ISSN- O: 2458 - 868X, ISSN–P: 2458 – 8687
National Library of Medicine - ID: 101731606

International Journal of Medical Science and Innovative Research (IJMSIR)
IJMSIR : A Medical Publication Hub
Available Online at: www.ijmsir.com
Volume – 6, Issue – 3, June – 2021 , Page No. : 78 - 85

Vaccination status and factors for incomplete vaccination of children under 5 years of age at a Tertiary health care centre: A Cross-Sectional study

[1]Dr. Nisha Agrawal, Assistant Professor, Department of Community Medicine, Indira Gandhi Government Medical College, Nagpur

[2]Dr. Ashok Jadhao, Professor and Head, Department of Community Medicine, Indira Gandhi Government Medical College, Nagpur

[3]Mr. Sanjay Agrawal, Statistician cum Assistant Professor, Department of Community Medicine, Indira Gandhi Government Medical College, Nagpur

Corresponding Author: Mr. Sanjay Agrawal, Statistician cum Assistant Professor, Department of Community Medicine, Indira Gandhi Government Medical College, Nagpur

Citation this Article: Dr. Nisha Agrawal, Dr. Ashok Jadhao, Mr. Sanjay Agrawal, "Vaccination status and factors for incomplete vaccination of children under 5 years of age at a Tertiary health care centre: A Cross-Sectional study", IJMSIR- June - 2021, Vol – 6, Issue - 3, P. No. 78 – 85.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Introduction: Immunization is one of the most cost-effective public health interventions which directly or indirectly prevents the bulk of mortality in under-fives. The current scenario depicts that immunization coverage has been steadily increasing but the average level remains far less than the desired. Reasons for lack of coverage vary from logistic ones to those dependent on human behaviour. The present study was carried out in a tertiary level teaching hospital to assess the status of immunization of children from 9 months to 5 years of age and to identify the factors associated with incomplete vaccination.

Aim & Objectives: The present study was carried out in a tertiary level teaching hospital to assess the immunization status of children from 9 months to 5 years of age. An endeavour was made to particularly study some factors associated with the immunization status of the study subjects, besides finding out the reasons for incomplete immunization.

Materials and Methods: The present study was carried out from November 2018 to March 2019 at the Immunization Clinic (OPD) of a tertiary care hospital of Central India. 500 children were included amongst those coming for Measles-Rubella campaign.

Results: Most of the study participants 26% and 23.6% were in age group of 4-5 years and less than 1 year respectively. 63.58% were completely immunized for the age and 36.42% were incompletely immunized. More Female children 39.23% were incompletely immunized than Male children 33.33%. Most common reason for incomplete immunization of study participants was Ignorance of family members. The association between Age of child, Religion, Family size, Education of father and Immunization status of children was found to be statistically significant.

Keywords: Vaccination status, Immunization, Under 5 Children

Introduction

Immunization is one of the most cost-effective public health interventions which directly or indirectly prevents the bulk of mortality in under-fives. Complete vaccination of each and every child is the current need to reduce mortality and morbidity of under five in India. (1) About one quarter, or 25% of under-5 mortality is due to vaccine preventable diseases. (2)

The current scenario depicts that immunization coverage has been steadily increasing but the average level remains far less than the desired. Still only 44 per cent of the infants in India are fully immunized (NFHS-III) which is much less than the desired goal of achieving 85 per cent coverage (3). Reasons for lack of coverage vary from logistic ones to those dependent on human behaviour. It has been estimated that about 19 million infants are not accessing basic vaccines due to peculiar regional challenges such as inadequate funds and manpower for vaccine procurement, distribution, monitoring and supervision activities, and also the poor state and management of health care facilities.(4) The inequitable access to immunization services, further highlights the fact that the vaccination coverage or administration is not only dependent on the country's provision of vaccine supplies, equipment and manpower which the Government appears to be investing resources but also on other factors such as knowledge, opinions and attitude of mothers, mothers education, mother's religion, number of children within the family, perceived health institution support, family income, being born in a health facility and the accessibility to health facility's immunization services, lack of confidence and trust in the health services and political problems. (5)

The present study was carried out in a tertiary level teaching hospital to assess the status of immunization of children from 9 months to 5 years of age and to identify the factors associated with incomplete vaccination.

Aim & Objectives

The present study was carried out in a tertiary level teaching hospital to assess the immunization status of children from 9 months to 5 years of age. An endeavour was made to particularly study some factors associated with the immunization status of the study subjects, besides finding out the reasons for incomplete immunization.

