

row findings and tissue biopsy features (lymph node/liver/spleen/local site) must be correlated to subtype the class of histiocytosis for adequate management.

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Immunization Coverage in Bihar

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The National Family Health Survey (NFHS) in 1993 reported a low coverage level of immunization for children and mothers for the State of Bihar, using a properly designed random survey methodology[^]). This is in contrast to a high cover-

age level as reported by the State Government, which generated lot of controversy.

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The lower coverage levels for Bihar, were first reported by our institution using an appropriate survey methodology as against the commonly used WHO methodology(2,3). In this communication, we report the immunization coverage for the state of Bihar at District level to provide a basis for appropriate remedial measures to the planners and implementors.

Subjects and Methods

The study covered all the 39 districts of Bihar using methodology detailed earlier(3). The total sample in a district comprised of 375 children and 375 mothers. Information was collected through the structured questionnaires during 1991-92.

TABLE I - Immunization Coverage of Children and Pregnant Women (%)

| Immunization | Per cent coverage | |
|--------------|-------------------|------|
| | IRMS | NFHS |
| DPT 1 | 49 | 42.8 |
| 2 | 46 | 37.0 |
| 3 | 45 | 29.1 |
| OPV 1 | 49 | 45.0 |
| 2 | 46 | 40.6 |
| 3 | 45 | 31.6 |
| Measles | 28 | 14.6 |
| BCG | 32 | 33.9 |
| TT (PW) | 42 | 37.0 |

PW-Pregnant Women

The results according to sex, village size, residence, caste, etc. were analyzed using appropriate tests of significance (t-test and analysis of variance).

Results and Discussion

Table I summarizes the immunization with NFHS evaluation coverage for Bihar on the basis of our survey (IRMS) and compares the results with NFSH evaluation conducted in 1992-93. It is evident that the immunization coverage is fairly low for all vaccines. Further, the NFHS estimates were lower for all vaccines.

In view of low coverage level for the state, the results were analyzed by sex, literacy level of parents and size of village and residence (Tables II-IV). The higher size villages had relatively better coverage levels (Table II).

Significant differences were observed in the coverage levels by sex in rural areas. However, in urban areas no such differences were observed (Table III). Significant differences were also observed in the coverage levels of SC/ST and the rest of the population. The difference was even as high as 20 percentage points for some vaccines.

Both parents' literacy status had a significant influence on the immunization level of the children. The influence was more obvious for mothers as compared to fathers (Table IV).

TABLE II-Immunization Coverage According to Size of Village (%)

| Doses | Stratum | | | | |
|---------|---------|----|-----|----|----|
| | I | II | III | IV | V |
| DPT | 38 | 36 | 40 | 46 | 64 |
| OPV | 39 | 36 | 42 | 46 | 64 |
| BCG | 21 | 21 | 23 | 28 | 44 |
| Measles | 21 | 21 | 22 | 23 | 36 |
| TT (PW) | 36 | 39 | 38 | 46 | 60 |

TABLE III—Immunization of Children and Pregnant Women by Sex and Caste (%)

| Doses | | Sex | | | Caste | | |
|---------|---|------|--------|---------|-------|--------|----------|
| | | Male | Female | p-value | SC/ST | Others | p-value |
| DPT | R | 50 | 32 | 0.00 | 33 | 53 | 2.24E-62 |
| | U | 64 | 64 | 0.50 | 53 | 74 | 6.36E-22 |
| OPV | R | 50 | 32 | 0.00 | 34 | 45 | 1.31E-20 |
| | U | 64 | 64 | 0.50 | 52 | 60 | 3.65E-04 |
| Measles | R | 24 | 21 | 0.00 | 18 | 23 | 2.75E-07 |
| | U | 36 | 36 | 0.50 | 32 | 37 | 0.0152 |
| BCG | R | 24 | 23 | 0.10 | 18 | 24 | 1.49E-09 |
| | U | 44 | 44 | 0.50 | 37 | 42 | 0.0173 |
| TT (PW) | R | — | — | — | 31 | 44 | 3.01E-28 |
| | U | — | — | — | 58 | 62 | 0.0438 |

R=Rural, U=Urban

TABLE IV—Immunization of Children and Pregnant Women by Literacy (%)

| Doses | | Father | | | | Mother | | | |
|---------|---|---------|------|-------|-----------|--------|------|-------|-----------|
| | | Ill. | Lit. | F.Ed. | p-value | Ill. | Lit. | F.Ed. | p-value |
| DPT | R | 26 | 32 | 32 | 2.092E-07 | 32 | 45 | 65 | 6.483E-06 |
| | U | 38 | 47 | 67 | 1.526E-05 | 46 | 61 | 76 | 2.235E-05 |
| OPV | R | 26 | 33 | 53 | 3.412E-06 | 34 | 45 | 64 | 5.324E-06 |
| | U | 36 | 45 | 68 | 1.890E-05 | 46 | 60 | 75 | 2.072E-06 |
| Measles | R | 15 | 23 | 28 | 7.354E-07 | 19 | 27 | 35 | 1.587E-06 |
| | U | 27 | 27 | 43 | 6.082E-06 | 32 | 40 | 48 | 6.358E-07 |
| BCG | R | 15 | 23 | 29 | 8.437E-07 | 19 | 26 | 36 | 1.729E-06 |
| | U | 25 | 33 | 51 | 1.229E-05 | 34 | 48 | 57 | 1.401E-96 |
| TT (PW) | R | Husband | | | 3.44E-06 | Self | | | 5.791E-06 |
| | U | 25 | 43 | 53 | | 29 | 46 | 59 | |
| | | 43 | 60 | 73 | 1.549E-05 | 44 | 59 | 75 | 2.368E-06 |

Ill.: Illiterate, Lit.: Literate, F.Ed.: Formal Education

The results at district level are presented in *Table V*. Although the overall coverage levels for the state was low, relatively lower coverage levels (< 33%) were observed in seven districts, namely, Darbhanga, Mungar, Nalanda, Champaran (E), Shaharsa, Dumka and Vaishali.

