Interdistrict variations in child health status and health services utilization: Lessons for health sector priority setting and planning from a cross-sectional survey in rural India

THE INCLEN PROGRAM EVALUATION NETWORK (IPEN)*

ANNEXURE 1
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MORBIDITY SURVEY

Acute respiratory tract infection (ARI), malaria and diarrhoea are common causes of morbidity in children in India. Cough, fever and loose motions are the indicator symptoms for ARI, malaria and diarrhoea, respectively. Multiple studies were conducted to arrive at a prevalence estimate for ARI, malaria and diarrhoea before the sample size was calculated. According to the National Family Health Survey (NFHS)-2 (1998–99) in India, the prevalence of cough with fast breathing was 19.3%, fever was 29.5% and diarrhoea was 19.2%.

However, according to the NFHS-2 data for the eight states included in the study, the lowest prevalence of ARI was 7.9%, fever was 23.7% and diarrhoea was 13.9%. UNICEF and Ministry of Health and Family Welfare, Government of India conducted a Multi-Indicator Cluster Survey (MICS) in 2000 which surveyed all under-5 children. This study found the lowest prevalence of the indicator conditions in the eight states chosen for this study to be 18.8% for ARI, 21.3% for fever and 14.5% for diarrhoea. Table A1 summarizes the prevalence rates of the child morbidity indicators from different surveys (NFHS-2 and MICS) and figures used to calculate the sample size. (The NFHS-2 was the most recent survey report available at the time of planning this study.)

Since there was a wide variation in the prevalence of ARI reported in NFHS-2 and MICS studies, an average was taken and a prevalence of 13.5% was used to calculate the sample size with 20% admissible error. A design effect of 1.5 was used to calculate the final sample size required to estimate density of three indicator morbidities. Approximately 923 under-5 children were considered for the survey to estimate morbidity density (Table A2).

Sample size to estimate under-5 children accessing government health facility for one of the indicator illnesses (cough with fast breathing)

Of the three indicator illnesses being studied in this evaluation, ARI has the lowest prevalence rate in India. Therefore, the sample size for estimating the number of under-5 children accessing government health facilities for all the indicator illnesses was calculated on the basis of ARI prevalence rate of 13.5%. Regarding use of health facilities (according to NFHS-2), 64% of children in India with ARI are taken to a health facility/provider (either government or private). Therefore, of the 13.5% of children experiencing ARI, 9% are likely to be taken to a health facility/provider (either government or private), requiring a sample size of 621 with an admissible error of 25%.

This study also seeks to estimate the number of ARI children taken to government health facilities. Assuming that of the 13.5% of children experiencing ARI, who are taken to a health facility/provider (9%), 50% children (4.5%) were taken to a government facility, a sample size of 1072 with a 25% admissible error at 95% CI will be needed. However, considering a design effect of 1.5, a total sample of 1600 under-5 children were required in each district (20 per cluster) to estimate the number of children accessing government health facilities, when they are experiencing the indicator illness (cough and fast breathing) with adequate power.
TABLE A1: Prevalence of cough, fever and diarrhoea as indicators of child morbidity in India

<table>
<thead>
<tr>
<th>Level</th>
<th>NFHS-2:1998–99* (0–3 years)</th>
<th>MICS: 2000 (0–5 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cough with fast respiration</td>
<td>Fever</td>
</tr>
<tr>
<td>All India (% prevalence)</td>
<td>19.3</td>
<td>29.5</td>
</tr>
<tr>
<td>Least prevalence among any of the study states (% prevalence)</td>
<td>≈8</td>
<td>≈24</td>
</tr>
</tbody>
</table>

NFHS National Family Health Survey  MICS Multi-Indicator Cluster Survey  * Morbidity density over previous 2 weeks (% of specified age child population having the symptoms)  † The figures used for sample size calculation.