Materials and Methods

The present study was carried out at the Immunization Clinic (OPD) of a tertiary care hospital of Central India from November 2018 to March 2019, the children aged 9 months and above, up to 5 years coming for Measles-Rubella campaign serving as the study subjects. 500 Children were included in the study. A pre-tested proforma had been prepared to record the details, which were obtained from the parents.

For assessment of the immunization status of children, only the vaccines used in the National Immunization Program were taken into account, viz., Bacillus Calmette Gurein (BCG) vaccine, Oral Polio Vaccine (OPV), Hepatitis B vaccine (HBV), Pentavalent vaccine, Inactivated Polio vaccine (IPV), Measles vaccine and DPT vaccine. Special care was taken to see that the doses of OPV administered during the Pulse Polio Program (PPI) are not taken into account as quite often parents equate the doses administered during PPI with the regular OPV doses. The status was determined by history obtained from parents (preferably mothers), confirmed, wherever possible, by immunization cards. Complete immunization was

defined as receipt of BCG vaccine, HBV and OPV soon after birth, and three subsequent doses of Pentavalent/DPT vaccine and OPV and 2 fractional doses of IPV at 6 and 14 weeks and one dose of measles vaccine before 1 year of age. After 1 year of age, complete immunization included all the above vaccines along with booster doses (DPT, OPV, Measles) and doses of Vitamin A as per the age. Incomplete immunization was defined as failure to receive any of the vaccine listed above. For statistical evaluation, Chi-square test was done and a p value of <0.05 was considered significant.

Results

Table 1 shows Distribution of study participants according to age and gender. Most of the study participants 26% and 23.6% were in age group of 4-5 years and less than 1 year respectively. As per the Gender distribution, 52.4% of study participants were female and 47.6% were male. Table 2 shows the Distribution of study participants according to Religion and Birth order. Most of the study participants were Hindu 61.8% followed by Muslim 25.6%. Also, most of the participants, 70% were of first Birth order followed by 23% of second birth order. Table 3 shows the Distribution of study participants according to Birth order and Gender. Most of the study participants 70% were of Birth order 1 among which Females (55.14%) were more as compared to Males (44.86%). Table 4 shows the Distribution of study participants according to Education of Mother and Father. Most of the mothers of study participants 32% were educated up to Higher Secondary level. Among fathers of study participants, 26.68% were educated up to Higher Secondary level followed by 24.85% up to Middle school and 23.42% up to High School. Also, 2.24% of Fathers and None of the mothers of study participants were illiterate. Table 5 shows the Distribution of study participants according to Occupation of Mother and Father. Maximum of the mothers of study participants 83.2% were unemployed. Among fathers of study participants, 39.96% were Semi skilled worker. Table 6 shows the Distribution of study participants according to Immunization status. Out of 500 study participants, Mothers of 3 study participants were unaware about the immunization status of their children. Among the remaining 497 study participants, 63.58% were completely immunized for the age and 36.42% were incompletely immunized. More Female children 39.23% were incompletely immunized than Male children 33.33%. Table 7 shows the Reasons for Incomplete immunization of study participants. Most common reason for incomplete immunization of study participants was Ignorance of family members (45.9%). Illness of child was given as the reason by 9.9% of mothers, while illness of family members by 2.2%.

As the MR vaccine was being introduced in the Universal immunization programme, the doses of Measles vaccine were not available for previous 3-4 months prior to the introduction of the vaccine. Out of the 181 participants who were incompletely immunized, 38.12% had not received dose for Measles at 9 months age and 7.73% Measles of 18 months age. Children were not given one or more doses of Vitamin A. Table 8 shows that Complete Immunization was more in families with 5 and more members 67.70% as compared to those families having less than 5 members 57.77%. This relationship was found to be statistically significant.

Complete Immunization was found to be maximum in Christians 100%, followed by Hindu 69.90%, Muslim 55.47% and Boudhha 43.33%. This relationship was found to be statistically significant.

Complete immunisation status was found to be more in male study participants 66.67% as compared to females 60.77%. The relationship was not statistically significant.

Significant association was found between age of the child and immunization status.

Significant association was found between Education of father and immunisation status. More children were completely immunized whose Father were graduate or had higher education.

The association between Birth order, Education status of Mother, Occupation of Mother, Occupation of Father and Immunization status of children was not found to be statistically significant.

Discussion

The present study included 26% children in age group of 4-5 years and 23.6% children in age group of less than 1 year respectively. 52.4% of study participants were female and 47.6% were male. Naveen C Khargekar et al (6) in their study in Thane district found 54.6% were males and 45.4% were females.

Out of 500 study participants, Mothers of 3 study participants were unaware about the immunization status of their children. Among the remaining 497 study participants, 63.58% were completely immunized for the age and 36.42% were incompletely immunized. More Female children 39.23% were incompletely immunized than Male children 33.33%.

