Study on coverage of optional vaccines in 3 – 6 year old children in an urban setting in Vellore, India

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Background

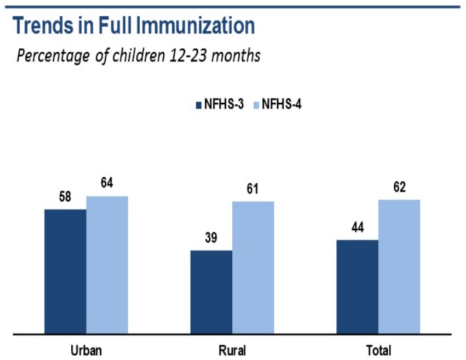
- Essential vaccines: Includes BCG, polio, DPT, measles , tetanus, hepatitis B, H influenza B, and in a few states, Japanese encephalitis. These are included in the Universal Immunization Program (UIP) and under this program no child can be denied immunization.
- Optional Vaccines: Vaccines that are not included in the Indian National Immunization Programme and given on an optional paid basis. They prevent common causes of morbidity and mortality in the Indian population.
- Optional vaccines included for the study are Hepatitis A vaccine, Pneumococcal vaccine, MMR vaccine, Rabies vaccine, Seasonal Influenza vaccine, Typhoid Vaccine, Varicella vaccine .
- Even though there are effective optional vaccines which prevent them, these diseases are highly prevalent in the study area and form a major bulk of diseases affecting children.
- Despite their proven efficacy and safety, the uptake of optional vaccine has been low since their introduction.[10,11,12]

Background

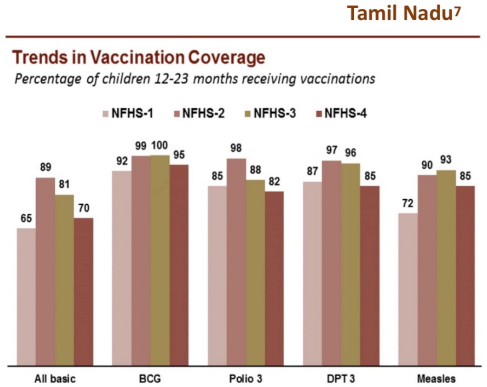
- No study has been done before to analyse the coverage of optional vaccines in the study area.
- NFSH studies have shown drop in routine immunization rates in the state of Tamil Nadu over the years.
- Factors affecting vaccine uptake has to be studied

Trends in Routine Vaccination Coverage- India and Tamil Nadu

India[6]



Tamil Nadu[7]



Background

Burden of Optional Vaccine preventable diseases

Disease	Supporting facts
Hepatitis A	In India, it was found that there **is 93% seroprevalence i**n children aged 4 years to 8 years.(1)
Rabies	India has about 18000 to 20000 cases a year and accounts for **36% of total world deaths**.(2)
Measles	India accounted for **50% of global deaths** in 2013.(globally 0.14 million)(3)
Mumps	36,352 cases reported in SE Asia region of WHO in 2013 with and **incidence of approximately 1000 cases per 100000**.(4)
Rubella	**Approximately 13000 cases** reported in India since 2012(5)
Seasonal Influenza	**Worldwide 3 to 5 million cases** with 2.5 to 3 lakh deaths(6)
Typhoid Fever	Prevalence of lab-confirmed hospital cases is approximately **10% in India**.(7)
Varicella infection	An overall seropositivity rate of >70% was reached between the ages of 11-15 years which increased to nearly 90% at the age of 30 years. (8)
Pneumococcal infection	**13.6% children aged 1 to 59 months die** of pneumonia. India accounts for **23% of global pneumonia** burden(9)

