

To study the immunization status of children aged 1-5 years & to assess the awareness level of the parents regarding immunization of their children in tertiary care hospital

Neeta Singh¹, Prashant Kumar Choudhary², Jyoti Prajapati³, Gunvant Singh Eske^{4*}

¹M.D. Pediatrics, PGMO Districts Hospital Shivpuri, M.P., India

² Assistant Professor, Department of Pediatrics, M.G.M. Medical College, Indore, M.P., India

³ Assistant Professor, Department of Pediatrics, M.G.M. Medical College, Indore M.P., India

⁴ Assistant Professor, Department of Pediatrics, M.G.M. Medical College, Indore M.P., India

Received: 19-05-2021 / Revised: 25-06-2021 / Accepted: 01-08-2021

Abstract

Background: Immunization is a proven tool for controlling and even eradicating disease. Immunization is the process of inducing immunity against a specific disease. Evolution of the immunization status of children aged 1-5 years & to assess the awareness level of the parents regarding immunization. **Method:** The Present study was conducted in the Department of Pediatrics tertiary care hospital. A total of 500 children were studied. All the children aged between 1-5 years, admitted in Department of Pediatrics were asked to participate in this study. Information regarding vaccination, sociodemographic factors was collected from their parents and care takers. Accuracy and validity of information were confirmed by immunization card in possible situation and inspection for BCG scar. **Results:** We found that 51.2% children were fully immunized, 45.6% were partially immunized and 3.2% children were unimmunized. Study showed significant association between immunization status and age of children P (<0.001), according to religion P (<0.001), socio-economic status P (<0.001), birth order P (<0.001). Association with type of family and immunization status P (<0.05), area P (0.05), according Gender P (0.05) statistically non-significant. Majority of the parents (40.8%) gained the knowledge of immunization from ASHA/ health worker, 32% from Doctors, 16% from media (newspaper, television), 7.2% from relatives and neighbors and only 2.6% parents were themselves aware of immunization. **Conclusion:** Age, religion, birth order, socio economic status had significant role in influencing the immunization. The prime reason behind partial immunization as per our study was unawareness of vaccination schedule and inters current illnesses of the children.

Keywords: Immunization, BCG scar, Immunity, Vaccination

This is an Open Access article that uses a fund-ing model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

Immunization is the process of inducing immunity against a specific disease. It can be done by the vaccines, immunoglobulins, and antisera. Immunity is of two types, active immunity and passive immunity. Active immunity is induced by administering a vaccine or toxoid. It stimulates the immune system to produce a prolonged humeral or cellular immune response.[1] It can be done by the vaccines, immunoglobulins, and antisera. Immunization plays an important role in reducing morbidity and mortality. The success of an immunization program in any country depends more upon local realities and national policies. A successful immunization program is of particular relevance to India, as the country contributes to one-fifth of global under-five mortality with a significant number of deaths attributable to vaccine preventable diseases. There is no doubt that substantial progress has been achieved in India with wider use of vaccines, resulting in prevention of several diseases. Vaccination is one of the most powerful and cost-effective weapon of modern medicine to control infectious disease. Some infectious diseases whose control is solely based on immunization are polio, diphtheria, tetanus, measles etc. Now a day's immunization coverage has been

pronto increasing but the average level remains far less than the desired. We are still only 62% (National Family Health Survey – 4) of the infants in India are fully immunized which is much less than the desired goal of achieving 100% coverage [2]. Immunization is primary focus of child health and many programs have been launched by government of India for better coverage as immunization is a primary level prevention [3]. When immunization coverage reaches the figure of 80% or more, disease transmission pattern is severely disrupted and provides degree of protection even for remaining children who have not been immunized. This protection is because of “Herd Immunity”. [4] Every country has its own immunization schedule. A well thought immunization schedule must be epidemiologically relevant, immunologically effective, operationally feasible and socially acceptable. Choice of vaccines in National immunization schedule is based on consideration of disease burden, vaccine availability and cost effectiveness. [5] Roughly 3 million children die because of VPDs with the disproportionate number of children residing in developing countries. Approximately 34 million children are not completely immunized, 90% of them residing in developing countries.[6] In India, immunization services offered free of cost in public health facilities but immunization rate has not achieved its target. In an attempt to increase immunization coverage a new programme, HBYC (home-based care of the young child) was introduced in 2018. This encompasses counseling for immunization of 3 months to 15 months old children by ASHA workers. [7] There is high variation in immunization status of different states of India. Some states are above all India percentage, and some are below. Pondicherry has the highest coverage with