NFHS-4 data also shows 62% of children age 12-23 months receiving all basic vaccinations (7). Similar findings were noted by Anil B. Kurane and Dokku Swathi in their study on immunization status of children in 2-5 years age, where 1303 (65.2%) children were fully immunized, 681 (34%) are partially immunized and 16 (0.8%) children were un-immunized (8). Vinod Chaudhary et al (9) and Saurabh Kumar et al also found nearly similar findings (10).

Complete Immunization was more in families with 5 and more members as compared to those families having less than 5 members. This relationship was found to be statistically significant.

Complete Immunization was found to be maximum in Christians 100%, followed by Hindu 69.90%, Muslim 55.47% and Boudhha 43.33%. This relationship was found to be statistically significant.

Naveen C Khargekar et al in their study (6) in Thane district also found that Hindu children have more complete immunization when compared to Muslim children. Also, the children of illiterate fathers were more unimmunized when compared to children of literate fathers. The children from joint family were more completely immunized compared to those from nuclear family.

Complete immunisation status was found to be more in male study participants 66.67% as compared to females 60.77%. The relationship was not statistically significant.

Significant association between age of the child and immunization status.

More children were completely immunized whose Father were graduate or had higher education. Shiyam Sunder Tikmani et al in their study also found age, gender and education of father as some of the significant factors for Non-vaccination. (11)

The association between Birth order, Education status of Mother, Occupation of Mother, Occupation of Father and Immunization status of children was not found to be statistically significant.

Conclusion

The percentage of children completely Immunized was found to be 63.58%. The main reason for incomplete

immunization of study participants was Ignorance of family members. There are opportunities for improving its coverage by regular awareness campaigns.

Recommendation

There is a need of improving the knowledge, attitude and practice regarding immunization and motivating the parents to get the children immunized. Stress on booster doses of vaccines and doses of Vitamin A has to be given.

Table 1: Distribution of study participants according to age and gender

Age	Females	%	Males	%	Grand Total	%
< 1yr	55	46.61	63	53.39	118	23.60
1-2	44	43.14	58	56.86	102	20.40
2-3	55	51.89	51	48.11	106	21.20
3-4	29	65.91	15	34.09	44	8.80
4-5	79	60.77	51	39.23	130	26.00
Grand Total	262	52.40	238	47.60	500	100.00

Table 2: Distribution of study participants according to Religion and Birth order

Religion	Birth Order								Grand Total	%
	1	%	2	%	3	%	4	%		
Boudha	40	66.67	17	28.33	3	5.00	0	0.00	60	12.00
Christian	3	100.00	0	0.00	0	0.00	0	0.00	3	0.60
Hindu	220	71.20	71	22.98	12	3.88	6	1.94	309	61.80
Muslim	87	67.97	27	21.09	11	8.59	3	2.34	128	25.60
Grand Total	350	70.00	115	23.00	26	5.20	9	1.80	500	100.00

Table 3: Distribution of study participants according to Birth order and Gender

Birth Order	Males	%	females	%	Total	%
1	157	44.86	193	55.14	350	70.00
2	60	52.17	55	47.83	115	23.00
3	18	69.23	8	30.77	26	5.20
4	3	33.33	6	66.67	9	1.80
Total	238	47.60	262	52.40	500	100.00

Table 4: Distribution of study participants according to Education of Mother and Father.

Education	Mother	%	Father	%
PG or Professional degree	41	8.20	27	5.50
Graduate degree	97	19.40	77	15.68
Higher Secondary Cert.	160	32.00	131	26.68
High school cert.	132	26.40	115	23.42
Middle school Cert.	70	14.00	122	24.85
Literate, Less than Middle school	0	0.00	8	1.63
Illiterate	0	0.00	11	2.24
Total	500	100.00	491	100.00

Table 5: Distribution of study participants according to Occupation of Mother and Father

Occupation	Mother	%	Father	%
Professional	23	4.60	21	4.30
Semi Professional	14	2.80	55	11.27
Arithmetic skill job	3	0.60	49	10.04
Skilled worker	3	0.60	4	0.82
Semi-Skilled worker	29	5.80	195	39.96
Unskilled worker	12	2.40	81	16.60
Unemployed	416	83.20	0	0.00
Total	500	100.00	488	100.00

Table 6: Distribution of study participants according to Immunization status and Gender

Immunization Status	Complete		Incomplete		
Gender	Number	%	Number	%	Total
Male	158	66.67	79	33.33	237
Female	158	60.77	102	39.23	260
Total	316	63.58	181	36.42	497

Table 7: Reasons for Incomplete immunization of study participants

Reasons for Incomplete vaccination	Number (N)	%
Ignorance	83	45.90
Dose Not Available*	73	40.40
Illness of Child	18	9.90
Illness of Family Members	4	2.20
Fever after Vaccination	3	1.60
Total	181	100.00

*Dose of Measles Vaccine was not available 3-4 months prior to the MR campaign.