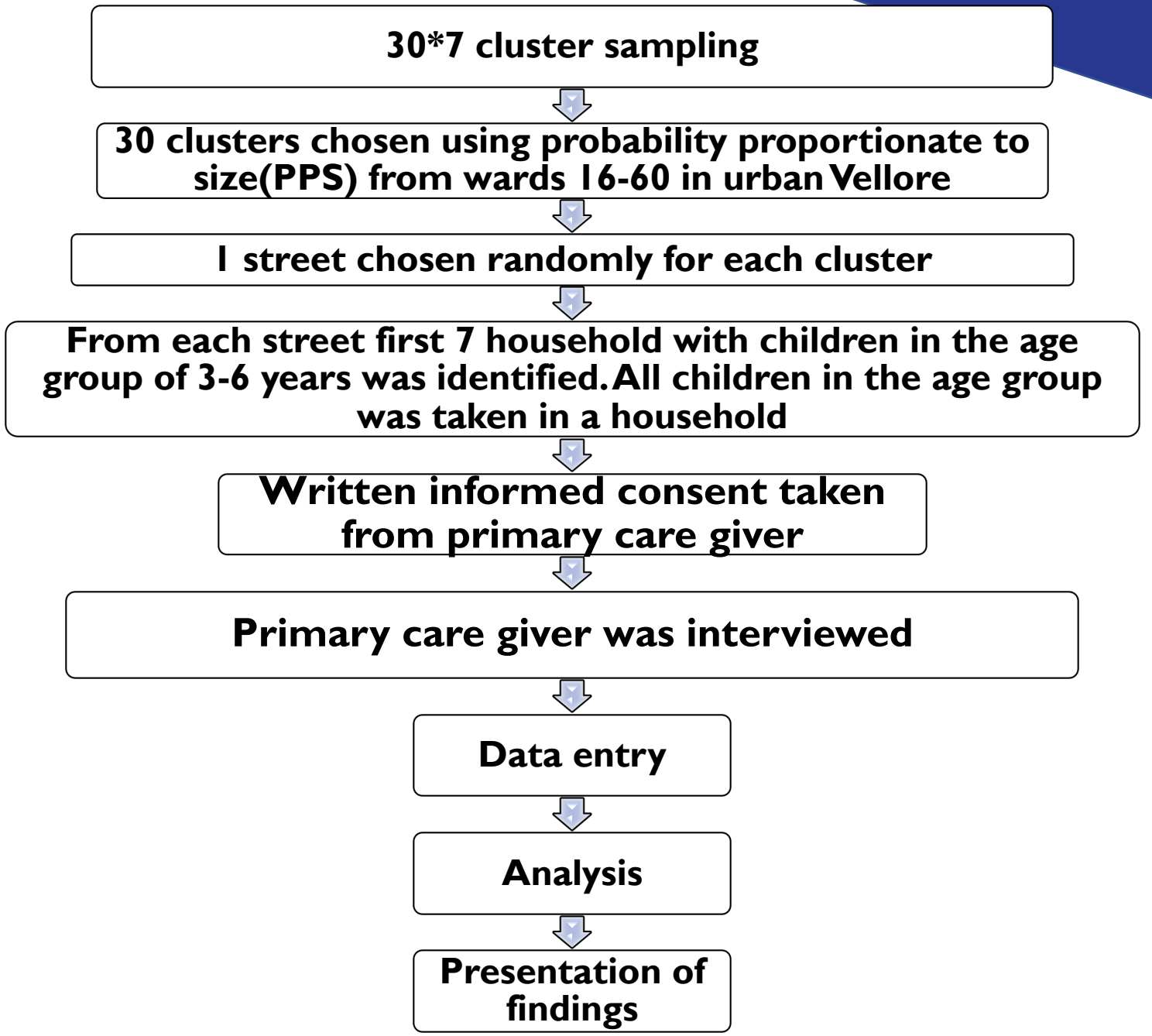
Objective

- To estimate the coverage of select optional vaccine among children in the age group 3-6 years in an urban setting of the Vellore district.
- To explore barriers and facilitators towards uptake of select optional vaccines among caregivers to children of age 3-6 in an urban setting of the Vellore district

