Child Immunization Coverage of Some Rural Belt in Relation to Socio-economic Factors of Jalpaiguri and Darjeeling District of West Bengal

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ABSTRACT The present study aimed to assess the immunization coverage, prevalence of diseases and child mortality of Jalpaiguri and Darjeeling Districts of West Bengal. A cross sectional study was performed on 1748 families that covered 1148 boys and 1116 girls at different blocks of Jalpaiguri and Darjeeling Districts of West Bengal. The study was made by different pre structured questioners to know the education level of parents, immunization knowledge, diseases susceptibility, child mortality etc. The immunization coverage was identified by checking the immunization card and questioners. The result showed that the immunization against Bacillus Calmette Guerin (BCG), Diphtheria, Pertussis and Tetanus (DPT), Polio and Measles coverage in the study area is much lower than the national coverage level. The BCG coverage is 81.36% for boys and 80.65% for girls. The DPT coverage is 61.06% and 61.92% for boys and girls respectively. The polio coverage for boys is 61.32% and for girls is 63.17%. The measles coverage for boys is 53.75% and for girls is 52.24%. We found that 49.25% parents produced immunization card. The rural mothers having low immunization knowledge. Disease susceptibility and mortality rate of the children are also high. Proper steps should be taken from the government side to change the attitude and practices and to improve the knowledge and awareness for better immunization and coverage.

INTRODUCTION

Universal Immunization Programme (UIP) was introduced in India in 1985-86 for complete immunization of the children. The Reproductive and Child Health Programme (RCH) was launched in October 1997 and it aims was to universalize the immunization, antenatal care etc. The RCH phase II was introduced while forming a part of the Xth plan which was based on lessons learnt from RCH phase-I.

The World Health assembly resolved to eradicate poliomyelitis from the world by the year 2000 AD reported by Grachev (1994).

The immediate objective of RCH-II, as envisioned in National Population Policy (NPP) 2000, is to achieve universal immunization of children against all vaccine preventable disease by 2010 reported by Ministry of Health and Family Welfare (1999). To achieve the goal universal immunization has introduced in every district of

our country. In spite of the UIP several reports like Lodha et al. (2000) focused that the prevalence of diphtheria in North India is also high. According to Dalal et al. (2005) the fully immunized children in Goa is not up to the satisfactory, though the importance of universal implementation of BCG vaccination in Kerala as per Pulickal et al (2007) is also good.

People of North Bengal are comparatively illiterate and poor workers. Both the parents need to go for hard work everyday to earn money for the feeding of their family member including children. They do not have the time and knowledge to understand the other essential elements of life like education, immunization etc. Keeping this in mind we wanted to see the immunization status of the children of economically poor class of Darjeeling and Jalpaiguri districts, West Bengal.

Experimental Design

A cross sectional study was conducted in the two districts of North Bengal (Darjeeling and Jalpaiguri) between December 2006 - March 2008. From these two districts 1768 families were selected randomly for data collection. We got 1148

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boys and 1116 girls of 1 to 7 years of age from the selected families. We collected the information to assess the immunization coverage with the evaluation of child immunization card and parents interview. We also tried to find out the reasons for non-immunization, dropouts, disease susceptibility and the mortality of children. To know the knowledge of parents about child immunization, we made a score table where 0.25 score was allotted for the name of the vaccine, 0.25 score for the doses of the vaccine, 0.25 score for the time schedule and 0.25 score for the function of the vaccine. In that way 1(one) mark is given for one vaccine. As we considered four vaccines (BCG, DPT, Polio and Measles) so the highest score will be four

OBSERVATION

We collected 2264 children from the 1768 families. Table 1 is showing the distribution of boys and girls according to their age.

Both father and mother from 313 families out of 1768 families were participated in our study and included to know the education level. We found that 25.95% father and 30.96% mother are illiterate out of the study area. About 3% fathers and about 7 % mothers have education up to class-X or above. The number in percentage of illiterate and primary educated father is 65.49% and mother is 67.45% (Table 2).

