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Assessment of immunization coverage in an urban slum of bangalore city

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ABSTRACT

Introduction: Prophylactic primary immunization given in the first year of life against the vaccine preventable diseases (VPD's) is an effective primary mode of prevention, wherein nearly 2-3 million lives are saved annually[1]·Post-National Immunization Programme era has witnessed a dramatic decrease in the incidence of the VPD's.Albeit active implementation of the programme, illiteracy, fear, lack of transportation and many other reasons has resulted in drop outs and partial immunization cases. The present paper was conducted to assess the coverage of immunization in the children in an urban slum and to know reasons for being a dropout. **Objectives:** To estimate the coverage of primary immunization in an urban slum in Bangalore city and to determine the reasons for partial immunization or non-immunization. **Methodology:** A cross sectional study done among children who have completed one year of age in an urban slum in Bangalore city between the period of August to December 2013.**Results**: In the study conducted among 210 children 198 (94.3%) were completely immunized and 12 (5.7%) were partially immunized of which 6(50 %) abstained due to AEFI. Lack of faith, myth and contraindications contribute to 8.3% each. **Conclusion**: The prime reason behind partial immunization as per our study is the fear of AEFI and abstinence due to the same. Time constraints and contraindications were other factors. Immunization status of the child is also seen to be affected by the mother's literacy status.

Keywords: Children, Immunization, Urbanslum, Vaccine.

Introduction

A vaccine is an immuno-biological substance designed to produce specific protection against a given disease [1]. Prophylactic primary immunization given in the first year of life against the vaccine preventable diseases (VPD's) is an effective primary mode of prevention, wherein nearly 2-3 million lives are saved annually. The Indian version of WHO's Universal Child Immunization programme, under the name Universal Immunization Programme (UIP) was launched in Nov 19th 1985. The UIP became a part of Child Safety and Safe Motherhood (CSSM) programme in 1992 and Reproductive and Child Health (RCH) programme in 1997.Post-National Immunization Programme era has witnessed a dramatic decrease in the incidence of the VPD's. Of the several VPDS, as of now, only small pox has been eradicated which was confirmed in May 1980[1]. Another major milestone in the field of preventive medicine is the elimination of polio in India. Albeit active implementation of the programme illiteracy, fear, lack of transportation and many other unforeseen reasons has resulted in drop outs and partial immunization cases. The present paper was conducted to assess the coverage of immunization in the children in the urban pockets and to know reasons for being a dropout.The immunization in the Expanded Programme on Immunization (EPI) include those against tuberculosis,

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diphtheria, tetanus and pertussis (DTP), polio and measles, as well as protecting newborn children and their mothers against tetanus by vaccination of pregnant women. In some countries, other vaccines (e.g., against hepatitis B, Haemophilus influenzae type B or yellow fever) may be included [2]. The VPD's that are considered in this study are

- Poliomyelitis
- Tuberculosis
- Diphtheria
- Pertussis
- Tetanus
- Hepatitis B and
- Measles.

Table 1: National Immunization Schedule (For Primary Immunization) [3]

AT BIRTH	**OPV + BCG+HEP B**
6TH Week	OPV1 + DPT1+HEP B1
10TH Week	OPV2 + DPT2+HEP B2
14TH Week	OPV3 + DPT3+HEP B3
9TH Month	Measles

Objectives

1. To estimate the coverage of primary immunization in an urban slum in Bangalore city.
2. To determine the reasons for partial immunization or non-immunization.

Methodology

STUDY DESIGN: Cross sectional study.
STUDY AREA: An urban slum in the field practice area of a tertiary care center in Bangalore city.
STUDY POPULATION: Children who have completed one year of age and upto 2 years in the urban slum of the field practice area of a tertiary care center in Bangalore city.
SAMPLE SIZE: 210 children.
SAMPLING METHOD: A sample of 210 children aged between 1 to 2 years of age was selected using WHO/EPI, 30 cluster sampling technique from an urban slum of the field practice area of a tertiary care center in Bangalore city. Immunization coverage of child was assessed through checking of immunization card, presence of BCG scar and interview. If immunization card was not available, then information was sought from the mother of that child. Reasons for partial or no immunization were also asked from mothers.
STUDY DURATION: August to December 2013.
INCLUSION CRITERIA: 1. Children of age 12 to 23 months residing in selected clusters for more than 6 months.
EXCLUSION CRITERIA: 1. Children of age 12 to 23 months residing in selected clusters for less than 6 months. 2. Those are not willing to participate in the study
STATISTICAL ANALYSIS:The data was collected and compiled in MS Excel and analyzed by using Statistical Package for Social Sciences (SPSS) software version 20.0.Descriptive statistics was used as necessary, all qualitative variables were presented as frequency and percentages. All quantitative variables were presented as mean and standard deviation. Chi square test of significance was applied. Expected outcome was to bring out awareness among mothers.
FULL IMMUNIZATION: Child, 1 to 2 years age, who received 3 doses of DPT/OPV/Hep B each, 1 dose of BCG and measles each.
PARTIAL IMMUNIZATION: Child, who missed any one or more of above doses
NO IMMUNIZATION:Child who did not receive even a single dose of vaccine.
FORMULA USED TO CALCULATE DROPOUTS :
Dropout Rate Proportion of children who receive one or more vaccinations but do not return for subsequent doses [4].