*Correspondence

Dr. Gunvant Singh Eske

Assistant Professor, Department of Pediatrics,
M.G.M. Medical College, Indore, M.P., India

E-mail: gunvant987@gmail.com

91.3% followed by Goa, Punjab, Lakshadweep, and West Bengal. These states have >62% immunization coverage. However, Nagaland (35.7%), Arunachal Pradesh (38.2%), Uttar Pradesh (51.1%), Madhya Pradesh (53.6%), Rajasthan (54.8%), Bihar (61.7%) are below the all India percentage. [2] Factors affecting immunization are knowledge and awareness of parents about immunization, education of parents, socio-economic status, and number of children, the area of habitat, religion, side effect of vaccines, dependency on health workers, cultural practices and myths about immunization.

Some studies have been carried on children admitted in a tertiary care centre. In all studies, lacks of awareness and knowledge about immunization have come out as a gist. So, the purpose of this study was to assess immunization status in 1 to 5 year age of children and awareness among their parents and spreading awareness about immunization and health programme.

Material & methods

The Present study was conducted in the Department of Pediatrics tertiary care Hospital. A total of 500 children were studied. All the children aged between 1-5 years, admitted in Department of Pediatrics were asked to participate in this study. To assess the awareness level of the parents regarding immunization of their child. Information regarding vaccination, socio-demographic factors was collected from their parents and care takers. Accuracy and validity of information were confirmed by immunization card in possible

situation and inspection for BCG scar. To assess the awareness level of the parents regarding immunization of their child.

Study Design

- Hospital based descriptive cross-sectional study.

Inclusion Criteria

- All children aged 1-5 years admitted to Pediatrics ward.

Exclusion Criteria

- Children <1 year and >5 years.
- Children following IAP Schedule of immunization.
- Children whose parents did not give consent for the study.
- Children on long term steroid therapy

Statistics: A total of 500 children were studied. Codes were prepared for each options of the questionnaire. Data was entered in excel sheet to prepare a master chart **Chi square test** was used to find out factors affecting immunization status.

Ethics The study was approved by the Institutional Ethics Committee

Results

In our study, 500 children were included for assessment of immunization status. Subjects were distributed according to age group. Maximum subjects belonged to 1-2 years 274 (54.8%) and maximum immunization was found among children between 1 to 2 years of age (58.7%). P value <0.001 indicates a significant association between age and immunization status (**Table 1**)(**Fig 1**)

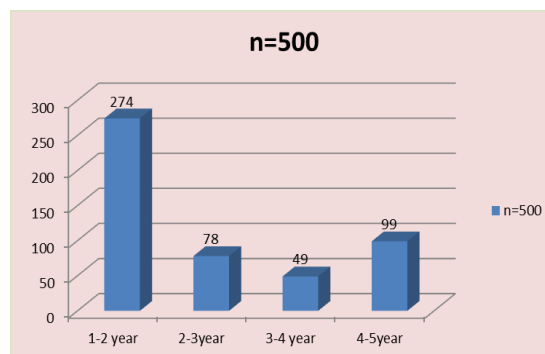


Fig 1: Age Distribution Of The Study Subjects

Table 1: Age Distribution Of The Study Subjects

Age group	N=500	percentage	Complete	%
1-2 year	274	54.8%	161	58.7
2-3 year	78	15.6%	33	42.3
3-4 year	49	9.8%	15	30.6
4-5 year	99	19.8%	47	47.4

Among 500 subjects, 420 (84%) children were Hindus and 80 (16%) were Muslims. In Hindus, 223(53%) were completely immunized, 197(43.2%) were partially immunized and no one child remained unimmunized. In Muslims, 33(41.2%) were completely immunized,

