.125)	*
Immunization card				
Present	120(75)	27(16.875)	147(91.875)	0.149*
Absent	12(7.5)	1(0.625)	13(8.125)	
Place of immunization				
Government	132(82.5)	28(17.5)	160(100)	0.25**
Private	0(0)	0(0)	0(0)	
BCG scar				
Present	128(80)	26(16.25)	154(96.25)	0.0249
Absent	4(2.5)	2(1.25)	6(3.75)	*
Type of family				
Nuclear	89(55.625)	18(11.25)	107(66.875)	0.155*
Joint	43(26.875)	10(6.25)	53(33.125)	*

Paired- t test **, F.test*: $p<0.05$ is statistically significant

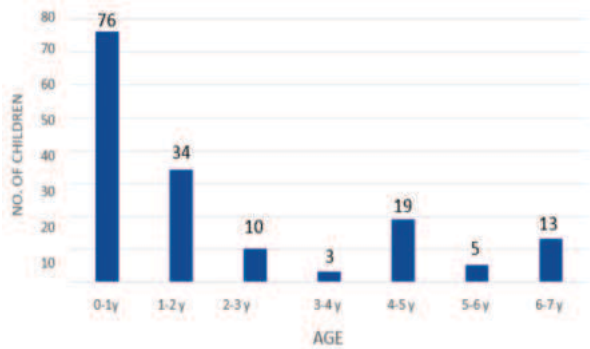


Figure 1. Distribution Of Children By Age Wise



Figure 2. Gender Wise Distribution

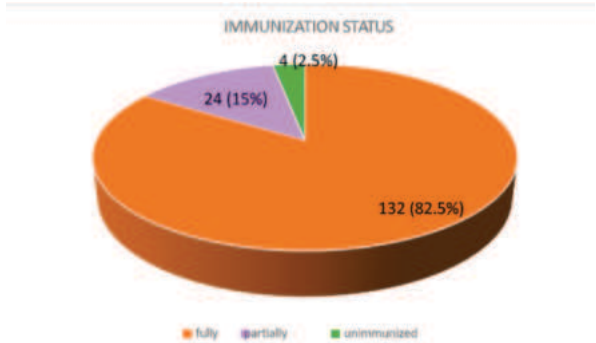


Figure 3. Distribution Of Children According To Immunization Status

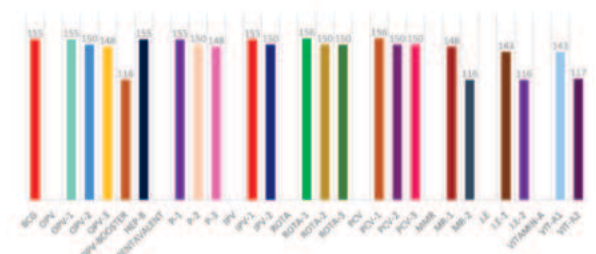


Figure 4. Immunization Coverage Of Children With Vaccine Details

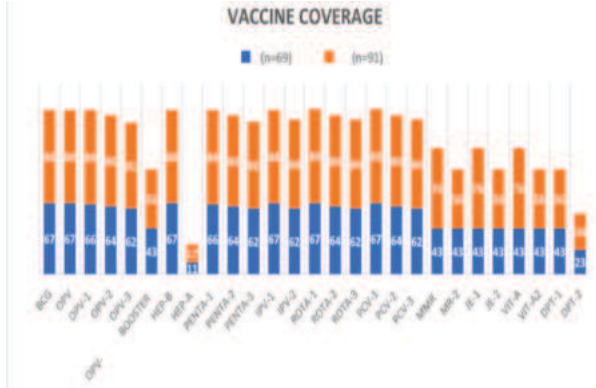


Figure 5. Immunization Status For Individual Vaccine Among Study Population

Table.2: Reasons For Partial And Unimmunisation Among Children

S.NO	REASON	FREQUENCY (n)	PERCENTAGE (%)
1	Vaccination considered either unnecessary /harmful.	1	4.166
2	Transport issues	11	45.833
3	Vaccine shortage	2	8.333
4	Child was sick	7	29.166
5	No knowledge of next dose	3	12.5
Total		24	100

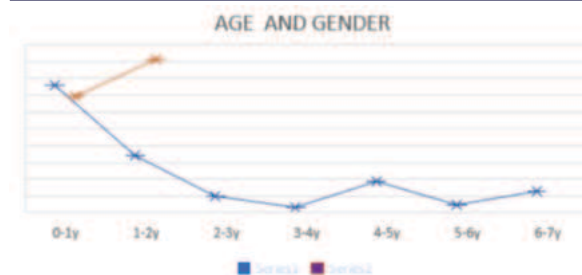


Figure 6. Association Between Selected Demographic Variables With Immunization Status