Methods

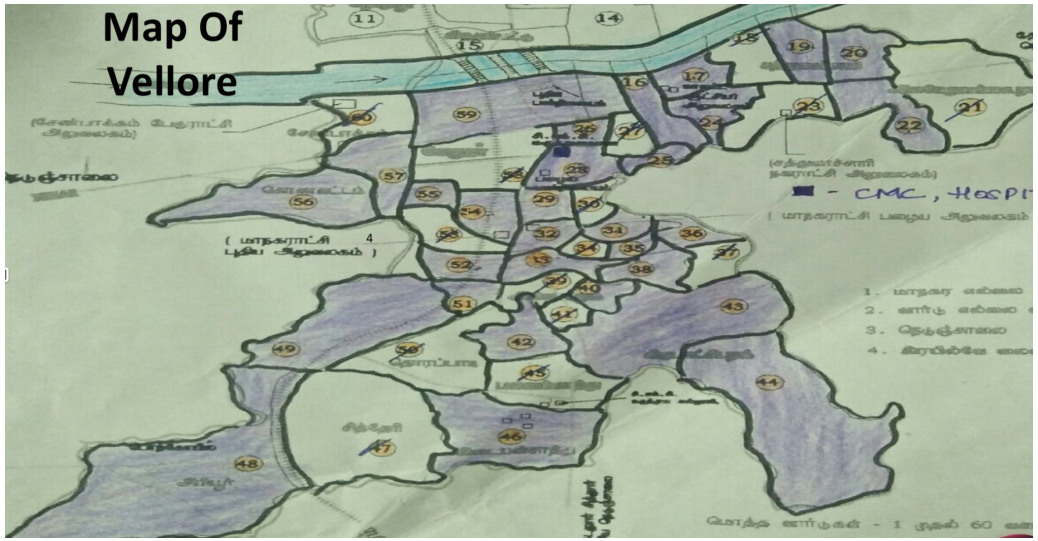
- Study Design : A community based Cross Sectional Study
- Setting Of The Study: The study was conducted in the urban population of the Vellore town (Wards 16-60, situated south of the Palar River).
- Study Population : Children in the age group of 3-6 years
- Inclusion criteria : Children in the age group of 3-6 years residing in (Wards 16-60) Vellore Town, all children in a household
- No exclusion criteria
- Period of the study: 2 weeks (14TH March – 24th March'18).
- Sample size 210 households

Methods


30*7 cluster sampling
30 clusters chosen using probability proportionate to size(PPS) from wards 16-60 in urban Vellore
1 street chosen randomly for each cluster
From each street first 7 household with children in the age group of 3-6 years was identified. All children in the age group was taken in a household
Written informed consent taken from primary care giver
Primary care giver was interviewed
Data entry
Analysis
Presentation of findings

Analysis

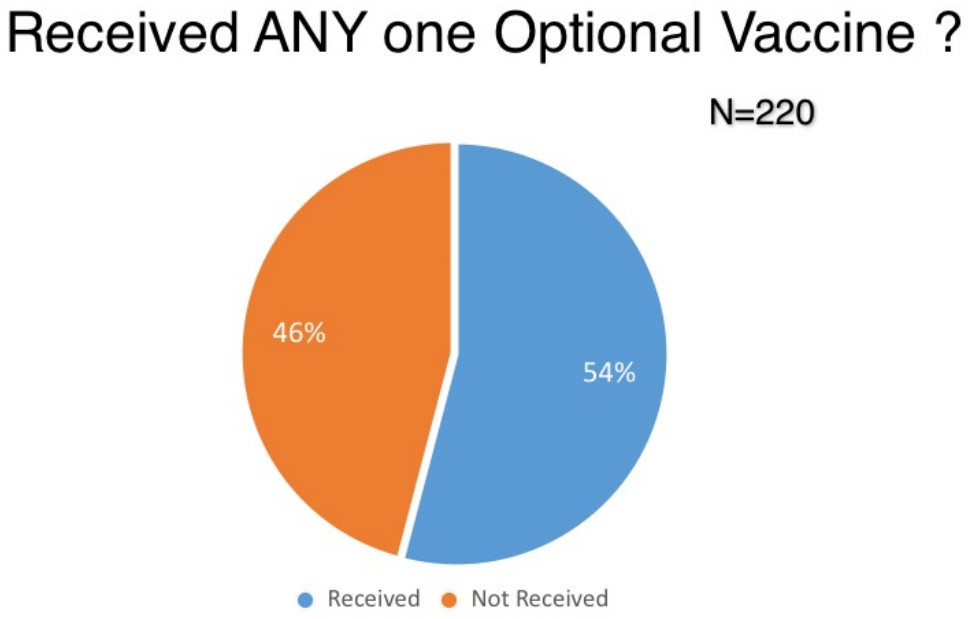
- Study Tool : Semi-structured, pilot tested, interviewer based questionnaire
- Data Entry using **Epidata v 3.1**
- Analysis using **SPSS v 25•Univariate analysis** –Vaccine coverage – as Proportion–Continuous variable – measures of central tendency– Categorical variable – as frequency and percentage.
- Bivariate analysis –Pearson's Chi Square test
- **Multivariate analysis** - Logistic regression analysis

