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Original Research Article

Determination of immunisation status of children between 2-5 years of age who attending to teaching institute with concern to both national immunization schedule and optional vaccines

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ABSTRACT

Background: In order to know the causes for non-immunisation, search for societal reasons for primary immunisation along with evaluating coverage. Aim of this current study is to determine the immunisation status of children between 2-5 years of age who are attending teaching health care centre with concern to both National Immunisation Schedule and Optional vaccines.
Methods: Study analysed the children's immunisation status, factors affecting their immunisation coverage, and reasons for partial or incomplete immunisation. The information was obtained from the parents using a questionnaire. Information such as socio-demographic variables, immunisation status, causes of their partial immunisation and lack of immunisation. The "vaccination card and the recall" approach was used to determine the recipient's immunisation status.
Results: Study found that 70.4% of children had received all recommended vaccinations. Lack of information and ignorance are significant contributors to under-immunization. Other statistically significant contributing factors for the low immunisation coverage include female gender, rural background, low socioeconomic status, born at home, lower mother age, and being from a joint household. BCG vaccination coverage was higher than pentavalent vaccine coverage, probably because of multiple doses needed. Only 77% of kids received vitamin A solution.
Conclusions: Paediatrician should mention the next vaccination date and dose at each appointment in order to lower the vaccination dropouts. Parents should be informed regarding the date of vaccination of their child through SMS message, calls, and social media groups.

Keywords: Expanded programme on immunisation, Vaccination, Socioeconomic status

INTRODUCTION

India is second largest nation in world with 75% of its people hailing from rural areas with low socioeconomic position and levels of education. 12-15% of this population is made up of children under the age of five. As populationincreasing the number of diseases were also increasing, many of these diseases are preventable. Given this, Indian government has made immunisation against all diseases are compulsory.[1-3] Expanded programme on immunisation (EPI), a global immunisation initiative to safeguard all children worldwide against six diseases that can be prevented by vaccination are introduced by year 2000, namely diphtheria, whooping cough, Tetanus, Polio, Tuberculosis, measles was formally inaugurated by WHO in May 1974.[5,6] The WHO-backed smallpox eradication campaign's success, made the related organizations and government to know the value of vaccines, which led to the creation of the V five-year plan (1975-80). It made vaccinations a top focus for MCH services. Mortality rate districts and states across the

nation, the UIP was strengthened and enlarged from 1992 to 1993 into Child survival and safe motherhood Project, which combined UIP with increased/intensified MCH activities. It entails doing many other things, such as ORT, as well as maintaining the high immunization rates under UIP.[7] In 1985, UIP introduced contributed stimulus to VIIIth Plan (1992-1997). All babies and expectant mothers in India were immunized against the six vaccine-preventable deadly illnesses.

Few big areas with weak public health systems gave routine immunisation less than ideal attention, which led to a noticeable fall in vaccination. Low physical accessibility to routine immunisation, a lack of social mobilisation, and ineffective cold chain maintenance in rural places all contribute to injectable delivery delays.[8,9] According to a UNICEF review from 2001, only 49% of children India have received all recommended vaccinations, a shockingly low number. Concerns about the reemergence of several treatable disease have been raised as a result of decline in vaccine coverage.[10] All of these claims plus the discrepancy in immunisation statistics between the government and UNICEF indicate the value of study. In order to know the causes for non-immunisation, search for societal reasons for primary immunisation along with evaluating coverage. Aim of this current study is to determine the immunisation status of children between 2-5 years of age who are attending teaching health care centre with concern to both National Immunisation Schedule and Optional vaccines.

METHODS

Cross-sectional study was conducted at Shadan institute of medical sciences, Hyderabad, Telangana State, India for a period of 16 months (From December 2021 to March 2024).

Study population, sampling method and study tools

Children between age group of 2-5 years attending to Department of Paediatrics, Shadan institute of medical sciences, Teaching Hospital and Research Centre, who are having vaccination cards. Every 10th child in the age group of 2 to 5 years was taken for analysis by applying systemic random sampling to select the 210 children. Vaccination cards were used as study tools.

Inclusion criteria

Children of age group 2-5 years attending Shadan institute of medical sciences those are having vaccination cards were included.