TABLE A2. Sample size for estimating morbidity density (per district)

<table>
<thead>
<tr>
<th>Indicator illness</th>
<th>Source</th>
<th>Prevalence (refer Table A1)</th>
<th>Admissible error (±20%)</th>
<th>Sample size (at 95% CI)</th>
<th>Sample size effect</th>
<th>Estimated sample size per district</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diarrhoea</td>
<td>NFHS-2</td>
<td>14</td>
<td>±2.8</td>
<td>590</td>
<td>615</td>
<td>923 (say 960)</td>
</tr>
<tr>
<td></td>
<td>MICS</td>
<td>15</td>
<td>±3</td>
<td>544</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARI/cough with fast respiration</td>
<td>NFHS-2</td>
<td>8</td>
<td>±1.6</td>
<td>615*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MICS</td>
<td>19</td>
<td>±3.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fever</td>
<td>NFHS-2</td>
<td>24</td>
<td>±4.8</td>
<td>304</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MICS</td>
<td>21</td>
<td>±4.2</td>
<td>361</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NFHS National Family Health Survey  MICS Multi-Indicator Cluster Survey  * Calculated for an average prevalence of 13.5%.
ANNEXURE 3

Integrated Management of Neonatal and Childhood Illness:
Baseline Assessment of Childhood Morbidity & Mortality in Selected Districts in India
(IMNCH-IPEN Study 2006–2007)

HOUSEHOLD SURVEY

Regional Coordinating Center: .................................................................................................................
Institution/Partner Medical College: ...........................................................................................................
State .....................................................................
District ........................................................................
Tehsil .................................................................
Village ........................................................................
Cluster Number ......................................................

Commencing Time Hr Hr Min Min

Concluding Time Hr Hr Min Min

“Namaskar, I am ................................................................ from ..................................................
Medical College / Partner Organization. I am here with my colleagues to do a survey of common illness in children and healthcare
facilities available in your area. Our team would like to interview you about common practices related to neonatal and childhood
illness. Your participation in the survey would contribute to improve health services and other facilities in this district. You are an
important stakeholder in this study and therefore we would appreciate if you could spare some valuable time to discuss about your
child’s health. Your responses will be kept confidential and you may choose to stop your participation at any time.

Instructions for filling up the schedules

Dear friends
1. Do not prompt any answer.
2. The respondent information will be treated as confidential and used to understand the sickness seeking behaviour/practices in the
   community
3. Please record the responses in appropriate boxes by writing correct code.
4. Write verbatim responses in the boxes provided and cross the appropriate codes after referring to the code book in the evening
5. Put ‘X’ in appropriate boxes for questions with multiple responses.

Respondent: Mother of Under-5 child. [If not available, Primary Caretaker]

Unique ID of mother from household screening: .................................................................

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Age (Months)</th>
<th>Sex</th>
<th>Name of the child identified from this household</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>..............</td>
<td>....</td>
<td>........................................................................</td>
</tr>
<tr>
<td>2.</td>
<td>..............</td>
<td>....</td>
<td>........................................................................</td>
</tr>
<tr>
<td>3.</td>
<td>..............</td>
<td>....</td>
<td>........................................................................</td>
</tr>
<tr>
<td>4.</td>
<td>..............</td>
<td>....</td>
<td>........................................................................</td>
</tr>
<tr>
<td>5.</td>
<td>..............</td>
<td>....</td>
<td>........................................................................</td>
</tr>
<tr>
<td>6.</td>
<td>..............</td>
<td>....</td>
<td>........................................................................</td>
</tr>
<tr>
<td>7.</td>
<td>..............</td>
<td>....</td>
<td>........................................................................</td>
</tr>
<tr>
<td>8.</td>
<td>..............</td>
<td>....</td>
<td>........................................................................</td>
</tr>
<tr>
<td>9.</td>
<td>..............</td>
<td>....</td>
<td>........................................................................</td>
</tr>
<tr>
<td>10.</td>
<td>..............</td>
<td>....</td>
<td>........................................................................</td>
</tr>
</tbody>
</table>

Use the random number table given in your team packet to identify the index child

We would like to know the ages of the children (male or female) under five years of age living in your household.
SECTION A: BACKGROUND INFORMATION

1. Age of .......................................................... in Months: .............
   (Enter 00 if Less than One Month)

2. Age category of index child ..................................................
   1. Less than one month
   2. One month to less than 12 months
   3. 12 months to less than 36 months
   4. 36 months up to 60 months

3. Sex of ............................................................ (child/name):  
   (1=Male, 2=Female) ..................................................

