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## Epidemiological Survey on Childhood Immunization in A Locality and Identify the Factors Affecting Them



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**Keywords:** Immunization, vaccine, Vaccine preventable diseases, primary health centres.

**ABSTRACT** Universal immunization program (UIP) of India is the biggest vaccination program conducted on close of 2.67 crore infants and 2.9 crore pregnant women every year. Under UIP 12 vaccines are given free of cost. India has the greatest number of deaths in children younger than 5 years due to vaccine preventable diseases (VPD). There are some exceptions for some vaccines which are paid, even private organizations are involved in vaccination but they charge a certain amount for each vaccine dose. **Aim-**To estimate vaccination percentage in a locality and factors influencing vaccination in children and also to compare the percentage of vaccination to government and private health centers. **Methodology-**This is an observational study, for a time of a half year i.e., 6 months from October 2021 to May 2022. In a primary health care center (PHC) and in a private healthcare centre in Bowenpally, Secunderabad, Hyderabad, Telangana in India. A total of 200 subjects were included in the study based on inclusion and exclusion criteria, a structure and pre-designed data collection form were used to record the patient specific demographic details and vaccination details. **Results-**The greatest number of subjects have received vaccines from private centre i.e., 59%, the major reason for selection of private centres contrary to the government centres are hygiene environment (31%), less time consumption (25%) and the remaining depend on the service and staff. The overall vaccination coverage in the study population was found to be 80.5%, where individual vaccine percentage is as follows: 100% for BCG, 87% for Pentavalent, 83% for OPV, 80.2% for Hepatitis A, 78.5% for MMR, 77% for PCV, 81.3% for Rota Virus and Vitamin A contributed for 57.6%. There are vast number of factors influencing vaccination in children the major factors contributing is Lack of time 25%, lack of interest 21%, cost 16%, lack of knowledge 15%, fear of side effects 13% and some other minor factors are about 7%. **Conclusion-**From this study we conclude that even with subject related barriers like lack of interest, lack of knowledge regarding the vaccine and facility site barriers like unavailability, long waiting periods, we have observed a satisfactory percentage of vaccination rate i.e., 80.5% and narrow percentage of drop rate which is 19.5%.

## INTRODUCTION

Immunization is one of the most practical child endurance intercessions which is demonstrated. Every country in this world has a vaccination program to oversee picked antibodies to the assigned individuals <sup>[1]</sup>. Which is expressly based on pregnant, children, and youths. We have something causative experts against which vaccinations are available and much more experts are centered around for immune response progression <sup>[2]</sup>.

Immunization has the minuscule parts of the sickness causing living being which goes about as an antigen. They additionally have different fixings or items which are useful to keep up with the security and viability of the immunization <sup>[3]</sup>. Every one of these items has a particular capacity or attempt to advance the adequacy and security of immunization <sup>[4]</sup>. The fixings in the immunization are:

1. **Antigen:** It is the lessened or inactivates life form or it very well might be a part of the specific creature or organism which can be adequate to deliver an invulnerable reaction without causing the infection in the host or the person <sup>[3]</sup>.
2. **Preservative:** It is utilized to forestall or stay away from the tainting of the antibody in the wake of opening the vial assuming it should be utilized for more than one person <sup>[4]</sup>. These additives are missing in the immunizations which are ready for a single use or one portion as it were. Most ordinarily utilize additive is 2-phenoxyethanol <sup>[5]</sup>.
3. **Stabilizers:** These stabilizers are utilized to balance out the antibody by forestalling the compound response inside the immunization and to keep the antibody particles from adhering to the dividers <sup>[4]</sup>. The most routinely elaborate stabilizers in the immunizers are: sugars, amino acids, gelatin and proteins <sup>[5]</sup>.
4. **Diluent:** It is utilized to make the antibody to the right quantity for utilization <sup>[5]</sup>.

Worldwide India has announced the greatest number of passings in child younger than 5 years, a large portion of which are vaccination preventable diseases (VPDs) <sup>[6]</sup>. These VPDs require recommended doses of a particular vaccine with a particular time interval between the given number of doses to develop adequate immunity and susceptibility to VPDs. Delay or secession of vaccines beyond the given time frame can increase the risk of disease to the child and contribute to the transmission of VPDs <sup>[6]</sup>. Thus, the antibody time span is a significant measure in distinguishing the inoculation program execution.

Universal Immunization Program (UIP) in India is shipped in 1985 by the Ministry of Health and Family Welfare of the Indian Government <sup>[7]</sup>. But it was first introduced as Expanded Immunization Program of India in 1978 which is later changed to UIP. UIP is one of the biggest general well-being programs focusing on close of 2.67 crore infants and 2.9 crore pregnant women every year <sup>[8]</sup>. Under UIP administration of India, a total of Twelve inoculations or vaccines are given free of cost.

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In India, the vaccines are administered without any cost by the government but there is an exception for some vaccines which are not free of cost and need to be purchased indeed, even private associations and medical clinics likewise partake in vaccination programs. But these private organizations will charge a certain amount for each dose of vaccination <sup>[6]</sup>.

Around four hundred million children in India under the age of 15 years, represent 35% of the country's population. The coverage of each individual vaccine in the country is as follows i.e., DTP is about 89%, Hib is about 60%, Hepatitis B is about 76%, polio vaccine is about 79%, PCV is 42%, MCV is 62% respectively <sup>[6]</sup>.

In India, the urban and semi-urban areas have high immunization coverage when compared to the rural areas. This can be due to lack of knowledge on the immunization programmes, transportation, and lack of interest <sup>[9]</sup>. Even in urban and semi-urban regions there are slums which have low immunization rates when compared to the other areas of the same regions. The child vaccination status likewise relies upon the parent's qualification, time schedule and interest (mental state) <sup>[2]</sup>.