$$= \frac{\text{DPT1 cumulative total - DPT3 cumulative total}}{\text{DPT1 cumulative total}} \times 100$$

Results

Among the 210 children between the age groups 1 to 5who were studied, 103(49%) were male and 107(51%) were females.Since it is predominantly occupied by Hindus majority of the children 75% belonged to Hinduism, 17 % were Muslims and the remaining 8% were Christians (Table 2). Of the 210 children 198(94.3%) were found to be fully immunized and the remaining 12(5.7%) were partially immunized of which 9(8.5%) were females and 3 (2.9%) were males. Association between gender and immunization status is not statistically significant. $X^2 = 2.95$, $p > 0.05$(Table 3).
The socioeconomic status was classified based on Modified Kuppusamy's classification (2007)[1]. Majority of the children belonged to lower middle class 105 (50%). The partially immunized were 12 in number of which 8(3.8%) were from the lower middle and 4(1.9%) from upper lower classes. No statistically significant association between socioeconomic status and

immunization status is observed. X^2= 2.152 p>0.05(Table 4). Of the 12 unimmunized children 8 were born to illiterate mothers and 4 were born to mothers who had completed primary schooling.X^2=21.716 p<0.05 which shows that there is statistically significant association between mothers literacy status and child's immunization status(Table -5). Of the 12 who were not immunized 7 were born to fathers who had completed primary school and 4 to those who completed middle school and 1 was born to an illiterate. X^2 = 1.530 p>0.05 not statistically significant (Table -6).

Among the 12 unimmunized children none of them got the dose of measles, 9 of them had not got 3rd dose of DPT3/OPV3/HEP B3 and 3 did not get the first dose of DPT1/OPV1/HEP B1. (Bar Diagram -1).

Formula: Drop-out Rate Proportion of children who receive one or more vaccinations but do not return for subsequent doses=DPT1 cumulative total - DPT3 cumulative total x 100
DPT1 cumulative total
DROP-OUT RATE = (207-201)*100/207= 2.89%

Table 2: Religion wise distribution of population

Religion	Percentage
Hindu	75%
Muslim	17%
Christian	8%

Table 3: Immunization status as per gender

Gender	Total	%	Immunized	%	Partially immunized	%
MALE	103	49	100	97.1	3	2.9
FEMALE	107	51	98	91.6	9	8.4
TOTAL	210	100	198	94.3	12	5.7

X^2 = 2.95, df = 1, p > 0.05

Table 4: Socioeconomic statuses of the study population

Socioeconomic class*	Total	Immunized	%	Partially immunized	%
Upper middle	29	29	13.81	0	0
Lower middle	113	105	50	8	3.81
Upper lower	68	64	30.48	4	1.90
Total	210	198	94.3	12	5.71

*Based on Modified Kuppusamy's scale (2007)[1]
X^2= 2.152, df = 2, p > 0.05

Table 5:Classification based on mothers literacy status

Mothers literacy status	Vaccine		
	Given	Not given	Total
Illiterate	29	8	37
Primary school	123	4	127
Middle school	31	0	31
High school	11	0	11
Intermediate	4	0	4
Total	198	12	210

X^2 =21.716,df=4, p <0.05

Table 6 : Classification based on fathers literacy status

Fathers literacy status	Vaccine		
	Given	Not given	Total
Illiterate	11	1	12
Primary school	102	7	109
Middle school	64	4	68
High school	20	0	20
Intermediate	1	0	1
Total	198	12	210