31(38.7%) were partially immunized and 16 (20%) were unimmunized. P value is <0.001, indicates that a significant relation exists between religion and immunization status. (**Table 2**)(**Fig 2**)

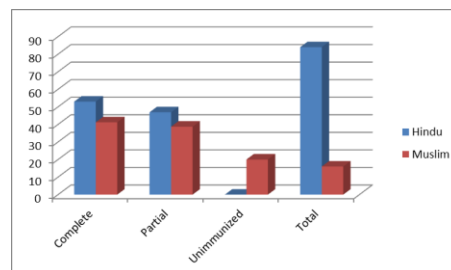


Fig 2: Distribution Of Immunization Status According To Religion

Table 2: Distribution Of Immunization Status According To Religion

Religion	Complete	%	Partial	%	Unimmunized	%	Total	%
Hindu	223	53	197	46.9	0	0	420	84
Muslim	33	41.2	31	38.7	16	20	80	16

In upper class, 100% of children were completely immunized. In upper middle class, 80.8% children had complete and 19.1% partial immunization status. No one remained unimmunized in upper middle class. In lower middle class, 33.9% of children were completely immunized, 59.6% partially immunized and 6.4% remained unimmunized. In upper lower class, 55.7% children were completely

immunized 42% partially immunized, and 2.2 % were unimmunized. In lower class, 50.9% were completely immunized, 49% partially immunized and no one was unimmunized. P value <0.001, indicates significant relation between socio-economic status and immunization status. (Table 3, Fig 3).

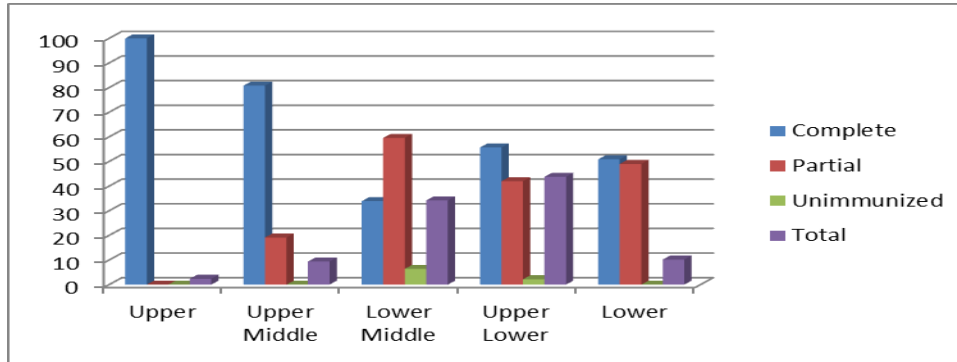


Fig 3: Distribution Of Immunization Status According To Socio-Economic Status.

Table 3: Distribution Of Immunization Status According To Socio-Economic Status

Class	Complete	%	Partial	%	Unimmunized	%
Upper	12	100	0	0	0	0
Upper Middle	38	80.8	9	19.1	0	0
Lower Middle	58	33.9	102	59.6	11	6.4
Upper Lower	122	55.7	92	42	5	2.2
Lower	26	50.9	25	49	0	0

Children, who were 1st in birth order, had maximum immunization coverage (44.8%). Minimum immunization coverage was in birth order >4 (3.2%).

P value is <0.001, indicates the significant relation between birth order and immunization status. As birth order increased, immunization coverage decreased. (Table 4)(Fig 6)

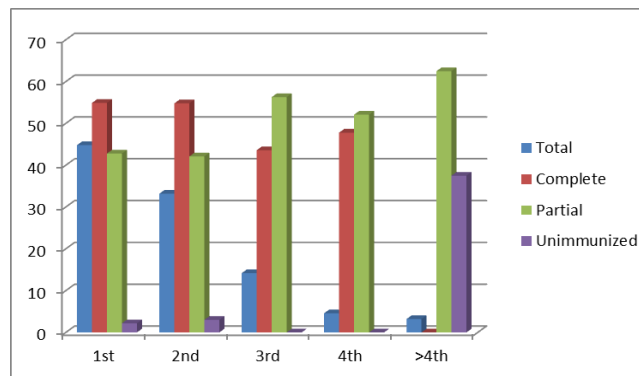


Fig 4: Distribution Of Immunization Status According To Birth Order.