Table 8: Association of Immunization status and Socio-demographic variables

Variables	Category of variables	Complete Immunization		Total	Chi square d.f. Significance
		Yes (%)	No (%)		
Number of Members in family	<5	119(57.77)	87(42.23)	206	5.13 1 0.023
	>=5	197(67.70)	94(32.30)	291	
Religion of Child	Hindu	216(70.59)	90(29.41)	306	16.82 1 0.000
	Others	100(52.36)	91(47.64)	191	
Gender of child	Male	158(60.77)	102(39.23)	260	1.86 1 0.172
	Female	158(66.67)	79(33.33)	237	
Birth Order	<=2	299(64.30)	166(35.70)	465	1.615 1 0.203
	>2	17(53.13)	15(46.88)	32	
Age of child	< 1yr	57(44.19)	72(55.81)	129	28.30 1 0.000
	>=1 yr	259(70.38)	109(29.62)	368	
Education of Mother	Graduate and above	92(66.67)	46(33.33)	138	0.78 1 0.37
	Below graduation level	224(62.40)	135(37.60)	359	
Education of Father	Graduate and above	75(72.12)	29(27.88)	104	4.34 1 0.037
	Below graduation level	38(61.03)	152(38.97)	390	
Occupation of Mother	Professional and semiprofessional	23(62.16)	14(37.84)	37	2.49 2 0.286
	Arithmetic skill job and semiskilled	18(51.43)	17(48.57)	35	
	unskilled and unemployed	275(64.71)	150(35.29)	425	
Occupation of Father	Professional and semiprofessional	45(59.21)	31(40.79)	76	0.92 2 0.63
	Arithmetic skill job and semiskilled	206(62.61)	123(37.39)	329	
	unskilled and unemployed	52(66.67)	26(33.33)	78	

References

1. National Family Health Survey (NFHS-3) 2005–06 India. Volume I September. Available at URL: https://dhsprogram.com/pubs/pdf/FRIND3/FRIND3-Vol1AndVol2.pdf
2. Kalaivani K, Mathiyazhagan T, Patro BC. Editorial. News Lett Nat Inst Health Fam Welfare 2006; 8:1-2.
3. National Family Health Survey-II (1998-99), J&K State (2002). International Institute for Population Sciences, Mumbai, p 129.
4. National Primary Health Care Dev Agency (NPHCDA) (2016) National Routine Immunization Strategic Plan 2013-2015. http://www.jhsph.edu/research/centers-andinstitutes/ivac/resources/Nigeria-NRISP-TechnicalPolicy.pdf.
5. Duru C, Iwu A, Uwakwe K, Diwe K, Merenu I, Emerole C et al. Assessment of Immunization Status, Coverage and Determinants among under 5-Year-Old Children in Owerri, Imo State, Nigeria. OALib. 2016;03(06):1-17.
6. Naveen C Khargekar, Vandana C Khargekar, Poonam P Shingade. Immunization Status of Children under 5 years in a Tribal Area, Parol, Thane District. National Journal of Community Medicine; Volume 6, Issue 4, Oct-Dec 2015.
7. International Institute of Population Sciences (IIPS), National Family Health Survey (NFHS-4), 20015-16. India Fact Sheet. IIPS, Mumbai.
8. Anil B. Kurane, Dokku Swathi. A study of immunization status of children in the age group 2-5 years. International Journal of Contemporary Pediatrics, Vol 5, No 3 (2018).
9. Vinod Chaudhary, Manish Tiwari, Manoj Ghoghare. Immunization Status of 1–5-Year-old Children and Factors Affecting It: A Hospital Based Study. Pediatric Oncall July - September 2015; Volume 12: Issue 3
10. Saurabh Kumar, Sudhir Prabhu, Arun P. Jose, Sowmya Bhat, Oliver D. Souza, Narayana V. Assessment of under-five immunization coverage among the population of slum areas in Mangalore taluk, India. International Journal of Community Medicine and Public Health; March 2017, Vol 4 (Issue 3): Page 781-86
11. Tikmani SS, Soomro T, Ali S. Vaccination Status and Factors for Non-Vaccination in Children at a Tertiary Care. Int J Vaccine Res 2(1): 5. DOI: http://dx.doi.org/ 10.15226/2473-2176/2/1/00112