In this survey, almost all the vaccinees had received immunization from the government sources. Those utilizing the private services were mainly literates. Lack of awareness and motivations were cited as the main reasons for non-immunization.

The lower coverage levels in Bihar are

TABLE V—District Wise Immunization Coverage of Children (%)

| District | DPT | OPV | Measles | BCG | Upper value 95% CI for DPT | Reported coverage |
|---------------|-----|-----|---------|-----|-------------------------------|----------------------|
| Aurangabad | 69 | 70 | 54 | 54 | 77 | 86 |
| Begusarai | 43 | 43 | 24 | 27 | 56 | 109 |
| Bhagalpur | 37 | 38 | 22 | 26 | 46 | 79 |
| Bhojpur | 51 | 50 | 35 | 34 | 58 | 129 |
| Darbhanga | 16 | 22 | 13 | 13 | 21 | 73 |
| Deoghar | 44 | 45 | 46 | 45 | 55 | 119 |
| Dhanbad | 54 | 54 | 23 | 27 | 64 | 100 |
| Gaya | 46 | 47 | 22 | 26 | 54 | 78 |
| Giridih | 45 | 45 | 13 | 15 | 56 | 87 |
| Godda | 62 | 62 | 38 | 49 | 73 | 67 |
| Gopalganj | 45 | 46 | 37 | 32 | 55 | 63 |
| Gumla | 45 | 45 | 35 | 46 | 56 | 91 |
| Hazari Bagh | 47 | 48 | 34 | 34 | 53 | 117 |
| Jahanabad | 55 | 55 | 35 | 34 | 65 | 108 |
| Katihar | 54 | 55 | 27 | 53 | 64 | 62 |
| Khagaria | 53 | 53 | 25 | 24 | 62 | 82 |
| Lohardagga | 48 | 48 | 24 | 28 | 54 | 111 |
| Madhepura | 60 | 60 | 60 | 62 | 69 | 102 |
| Madhubani | 43 | 39 | 14 | 16 | 55 | 135 |
| Munger | 28 | 29 | 13 | 17 | 33 | 93 |
| Muzaffarpur | 45 | 45 | 25 | 29 | 59 | 91 |
| Nalanda | 31 | 32 | 9 | 11 | 38 | 111 |
| Nawada | 46 | 46 | 11 | 26 | 55 | 101 |
| Palamu | 51 | 51 | 50 | 53 | 60 | 75 |
| Champaran (W) | 42 | 42 | 25 | 38 | 48 | 91 |
| Patna | 46 | 48 | 35 | 38 | 58 | 108 |
| Sitamarhi | 37 | 37 | 23 | 24 | 44 | 90 |
| Champaran (E) | 33 | 36 | 30 | 30 | 45 | 77 |
| Siwan | 42 | 43 | 22 | 19 | 52 | 45 |
| Purnia | 49 | 49 | 46 | 44 | 55 | 45 |
| Ranchi | 43 | 43 | 22 | 23 | 49 | 89 |
| Rohtas | 64 | 64 | 31 | 60 | 74 | 102 |
| Saharsa | 22 | 22 | 15 | 15 | 32 | 64 |
| Dumka | 29 | 29 | 19 | 23 | 38 | 49 |
| Sahebganj | 50 | 49 | 44 | 46 | 60 | 52 |
| Samastipur | 79 | 70 | 50 | 51 | 87 | 94 |
| Saran | 35 | 38 | 21 | 25 | 46 | 95 |
| Singbhum | 37 | 38 | 27 | 30 | 47 | 84 |
| Vaishali | 29 | 32 | 17 | 15 | 38 | 111 |

corroborated by the findings of NFHS survey(1). In fact the coverage levels as per NFHS evaluation were still lower for all immunization (*Table I*). The results from NFHS survey also revealed a high dropout rate. Special efforts are required to identify the areas and target groups for better focus in the programme. Small size villages, which are at times remote and inaccessible, tend to be neglected. The programme needs focus on those residing in small, inaccessible and remote villages. The coverage levels in the state can also be increased by reducing the dropout rate.

Further, the disaggregated results by sex, caste, and literacy are in consonance with NFHS survey(1). The information, Education and Communication activities in rural areas should focus for better care of female children for immunization and health care. The reasons for lower coverage levels for SC/ST apart from lack of the awareness and neglect by the society, is the fact that they tend to be ignored in the process of completing the targets. Special efforts therefore should be made to improve the coverage level for SC/ST. There is also a need for increasing the awareness and acceptance for this section of population about the benefits of immunization. Education of mother is the key to the success of

the Universal Immunization Programme and all out efforts need to be made to increase the female literacy in the country. The districts with coverage levels less than 33 percent need special focus in the programme.

The reported coverage levels by the Government for the corresponding period were much higher than even the upper value of the 95% confidence interval of estimated coverage level in almost all the districts of Bihar. In view of discordance between two large surveys(1-3), the reported figures by the state government, can not be used reliably. Only findings of such large scale studies should be relied for proper planning.

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