We found that 18.64% boys and 19.35% girls

Table 1: Age wise distribution of boys and girls.

Age (year)	Boys	Girls	Total
1-2	197	199	396
2-3	185	202	387
3-4	227	206	433
4-5	193	185	378
5-7	346	324	670
Total	1148	1116	2264

Table 4: Immunization status of DPT.

Age (year)	Boys			Girls		
	Non-immunized	Partially immunized	Fully immunized	Non-immunized	Partially immunized	Fully immunized
1-2	27	38	132	32	40	127
2-3	40	37	108	28	51	123
3-4	42	41	144	29	43	134
4-5	35	42	116	25	49	111
5-7	72	73	201	67	61	196
Total	216 (18.82)	231 (20.12)	701 (61.06)	181 (16.22)	244 (21.86)	691 (61.92)

Table 2: Education level of parents in the study zone.

Education Level	Father		Mother	
	No.	%	No.	%
Illiterate	170	25.95	442	30.96
Primary	259	39.54	520	36.47
Class V-VIII	138	21.06	228	15.99
Class IX-X	69	10.53	178	12.48
Class XI-XII	13	1.98	43	6.56
Class above XII	6	0.92	15	1.05
Total	655		1426	

did not-receive of BCG vaccine. Only 81.36% boys and 80.65% girls were immunized with BCG (Table 3). This indicates slightly lower coverage of BCG vaccination in the two districts as compared to North East (NE) states coverage (BCG-84.1%) studied by Yadav and Singh (2004) as well as to national coverage (BCG-85.9%) studied by Singh and Yadav (2000).

The table (Table 4) of DPT focused that 18.82% boys and 16.22% girls were not immunized with DPT vaccine. The value of partially immunized with DPT were 20.12% for boys and 21.86% for girls. So, the combined numbers of non-immunized and partially immunized for boys and girls were 38.94% and 38.08%. 61.06% boys and 61.92% girls were fully immunized with DPT. The coverage with DPT vaccine of the two districts

Table 3: Immunization status of BCG.

Age (year)	Boys		Girls	
	Non-immunized	Immunized	Non-immunized	Immunized
	No.	No.	No.	No.
1-2	34	163	37	162
2-3	37	148	34	168
3-4	41	186	42	164
4-5	38	155	39	146
5-7	64	282	64	260
Total	214 (18.64)	934 (81.36)	216 (19.35)	900 (80.65)

Table 5: Immunization coverage of Polio.

Age (year)	Boys			Girls		
	Non-immunized	Partially immunized	Fully immunized	Non-immunized	Partially immunized	Fully immunized
1-2	22	44	131	32	40	127
2-3	40	37	108	28	49	125
3-4	38	43	146	30	37	139
4-5	35	42	116	29	41	115
5-7	70	73	203	65	60	199
Total	205 (17.86%)	239 (20.82%)	704 (61.32%)	184 (16.49%)	227 (20.34%)	705 (63.17%)

under the study area is much less than the coverage of NE states coverage (67.6%) studied by Yadav and Singh (2004) and National coverage DPT (80.8%) studied by Singh and Yadav (2000).

We found that 17.86% boys and 16.49% girls were not received polio vaccine. 20.82% boys and 20.34% girls were partially immunized with polio vaccine (Table 5). So, the added number of these two is 38.68% for boys and 36.83% for girls. 61.32% boys and 63.17% girls were fully immunized with polio vaccine. The coverage level of polio vaccine at study area of the two districts is much less than the NE states coverage (67.7%) studied by Yadav and Singh (2004) and national coverage (81%) studied by Singh and Yadav (2000).

From the measles (Table 6) we found that 46.25% boys and 47.76% girls were not immunized with measles vaccine. The remaining 53.75% boys

and 52.24% girls were fully immunized with measles. The coverage is quiet similar to North East states coverage (54.3%) studied by Yadav and Singh (2004) but it is much less than the national coverage (66.5%) studied by Singh and Yadav (2000). A study in Naxalbari indicated the measles coverage is 51.2% reported by Mukherjee et al. (1990), which is also less than the national coverage.

