



IMMUNIZATION STATUS OF CHILDREN IN THE AGE GROUP OF 12-23 MONTHS: A CROSS SECTIONAL STUDY AMONG TEA TRIBE POPULATION IN A BLOCK OF JORHAT DISTRICT, ASSAM.

Pediatrics

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ABSTRACT

Aims and Objectives: To assess the immunization status of children in the age group of 12-23 months children in tea tribe population of Jorhat, Assam. To identify and analyze the factors responsible for incomplete and non-immunization among children in the age group of 12-23 months in the selected block of tea tribe population. **Materials and Methods:** A cross sectional study was carried out among the 250 participants of the tea tribe population using a pre-designed and pre-tested proforma. Parents were explained the purpose of the study and Mother-Child Protection (MCP) cards were used to obtain the vaccination dates. **Results:** Of the total 250 participants, 176(70.4%) were fully immunized and 74(29.6%) were partially immunized. Detailed study has been done among the factors affecting the immunization status of the participants like socio-economic conditions, religion of the parents, literacy rate of both the parents etc. An association between place of delivery, socio-economic status, occupation status of parents and immunization status was found significant. **Conclusions:** Immunization coverage was found to be reasonably good when compared to National Family Health Surveys but still there is a lot of scope for improvement to achieve the national target of 100% immunization coverage. The reasons for incomplete immunization were domestic issues and mother being too busy to take the child for vaccination followed by sickness of the child. Efforts are still required to raise the awareness about importance of immunization.

KEYWORDS

Children, Immunization, 12-23 months, Tea tribe, Assam

INTRODUCTION

Immunization saves millions of lives annually, which is a success story in global health and development. It is an essential part of basic healthcare and an unquestionable human right. Infectious illness outbreaks can be prevented and controlled with the use of vaccines. They support the security of the world's health and will be a crucial weapon in the fight against antibiotic resistance.¹

Launched in May 1974 by WHO, the main objective of Expanded Programme on Immunization (EPI) was to prevent the spread of six vaccine-preventable disease. In India, EPI was launched in 1978 and renamed as Universal Immunization Programme (UIP) in 1985. UIP was launched with an objective to vaccinate children and antenatal women as per the vaccination schedule. Primarily focussed on under-5 mortality rate, the program seeks to achieve a total of 2.67 crore newborns and 2.9 crore pregnant women annually. Over 89 lakh children in the country are not able to avail any of the vaccines under the immunization programme. This is highest compared to other countries in the world. India has high burden of Pertussis, Diphtheria, Japanese Encephalitis and Measles in spite of a national immunization program in place since the last five-decades.²

In 2014, the Government of India launched "Mission Indradhanush". It was launched to add more pregnant women and children below the age of five to the vaccination coverage. In December 2018, the mission Intensified Mission Indradhanush (IMM) was launched with the objective of achieving a vaccination coverage of more than 90%.³

In Assam, according to NFHS 4 and NFHS 5, children aged 12-23 months who were fully vaccinated based on information from either vaccination card or mother's recall were 47.1% and 66.4% respectively.⁴

Tea garden population contributes to 1/5th of Assam state population. The population, especially children, are highly prone to diseases, mostly because they belong to the lower socio-economic strata. Limited studies have been found about the immunization status and the percentage of coverage in this part of the state, hence this study has

been performed to estimate the status of immunization in tea tribe population and to estimate the causes of non or partial immunization among children of 12-23 months age group.

MATERIALS AND METHODS

Place of study: Tea gardens in Bagchung block of Jorhat district, Assam

Duration of study: One year (2021-2022)

Design of the study: A cross-sectional study

Study population: 12-23 months old children residing in tea garden area of Bagchung block

Inclusion criteria: Children belonging to the age group of 12 to 23 months from tea tribe population.

Exclusion criteria:

1. Children of parents who did not give consent.
2. Children less than 12 months and more than 23 months.
3. Children not found in their residence even after three consecutive rounds of visit.
4. Children with serious illnesses like malignancies on chemotherapy, congenital immunodeficiency, HIV, hemoglobinopathy, bleeding diathesis, nephrotic syndrome or on oral steroids, etc.