$X^2 = 1.530$, df=4, p >0.05

Bar diagram 2- Partially immunized children among the study population

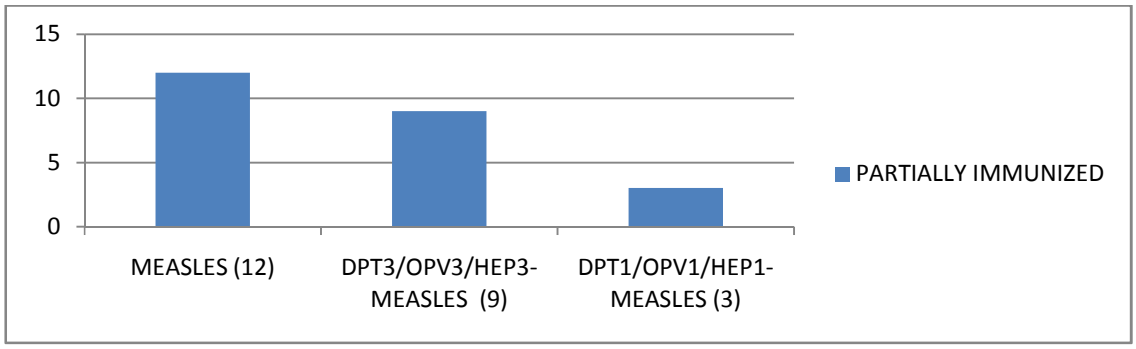

Table 7: Reasons for The Partial Immunization

REASON	NUMBER	PERCENTAGE (%)
Fear of AEFI*	6	50
Time not convenient	3	25
Myth	1	8.3
Lack of faith	1	8.3
Contraindications (febrile convulsions)	1	8.3
Cost	0	0
No health worker	0	0
No stock of vaccine	0	0

AEFI*- Adverse Effect Following Immunization

Discussion

The national immunization coverage is 72% as per the rapid survey on children done in 2013-2014 [5] according to the National fact sheet 2015 and Karnataka state immunization coverage as per the Karnataka fact sheet 2012-13 is 77.6% [6].This study done in an urban slum,reveals coverage of 94.3% which indicates it is well ahead of both the state as well as the national coverage.As per the SEAR-ITAG report 2013 the regional coverage of the third dose of DPT (DPT3) has remained stagnant for the past five years with India and Indonesia accounting for more than 90% of the Region's unimmunized infants[4].In this study it shows only 75% of the unimmunized did not get DPT3. Regional measles containing vaccines (MCV) coverage is targeted to reach at least 95% by 2020 [4]and in this slum it is found to be 94.3% which is worthy of appreciation. The reasons for partial immunization as per the rapid survey of children mentioned in National Fact Sheet 2013-14 had been broadly classified into issues arising due to supply and demand. Luckily, although it's a slum, no issues due to supply were noticed. All the issues were pertaining to the demand aspect of immunization. Transportation and transit time to the vaccination sites

were not much of a problem. Time constraints prove to be a major factor resulting in partial immunization. Fear of injectables and more so fear of AEFI, prevails among most of the mothers. This, in a way can be attributed to the poor literacy status of the mothers. The need for public health education regarding the paramount importance of primary immunization is to be emphasized. Awareness has to be created regarding the management of post vaccination sequelae. The availability of medical and emergency facilities in the local health care centers to attend to the AEFI has to be enlightened upon. Routine motivation of the mothers by the grass root level health workers and the anganwadi staff is bound to manifest with better attendance at the immunization clinics.

Conclusion

This study done in the urban slum reveals immunization coverage of 94.3% which indicates its well ahead of both the state (77.6%) [6]as well as the national average (72%) [5].The prime reason behind partial immunization as per our study is the fear of AEFI and time constraints is one other major factor withholding them from seeking the benefits of vaccination.

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References

1. Park K. Park'sText book of preventive and social medicine. 23rd ed. Jabalpur: Banarsidas bhanot; 2015.pg. 103, 690
2. UNICEF and World Health Organization. Immunization summary.Notes on indicators and data.[Serial Online]. UNICEF and World Health Organization;2014.Availablefrom:http://www.childinfo.org/files/immunization_summary_2012_en.pdf
3. Kishore J. National health programs of India. 11th ed. New Delhi: Century Publications; chap 8; 2014.pg.189
4. Department of Health and Family Welfare. Immunization Handbook for Medical Officers.[Serial Online]. New Delhi:Ministry of Health and Family WelfareGovernment of India; 2008. Available from:http://nihfw.org/pdf/nchrc-publications/immunihandbook.pdf
5. Ministry of Women and Child Development. National fact sheet RSOC [Serial Online]. New Delhi: Ministry of Women and Child Development.Government of India;2015. Availablefrom:http://wcd.nic.in/issnip/National_Fact%20sheet_RSOC%20_02-07-2015.pdf
6. District Level Household and Facility Survey-4. Karnataka Fact Sheet 2012-13 Child immunization[Serial Online].New Delhi: Ministry of Health & Family Welfare, GovernmentofIndia;2012Availablefrom:http://rchiips.org/pdf/dlhs4/report/KA.pdf
7. South-East Asia Regional Immunization Technical Advisory Group (SEAR-ITAG)Report of the fifth meeting. [Serial Online]. New Delhi: World Health Organization; 2014.Available from:http://www.searo.who.int/entity/immunization/documents/sear_itag_meeting_2014.pdf