Table.3: Association Between Selected Demographic Variables With Immunization Status

Variables	Category	Frequency	Fully Immunized	P- Value
AGE	0-1 Y	76 (47.5%)	72 (54.54%)	0.0224**
	1-2 Y	34 (21.25%)	26 (19.7%)	
	2-3 Y	10 (6.25%)	7 (5.3%)	
	3-4 Y	3 (1.875%)	1 (0.75%)	
	4-5 Y	19 (11.875%)	14 (10.6%)	
	5-6 Y	5 (3.125%)	2 (1.5%)	
	6-7 Y	13 (8.125%)	10 (7.57%)	
GENDER	MALE	69 (43.125%)	58 (36.25%)	
	FEMALE	91 (56.875%)	74 (46.25%)	

Paired t-test **: $p < 0.05$ is statistically significant

DISCUSSION

In our present study we found that majority of the under 7 children were age group of 0-1 years (47.5%), 56.875% were females. Majority of children's mother were literate 63.75% and from nuclear families 66.87%. Immunization card was available with only 91.87%. 96.25% had BCG scar and 3.75% did not have BCG scar was determined by Ravi Marinayakanahalli et al. The literate mothers were having more percentage 63.75% of immunized children as compared to illiterate mothers. This finding was like the finding of Farzad et al.

In the present study proportion of fully immunized children was 82.5%, 15% were partially immunized and 2.5% were unimmunized. Our study showed that the percentage of female children who were fully immunized were more compared to male children. Age and gender have a statistically significant ($p = 0.0226$) association with the immunization status of children. In the present study, BCG was taken by 96.87% of the children, followed by pentavalent and OPV (96.87%). Pentavalent-3 was taken by 92.5% and J.E-2 & MMR-2 by 72.5% of the children. Our research was supported by Amit kumar et al. In India, the main reason behind partial immunization was found to be sickness of child and lack of information regarding 2nd and 3rd dose of vaccination determined by Sanjeev et al. Preserving immunization cards shows that the mothers/ family members are interested in immunizing their children. It is unlikely for those without the card to remember about the next immunization scheduled dates too were supported by Basti BD et al. Government facilities need to be further strengthened for providing immunization as majority of mothers were dependent on government centers like ICDS, Anganwadi center. The mothers gave a variety of explanations for why their children had not received all recommended vaccinations. These includes some of important reasons which affects the complete immunization i.e., a sick child at the time of vaccination 29.166%, a lack of knowledge about the vaccination next dose 12.5%, Transport issue 45.833%, Vaccine shortage 8.33%, Vaccination considered either unnecessary/harmful 4.166%. Regarding children with complete and incomplete vaccination status, there were notable differences in knowledge of the value of vaccination, education, and occupational status. There were no discernible variations in the completeness of vaccinations across variables like the child's gender, the mother's age, and educational attainment.

Various other studies have estimated lesser immunization coverage than our study, like those conducted by Mutua et al. Our goal is to bring the improved immunization and vaccine coverage by the health care system with the help of ANMs and ASHA workers in the future years, increasing awareness regarding immunization and implementation of mission Indra-Dhanush.

CONCLUSION

This study was assessed the immunization status of under seven years children and study were conducted at SVRRGGH, Tirupati. In the study, the overall immunization and vaccine coverage was found to be better than other areas statistics. Although most of children were fully immunized, but still there were partially immunized and unimmunized children and children with delayed vaccination. The literacy status of the parent played a major role in determining the immunization status of the children. Transport issue and lack of information on next dose were some of the important reasons for children being partially immunized. Though the immunization coverage was increased over the last few years, but still booster doses were neglected and there is need to create awareness about importance of booster doses. Government facilitates the Anganwadi centers, PHCs and sub-community areas is the key for immunization. Health care workers at the grass root level must be trained and through them the importance of childhood vaccination disseminated to all rural areas. In the urban areas also, centralization of vaccination facilities in certain major hospitals, will ensure vaccine safety and good vaccination coverage in children. Awareness regarding immunization, immunization schedule, maintaining immunization card, setting reminders to mothers to complete immunization schedule, tracking the child, public private partnership are some of the measures to further improve the immunization status towards attaining the universal immunization coverage.

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