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Original Article

KAP Study on Immunization of Children in a City of North India – A 30 Cluster Survey

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Abstract:

Background: To determine the knowledge, attitude and practices about immunization among respondents of children aged 12-23 months.
Methods: A total of 510 respondents were interviewed in the urban slums of Lucknow district of India, using 30 cluster sampling technique from January 2005 to April 2005. A pre-tested structured questionnaire was used to elicit the information about the knowledge, attitude and practices of the respondents regarding immunization.
Results: Knowledge regarding the disease prevented, number of doses and correct age of administration of BCG was highest among all the categories of respondents. The paramedical worker was the main source of information to the respondents of completely (52.0%) and partially immunized (48.5%) children while community leaders for unimmunized children. Those availing private facilities were more completely immunized, as compared to the government facilities. 55.8% of those who took 20 minutes to reach the immunization site were completely immunized as compared to 64.1% of those who took more than 20 minutes.
Conclusion: Considering the incomplete knowledge, and inappropriate practices of the people, the policy makers and medical professionals require Herculean efforts to raise the knowledge and to break the old beliefs of the people
Key Words: Immunization, KAP study, 30 cluster sampling

Introduction:

Immunization is one of the best indicators to evaluate the health outcomes and services distributed across social and economic groups. It is also one of the most cost-effective interventions to prevent a series of major illnesses, particularly in environments where children are undernourished and die from preventable diseases. Given the extensive social benefits of immunization, any inequities in the knowledge, attitude and practices that leave out large sections of the most deprived populations are a cause for serious policy concern. There is evidence of inequalities in immunization in India, despite the fact that childhood immunization has been an important part of maternal and child health services since the 1940s.[1]

Even more dismal is the situation of the urban slums, which are mushrooming at an unprecedented rate and are accompanied by the problems of poverty, ill health and under- nutrition. Therefore, this study was done in the urban slums of Lucknow, the capital city of the largest state of the country, located in North India, to know the existing gaps in the awareness of the people regarding immunization.

Materials and Methods:

A total of 510 households having children in the age group 12-23 months on the date of interview, were included in the study using the WHO 30 cluster survey methodology[2] from January 2005 to April 2005. The sample size was calculated by the following formula - Sample size (n) = $Z_{(1-\alpha/2)}^2$ pq / d^2 (At 95% confidence limits).

To ensure the adequacy of the sample, proportion of fully immunized children (p), aged 12-23 months, in Uttar Pradesh, according to National Family Health Survey-2 [3] (NFHS-2) was taken as 0.21. A confidence limit of 95% and an absolute precision (d) of 5% of prevalence were taken for the calculation. {(3.86x0.21x0.79)/ (0.05x0.05) = 254.8 ≈ 255}. This was then multiplied by a design effect of 2[4] to account for cluster randomization. Thus the final sample size was calculated to be = 255x 2 = 510. With 30 clusters to be studied, the number of respondents selected per cluster was therefore 510/30=17.

In the second stage of the sampling, the first household was selected randomly and then the subsequent households were selected contiguously till the completion of the required sample size. If the required 17 respondents could not be found in the selected cluster then the area adjacent to the cluster was selected for the completion. If a household had more than one eligible child, only one was randomly selected. Only those respondents who were residing in the area for last six months or more were included in the study. The primary respondent was the mother. In the absence of mother, the father acted as the respondent. In case of absence of both of them, the adult in the household who remained with the child for most of the time or had taken the child for immunization on at least one occasion was interviewed.

The interview schedule consisted questions about knowledge, attitude and practices (KAP) and also the background characteristics of the child and the family. The content validity of the questionnaire was established by an extensive literature review and after pilot testing. Background questions covered demographic, social, and economical status. The results were categorized into three groups of Completely, Partially and Unimmunized children. The child was considered as completely immunized if he/she had received one dose each of BCG and measles, and three doses each of DPT and polio (excluding Polio 0 dose) by his/her first birthday. Those who had missed any one vaccine out of the six primary vaccines were described as "partially immunized" and those children who had not received any vaccine up to the 12 months of age were defined as "unimmunized"[5]. To ascertain this information, the respondents were asked to produce immunization card if they had any. In the case of unavailability of the card, the information regarding the administration of vaccines was recorded on the basis of the respondent's memory. Further analysis was done according to these three categories to know about the knowledge, attitude and practices of the respondents.

Statistical Analysis

Data was tabulated on Microsoft Excel sheet and analysed using the software SPSS 10.0.1 for Windows. Discrete data was analysed using Pearson's Chi-square test for normal distribution. P values < 0.05 were considered significant. In case the expected values in some cells were <5, Fischer's Exact test was used in place of Chi-square test.