We collected the data of child immunization mostly with the help of immunization card. Table 7 focused the number and percent of the children produced card, not produced card, lost card or without card. The parents of about 49.25% children were produced immunization card, which is not a good percent. The added value of lost card and without immunization card holders children's is 20.58%.

The parents were placed in a four scored table to know the knowledge about child immunization

Table 6: Immunization status of measles.

Age (year)	Boys		Girls	
	Non-immunized	Immunized	Non-immunized	Immunized
	No.	No.	No.	No.
1-2	79	118	89	110
2-3	75	110	96	106
3-4	111	116	99	107
4-5	94	99	86	99
5-7	172	174	163	161
Total	531 (46.25%)	617 (53.75%)	533 (47.76%)	583 (52.24%)

Table 8: Knowledge about vaccine on the basis of 4 (four) point score.

Scores	Father		Mother	
	No.	%	No.	%
0	374	57.09	677	47.48
0.25-1	202	30.84	473	33.17
1.25-2	59	9.00	178	12.48
2.25-3	13	1.98	75	5.26
3.25-4	07	1.06	23	1.61
Total	655		1426	

Table 7: Immunization card.

Age (year)	Card produced		Card present but not produced		Card lost		Without card	
	No.	%	No.	%	No.	%	No.	%
1-2	244	61.62	109	27.53	22	5.55	21	5.30
2-3	221	57.10	93	24.03	39	10.08	34	8.79
3-4	208	48.04	132	30.48	48	11.09	45	10.39
4-5	189	50.00	107	28.31	52	13.76	30	7.93
5-7	253	37.76	242	36.12	126	18.81	49	7.31
Total	1115	49.25	683	30.17	287	12.67	179	7.91

(Table 8). We found that 57.09% father and 47.48% mother got 0 score. Only 1.06% father and 1.61% mother have got score 4. The added value of 0 and 1 score of father is 87.93% and of mother is 80.65%. We also found that the parents got scored because most of them know the name of the vaccines. So, the knowledge about immunization of the parents is very poor.

The study indicated that the knowledge about immunization is directly related to education (Table 9), which has been supported by Streatgelt (1990). Parents with higher education got the higher score, the illiterate parents failed to achieve higher scores like 3 and 4. Father with class VIII and above education achieved the highest score. More number of mother with class VIII and above education achieved highest score.

We found 552 boys were fully immunized, 394 were partially immunized and 202 were non immunized. Similarly 551 girls were fully immunized, 361 were partially immunized and 204 were non immunized. In this study it has been focused that the negligence is the important factor out of six

factors considered here for non-immunization and dropouts (Table 10).

The children of the rural belt with poor socio economic background are suffering from different types of diseases (Table 11). Children usually suffer from high fever, common cold and diarrhoea. We included the children those are suffering from high fever, common cold and diarrhoea, 3 times or more in a year. We found 53.58% children suffering from high fever, 66.03% suffering from common cold and 61.26% suffering from diarrhoea. Malaria and jaundice were two major diseases of the rural belt. 28.75% children were suffering from malaria and 32.29% children were suffering from jaundice.

Mortality is the good indicator of immunization and health status of the children. Out of 234 dead children 110 were boys and 124 were girls. We found that the cause of 58 dead was unknown, 49 child died in diarrhoea (Table 12).

A study in some blocks of West Bengal indicated that 45.9% children were fully immunized studied by Mukherjee et al. (1990), they

Table 9: Literacy and immunization knowledge.