4. Relationship of respondent to index child: .......................
   1. Mother
   2. Father
   3. Other family member
   4. Relationship other than above (Specify:......................)
   5. Education of Respondent ..........................................  
   1. Illiterate
   2. Up to 5th class/informally educated
   3. 6th to 10th class
   4. More than 10th class
   5. Refused to answer
   6. Incomplete information

5. Does the mother/primary caretaker go out to work for at
   least 6 hours a day? ..................................................
   0. No
   1. Yes
   8. Refused to answer
   9. Do not know/Not Sure

6. Who all take care of .................................................. in the
   absence of mother (primary caretaker)? 
   (Cross ‘X’ as many as apply)  
   1. No one
   2. Father
   3. Siblings (sister/brother)
   4. Grandparents
   5. Others
   6. Mother always takes care
   8. Refused to answer
   9. Do not know/Not Sure

7. When do you wash your hands? (Probe: Occasions) 
   (Cross ‘X’ as many as apply)  
   1 2 3 4 5 6 7 8 9

8. How is the drinking water stored in your house? 
   (Cross ‘X’ as many as apply)  
   1 2 3 4 5 6 7 8 9

9. What do you usually do to the water to make it safer to
   drink? .................................................. (Cross ‘X’ as many as apply)  
   1 2 3 4 5 6 7 8 9 10 11 12 88 99

10. When did you bathe your ......................................... in the last 24 hours?  
    (0-No, 1-Yes, 8-Refused to answer, 9-Do not know/Not Sure)

11. Has <child/name> ever been vaccinated? 
    (0-No, 1-Yes, 8-Refused to answer, 9-Do not know/Not Sure)

12. Is there a vaccination card/record for the <child/name>? 
    (0-No, 1-Yes, 8-Refused to answer, 9-Do not know/Not Sure)

13. What was the age at which first vaccine was given to 
    <child/name> ..........................................................?  
    (Age in months, enter 00 if age less than 1 month, 88 if refused to answer, 99 if not known/not sure)
    (Confirm from immunization card if available)

14. Has <child/name> been given BCG vaccination against 
    tuberculosis (TB)—that is, an injection in the left shoulder 
    that caused a scar?  
    (Confirm from immunization card if available)  
    (0-No, 1-Yes, 8-Refused to Answer, 9-Do not know/Not Sure)

15. Has <child/name> been given “vaccination injection” for 
    measles after 9 months of age?  
    [0-No, 1-Yes(vaccine after 9 months), 2-vaccine before completion 
    of 9 months, 3- Not eligible if child is less than 9 months, 8-Refused to answer, 9-Do not know/Not Sure]  
    (Confirm from immunization card if available)

16. Has <child/name> been enrolled at anganwadi? 
    (0-No, 1-Yes, 2-Not eligible, 8-Refused to answer, 9-Do not know/Not Sure)

SECTION B: SICKNESS RECORD OF THE INDEX CHILD IN LAST TWO WEEKS

18. Does <child/name> have any illness or health problems 
    today? .......................................................... 
    (0-No, 1-Yes, 8-Refused to answer, 9-Do not know/Not Sure)

19. In the last two weeks, that is since <weekday> of the week 
    before last has <child/name> had any illness or health 
    problem? 
    (0-No, 1-Yes, 8-Refused to answer, 9-Do not know/Not Sure)  
    If No/Refused to answer/Do not know/Not sure - go to Q.39.

20. What were <child/name> symptoms during last 2 weeks? 
    (Probe for symptoms if mother tells a diagnosis) 
    (Cross ‘X’ as many as apply)  
    1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 88 99

21. In the last two weeks, that is since <weekday> of the week 
    before last how many days has <child/name> been ill? 
    (In completed days)

22. Has <child/name> been ill with fever at any time in the 
    last two weeks?  
    (0-No, 1-Yes, 8-Refused to answer, 9-Do not know/Not Sure)

23. Did <child/name> have diarrhea (more frequent, loose 
    watery stools than usual) in the last two weeks?  
    (0-No, 1-Yes, 8-Refused to answer, 9-Do not know/Not sure)  
    If No/Refused to answer/Do not know/Not sure - go to Q. 26.
24. If the <child/name> had diarrhea (more frequent, loose watery stools than usual), did you give fluid made from ORS packet? .................................................................
   (0-No, 1-Yes, 2-Not required, 8-Refused to answer, 9-Do not know/Not Sure)