Sample size:

According to NFHS 5, the prevalence of children getting fully immunized in the age group of 12-23 months in Jorhat district, has been found to be 69.2%.⁴ Therefore, we have taken 30.8% as the prevalence of non-immunization and partial immunization. Taking absolute error as 5% and prevalence as 30.8%, total sample was calculated to be 340. Formula used: $N = \frac{4 \cdot p \cdot q}{d^2}$, where p =prevalence, $q=1-p$, d = absolute error. Taking 30.8% as the prevalence of non-immunization and partial immunization ($p=0.308$), $n = \frac{4 \cdot 0.308 \cdot 0.692}{0.05^2}$ 341 ~340.

Ethical clearance:

Ethical clearance was obtained from Institutional Ethics Committee (IEC) of Jorhat Medical College and Hospital, Jorhat prior to the commencement of study.

Method of data collection:

Prior to the beginning of the field work, the study participants were carefully explained about the purpose of study to receive their full co-operation for the study. The data collection was done by house-to-house visit. At every household, the presence of a child (12-23 months) was first confirmed. If a child (12-23 months) was present, he/she was included or excluded in the study based on the inclusion and exclusion criteria mentioned earlier. If more than one study participant (child) was present at one household, then only the younger child was included. A pre-designed and pre-tested proforma was used to obtain the information. Mother-Child Protection (MCP) cards were used to obtain the vaccination dates. Also, mothers of children with missed or unimmunized vaccination schedules were inquired to assess the reasons for the incomplete immunization status.

The causes of delay in vaccination/ no vaccination analysed in the study were:

1. No need of vaccination for their child
2. Unaware about vaccination schedule
3. Vaccine is not available in the centre
4. Vaccine timing not convenient for them
5. Long waiting time for vaccine
6. Fear of side effects due to vaccine
7. Child was sick on the day of immunization
8. Parents could not recall the date of immunization
9. Health worker did not notify the parents
10. Immunization centre too far
11. Domestic issues/ Parents were busy
12. Working parents
13. Religious believes
14. Advised against immunization by relatives or friends or family members.
15. Non cooperative health worker.
16. Birth weight was low
17. Child is too small or under nourished

Statistical analysis:

The recorded data was compiled and entered in a spreadsheet (Microsoft Excel). Statistical Package for Social Sciences (SPSS) software, IBM SPSS – version 23 was used to analyze the data. Chi-square test or Fisher's exact test, whichever appropriate, was employed for comparing variables. The p value <0.05 was taken as significant.

RESULTS

Table 1 shows that out of 250 children, 70.4% (176) and 29.6% (24) were fully and partially immunized respectively.

Table 1: Immunization status of children

Sl.no.	Immunization status	Total	%
1	Fully immunized	176	70.4%
2	Partially immunized	74	29.6%

Table no.2 Association between socio-demographic factors and immunization status

Variables	Fully Immunized	Partially Immunized	P value
Sex			
Male	88(35.2%)	33(13.2%)	0.435
Female	88(35.2%)	41(16.4%)	
Religion			
Hindu	160(64%)	69(27.6%)	0.484
Muslim	1(0.4%)	1(0.4%)	
Christian	15(6%)	4(1.6%)	
Socio-economic status			
Class I	2(0.8%)	NA	0.000
Class II	23(9.2%)	1(0.4%)	
Class III	71(28.4%)	5(2%)	
Class IV	50(20%)	61(24.4%)	
Class V	30(12%)	7(2.8%)	
Place of delivery			
Institutional	160(64%)	60(24%)	0.034
Home	16(6.4%)	14(5.6%)	

Educational status of mother			
Literate	70(28%)	28(11.2%)	0.774
Illiterate	106(42.4%)	46(18.4%)	
Educational status of father			
Literate	71(28.4%)	27(10.8%)	0.56
Illiterate	105(42%)	47(18.8%)	
Occupation status of mother			
Unemployed	37(14.8%)	33(13.2%)	0.000
Unskilled	59(23.6%)	37(14.8%)	
Semi-skilled/skilled	64(26%)	4(1.6%)	
Clerical/shop /farm	10(4%)	NA	
Semi-professional/professional	6(2.4%)	NA	
Occupation status of father			
Unemployed	34(13.6%)	30(12%)	0.000
Unskilled	68(27.2%)	40(16%)	
Semi-skilled/skilled	65(26%)	4(1.6%)	
Clerical/shop /farm	7(2.8%)	NA	
Semi-professional/professional	2(0.8%)	NA	

