

COMMUNITY BEHAVIOUR CHANGE COMMUNICATION (CBCC) FOR IMPROVING CHILDHOOD IMMUNIZATION COVERAGE AMONG CHILDREN IN URBAN SLUMS AND BRICK KILNS IN RURAL AREA

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Abstract

Background: Immunization of the children against vaccine preventable diseases is important programme that have contributed in the prevention of childhood morbidity and mortality. High immunization coverage rate is desirable for the same. **Materials and Methods:** Quasi experimental study was conducted in the urban slums in the urban field practice area and brick kilns in the Rural Health and Training Centre area of a private Medical college Pune. Data were collected by similar way in both area, however behavior change communication (BCC) activities were not conducted in comparison area. Each enrolled newborn from urban and rural area had followed till the child was one-year-old to assess status of immunization in both the arms of the study. Booklet on immunization was prepared consisting mainly immunization schedule, diseases prevented by immunization with positive impact on health of child. It was distributed in the intervention area after focus group discussion. Film on Immunization was shown to mothers within one month after birth of baby. **Result:** At 12 months of age 98.4% children in the rural area and 99.2 % children in the urban area were vaccinated against Pentavalent vaccine (1,2,3), OPV (1,2,3), IPV (1,2), Rotavaccine (1,2,3), PCV (1,2) and MR 1 vaccine. All the mothers from rural area told that child cannot be immunized during mild illness, whereas 88.7% mothers from urban area correctly told that child can be immunized during mild illness. The dropout rate from BCG to measles rubella1 (MR1) in the urban slums was 0.78% and in the rural area it was 1.58%. **Conclusion:** Excellent immunization coverage in the selected urban slums as well as rural area has been observed. Immunization coverage at 12 months of age was more in urban area as compared to children from rural area.

INTRODUCTION

Immunization is one of the most cost-effective preventive healthcare intervention in reducing childhood morbidity & mortality by preventing vaccine preventable diseases (VPDs).^[1] Throughout the world each year, an estimated of 40 million pregnant women and 27 million children do not receive the basic immunizations and about two/three million people die from diseases that could be prevented with the available vaccines.^[2] According to the Global Vaccine Action Plan (2011-2020) goal is to meet 90% vaccine coverage at national level

and at district level 80%.^[3] In 1985, Universal immunization Programme(UIP) was launched in India and it was one of the largest health programmes in the world. It provides vaccination against twelve VPDs, including tuberculosis, polio, pertussis, diphtheria, measles, rubella, tetanus, hepatitis B,pneumonia, meningitis, JE (in endemic districts), Rotavirus diarrhoea, and pneumococcal pneumonia.^[4] In India about twenty-seven million pregnant women and infants receives immunization every year but immunization rates through the national immunization program are uneven across the country.^[5] There is discrepancy in immunization coverage in the urban and rural areas. In the urban

areas coverage is 67.4% whereas in rural areas it is 58.5% and there is wide variation across states, districts and regions.^[6] In spite of major producer of vaccines, world's 1/3rd of the unimmunized children are in India.^[7] There is less utilization of health care services in spite of increased accessibility through different programmes, schemes and yojanas by Government. According to NFHS 5 survey (2019-2020) report published recently, in Pune district only 58.1% of children aged between 12-23 months were fully immunized as recorded from either vaccination card or mother's recall history. Considering this fact of low childhood vaccination coverage, Mission Indradhanush (MI) was launched in 2014 by Ministry of Health and Family Welfare, to serve underserved, inaccessible, vulnerable and resistant, populations from the community. Around 6.9 million pregnant women and 25.5 million children were vaccinated between April 2015 to July 2017. After the first two phases of vaccination under this programme substantial increase was seen in full immunisation coverage by 6.7% on an average. To facilitate increase uptake of immunization in October 2017 the Prime minister of India launched Intensified Mission Indradhanush (IMI) programme. Aim was to achieve 90% full immunisation coverage in districts and urban areas with persistently less immunization.^[8] Though there is presence of immunization program and other healthcare services factors like, gender, education, occupation, religion, socio economic status, living conditions, awareness about vaccine preventable diseases etc. appear to play a significant role. Considering this present study is planned with the objectives to assess change in immunization coverage of infants after behaviour change communication among parents and to understand barriers in immunization in the community.

MATERIALS AND METHODS

Present Quasi experimental study was conducted in the urban slums in the urban field practice area and brick kilns in the Rural Health and Training Centre area of a private Medical college Pune. In urban area total 13 slums are there. Out of these 13 slums 7 were selected as intervention area and remaining 6 slums were selected as comparison area. Similarly, in the rural area out of 40 brick-kilns, 20 brick kilns were considered as intervention area and remaining as control area. New-born babies in the selected clusters were included in the study. Respondents were mothers of the new born babies. Study sample was calculated as follows- To get 20% absolute change in immunization status, by considering 80% power and 5% level of significance minimum sample size was 164 (82 each in intervention and comparison area). It was calculated as follows- $(z\alpha/2 + z\beta)^2 (p_1q_1 + p_2q_2) / (p_1 - p_2)^2$. Considering 10% loss to follow up the sample size will be 180 each in urban area and in rural area. Out of this

180 sample size 90 will be in intervention area and 90 in comparison area in both urban and rural area

Data Collection-

Data were collected by similar way in both area, however behavior change communication (BCC) activities were not conducted in comparison area, but after completion of project information booklet on immunization was distributed to participants in the comparison area. Routine MCH services had continued with same intensity in both intervention and comparison area. Accredited Social Health Activist (ASHA) and Anganwadi workers (AWW) from field practice area had trained for data collection. These ASHA and AWW had enrolled all the births in their area.