Table 4: Distribution Of Immunization Status According To Birth Order.

Birth Order	Complete	%	Partial	%	Unimmunized	%	Total	%
1 st	123	54.9	96	42.8	5	2.2	224	44.8
2 nd	91	54.8	70	42.1	5	3	166	33.2
3 rd	31	43.6	40	56.3	0	0	71	14.2
4 th	11	47.8	12	52.1	0	0	23	4.6
>4 th	0	0	10	62.5	6	37.5	16	3.2

In upper class, 100% of children were completely immunized. In upper middle class, 80.8% children had complete and 19.1% partial immunization status. No one remained unimmunized in upper middle class. In lower middle class, 33.9% of children were completely immunized, 59.6% partially immunized and 6.4% remained unimmunized. In upper lower class, 55.7% children were completely

immunized 42% partially immunized, and 2.2 % were unimmunized. In lower class, 50.9% were completely immunized, 49% partially immunized and no one was unimmunized. P value <0.001, indicates significant relation between socio-economic status and immunization status.[Table 5][Fig 5]

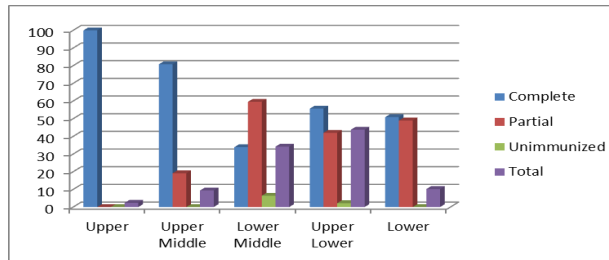


Fig 5:Distribution Of Immunization Status According To Socio-Economic Status.

Table 5: Distribution Of Immunization Status According To Socio-Economic Status.

Class	Complete	%	Partial	%	Unimmunized	%
Upper	12	100	0	0	0	0
Upper Middle	38	80.8	9	19.1	0	0
Lower Middle	58	33.9	102	59.6	11	6.4
Upper Lower	122	55.7	92	42	5	2.2
Lower	26	50.9	25	49	0	0

Awareness among parents regarding immunization assessed by asking some question related to immunization. Out of 500 parents, 303 (60.6%) parents replied that the vaccines prevent disease. Out of

124 (24.8%) parents told vaccines cure the disease and 73 (16.6%) did not know anything about vaccine. (Fig. 1)

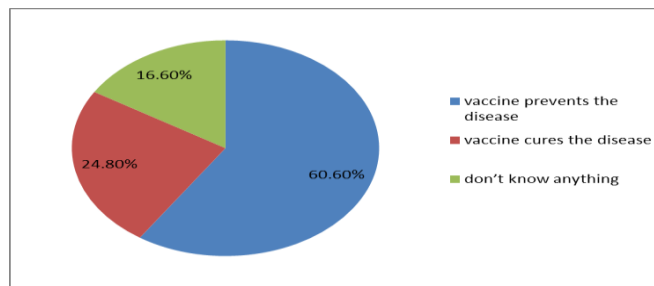


Fig 6:Percentage of awareness among parents regarding immunization

Source of knowledge regarding immunization. 204 (40.8%) respondents got information about immunization from ASHA/health worker, 163(32.6%) from doctors,84 (16.8%) from media (television, newspaper) and 36 (7.2%) respondent were informed by relatives & neighbors. Only13 (2.6%) respondents were aware by themselves.