Out of the 176 fully immunized children, 88 were male and 88 were female. Sex of the child, religion, socioeconomic status of the family, place of delivery of the child, educational status of parents and occupational status of parents were compared with the immunization status of the child as displayed in table no.2. Out of all the factors, religion, socioeconomic status, place of delivery of the child and occupational status of parents showed significant association with the immunization status.

Table no.3 Reasons for delayed immunization

Factor	Frequency	%
Domestic issues/Parents were busy	186	29.1
Child was sick on the day of immunization	181	28.3
Parents couldn't recall the date of immunization	122	19.1
Fear of side effects due to the vaccine	76	11.9
Vaccine was not available in the centre	45	7
Unaware about vaccination schedule	29	4.5

The common reasons for partial immunization were: domestic causes (29.1%), sickness of the child (28.3%), failure of parents to recall the scheduled date of immunization (19.1%), fear of side effects due to vaccine (11.9%), vaccine not available in the centre (7%) and parents advised against immunization by relatives or friends or family members (4.5%)

DISCUSSIONS

This study was a community based cross sectional study done during the period of one year in the tea gardens of Bagchung block in the district of Jorhat. It included children in the age group of 12-23 months. The coverage of fully immunized children in the study area was found to be 70.4 % which is quite high as compared to NFHS-4 (2015-16) i.e. 47.1% and NFHS 5(2019-2021)⁴ which is 66.4%. In comparative analysis done with other studies, the full immunization coverage of children in other studies across the country revealed a similar pattern. The present study was found to be comparable with the studies done by P.S.Baghel et al,⁵ Vohra et al,⁶ Noronha E et al⁷ and Chakraborty N et al⁸.

In comparative analysis with other studies on the basis of sex of the child, the present study was comparable with studies by P.S.Baghel et al⁵, Noronha E et al⁷, Chakraborty N et al⁸ and Chavan P et al⁹. In all the studies, insignificant association was seen.

In the present study, majority of the families surveyed belonged to Hindu religion (91.6%) and the full immunization coverage with Hindu religion in the present study came out to be 64 %. Significant association was seen in studies done by P.S.Baghel et al⁵, Vohra et al⁶, Chakraborty N et al⁸ and Chavan P et al⁹ as compared to the present study where the association was insignificant.

A family's socioeconomic level typically determines their standard of living and access to medical services. Based on the BG Prasad Scale, the study population was categorised into 5 socioeconomic classes (2021). The present study was compared to studies by Chakraborty N. et al.⁸ and Noronha E. et al⁷. While the study by Noronha E et al showed the correlation to be minor, all other studies found the association to be substantial. In the current study, children in class 4 socioeconomic position had the highest partial immunisation rates, followed by those

in class 5 socioeconomic status, while children in class 1 socioeconomic status had the lowest rates. This can be explained by the fact that people from wealthier classes can access and afford private healthcare systems for treatment as well as for other health care services including immunisation, which makes them less likely to take the vaccines on schedule. In contrast, people from lower classes rely primarily on public health facilities and the vaccines provided under UIP because they are free of charge.

Deliveries in the hospital were more likely to be completely immunized ($p < 0.05$). This may be because vaccination was started at birth, and parents were educated regarding subsequent vaccinations. Therefore, institutional deliveries should be promoted to increase the coverage of immunization. Mothers who deliver at home may be non-users of health services in general and have to be targeted for utilization of health services. The present study was comparable with study done by Vohra et al.⁶. Significant association was found between immunization coverage and place of delivery in all the studies including the present study.

