

# NEPAL FURTHER ANALYSIS

---

## The Treatment of Childhood Illness in Nepal

Further Analysis of the 2006  
Nepal Demographic and Health Survey

---

This report presents findings from a further analysis study undertaken as part of the follow up to the 2006 Nepal Demographic and Health Survey (NDHS). Macro International Inc. provided technical assistance for the project. Funding was provided by the U.S. Agency for International Development (USAID) under the terms of Contract No. GPO-C-00-03-00002-00. The opinions expressed herein are those of the authors and do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

This report is part of the MEASURE DHS program, which is designed to collect, analyze, and disseminate data on fertility, family planning, maternal and child health, nutrition, and HIV/AIDS.

Additional information about the 2006 NDHS may be obtained from Population Division, Ministry of Health and Population, Government of Nepal, Ramshahpath, Kathmandu, Nepal; Telephone: (977-1) 4262987; New ERA, P.O. Box 722, Kathmandu, Nepal; Telephone: (977-1) 4423176/4413603; Fax: (977-1) 4419562; E-mail: [info@newera.wlink.com.np](mailto:info@newera.wlink.com.np). Additional information about the DHS project may be obtained from Macro International Inc., 11785 Beltsville Drive, Calverton, MD 20705 USA; Telephone: 301-572-0200, Fax: 301-572-0999, E-mail: [reports@macrointernational.com](mailto:reports@macrointernational.com), Internet: <http://www.measuredhs.com>.

Recommended citation:

Quinley, John, and Pav Govindasamy. 2007. *The Treatment of Childhood Illness in Nepal: Further Analysis of the 2006 Nepal Demographic and Health Survey*. Calverton, Maryland, USA: Macro International.

**The Treatment of Childhood Illness in Nepal:  
Further Analysis of the 2006 Nepal Demographic and Health Survey**

John Quinley  
Pav Govindasamy

Macro International Inc.  
Calverton, Maryland, USA

January 2008



## Contents

---

Acronyms	v
List of Tables	vii
List of Figures	ix
Executive Summary	xi
1 Introduction: The Nepal Demographic Health Survey (NDHS) and illness in children	1
2 Rates of illness and care-seeking behavior	1
3 Place of treatment for childhood illnesses	2
4 Equity in childhood illness treatment by wealth and location	5
5 The role of FCHVs, the public and the private sector	7
6 Treatment of childhood illness by source of care	10
7 Conclusion	13
References	15



## Acronyms

---

ARI	Acute respiratory infection
CB-IMCI	Community-based integrated management of childhood illness
CHW	Community health worker (i.e. FCHV, MCHW or VHW)
CPD	Core program district
FCHV	Female community health volunteer
HP	Health post
IV	Intravenous
MCHW	Maternal and child health worker
NDHS	Nepal Demographic and Health Survey
NFHP	Nepal Family Health Program
NGO	Non-governmental organization
ORC	Outreach clinic
ORS	Oral rehydration solution
ORT	Oral rehydration therapy
PHC	Primary health care center
SHP	Sub-health post
VHW	Village health worker



## List of Tables

---

Table 2.1	Rates of illness among children under five years in the two weeks prior to the survey, Nepal 2006	1
Table 2.2	Percentage of children under five years with fever, diarrhea or ARI in 2001 and 2006	2
Table 2.3	Percentage of children under five years with symptoms of ARI and diarrhea who saw a provider, 1996-2006	2
Table 3.1	Percentage of children under five with fever (and/or cough), diarrhea and symptoms of ARI, who were taken to a provider, by type of provider, Nepal 2006	3
Table 3.2	Percentage of children under five years with fever (and/or cough), diarrhea and symptoms of ARI, who visited a pharmacy, by type of treatment provided at the pharmacy, Nepal 2006	3
Table 3.3	Number of children under five with fever (and/or cough), diarrhea or symptoms of ARI seen by an FCHV, Nepal 2006	4
Table 3.4	Percentage of children under five years with fever (and/or cough), diarrhea or symptoms of ARI by source of provider for treatment, Nepal 2006	4
Table 4.1	Percentage of children under five years with cough and/or fever according to type of provider by wealth quintile (adjusted for pharmacy with examination as a type of provider), Nepal 2006	5
Table 4.2	Percentage of children under five years with diarrhea according to type of provider by wealth quintile (adjusted for pharmacy with examination as a type of provider), Nepal 2006	6
Table 4.3	Percentage of children under five years by geographic variation in treatment for fever/cough, Nepal 2006	7
Table 5.1	Percentage of children under five years with symptoms of ARI taken to providers by type of district, Nepal 2006	8
Table 5.2	Percentage of children under five years with diarrhea taken to providers by type of district, Nepal 2006	8
Table 5.3	Percentage of children under five years taken for treatment of symptoms of ARI at government rural facilities and FCHVs by type of district, Nepal 2006	9
Table 5.4	Percentage of children under five years taken for treatment of diarrhea at government rural facilities and FCHVs by type of district, Nepal 2006	9
Table 6.1	Percentage of children under five years with fever and/or cough by type of medication, according to provider, Nepal 2006	10