Discussion

According to Roughly 3 million children die because of Vaccine preventable disease with the disproportionate number of children residing in developing countries. Approximately 34 million children are not completely immunized, 90% of them residing in developing countries.[6]The Present study was conducted in tertiary care center with study population of 500 children belonging to 1-5 years age group.Among them, 256 (51.2%) Children were fully immunized. Similar findings were noted in studies of Ashish Awasthi et al. (57.03%), The goal of achieving universal immunization, especially in the low socioeconomic status , vulnerable urban slum population with poor health care delivery system, needs more efforts to deal with dropout [8].Bholanath et al. (52.0%), the analysis of vaccine-specific data indicated a low level coverage [9]Majority of the respondents (65.16%) opined that diseases could be prevented by immunization, while only 11.61% could name two or more diseases

that could be prevented by the immunization schedule. No respondent could name more than three of diseases and 61.16% could not even name one. [9] Similarly Suresh Kumar Verma et al. (48.5%),found that the most common reason for missed opportunities of immunization was failure on part of the treating doctor to assess the immunization status and advised so by the treating physician. The next most common cause was ignorance of the immunization schedule by parents in 79.40% and false contraindications like mild acute illness in 21%, current antimicrobial therapy in 8.22%, convalescent phase of illness in 7.86%, recent exposure to infectious disease in 5.24%, fever precipitating seizures in 1.12%, pre-maturity 0.74% in that order). They noted very low percentage of immunization [10] The 45.6% Children were partially immunized in the study population. Similar findings were seen in study conducted by Kumar et al. (48%) [11], Jain et al. (44.5%), (34%),), While M.M. Angadi et al. (62.5%) [9] had shown high percentage of partially immunized children. In present study, 3.2% children were unimmunized which was similar to Prabhakaran Nair et al. (4.2%), M.M. Angadi et al. (2.8%) and less in comparison to Suresh Kumar Verma et al. (15.17%) [12,9,10]In this study, 303 (60.6%) children were males and 197 (39.4%) were females whereas in the study of

Kumar et al. (58.6%) children were male and 41.6% were female. Similar results were shown in study of Deshmukh PR et. al. (52% Male and 48% Female). Rajeev S.V. et al. conducted a study in North Kerala in which 44.7% children were male and 55.3% children were female. [13,14,15]In present study more, numbers of male children were fully immunized (53.1%) and a greater number of female children were partially immunized (49.2%). The relation of immunization status with gender was found non-significant. Similar results were shown in the study conducted by Kadri et al. in 2006 and M.M. Angadi et al. in Urban Slums of Bijapur City Karnataka. [16, 9]In present study, majority of children (84%) were Hindus and 6% were Muslims, showing similar result in study conducted by Suresh Kumar Verma et. al. 77.6% Hindu and 22.3% Muslims [10]In this study, children belonging to joint family had more immunization coverage (55.8%) as compared to nuclear family (44.2%). But there was no significant relationship between type of family and immunization status. Similar results were found in studies conducted by Sahil Goel et. al., Naresh Kumar Munda et. al., Suresh Kumar Verma et al., showing higher immunization coverage in joint family. In this study complete immunization was more in nuclear family (56.5%) as compared to joint family (46.9%) [17,18, 10] In our study we found significant association between socio economic status and immunization status of children. 100% immunization was found in upper class, 80.8% immunization in upper middle class. Similar observation was made by M.M. Angadi et al and Suresh Kumar Verma et. al. and probable reason could be more awareness of immunization among the high socio-economic classes. Studies conducted by Naresh Kumar Munda noted no association between socio economic status and immunization status. According to their study more immunization coverage was found in lower SES group. [9, 10,18]Our study showed that among the completely immunized children, 54.9% were first in birth order, 54.8% were second born, 43.6% were of third born and 47.8% were of fourth born. As birth order increased immunization coverage decreased. With first birth order 42.8% children were partially immunized, second birth order 42% children were partially immunized. 62.5% children were partially immunized in more than 4th birth order. Similar result was shown by Anil B. Kurane et al. and study of Kunal Kumar M. et. al. showed that birth order did not influence immunization status. [11]We had taken 7 reasons into consideration to know causes for partial or un-immunization of children, out of which most common reason was unawareness of next vaccine (35.2%), side effect (7.3%), sickness of children (23.3%), lack of follow up by health worker and unavailability of vaccinator (9%), Busy attendant (7.7%), immunization center far away (12.7%) and ignorance (4.5%). Similar result found by Suresh Kumar Verma et al [10] When asked the parents about source of information regarding immunization, 40.8% parents told that knowledge for immunization was given by ASHA/Health worker and similar result was found in study conducted by M.M. Angadi (34.19%), Doctor was the source of information (32.6%), relatives and neighbors were the source of information (7.2%) but in study done by M.M. Angadi et. al. results were different as in their study, they found that 42.58% of parents got information about immunization from relatives. [9] A great deal of research has been found that factors associated with immunization providers are some of the most significant factors having positive influence on immunization

Acknowledgement

Authors are grateful to all the respondents for taking part in the present study.