Each enrolled newborn from urban and rural area had followed till the child was one-year-old to assess status of immunization in both the arms of the study.

Total five visits were given to the house of the beneficiaries as follows – First visit in the first week after the birth of the baby, second visit at the age of two months of baby third visit at the age of three months, fourth visit at the age of 9 months and fifth visit after 12 months of age. Complete immunization at 12 months was assessed. Information on sociodemographic variables such as mother's age, education, type of house, characteristics of the child such as age, gender, birth order, type of delivery were obtained. Information about immunization of the children was obtained mostly from vaccination cards, but if vaccination cards were not available then it is obtained by parental recall.

Interventions-

1. Booklet on immunization was prepared consisting mainly immunization schedule, diseases prevented by immunization with positive impact on health of child. It was distributed in the intervention area after focus group discussion.

2. Film on Immunization was shown to mothers within one month after birth of baby.

Operational definitions used in the study

1. Fully immunized Children- Children at 12 months of age who have received BCG, OPV zero dose and Hepatitis B at birth, Pentavalent 1, OPV1, Rotavirus vaccine 1, IPV 1, PCV1 at 6 weeks, Pentavalent 2, OPV2, Rotavirus vaccine 2, at 10 weeks, Pentavalent 3, OPV3, Rotavirus vaccine 3, IPV 2 and PCV2 at 14 weeks, Measles Rubella (MR) and vitamin A at 9 months.

2. Partially immunized- All other children were considered as partially immunize

c. Unimmunized children - Those children who have not received a single dose of the vaccine.

3. Dropout rate of the vaccine - It is the difference between the first and the last dose of the vaccine. and it is an indicator of the effectiveness of the immunization programme.

RESULTS

Among 191 participants from rural area female children contributes to 51.3% and male children contributes to 48.7%. In the urban area (n=265) female children contributes to 47.2% and male children contributes to 52.8%. Maximum children from rural (60.7%) and urban (64.9%) were first born children. Approximately 82.2% mothers of the participants from rural area and 89.4% mothers from urban area were in the age group of 21-30 years. [Table 1]

About 60.2% mothers from rural area and 100% mothers from urban area responded correctly that immediately after birth immunization of the baby starts. All the mothers from rural area told that child cannot be immunized during mild illness, whereas 88.7% mothers from urban area correctly told that child can be immunized during mild illness. All the

mothers from urban and rural area were knowing that they can vaccinate their child after the date of vaccination if they missed the vaccination date. [Table 2]

It was observed that all the participants were vaccinated against BCG, OPV -0 dose, Hepatitis B - 0 dose, Penta vaccine 1 and 2, OPV 1 and 2 and Rota vaccine 1 and 2. Approximately 97.9% participants in the rural area and 99.6% participants in the urban area had vaccinated against penta valent 3 vaccine, OPV3, IPV 3 and Rotavirus 3 vaccine. About 98.4% participants from rural area and 99.2% participants from urban area first dose of Measles and Rubella (MR) vaccine. [Table 3]

The dropout rate from BCG to measles rubella (MR1) in the urban slums was 0.78% and in the rural area it was 1.58%. Overall there is low dropout rate both in urban and rural area. [Table 4]

Table 1: Distribution of participants according to socio-demographic variables.

Variable		Rural		Urban	
		Frequency(n=191)	Percentage(%)	Frequency(n=265)	Percentage(%)
Age of the mother	>30	12	6.3	13	4.9
	≤20	22	11.5	15	5.7
	21-30	157	82.2	237	89.4
Gender of the child	Female	98	51.3	125	47.2
	Male	93	48.7	140	52.8
Type of delivery	LSCS	76	39.8	143	54.0
	Normal	115	60.2	122	46.0
Birth Order	1	116	60.7	172	64.9
	2	68	35.6	73	27.5
	3	4	2.1	20	7.5
	>3	3	1.6	0	0.0

Table 2: Distribution of participants according to knowledge of mothers about childhood immunization

Variables		Rural		Urban	
		Frequency	%	Frequency	%
After birth of baby when immunization starts	10 Weeks	3	1.6	0	0.0
	6 Weeks	69	36.1	0	0.0
	Don't Know	4	2.1	0	0.0
	Immediately after birth	115	60.2	265	100.0
Do you think that because of vaccination we can prevent infectious diseases?	Yes	191	100.0	265	100.0
During mild illness can child be vaccinated ?	No	191	100.0	30	11.3
	Yes	0	0.0	235	88.7
Do you think that premature babies can be vaccinated	No	117	61.3	98	37.0
	Yes	74	38.7	167	63.0
If you missed the vaccination date then after that date will you give vaccination to your child ?	No	0	0.0	0	0.0
	Yes	191	100.0	265	100.0