25. Was there any blood in the stools in the last two weeks?
   ..........................................................................................
   (0-No, 1-Yes, 8-Refused to answer, 9-Do not know/Not Sure)

26. Has <child/name> been ill with cough at any time in the last two weeks? .................................................................
   (0-No, 1-Yes, 8-Refused to answer, 9-Do not know/Not Sure)

27. When <child/name> was ill with cough, did he/she breathe faster than usual with short rapid breaths? (Note: Use local expression for fast breathing) .................................................................
   1. No cough
   2. Cough without fast breathing
   3. Cough with fast breathing
   4. Refused to answer
   5. Do not know/ Not sure

28. In your opinion, how severe was the illness of <child/name> during last 2 weeks? .................................................................
   1. No illness
   2. Mild
   3. Severe
   4. Life threatening
   5. Do not know/ Not sure

29. During the child’s illness, did he/she drink much less, more or about the same amount of total fluids (including breast milk and formula) as s/he did before illness? .................................................................
   1. Stopped drinking
   2. Less than usual
   3. About the same as usual
   4. More than usual
   5. Refused to answer
   6. Do not know/ Not sure

30. During the child’s illness, did he/she eat much less, more or about the same amount of total food as s/he did before illness? .................................................................
   1. Stopped eating
   2. Less than usual
   3. About the same as usual
   4. More than usual
   5. Not Applicable/Does not apply
   6. Refused to answer
   7. Do not know/ Not sure

31. What home based treatment/home remedy did you give to <child/name> during this illness, without consulting any prescriber? (Cross ‘X’ as many as apply)
   ..........................................................................................
   1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 88 99

32. Did any health care provider/health worker visit your home during <child’s/name> illness? .................................................................
   (0-No, 1-Yes, 8-Refused to answer, 9-Do not know/Not Sure)

33. Did you seek care from someone outside home for your child’s illness in the last two weeks? .................................................................
   (0-No, 1-Yes, 8-Refused to answer, 9-Do not know/Not Sure)

34. What happened to the child’s condition that you decided to seek care from a health facility/health provider? (Cross ‘X’ as many as apply)
   ..........................................................................................
   1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 88 99

35. From whom or where did you seek care first? ..........................................................................................
   1. Did not take the child to any health facility
   2. Government hospital/Dispensary/PHC/CHC
   3. ANM/Village health worker/AWW/ Sub-center/ Anganwadi center/ Mobile outreach clinic
   4. TBA/ ASHA
   5. Charitable clinic/Trust/NGO Hospital
   6. Private practitioner: Allopathic, MBBS or higher
   7. Private practitioner: Ayurvedic/Homeopathic/ Unani/Siddha
   8. Pharmacist/Chemist shop/Western drug seller
   9. Assistant/ Helper/ Compounder/Dai
   10. Unqualified/Quack/Jhola-doctor/Doctor-on-cycle
   11. Traditional healer/Jhar-Phook/adu-tona
   12. Friend/ Family member/Priest
   88. Refuse to answer
   99. Do not know/ Not sure

36. Why did you choose to take treatment from this particular health care provider/health facility? .................................................................
   (Cross ‘X’ as many as apply)
   ..........................................................................................
   1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 88 99

37. After that, which other health facility or health care provider did you take the <child/name> for this illness? (Cross ‘X’ as many as apply)
   ..........................................................................................
   1 2 3 4 5 6 7 8 9 10 11 12 88 99

38. Did <child/name> receive any injection for his or her latest/last illness? .................................................................
   (0-No, 1-Yes, 8-Refused to answer, 9-Do not know/Not Sure)

39. During non-working hours, is anyone available/on call in the nearby government health facility (hospital/CHC/PHC/Dispensary) to provide emergency services for children? (0-No, 1-Yes, 2-Do not go to a government health facility, 8-Refused to answer, 9-Do not know/Not Sure)

40. How do you keep your child healthy? (Cross ‘X’ as many as apply)
   ..........................................................................................
   1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 88 99

Signature ..........................................................................................

Name of Research Assistant.............................................................................