Reference

1. Nelson Text Book Of Pediatrics 21 Edition, Robert M Kliegman, MD volume 1 Chapter 197 Immunization practices, Page no. 1347,

Conflict of Interest: Nil

Source of support: Nil

2. Ministry of Health and Family Welfare National Family Health Survey-4 2015 -16, www.mohfw.nic.in
3. <https://www.unicef.org/india/>
4. Bauch CT, Earn DJ. Vaccination and the theory of games. Proceedings of the National Academy of Sciences of the United States of America. 2004;101(36):13391–13394.
5. Bonu S, Rani M, Baker TD. The impact of the national polio immunization. Campaign on levels and equity in immunization coverage: Evidence from rural North, India. Social Science Medicine. 2003; 57:1807-19.
6. Tulika Goswami, Ajit Kumar Sudkeet al. Effectiveness of introducing home-based newborn care voucher system in Golaghat District of Assam Clinical Epidemiology and Global health. 2016; 4:69-75c.
7. Ashishawasthi, CM Pandey, Uttam Singh et al. Maternal determinants of immunization status of children aged 12–23 months in urban slums of Varanasi, India. Clinical Epidemiology and Global health. 2015; 3:110-116
8. MM Angadi, Joseph AP et al. A study of knowledge, attitude and practices on immunization of children in urban slums of bijapur city, karnataka, India. Journal of Clinical and Diagnostic Research : JCDR. 2013; 7(12):2803-2806
9. Suresh Kumar Verma, Anita Yadav et al. Assessment of missed opportunities of immunization in children visiting health facility. Int J Contemp Pediatr. 2017;4(5):1748-1753
10. Kunal Kumar M Amin. Evaluation of immunization status . A hospital based study of 1000 children at department of pediatrics . BMC Vadodara ISSN 2250 -1991 IF: 5.215 [IC Value 77. 65. 2016,5(8).
11. Prabhakaran Nair TN, Varughese E. Immunization coverage of infants-Rural-Urban difference in Kerala. Indian Pediatr. 1994;31:139-43.
12. Kumar D, Gomber S. Immunization status of children admitted to a tertiary-care hospital of north India: Reasons for partial immunization or non-immunization. J Health Popul Nutr. 2010; 28:300-4.
13. Deshmukh PR, Dongre AR, Gupta SS et al. Newly developed WHO growth standards: implications for demofic surveys and child health programs. Indian J Pediatr. 2007; 11:987-990.
14. Rajeev SV, Radhamani KV. A cross sectional study on immunization status of anganwadi children in a rural area of north kerala ,India International Journal of Medical sciences. 2016; 4(6):2039
15. Kadri AM, Singh A, Jain S, Mahajan RG et al. A study on immunization coverage in urban slums of Ahmedabad city. Health and population; perspectives and Issue. 2010; 33(1):50 - 4
16. Sahil Goyal, Vijay Kumar, Ritika Garg. Evaluation of primary immunization coverage among children in a rural block of district Rohtak, Haryana, India IJCMPh, 2017, 4(5):1
17. Naresh Kumar Munda, Vidya Sagar, Vivek Kashyap et al. Study on Immunization Status among Childrens between 2 To 6 Years of Age Group in Rural Field Practices Area of Ormanjhi of Rims, Ranchi India. IOSR Journal of Dental and Medical Sciences (IOSR-JDMS). 2016; 15(3)Ver.I:108-112
18. Anil B. Kurane, Dokku Swathi. A study of immunization status of children in the age group 2-5 years. IJCP, 2018, 5(3).