

## IMMUNIZATION STATUS OF LAME CHILDREN IN ALIGARH DISTRICT

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### ABSTRACT:

**Research Problem:** Immunization profile of under five lame children in district Aligarh.

**Objectives:** i) To assess the prevalence of lameness among polio vaccinated and unvaccinated children.

ii) To assess lameness in relation to their overall immunization status and source of immunization.

**Study Design :** Cross - sectional epidemiological study.

**Participants:** Under five children.

**Sample Size:** 10,020 under five children drawn from 30 clusters of Aligarh district.

**Study Variable:** Immunization status of participant children.

**Outcome Variable:** Lameness among immunized and unimmunized children.

**Statistical Analysis:** Tests of proportion.

**Result:** Among the vaccinated (had at least one dose of OPV) children, prevalence of lameness was 2.0/1,000, while among unvaccinated children, prevalence was 8.8/1,000. This difference was statistically significant ( $X^2 = 30$ , d.f. = 1  $P < 0.001$ ).

**Conclusion and Recommendations:** i) Immunization of target children with OPV is an effective preventive measure to lower down the prevalence of lameness in children. ii) Apart from continuing routine immunization, there is need of gearing up catch - up and mop - up rounds of polio immunization. iii) The strategy of pulse polio immunization is needed to be executed year after year until poliomyelitis is eradicated. iv) Community based surveillance and sentinel surveillance of poliomyelitis should be expanded to all remote and far flung areas.

**Key Words:** Lameness, Poliomyelitis, Immunization status.

### INTRODUCTION:

Lameness is as old as the human race itself. It is only in recent times that it has become an important tool for measuring the poliomyelitis prevalence in the community. In fact the most accurate technique to measure the prevalence of polio in a community is house to house survey of lameness<sup>1</sup>. Lameness surveys in several North Indian states showed annual incidence rates of 2 to 5 per 1,000 rural pre - school

children and 1 to 3 per 1,000 urban pre - school children<sup>2</sup>. Surveys in South India suggest that the prevalence of polio lameness among pre - school children is about 3.5 per 1,000<sup>3</sup>. WHO has recommended that 3 doses of OPV can prevent about 80% of paralytic poliomyelitis and subsequent lameness. The present study was undertaken to assess the prevalence of lameness among OPV vaccinated and unvaccinated children in relation to their overall immunization status.

### MATERIAL AND METHOD:

The present cross - sectional study was carried out for a period of one year, i.e., April 1, 1994 to March 31, 1995, in under five children in district Aligarh. The sampling frame included all villages and wards of municipalities or town areas under Aligarh district. The sampling method used in the present study was cluster sampling technique. A cluster was a group of 334 children in the age group of 0 - 5 years. These 30 clusters were randomly selected by making use of currency note<sup>4</sup>. The sample consisted of 30 clusters, each cluster had 334 children in 0 - 5 years age group. So, sample size was  $30 \times 334 = 10,020$  such children. Lame child in the study was defined as one who was unable to walk properly or having one leg shorter than the other<sup>5</sup>.

### Methodology of the field work:

For doing survey in each cluster, investigator went to the centre of the village / ward (e.g., place of worship, school, well, etc.) and selected, at random, one of the lanes leading from centre to the periphery and started house to house survey along one side of the lane. Households of the opposite side were covered when investigator returned from the periphery to centre. After covering households of both sides of the path, the next path was taken. The procedure was continued till 334 children were covered in each cluster for survey. A pretested proforma was used for recording essential information. The data collected in survey was statistically analysed and chi -square test was used as a test of significance wherever necessary.

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**OBSERVATIONS:**

In this study, 10,020 underfive children were screened for lameness. A total of 49 children were found to be lame, giving a prevalence of 4.9 / 1000. 3,607 children were unvaccinated and 6,413 children were partially vaccinated against poliomyelitis. Out of 49 lame children, 73.48% were unvaccinated and 26.52% partially vaccinated against poliomyelitis (Fig. I). Prevalence of lameness among unvaccinated and partially vaccinated children was 8.8 / 1000 and 2.0 / 1000 respectively (Table - I). This difference was statistically significant ( $X^2 = 30$ , d. f. = 1,  $P < 0.001$ ).

A detailed history of immunization revealed that out of 49 lame children, 13 (26.52%) had received first dose of oral polio vaccine while 5 (10.21%) had received second dose of the vaccine. 73.48% of lame children were unimmunized. Thus, 26.52% were partially immunized and none was immunized completely for his age (Table - II).

Of the total 13 partially immunized lame children, those immunized at hospitals and health centres were 38.46% and 30.77% respectively. Children immunized by outreach approach and private doctors were 23.08% and 7.69% respectively (Fig - II).