Exclusion criteria

Children with neurological disease which are progressive, immunocompromised children and Children without vaccination cards were excluded.

Other criteria

Age: based on date of birth age was taken. BCG scar: BCG scar was used for the confirmation of BCG vaccine given or not, if the parents did not have vaccination card. For vaccines like Pentavac, Measles, OPV, IPV, hepatitis-B, we asked the parent about the month when child was vaccinated and number of injections and site of injections.

Data analysis

Data analyzed by statistical package for social sciences software for windows version (IBM SPSS, version 25). Data represented as percentage/frequency in the form of tables. Significance was set at $p<0.05$.

RESULTS

There was no significant association observed between age of children and both fully/partial Immunization Status ($p=0.25$) (Table 1).

In current study, there was no significant association observed between sex of the children and Immunization Status ($p=0.30$) (Table 2). In our study, no significant association noted between residence of the children and Immunization Status ($p=0.9$) (Table 3).

Table 1: Association between age and immunization status.

Age group (years)	Fully immunized		Partially immunized		P value
	N	%	N	%	
2 to 3	44	29.73	25	40.32	0.25
3 to 4	49	33.11	20	32.26	
4 to 5	55	37.16	17	27.42	
Total	148	100.00	62	100.00	

Chi-Square test, $p<0.05$ is considered to be statistically significant

Table 2: Association between sex and immunization status.

Sex	Fully immunized		Partially immunized		P value
	N	%	N	%	
Female	58	39.19	29	46.77	0.30
Male	90	60.81	33	53.23	
Total	148	100.00	62	100.00	

Chi-Square test, $p<0.05$ is considered to be statistically significant

In our study, there was significant association noted between Socio Economic Status of the children's parents and both fully/partial Immunization Status ($p<0.001$) (Table 4).

In our study, no significant association noted between birth order and both fully/partial immunization status (p=0.1) (Table 5).

Table 3: Association between place of residence and immunization status.

Place	Fully immunized		Partially immunized		P value
	N	%	N	%	
Rural	73	49.32	30	48.39	0.90
Urban	75	50.68	32	51.61	
Total	148	100.00	62	100.00	

Chi-Square test, p<0.05 is considered to be statistically significant

Table 4: Association between socio economic status and immunization status.

Class	Fully immunized		Partially immunized		P value
	N	%	N	%	
Class 1	25	16.89	1	1.61	<0.001
Class 2	27	18.24	7	11.29	
Class 3	21	14.19	20	32.26	
Class 4	29	19.59	2	3.23	
Class 5	46	31.08	32	51.61	
Total	148	100.00	62	100.00	

Table 5: Association between birth order and immunization status.

Birth order	Fully immunized		Partially immunized		P value
	N	%	N	%	
First	67	45.27	29	46.77	0.1
Second	57	38.51	17	27.42	
Third	24	16.22	14	22.58	
Fourth	0	0.00	1	1.61	
Fifth	0	0.00	1	1.61	

Table 6: Association between hospital visit of vaccine and immunization status.

Hospital visits of vaccine	Fully immunized		Partially immunized		P value
	N	%	N	%	
ARI	27	18.24	19	30.65	0.039
ADD	30	20.27	10	16.13	
Measles	2	1.35	6	9.68	
Pertussis	1	0.68	0	0.00	
Tuberculosis	3	2.03	1	1.61	
Hepatitis-B	2	1.35	0	0.00	
Tetanus	1	0.68	0	0.00	
Other diseases	82	55.41	26	41.94	
Total	148	100.00	62	100.00	

In our study, there was significant association noted between hospital visit of vaccine and both fully/partial Immunization Status (p=0.039) (Table 6).