Table 6.2	Percentage of children under five years with symptoms of ARI by type of treatment according to provider, Nepal 2006	11
Table 6.3	Percentage of children under five with diarrhea according to type of treatment, by provider, Nepal 2006	12
Table 7.1	Percentage of children under five years with fever and/or cough, diarrhea and symptoms of ARI, taken to provider, Nepal 2006	13

## List of Figures

---

Figure 3.1	Percentage of children under five with fever and/or cough and diarrhea who saw a provider, Nepal 2006	5
Figure 4.1	Percentage of children under five by geographic variation in the type of providers for the treatment of fever and/or cough, Nepal 2006	7
Figure 5.1	Percentage of children under five years with symptoms of ARI seen in the NFHP districts-rural, Nepal 2006	9



## Executive Summary

---

Data from the 2006 Nepal Demographic and Health Survey (2006 NDHS) provides an opportunity to examine the patterns of treatment for childhood illness in Nepal. In addition to the usual questions about illnesses in the two weeks prior to the survey and sources and content of care, parents were prompted about whether the child was examined during a “pharmacy” visit and whether the child was seen by a female Community Health Volunteer (FCHV). This analysis allows for a more complete examination of treatment behavior than was possible in the 2006 NDHS Final Report. This analysis also provides an examination of the content of care by type of provider.

Major findings of this study include:

Time trend in childhood illness and care-seeking behavior. There has been a rapid decline in the rate of recent illness between 2001 and 2006 and an increase in the proportion of sick children taken to a provider between 1996 and 2006.

Pharmacy as clinic. Nearly two-thirds of respondents who reported “pharmacy” as a source of care say the child was examined there. When “pharmacy” visits with examination are reclassified as private sector visits, then about 40 percent of sick children go to see a provider (59 percent for those with acute respiratory illness or ARI). About half of these children go to the public sector and half to the private sector.

FCHV as source of care. When respondents are prompted about visits to FCHVs, then their reported coverage increases from 2 to 4 percent of sick children to 7 to 9 percent of sick children, depending on the type of illness. More than half of children who visit an FCHV, however, also visit another provider.

Equity, geography and providers. Seeing a provider increases moderately with increasing wealth. Government services are used at similar rates by most wealth groups (although less by the wealthiest). Private sector use increases rapidly with increasing wealth. FCHVs are most likely to be used by middle wealth groups rather than the poorest or richest wealth groups. Most patients see private providers in urban areas and the *terai*. In the rural hills and the mountains, public providers and FCHVs are more popular.

CB-IMCI and FCHVs. The Community-Based Integrated Management of Childhood Illness (CB-IMCI) program is expected to increase the popularity of FCHVs for ARI treatment. This effect is seen only in those CB-IMCI districts receiving special support under the Nepal Family Health Program (NFHP), where FCHVs see 16 to 27 percent of all children who visit a provider. FCHVs and rural government health services cover less than half of ARI cases in CB-IMCI districts that are seen by providers. Therefore, they probably cover less than half of childhood pneumonia cases.

Treatments provided for ARI (and fever/cough). The available evidence does not show indiscriminate use of inappropriate antibiotics in most children. Nearly 100 percent of children who go to a provider or a pharmacy receive a medication, but only 33 to 45 percent receive an antibiotic from a provider (27 to 65 percent for ARI). Among known antibiotics, nearly all are either cotrim or amoxicillin, either of which is indicated for childhood pneumonia. Antibiotics are less often given to children with a pharmacy visit without examination (20 to 33 percent).

Treatments provided for diarrhea. Most children who go to a provider receive a medication (74 percent for government and more than 90 percent for private or pharmacy). The type of medication is usually not known, but injections and IVs are rare and anti-motility agents were rarely mentioned specifically. Promotion of oral rehydration solution/oral rehydration therapy (ORS/ORT) is inadequate for public and

private providers (only about half of patients), but is much better for FCHVs (75 percent and 88 percent). Promotion of ORS/ORT is worst for pharmacies (18 percent and 20 percent).