**DISCUSSION:**

In the present study, the prevalence of lameness among partially vaccinated and unvaccinated children was 2.0 / 1000 and 8.8 / 1000 respectively. Similarly, higher prevalence of lameness was observed among polio - unimmunized children (19.0 / 1000) as compared to polio - immunized children (10.3 / 1000) by Broca et al<sup>6</sup>. Low prevalence of lameness was observed among polio partially vaccinated and polio unvaccinated children in present study as compared to study by Broca et al<sup>6</sup> probably because vaccination coverage against polio was high.

The present study revealed that 73.48% lame children were totally unimmunized, 26.52% were partially immunized and none was immunized (complete for age). The findings were in conformity with the observations made in a survey conducted in Delhi where 93.16% lame children had not received any oral polio vaccine dose<sup>7</sup>. Broca et al.<sup>6</sup> also found that 88.46% of lame children did not receive any dose of OPV. Joshi et al<sup>8</sup> also observed that 83.3% of lame children were not immunized with OPV. Shah et al<sup>9</sup>

described that 75.0% of lame children were unimmunized with OPV.

However, Chakraborty et al<sup>10</sup> reported that 31.79% lame children were completely immunized, 20.70% were partially immunized and 47.51% were unimmunized with OPV. Difference in the coverage of lame children with OPV in present study and the study by Chakraborty et al.<sup>10</sup> is due to the fact that majority of lame children in Chakraborty study belonged to urban areas where immunization facilities and coverage were better.

The percentage of children immunized at Government hospitals and health centres was higher in present study (69.43%) than in the Chakraborty study (50.14%). This difference was attributed to the dependency or rural children on government hospitals and health centres for immunization.

**CONCLUSION:**

The present study revealed that OPV plays a significant role in preventing poliomyelitis and subsequent lameness. None of the lame children was immunized (complete for age) and had they been immunized completely, prevalence of lameness would be considerably low. Among the immunized lame children, maximum (38.46%) were immunized at hospitals.

**RECOMMENDATIONS:**

- i) Immunization of target children with OPV will prove an effective preventive measure for lowering down the prevalence of lameness in children.
- ii) Apart from continuing the routine immunization, there is need of gearing up catch - up and mop - up rounds of polio immunization.
- iii) The strategy of pulse polio immunization must be executed year after year until poliomyelitis is eradicated.
- iv) Community based surveillance and sentinel surveillance of poliomyelitis should be expanded to all remote and far flung areas.

Fig. I - Distribution of lame children according to immunization status

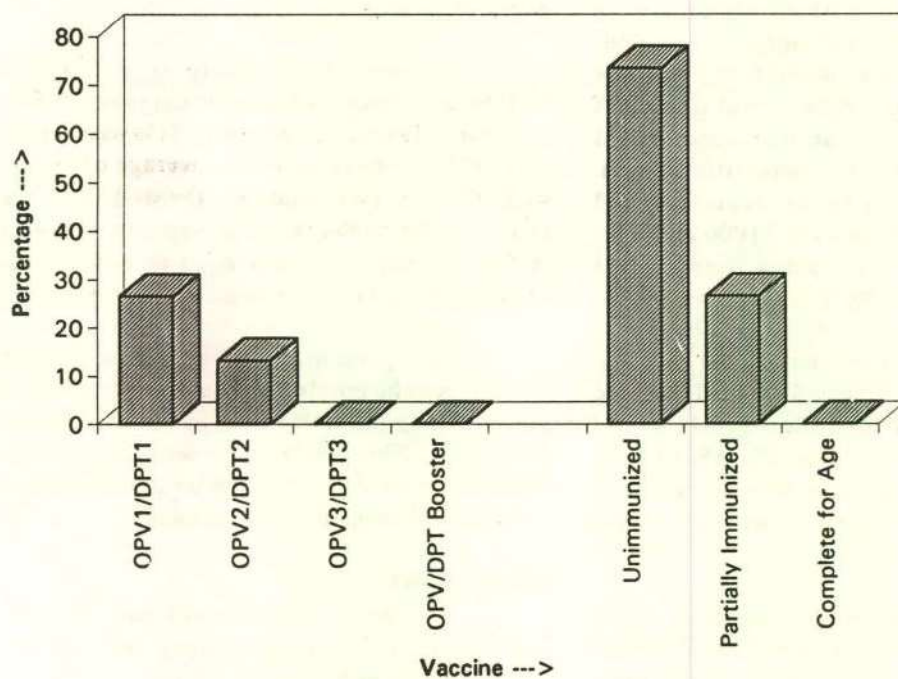
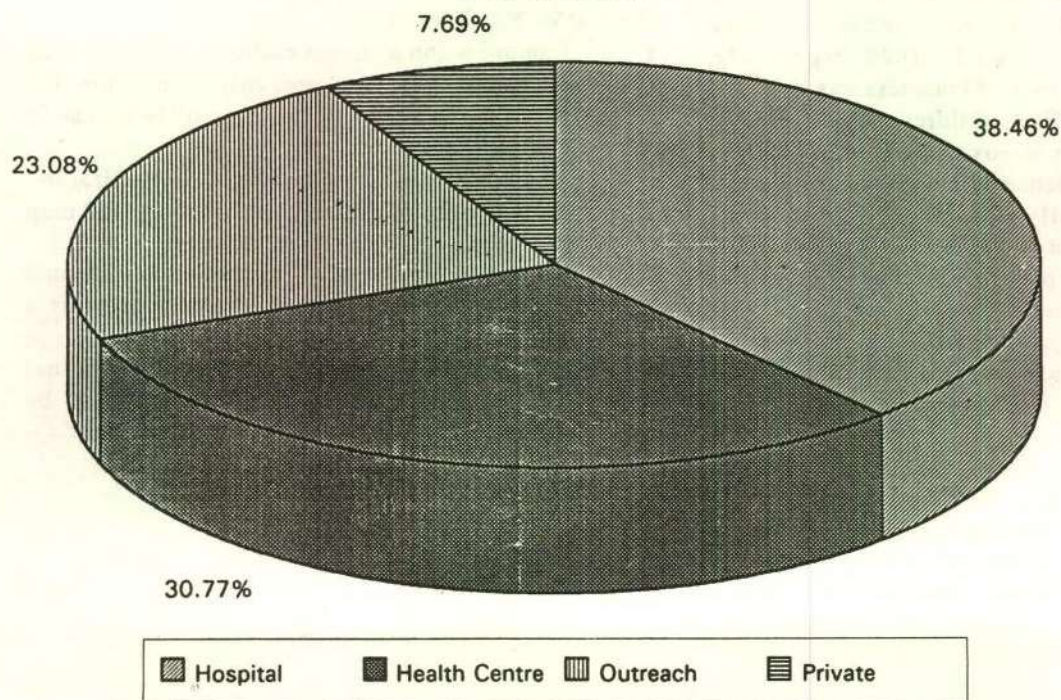