DISCUSSION

Immunization is a crucial and powerful weapon in the fight against communicable diseases, especially in preventing childhood illnesses that are a major cause of morbidity and mortality in young preschoolers. At least 90% of infants should receive the primary immunisation series, according to the expanded programme on immunisation.[11] However, low levelsof childhood illness immunisation continue to be a serious public health issue in places of the world with little resources. Following observations were analyzed from our study which includes: Among 210 children's studied, 70% had received all the vaccinations given under national immunization schedule. Association between literacy of parents and vaccination coverage was found to be statistically significant. Immunisation coverage was better in children of educated parents. Statistically significant association was found between age of mother and vaccination coverage. Immunisation coverage was less in children of younger mothers. Statistically significant association was not found between type of family (nuclear or joint family) and vaccination coverage. Children born in hospitals had better immunization coverage than children born at home, this association was statistically significant (p<0.001). Children belonging to advanced socioeconomic status families had better immunisation coverage. Statistically significant association between vaccination coverage & SES (p<0.001). Statistically significant association was not found between birth order and vaccination coverage (p=0.12). In our study most frequent causes of incomplete vaccination status were parents illiteracy, lack of motivation, and ignorance about the immunisation schedule. Coverage was better with single dose vaccines like BCG compared to multiple dosage vaccines like pentavalent. Our research reveals 45.27% first born, 38.51%of second born fully immunised, 16% of every third-born child. 2/3 birth rate is 64%. 58% of those 6+ years old and 63% of those 4/5 were fully immunised. Thus, immunisation rates drop as birth order rises. Moms who have 2-3 children are 20% less likely, and those who have more than 4 children are 40% less likely to be vaccinated Compared to people who only have one child. In our study, 97.30% are fully immunised who born at hospital, where 27.42% childrens are partially immunised who born at home. Mothers who give birth in a hospital will have "co-patient motivation" for improved immunization. Additionally, children delivered at homes have a 2.27 times higher risk of not completing their vaccination programme than who born in healthy facility area. Immunization rates are higher in urban than rural regions, likely as a result of easy access to health care facilities, improved health awareness, and higher standards of living. Compared to children from low socioeconomic areas, children from medium and high socioeconomic areas typically have 10% to 5% greater

levels of immunisation coverage. According to our study, there are 68.86.86 people in Class I. Im a class III. Similar observations presented by Dalal et al[12] demonstrate improved immunisation among higher socio-economic strata as follows: 31.08 % of class V are fully immunized, 19.59% of class IV are fully immunized, 14.18%. Of class IIIare fully immunized, 18.24% of class II are fully immunized, 16.89% of class I are fully immunized. A family is a group of genetically related people who live and eat together. It is a unit that provides both comprehensive medical care and social services. In line with a study by Nawaz et al which found that 70% of children from nuclear families and 30% of children from joint families were fully immunized.[13]

In our study found that children from nuclear families (65.54%) are better immunised than children from joint families (34.46%). Children born into nuclear families have a higher likelihood of receiving all of their vaccinations than those born into joint families. This may occur because different members of a joint family may have divergent perspectives, and elder family members may prove to be a barrier to a child's immunisation. While only the mother and father are directly involved in raising their kid in a nuclear family, therefore, the probability of having an unimmunized child in a combined family was doubled.[14,15]

According to our study, fathers' jobs are correlated with their kids receiving all the recommended vaccinations. Causes of partial immunization includes more than 2 reasons in 64.52% children, two reasons in 24.19% and one reason in 11.29% children respectively. Vit-A with Measles were given to 77.62% (N=163) children. There has been some improvement in the overall vaccination coverage levels in India, according to a recent immunisation coverage evaluation survey.[16] Additionally, a national family health survey revealed that the percentage of children who were fully vaccinated had increased from 36% in the first survey (1992) to 42% in the second survey (1998).[17] However, these estimates differ significantly throughout states, regions, and social classes based on socioeconomic variables and the accessibility of medical facilities.

Limitations

Limitation of this study includes that it is a hospital-based study which covers only 16-month duration, hence study protocol/outcome may not imply to the other study areas or regions. Hence the study protocol needs to develop in order to imply outcome the other setup when it organized as community screening programs.

CONCLUSION

At the time of admission into the schools, vaccination status of the child should be checked and any deficiency found in children, should be sent to medical facility for vaccination. The importance of receiving immunizations at the appropriate age and soon after birth should be properly explained. To lower the vaccination dropouts, Paediatrician must mention the next vaccination date and dose at each appointment. Parents should be reminded about the date of vaccination of their child through SMS message, calls, and social media groups.

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