Results:

The analysis of the data regarding the background characteristics revealed that of all the studied households, most (69%) belonged to Hindus while 30.6% belonged to Muslims. 43.5% of the households belonged to people of backward caste while scheduled caste and tribes constituted 36.4%. 62.8% had a joint family. It was noticed that about two-fifth of the mothers interviewed were illiterate, while only 17.2% were just literate to primary school passed. Mothers with graduation or higher educational status constituted only about one-tenth of the total. It was observed that more than half of the households belonged to class IV socio- economic status, i.e. upper lower class, which was defined according to the modified Kuppuswamy scale. Households belonging to lower (class V) and lower middle (class III) class constituted 20.4% and 18.8% respectively of the total. The distribution of gender, delivery place and the birth order of the children are shown in Table 1.

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Table 1: Distribution Of Children (12-23 Months) According To Their Biosocial Characteristics

Biosocial Characteristics of the child		Number	Percentage
Gender			
Male		251	49.2
Female		259	50.8
Place of Delivery			
Institutional (n_1 = 255)		255	50.0
Home (n_2 = 255)	Trained	122	23.9
	Untrained	133	26.1
Birth order			
1st		140	27.5
2nd		150	29.4
3rd and above		220	43.1
Immunization Status			
Fully Immunized* (N_1)		225	44.1
Partially Immunized** (N_2)		163	32.0
Unimmunized (N_3)		122	23.9

*Children who had taken 1 BCG, 3 DPT/OPV and 1 Measles within Ist year of life

**Children who had missed any one or more than one vaccine out of 1 BCG, 3 DPT/OPV and 1Measles within Ist year of life

About three- fourth of the respondents of completely immunized children knew about the disease prevented by BCG vaccine, which was more than that of any other vaccine and of any other category. Surprisingly, 41.2% of unimmunized children's respondents had knowledge about the protective role of routine polio vaccine, which was higher than the respondents of partially immunized children (table not given). Knowledge of respondents about the age and doses of individual vaccines is depicted in Table 2.

Table 2: Knowledge of respondents about the age and doses of individual vaccines

Vaccines	Completely Immunized (N_1=225)		Partially Immunized (N_2=163)		Unimmunized (N_3=122)	
	Age	Doses	Age	Doses	Age	Doses
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
BCG	153 (68.0)	143 (63.6)	45 (27.6)	50 (30.7)	7 (5.7)	6 (4.9)
OPV*	45 (20.0)	39 (17.3)	12 (7.4)	6 (3.7)	4 (3.3)	0 (0)
DPT	106 (47.1)	120 (53.3)	34 (20.9)	36 (22.1)	3 (2.5)	3 (2.5)
Measles	105 (46.7)	118 (52.7)	15 (9.2)	18 (11.0)	1 (0.8)	1 (0.8)
Vitamin A	43 (19.1)	31 (13.8)	0 (0)	0 (0)	0 (0)	0 (0)
Hepatitis	16 (7.1)	7 (3.1)	6 (3.7)	1 (0.6)	0 (0)	0 (0)
Others	0 (0)	7 (3.1)	0 (0)	0 (0)	0 (0)	0 (0)

*Denotes the oral polio vaccine given during routine immunization

Auxiliary Nurse Midwife (ANM), the paramedical worker, was found to be the major source of information in the attendants of completely (52.0%) and partially immunized (48.5%) children; community leaders, on the other hand were found to be the most important source of information among unimmunized children (Table 3).

Table 3: Distribution of source of information among respondents about immunisation

Source	Completely Immunized (N_1=225)		Partially Immunized (N_2=163)		Unimmunized (N_3=122)	
	N	%	N	%	N	%
ANM	117	52.0	79	48.5	8	6.6
AWW*	60	26.7	52	31.9	5	4.1
Radio	5	2.2	1	0.6	3	2.5
TV	33	14.7	11	6.8	3	2.5
NGO/Health Volunteers	0	0	0	0	1	0.2
Community Leaders	0	0	1	0.6	13	10.7
Friends & Relatives	2	0.9	0	0	0	0
Doctors	5	2.2	0	0	0	0

*Anganwadi worker

While 63.4% of those who availed private facilities were completely immunized, a lesser proportion i.e. 57.1% of those who availed government facilities were completely immunized (Table 4). However the association was not found to be significant.

Table 4: Type of Health care facility visited by the respondents for immunization of the child

Type of Place of Immunization	Completely Immunized (N_1=225)		Partially Immunized (N_2=163)	
	N	%	N	%
Government (n=296)	169	57.1%	127	42.9%
Private (n=71)	45	63.4%	26	36.6%
Outreach (n=21)	11	52.4%	10	47.6%

$\chi 2$ =1.215, d =2, p >0.545

It was observed from the table 5 that time taken for reaching the health care facility did not affect the immunization

Table 5: Distribution of respondents according to time taken for reaching the health care facility

Reaching Time	Completely Immunized (N_1=225)		Partially Immunized (N_2=163)	
	N	%	N	%
20 min. (n=285)	159	55.8%	126	44.2%
More than 20 min. (n=103)	66	64.1%	37	35.9%

χ^2 =2.13, d =1, p>0.144

With the increase in educational status of the mother, the percentage of immunization received from the private sector increased significantly (Table 6)

Table 6: Preference of place of immunization according to mother's educational status