Fig. II - Distribution of partially (OPV) immunized lame children according to source of immunization



**TABLE: I** PREVALENCE OF LAMENESS AMONG PARTIALLY OPV VACCINATED AND UNVACCINATED CHILDREN

Immunization status	Total no. of examined children	No. of lame children	Prev/1000
Unvaccinated	3607	36 (73.48)	8.8
Vaccinated (Partially Immunized)	6413	13 (26.52)	2.0
<b>Total</b>	<b>10, 020</b>	<b>49 (100.0)</b>	<b>4.9</b>

Figures in parenthesis indicate percentage  
 $\chi^2 = 30$ , d.f. = 1,  $P < 0.001$ , highly significant

**TABLE: II** DISTRIBUTION OF LAME CHILDREN ACCORDING TO IMMUNIZATION STATUS

Vaccine	Number	%
B.C.G.	13	26.52
OPV 1/DPT 1	13	26.52
OPV2/DPT2	5	10.21
OPV3/DPT3	0	00.00
Measles	0	00.00
OPV / DPT Booster	0	00.00
Unimmunized	36	73.48
Partially Immunized	13	26.52
Complete for Age	0	00.00
<b>Total</b>	<b>49</b>	<b>100.00</b>

**REFERENCES:**

1. Park's Textbook of Preventive and Social Medicine, Jabalpur, M/s. Banarsidas Bhanot, 1994, Park K. 141-145.
2. Basu, R. N., Indian Paediatrics, 1981; 18 (8) 507
3. Weekly Epi. Record. WHO (1981), 56 (42), 329-332.
4. CSSM Module (1992), Ministry of Health and Family Welfare, Govt. of India, New Delhi.
5. Nicholas, D.D, Kratzer, J.H., Ofosu - Amaah, S., Belcher, D. W., Is poliomyelitis a serious problem in developing countries? The Danfa experience, British M.J.I., 1977; 1009-1012.
6. Broca, J. S., Chaturvedi, S. K., and Mathur, G. M., Prevalence of residual polio - paralysis in children of 5 - 15 years in Ajmer city, Indian Journal of Public Health, 1985; Vol. XXXIX, No. 3, 193 - 200.
7. E.P.I. Bulletin 4 (4): D.G.H.S., Neonatal tetanus and poliomyelitis survey in Delhi., 1981; 4 - 13.
8. Joshi, P.L., Bhattacharya, M., Rastogi, A.K. and Raj, B., Magnitude of poliomyelitis in a rural area of Allahabad, Indian Pediatrics, July 1988; Vol. 25 673 - 674.
9. Shah, K.C., Bansal, R.K., Gupta, S. D. and Tomar, V. N.S., Prevalence and incidence of poliomyelitis in children in Jaipur city, Indian Journal of Community Medicine, 1990; Vol. XV, No. 2, 67 - 69.
10. Chakraborty, P.K., Agarwal, S., and Banerjee, D.P., A retrospective study of the epidemiology of poliomyelitis, Indian Medical Gazette, December 1994.