## **I. METHODOLOGY**

The observational study was conducted in the PHC bowenpally and in a primary neonatal care center in Bowenvale - secunderabad, Hyderabad from October 2022 to Mar 2023(6 months). We have reviewed the 200 patients or children as per the incorporation and avoidance measures. All the subjects were recruited based on inclusion and exclusion criteria;

children between age of 0 – 10 years have been included; children of age greater than 10 years and having neurological disorders, implants, immunocompromised are excluded.

Materials used to carry out the study process were:

### **2.1 PATIENT CONSENT FORM (PCF):**

For the suitability of the children and parents consent forms are in four different languages i.e., Telugu, Hindi, English, Urdu which includes the details of the study. The patient was given satisfactory data about the review and is allowed to choose whether to take an interest or not. Upon their acknowledgment, they are enrolled into the concentrate subsequent to marking the assent structure.

### **2.2 DATA COLLECTION FORM (DCF):**

A suitable data collection form was designed with the support of the physician and used to collect the required data from the study subjects.

### **2.3 PATIENT INFORMATION LEAFLETS:**

Patient information leaflets are provided to the patient during the counselling sessions which gives brief information about the importance of vaccination in children, when should he/she can be vaccinated and when should not get vaccinated. The parents are counselled on their reasons for irregular vaccination in their child and in parents who are about to drop out from the immunization programme. The detailed information was provided in the leaflet in three languages i.e., Telugu, Hindi, English for the better understanding.

## **II. RESULTS**

The study was completed with a total of 200 patients, from both urban towns and urban slums. The basic demographics of the study were depicted in table 1.

**Table – 1: Subject demographics details.**

VARIABLE	TOTAL POPULATION
<b>Mean age</b>	3.85 ± 2
<b>Gender</b>	
No. of males (%)	53
No. of females (%)	47
<b>Locality</b>	
Urban towns (%)	55
Urban slums (%)	45
<b>Vaccination center</b>	
Primary health center (%)	41
Private clinic (%)	59

To understand the vaccination in children the immunization data of the study subjects or the children are collected from the parents. It was found to be that during the study periods the study subjects have taken 100% BCG vaccine, 87% PENTAVALENT, 83% OPV, 80.2% HEPATITIS A, 78.5% MMR, 77% PCV, 81.3% ROTA VIRUS and 57.6% VITAMIN A. The overall vaccination rate in the study subjects was found to be 80.5% in 200 subjects. And dropout rate is as follows 0% study subjects dropped out for BCG VACCINE, 13% for PENTAVALENT, 17% for OPV, 19.8% for HEPATITIS A, 21.5% for MMR, 23% for PCV, 18.7% for ROTA VIRUS and 42.4% for VITAMIN A. The overall dropout rate in study population is 19.5%. The grouping of the study subjects is depicted in table 2.

**Table -2: Grouping of subjects based on their vaccination status and dropout rate.**

VACCINE	AVG. of all doses taken	PERCENTAGE (%) of avg. doses taken	NO. OF DROPOUT SUBJECTS	PERCENTAGE (%)
BCG	200	100	0	0
PENTAVALENT	174	87	26	13
OPV	166	83	34	17
HEPATITIS A	160.5	80.2	39.5	19.8
MMR	157	78.5	43	21.5
PCV	154	77	43	23
ROTA VIRUS	162.6	81.3	37.4	18.7
VITAMIN A	115.25	57.6	84.75	42.4

The factors effecting the vaccination were found to be that 13% of study subjects were not immunized due to FEAR OR SIDE EFFECTS, 7% due to OTHER Reasons,16% due to COST, 25% due to TIME ADJUSTMENT,15% due to LACK OF KNOWLEDGE, 21% due to LACK OF INTEREST. And some facility-related factors are 39.4% were not immunized due to WAITING TIME, 20% due to VACCINES DEARTH, 17.7% due to STAFF BEHAVIOUR, 22.7% due to STORAGE. It is depicted in table 3.

**Table – 3: Grouping of subjects based on the factors influencing the vaccination rate.**

FACTORS	NO. OF SUBJECTS	PERCENTAGE (%)
LACK OF INTEREST	56	21
LACK OF KNOWLEDGE	40	15
TIME ADJUSTMENT	66	25
COST	43	16
FEAR OF SIDE EFFECTS	35	13
OTHERS	20	7
WAITING TIME	71	39.4
VACCINES DEARTH	36	20
STAFF BEHAVIOUR	32	17.7
STORAGE	41	22.7

### III. CONCLUSION

In this study we have conducted a survey and recruited 200 subjects based on the consideration and prohibition rules whose vaccination coverage of the subjects was assessed and the factors responsible for the dropout of the individuals were identified through interviewing parents.

Based on the results there are numerous factors effecting the vaccination coverage in our study which can be managed by counselling the parents about the use of vaccination. We also observed that there is a drastic increase in the vaccination process in the cases where the fathers of subjects are well educated when compared to uneducated or partially educated fathers.

From this study we conclude that even with subject related barriers like lack of interest, lack of knowledge regarding the vaccine and facility site barriers like unavailability, long waiting periods, we have observed a satisfactory percentage of vaccination rate and narrow percentage of dropout rate.

## SOME OF THE ADVANTAGES FROM THE ABOVE RESULTS

- a) Identified factors affecting childhood immunization.
- b) Educated parents about the importance of vaccination.

## IV. ACKNOWLEDGMENT

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