Overall treatment/provider relationship. Among sick children, about 40 percent see a provider (public, private or FCHV), 11 to 15 percent receive a medication without seeing a provider (from a pharmacy or possibly from what is already at home), and over 40 percent do not visit a provider or receive a medication. About 75 percent of children who receive a treatment do so only after a provider visit.

## 1 Introduction: The Nepal Demographic Health Survey (NDHS) and illness in children

---

The Nepal Demographic and Health Survey (NDHS) is carried out periodically to provide a wide variety of household-level information on health and fertility for Nepal. A nationally representative sample of 10,793 women ages 15-49 was surveyed from 8,707 households in 260 primary sampling units throughout Nepal. The women interviewed were asked whether their children younger than five years had diarrhea, fever or cough in the two weeks prior to the survey. If so, then they were asked a series of questions about the symptoms, whether and where they sought advice, treatment for the illness and what treatment was given. Results from the survey are given in the 2006 NDHS final report. Similar questions on childhood illness were asked in the two previous NDHS surveys that were carried out in 2001 and 1996, and they are referenced in this paper for comparison purposes.

This working paper focuses on additional data that was not analyzed as part of the overall 2006 NDHS final results. Two questions were added to the 2006 NDHS that were not included in earlier DHS surveys in Nepal. The first was whether a child for whom the source of care was “pharmacy” had been examined, and if not, whether the caretaker had received advice about what to give the child. The second question was a prompt as to whether the child was taken to a female Community Health Volunteer (FCHV). Both of these issues have programmatic implications regarding the nature of providers for childhood illness in Nepal. Finally, this working paper looks at the type of treatment by provider to provide further insight into provider behavior and possible gaps in coverage.

Sampling in the 2006 NDHS was weighted differently according to 13 geographic domains and by urban-rural areas. All data in this paper, with the exception of counts of FCHV contacts, have been weighted to yield representative results for Nepal or for their geographic area.

## 2 Rates of illness and care-seeking behavior

---

The 2006 NDHS asked mothers about the incidence of fever, cough or diarrhea in their children younger than five years during the two weeks prior to the survey. For those children with fever or cough, their mothers were asked if the child had rapid breathing or difficulty breathing and, if yes, whether this was due to a problem in the chest. If the child met all these criteria the disease was called acute respiratory infection (ARI). Table 2.1 shows the 5,252 children surveyed and the rates of disease found.

Table 2.1 Rates of illness among children under five years in the two weeks preceding the survey, Nepal 2006

Symptom	Percent	Number
Fever or cough	23	1,212
Symptoms of ARI	5	277
Fever only	17	890
Diarrhea	12	623
Any symptom	30	1,570
All children	100	5,252

In general, all types of symptoms are the most common in children between the ages of six and 23 months and are less common in young infants and children two or more years old. This timing corresponds to the weaning period and is consistent with findings in many other studies. Children with ARI and/or fever are both subsets of children with fever or cough. Children who had fever or cough cross over somewhat with children who had diarrhea, but they are mostly different.

Similar questions were asked in the prior NDHS surveys regarding childhood illness. As seen in Table 2.2, between 2001 and 2006 there has been a large decline (by nearly half) in the rates of all types of childhood illness. Comparison with 1996 has to be done by age group since that survey limited questions to children younger than three years. In general, there was a minimal decline in diarrhea and fever between 1996 and 2001 and a modest decline in ARI. The reasons for the rapid decline in disease rates between 2001 and 2006 are not clear. There are trends for improved water supply, sanitation and living standards, but these have been going on longer than just the past five years. The NDHS collected data between February and August of 2006, which is the peak season for childhood illness, especially diarrhea, but the data is comparable since prior surveys were done at approximately the same time of year.

Table 2.2 Percentage of children under five years with fever, diarrhea or ARI in 2001 and 2006.

Illness	2001	2006
ARI	23	8
Fever	32	17
Diarrhea	20	12
Number of children	6,471	5,252

Note: ARI 2006 is revised to use the NDHS 2001 definition.

While rates of disease have gone down, rates of treatment have been going up. This can be interpreted as better access to care, although it is possible that respondents are not reporting more minor illnesses, which could partly account for both trends (Table 2.3).

Table 2.3 Percentage of children under five years with symptoms of ARI and diarrhea who saw a provider, 1996-2006

	1996		2001		2006	
	%	#	%	#	%	#
ARI	18	1,389	24 <sup>a</sup>	2,496	31	425
Diarrhea	14	1,120	21	1,320	27	623

<sup>a</sup> Refers to children with ARI or fever, not just ARI.  
 Note: Provider does not include pharmacy examinations with visits since this information was not collected in 2001 and 2006. The data for 1996 is with reference to children younger than 36 months in comparison to children younger than 60 months in the 2001 and 2006 surveys. Restricting the data for these two surveys to children younger than 36 months shows that incidence of ARI and diarrhea does not substantially influence the trends seen.  
 Note: ARI 2006 is revised to use the NDHS 2001 definition.