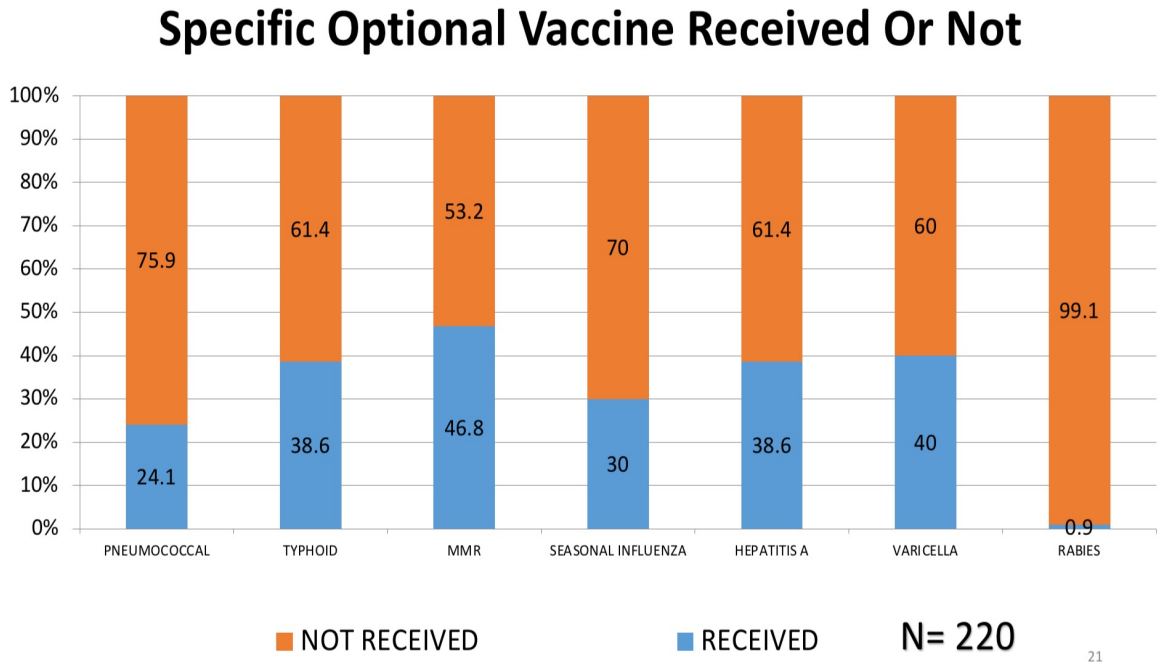


Results

- A total of 220 children from 210 households were included in the study, of which 46% (101) had not received any optional vaccine.
- The individual vaccine coverage were ranged from 0.9% for Anti Rabies vaccine to 46.8% for MMR Vaccine.
- High socioeconomic status ($p< 0.001$), high maternal educational level ($p <0.001$), health professional's advice ($p<0.001$), access of caregiver to smart phones ($p<0.001$), and birth in a private hospital ($p<0.001$) were found to be predictors of good vaccine uptake.
- The barriers to vaccine coverage observed were lack of knowledge, cost of the vaccine, non-availability and false knowledge of apparent insufficiency.