Table 3: Distribution of participants according to vaccine coverage

Name of Vaccine	Yes/No	Rural	Urban
		Frequency(%) (n=191)	Frequency (%) (n=265)
BCG, OPV- 0 dose, Hepatitis B – 0 dose	Yes	189(99%)	265(100%)
	No	2 (1%)	0(0%)
Penta vaccine 1 , OPV1, Rota vaccine1, IPV1, PCV1	Yes	189(99%)	265(100%)
	No	2(1%)	0(0%)
Penta vaccine 2, OPV 2, Rota vaccine 2	Yes	189(99%)	265(100%)
	No	2(1%)	0(0%)
Penta vaccine3 , OPV 3, Rota vaccine 2, IPV 2, PCV 2	Yes	187(97.9%)	264(99.6%)
	No	4(2.1%)	1(0.4%)
MR 1	Yes	188(98.4%)	263(99.2%)
	No	3(1.6%)	2(0.8%)

Table 4: Distribution of participants according to dropout rates of the vaccine

Dropout rate	Urban (%)	Rural (%)
BCG to measles rubella 1(MR1)	0.78%	1.58%
Pentavalent 1 to pentavalent 3	0.38%	1.06%
OPV1 to OPV 3	0.38%	1.59%
Pentavalent 3 to measles rubella 1(MR1)	0.78%	0.76%

DISCUSSION

The most cost effective intervention that could improve the health status of the children is vaccination. In the present study maximum mothers' i.e. 82.2% from the rural area and 89.4 % were in the age group of 21-30 years. Study conducted by Tiwari et al and Reja R et al revealed that $\geq 70\%$ mothers were in the age group of 21 to 30 years. The present study results were comparable with the study conducted by Bhagyashree Jogdeo et al who reported that 80% mothers were in the age group of 21-30 years. Majority of the participants were first born in the present study. This is in line with the study findings by Dhalaria P et al.^[9-13]

Mothers with adequate knowledge about immunization schedule were more likely to fully vaccinate their children compared to mothers with inadequate knowledge.^[14] In the present study knowledge of mothers about childhood immunization from urban slums was better than mothers from rural area (Brick kilns). All the mothers from rural area told that child cannot be vaccinated during mild illness but 88.7% mothers from urban slum were aware that child can be vaccinated during mild illness. These study results were comparable to a previous study by Reja R et al,^[10] who observed that mothers from urban area had better knowledge about childhood immunization than mothers from rural area. There was a substantial increase in vaccination uptake of all primary vaccinations between NFHS-4 (56%) and NFHS-5(74%).^[15] According to the NFHS 5 report, in India, fully vaccinated children between the age of 12-23 months were 75.5% in the urban area and 76.8% in the rural area.^[16] Similarly, in Maharashtra (NFHS 5 report) 74% of children between the age of 12-23 months were fully vaccinated.^[9] In the present study 98.4% children in the rural area and 99.2% children in the urban area were fully vaccinated. It might be because of Intensified Mission Indradhanush programme and sustainability through routine immunization programme. Also because of the active involvement of all the stake holders and vigilance to fill the gaps in the earlier immunization programme. These findings were comparable with study led by C M Singh et al conducted among 12-23 months' children in low performing areas of Bihar.^[17] While low prevalence of fully immunized children were revealed by other studies conducted in various parts of India like study conducted by Tiwari et al,^[9] Khargekar NC et al and Vohra R et al.^[18,19] To achieve high full immunization coverage rates reduction in the dropout rates is a crucial factor. To prevent mortality and morbidity from

vaccine preventable diseases low dropout rates are essential. In India Improvement in the rates of full immunization coverage and dropout of the vaccine might be due to different policy measures taken in the last decade.^[13] Present study had shown overall low dropout rates from BCG to measles rubella 1(MR1), Pentavalent 1 to pentavalent 3, OPV1 to OPV 3, pentavalent 3 to measles rubella 1(MR1). The BCG to measles rubella 1(MR1) rate was preferred, as it can measure dropout over a longer time interval between doses. The Pentavalent 1 to pentavalent 3 and d OPV1 to OPV 3 dropout rate measures the ability of the health workers to reach the child with the same antigen(s) multiple times. Previous studies by Vohra R et al,^[18] and Rashmi Sharma et al had shown high drop rates which contradicts the present study findings.^[20] This could be due to the fact that these studies were prior to the implementation of Mission Indradhanush and Intensified Mission Indradhanush in the country.

CONCLUSION

High immunization coverage in the selected urban slums as well as rural area has been observed. Mothers from urban area had adequate knowledge about immunization as compared to mothers from rural area. Also it was observed that immunization coverage at age of 12 months was more in urban area as compared to children from rural area.

Recommendations: To improve the knowledge about childhood immunization among mothers from rural area, sustainable health education activities should be conducted.

Limitations: The study was carried out in field practice area of only one Medical college of Pune district, hence we cannot generalize the results to the entire district.

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