Mother's Education	Place of Immunization							
	Level of health care						Private	
	Primary *		Secondary **		Tertiary ***			
	N	%	N	%	N	%	N	%
Illiterate - Primary school (n=187)	80	42.8%	76	40.6%	21	11.2%	10	5.3%
Middle school- High School (n=108)	22	20.4%	47	43.5%	11	10.2%	28	25.9%
Intermediate - Graduate & above (n=93)	6	6.5%	46	49.5%	10	10.8%	31	33.3%

$\chi 2$=66.55, d =6, p < 0.001

* includes sub centre, Primary Health Centre (PHC), urban health centers and outreach

**includes mostly Maternal and Child health (MCH) centers and few district hospital

*** includes Medical college and other specialty hospitals

Discussion:

Despite all the efforts taken by the Government of India and international agencies, the proportion of unimmunized and partially immunized children remain quite high and we lag far behind the National socio-demographic goal of 85% coverage of all the vaccines[6] .There is an urgent need to increase the coverage of UIP (Universal Immunization Programme) vaccines. This necessitates the information on the existing knowledge, attitude and practices of the society with respect to the different aspects of immunization. This study therefore provides us an important insight into the existing level of awareness among the people and the areas that need attention.

In this study, the knowledge of the respondents of completely immunized children regarding BCG vaccine by the disease it prevents (76.4%), correct age of administration (68%), as well as its correct number of doses (63.6%) was quite impressive. This could be attributed to the fact that the parents are more concerned about the health of the newborn child and since BCG is the first vaccine to be administered, most of them get their child immunized with the vaccine and if not, they at least acquire the knowledge about it. Less than half of the respondents knew about the correct age of DPT and measles vaccine. This could be attributed to the triple dose schedule of DPT, which makes it difficult for people to remember the schedule. The confusion is also compounded by the administration of hepatitis B, which is given on the same site. Those completely immunised, found it easy to remember the age of measles, because it is administered in a single dose and at the last. On the other hand most of those with partial immunisation, had not received the measles vaccine and therefore failed to recollect the correct age. Even if they had received the vaccine, they remembered little about the age because of less interest, which had led to their partial immunized status. Those who had received no vaccination were least expected to know/remember the correct age. The percentages reported in this study were lower than that reported by M.C. Singh et al[7] in Wardha where the corresponding percentages for DPT/OPV were 60% and 45% for measles. The difference could be because of different biosocial characteristics of the respondents and different implementation strategies. The information, education and communication (IEC) activities focused on immunization need to be implemented with more sincere efforts with special focus on the Partial and Unimmunized group of people.

About two third of the attendants of completely and partially immunized children received the information from ANM (Auxiliary Nurse Midwife) and the Anganwadi workers. This was because majority of the respondents had availed the services at primary and secondary health care level and these health functionaries seem to be most readily available and accessible to the people. The health personnel at the primary level, mass media and other means of IEC activities should be harnessed to the maximum extent so as to increase the knowledge and change the attitude regarding immunization among people.

The community leaders played a significant role in imparting knowledge to the unimmunized group, although only to about one- tenth of the unimmunized group, as they are the only ones who can reach out to the masses and motivate them. Our findings are consistent with the findings of M.C. Singh et. al[7] who found that health workers and the health personnel were the major sources of information regarding immunization (78%) followed by relatives (9%) and mass media like radio and television (7%). N.Gulati et al[8] in their study in Delhi also found that the most important source of information was the health staff.

Regarding practices, it was observed that a greater proportion of those who availed government and outreach facilities remained partially immunized as compared to the private facilities, although the association was not statistically significant ($p>0.545$). This may have been due to dissatisfaction with the previous visits to government health institutions and uncertainty of outreach services. A significant finding observed was that time taken to reach the health facility had no bearing on the immunization status of the child, indicating that in presence of proper motivation, the distance of the health facility does not act as a barrier for availing the immunization services.

It was also observed that the mothers with a higher level of education preferred to get their child vaccinated at a secondary health care facility or a private facility. This may be due to the fact that with the improvement in educational status the awareness about various private facilities increases and also the satisfaction with primary health care facilities decreases. There is also a possibility that people with higher educational status are economically well off and thus, have the resources to pay for the private services. Our findings are consistent with the findings of NFHS-2[9]. The government health facilities, specially the primary level health facilities need to be made more user-friendly by making it available and accessible to all and also by reducing the waiting time so that the burden on the health system is distributed equitably and the potential of the health system is harnessed efficiently for the achievement of the goal of "Health for All". The insufficient knowledge of the people requires sincere efforts on the part of the health professionals and the policy makers to plan and execute the IEC initiatives.

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Conclusion:

Though a considerable number of respondents had satisfactory knowledge about the Universal immunization programme, respondents' inability to name or identify diseases other than tuberculosis and poliomyelitis indicate that health education should be emphasized to enhance respondents' knowledge about the complete program. Also gaps regarding the knowledge about correct age of administration, doses, place of vaccination should be filled along with the improvement in the literacy status of the mothers. This would require appropriate information dissemination, aggressive campaigning and family involvement as crucial to the success of the programme.

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