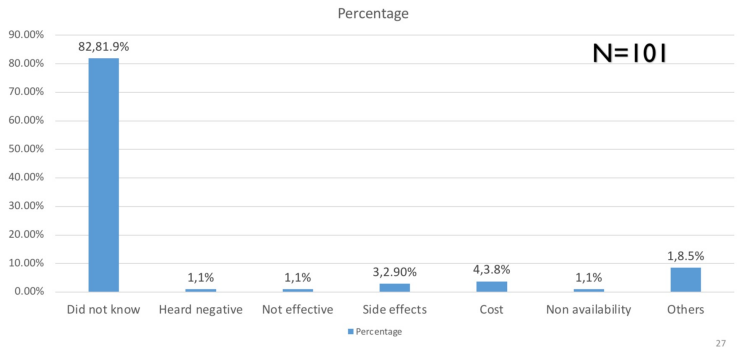
Results


Received ANY one Optional Vaccine ?
N=220
46%
54%
Received
Not Received


Specific Optional Vaccine Received Or Not
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
75.9
24.1
61.4
38.6
53.2
46.8
70
30
61.4
38.6
60
40
99.1
0.9
PNEUMOCOCCAL
TYPHOID
MMR
SEASONAL INFLUENZA
HEPATITIS A
VARICELLA
RABIES
NOT RECEIVED
RECEIVED
N= 220

Discussion

Reasons for NOT taking the vaccines



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Factors affecting Optional Vaccine uptake

Sl no	Parameter	Variable	Vaccinated N ,(in %)	Not vaccinated N ,(in %)	χ^2	P value
1	Gender of child	Male	53 (49.5%)	54 (50.5%)	1.743	0.187
		Female	66 (58.4%)	47 (41.6%)		
2	Education of primary caregiver	nil, primary, secondary	44 (34.9%)	82 (65.1%)	43.641	<0.001
		higher secondary, ug , pg	75 (79%)	19 (20.2%)		
3	SES	Upper+Middle SES(BG Prasad 1,2,3)	85 (70.8%)	35 (29.2%)	29.8	<0.001
		Lower SES(BG Prasad 4,5)	34 (34%)	66 (66%)		
4	Religion	Hindu	91 (57.2%)	68 (42.8%)	13.193	<0.001
		Muslim	15 (33.3%)	30 (66.7%)		
		Christian	13 (81.2%)	3 (18.8%)		
5	Caste	General	7 (46.7%)	8 (53.3%)	4.891	0.180
		SC/ST	18 (43.9%)	23 (56.1%)		
		OBC	82 (59.9%)	55 (40.1%)		
		Others	12 (44.4%)	15 (56.6%)		
6	Health Professional's advice	yes	95 (90.5%)	10 (9.5%)	107.088	<0.001
		no	24 (20.9%)	91 (79.1%)		
7	Access of Caregiver to smartphone	Yes	78 (70.3%)	33 (29.7%)	23.617	<0.001
		No	41 (37.6%)	68 (62.4%)		

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Conclusion

The coverage and awareness of select optional vaccines among children aged 3-6 yrs in urban setting:

	coverage	awareness
1. Hepatitis A -	38.6%	40%
2. Anti-rabies vaccine -	0.9%	16.8%
3. MMR vaccine -	46.8%	48.2%
4. Typhoid vaccine -	38.6%	55.9%
5. Seasonal influenza -	30%	39.1%
6. Pneumococcal vaccine -	24.1%	35%
7. Varicella vaccine -	40%	56.4%

Conclusion

Factors associated with vaccine uptake:

Promotes Uptake	Barriers for Uptake
Socioeconomic Status	Lack of Awareness
Caregivers education	Heard it was inefficient
Health Professional Advice	Relatively expensive
Smart phone use	Lack of availability

Recommendations

- To encourage medical practitioners and other health care providers to give counselling regarding the uptake of optional vaccines.
- Since mobile phone is an important source for dissemination of health education, it must be utilised to create more awareness among the public.
- To educate of the primary care giver regarding optional vaccines
- Anti-rabies vaccine uptake should be encouraged as rabies is the most lethal disease.

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Q&A