Literacy	No.	Scores of Father					No.	Scores of Mother				
		0	1	2	3	4		0	1	2	3	4
Illiterate	170	158	11	1	-	-	442	423	16	3	-	-
Primary	259	153	98	5	2	-	520	187	304	20	8	1
Class V-VIII	138	54	66	17	2	-	228	60	92	62	13	1
Class IX-X	69	9	27	28	3	2	178	7	59	87	17	8
Above	13+6	-	-	8	6	5	43+15	-	2	6	37	13

Table 10: Reasons for non-immunization and dropouts.

Reasons	Partially immunized				Non-Immunized			
	Boys		Girls		Boys		Girls	
	No.	%	No.	%	No.	%	No.	%
1. Children went to other place	59	14.97	43	11.91	18	8.91	27	13.24
2. Negligence	102	25.89	87	24.10	63	31.19	71	34.80
3. Unfaith to vaccine	47	11.93	36	9.97	16	7.92	22	10.78
4. Guardians busy	79	20.05	94	26.04	51	25.25	37	18.14
5. Ignorance	32	8.12	47	13.02	28	13.86	12	5.88
6. Unwell	75	19.04	54	14.96	26	12.87	35	17.16

Table 11: Disease susceptibility of the children.

Diseases	Age									
	1-2 yrs		2-3 yrs		3-4 yrs		4-5 yrs		5-7 yrs	
	No.	%	No.	%	No.	%	No.	%	No.	%
High Fever*	242	61.11	248	64.08	321	74.13	198	52.38	204	30.45
Common Cold*	267	67.42	296	76.49	208	48.03	282	74.6	442	65.97
Diarrhoea*	228	57.58	257	66.41	276	63.74	270	71.42	356	53.13
Malaria**	84	22.47	73	18.86	114	26.32	203	53.70	277	41.34
Jaundice**	100	25.25	89	22.99	135	31.17	168	44.44	239	35.67
Total	1213	53.58	1495	66.03	1387	61.26	651	28.75	731	32.29

*= Three times or more in a year **= At least once in a year

Table 12: Mortality.

Reason	Boys	Girls	Total
Unknown reason	33	32	65
Fever	17	19	36
Jaundice	15	13	28
Diarrhea	21	28	49
Malaria	8	12	20
Pneumonia	16	20	36
Total	110	124	234

also reported that the 19.2 % children remain non-immunized because of ignorance.

DISCUSSION

The children of one to seven years of age of two districts of North Bengal are not receiving proper immunization schedule. The coverage for the different vaccines is low studied by Singh and Yadav (2000). The parents are illiterate and are not serious about keeping the immunization card. The knowledge of the parents about immunization is very poor and the literacy of the parents is also poor. So, the parents are not serious about immunization and we found that negligence is the major cause for non immunization and guardian engagement in other work is the major cause for partial immunization. The parents fell to take the initiative for the treatment of diseases of child because of poorness. So, the child mortality in this area is high. Our results are also consistent with the reports of Elliott and Farmer (2006) where literacy is considered as one of the factors for full immunization. Similarly the cross sectional survey by Sharma et al. (2009) in Surat also focused the full immunization is of 25% due to poor education. One study in Nigeria shows that poor immunization is the cause of increased child mortality studied by Nwoqu et al. (2008). An important finding in this survey was that a significant percentage of parents in study area do not believe the beneficial effect of vaccine indicating an immediate need to create common awareness regarding UIP. The findings are sending a clear message that the child immunization needs to be more attention in poor and illiterate areas so that all the children get proper immunization in the prescribed date. The awareness programme may be implemented at such rural belts by government and non government sectors so that parents may change their attitude and practice for better immunization for their children.

CONCLUSION

From the results of this survey it may be concluded that at rural belt of Darjeeling and Jalpaiguri districts the child immunization coverage is not so good and there is a scope for improvement in this regard. Information, education and communication (IEC) activities should be revitalized at such belts to increase the awareness and to improve their practices and attitudes for the full implementation of Universal Immunization Programme (UIP). Supervision of ongoing UIP, reorientation of health services may be considered as key components. Side by side sustain routine immunization coverage should be followed in order to touch the untouched.

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