This study witnessed no association between education of mothers and immunization status of the child. Education aids in a greater comprehension of an individual's healthcare requirements, which enhances the behaviour of seeking out health care. Mothers who lack literacy are more likely to be ignorant of the advantages of vaccination and to be dubious of contemporary medicine. On the connections between maternal education and childhood immunisation in India, Vohra et al.⁶ obtained similar findings. The table above lists the conclusions of the research conducted by Chavan et al.⁷, Noronha E et al.⁸ and Chakraborty et al.⁹.

Partially immunized children with illiterate and literate status of father were 47(18.8%) and 27(10.8%) respectively. P value was found to be insignificant. In comparative analysis with other studies, the present study was comparable with studies by Vohra et al.⁷, Noronha E et al.⁸, Chavan VP et al.⁹ and P. Chhabra et al.¹⁰. Vohra et al found significant association between immunization. coverage based on Literacy Status of Father. All other studies, including the present study, witnessed insignificant association.

Significant association was found between immunization coverage based on occupational status of mother. Among fully immunized children, mothers as semi-skilled and skilled workers were more whereas mothers as unskilled workers were the least. Number of unskilled workers were the highest among partially immunized, followed by unemployed workers. This may be attributed to mothers with skilled jobs having greater awareness and socioeconomic standing. Working mothers had significant financial influence, thus they were granted the right to influence family decisions. That might have led to timeliness of the children's vaccine schedule. In comparative analysis with other studies, the present study was comparable with study by Chavan VP et al.¹⁰

Number of fathers as unskilled workers were the highest among fully immunized, followed by semi-skilled and skilled workers. Among partially immunized children, fathers as unskilled workers were more whereas fathers as semi-skilled and skilled workers were the least. Significant association was found between immunization Coverage and occupational status of father. According to studies, father's participation is crucial for the child's immunisation to be successful. Man is often the head of the family and is responsible for all choices, especially those involving health and finances. Fathers who are well-versed in routine immunization are more likely to advise their kids to evaluate immunisation services. This may be achieved by the probability of gaining such knowledge from the peers or colleagues at work. In comparative analysis with other studies, the present study was comparable with study by Vohra, et al.⁶.

The findings were found to be comparable with the studies done by Kumar D et al, Gupta et al. Because of the parents getting stuck up in the household chores or any family event, the immunization of the child had taken a back seat. Children falling sick on the day of vaccination was another hurdle. This can be overcome by proper counselling about the need and the contraindications of the vaccines.

CONCLUSIONS

Partial immunization was observed in 29.6% of children. Thus, in spite of vaccines being provided free of cost under UIP many parents are not

aware of the importance of timeliness of the vaccinations rendering the child vulnerable to diseases during the gap. Thus, adherence to the schedules should be ensured and for that the mothers should be educated and counselled regarding the risk of diseases the child may suffer due to non-adherence to immunization schedules. Immunization coverage was found to be reasonably good when compared to National Family Health Surveys but still there is a lot of scope for improvement to achieve the national target of 100% immunization coverage. The reasons for incomplete immunization were domestic issues and mother being too busy to take the child for vaccination followed by sickness of the child. All efforts should be taken to raise the awareness of community about importance of immunization along with providing complete information about the immunization services being available to them. It is important to place more emphasis on variables that can be changed, such as unemployment and immunisation ignorance. Outreach workers should educate residents during their home visits about the necessity of getting immunizations when they need them. To ensure that immunisation will become a "felt necessity" of the mothers in the community, regular IEC activities in the form of group talks, role plays, posters, pamphlets, competitions, etc., should be held in the community. Mothers should get health education every time they interact with a healthcare facility, such as during ANC, PNC, immunisation appointments, and in clinics for children under five. The effectiveness of such intervention techniques should be carefully evaluated. Long term strategies to achieve universal vaccination coverage include increasing female literacy and stabilising the population.

Limitations

The present study was a community based cross sectional study done to know the primary immunization coverage of children in tea tribe population in a block of Jorhat district, Assam. To add to the challenges of the study, COVID-19 pandemic continued for around 8-10 months out of the total study period. Due to this, parents did not give consent for the study leading to difficulty in meeting the required sample size. Also because of the lockdown imposed in the town, communication had become difficult. Hence the total sample size of 340 could not be met and only 250 study participants could be enrolled in the study.

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