### 3 Place of treatment for childhood illnesses

Respondents were asked: “Did you seek advice or treatment for the illness from any source?”. If they answered yes, then they were asked: “Where did you seek advice or treatment?”. Respondents were asked to mention all the places of treatment. Table 3.1 shows the percentage of children under five by source of treatment for ARI, fever and diarrhea.

Table 3.1 Percentage of children under five with fever (and/or cough), diarrhea and symptoms of ARI, who were taken to a provider, by type of provider, Nepal 2006

Illness	Any provider <sup>1</sup>	Gov. hospital/ clinic	Gov. PHC/HP/ SHP/ORC	FCHV	Private or NGO	Pharmacy	Traditional/ other	No place of care reported	# of children
ARI	43	8	20	9	17	25	2	34	277
Fever	34	5	13	7	10	26	3	41	890
Fever or cough	32	5	13	7	10	23	2	48	1,212
Diarrhea	27	4	15	9	6	25	1	49	623

<sup>1</sup> Any government, FCHV or private/NGO. Some patients went to more than one source. This does not include pharmacy, traditional healer or other.

A pharmacy is generally not treated as a provider since it is assumed to be a place where one goes to buy drugs and does not involve a clinical examination of the sick child. In Nepal, this has never been clear, since many pharmacies have clinics located at the back of the facility. When a respondent mentions a visit to a pharmacy, then it might, in fact, represent a clinic visit, and thus should be considered a visit to a provider. Pharmacies are the single most common place that sick children are taken (25 percent). If many of these are indeed clinic visits, then they would be an important source of care. Also, it was not clear if families of children who do not get examined go to the pharmacy knowing what they want or if they ask for advice on what to buy. This is important in helping decide whether a social marketing campaign should focus on getting people to ask for a specific product or on getting the pharmacy staff to promote it.

To address these issues, the following additional questions were added to the 2006 NDHS if ‘pharmacy’ was cited as a source:

- Was (name of child) examined?
- Did you get advice on what type of medicine to buy?
- Did you know exactly what medication to buy and only went there to buy it?

As shown in Table 3.2, nearly two-thirds of “pharmacy” visits were, in fact, “clinic” visits that happened to take place at a pharmacy. These visits should be regarded as ‘provider visits’ from the private sector.

Table 3.2 Percentage of children under five years with fever (and/or cough), diarrhea and symptoms of ARI, who visited a pharmacy, by type of treatment provided at the pharmacy, Nepal 2006

Illness	Visited a pharmacy	Received an examination	Received advice only	Bought medication only	# of children
ARI	25	18	5	2	277
Fever	26	18	7	1	890
Fever or cough	23	14	6	3	1,212
Diarrhea	25	15	8	2	623

Also new to the 2006 NDHS is a question that asks respondents if their child had been taken to see an FCHV, even if they hadn’t mentioned FCHVs spontaneously. FCHVs are trained to give ORS for diarrhea and in over half of rural areas they treat simple childhood pneumonia with cotrim. Data on these programs show large numbers of FCHVs as a source of care, but in the 2001 NDHS they were rarely spontaneously mentioned as a source of care. It was hoped that prompting respondents specifically about FCHVs would provide better data on the role of FCHVs. Table 3.3 shows that for all diseases, the number

of times FCHVs were reported as a source of care doubled or tripled when respondents were prompted. The low rate of spontaneous reports may reflect the caretaker's view that FCHVs are not medical providers and that they do not provide medication (other than ORS) for most children.

Table 3.3 Number of children under five with fever (and/or cough), diarrhea or symptoms of ARI seen by an FCHV, Nepal 2006

Illness	FCHV mentioned spontaneously	FCHV mentioned when prompted
ARI	5	19
Fever or cough	29	53
Diarrhea	23	35

Note: These counts are not weighted.

When pharmacy visits with an examination are classified as a visit to a private sector provider, then the percentage of sick children seeing any provider increases substantially. The reclassification of pharmacy as a provider when children are examined results in an overall increase in the importance of the private sector as a provider, bringing it more in balance with the public sector as a provider. For example, the percentage of children with symptoms of ARI seen by a provider increases from 43 percent (as reported in the 2006 NDHS final report) to 59 percent.

Table 3.4 Percentage of children under five years with fever (and/or cough), diarrhea or symptoms of ARI by source of provider for treatment, Nepal 2006

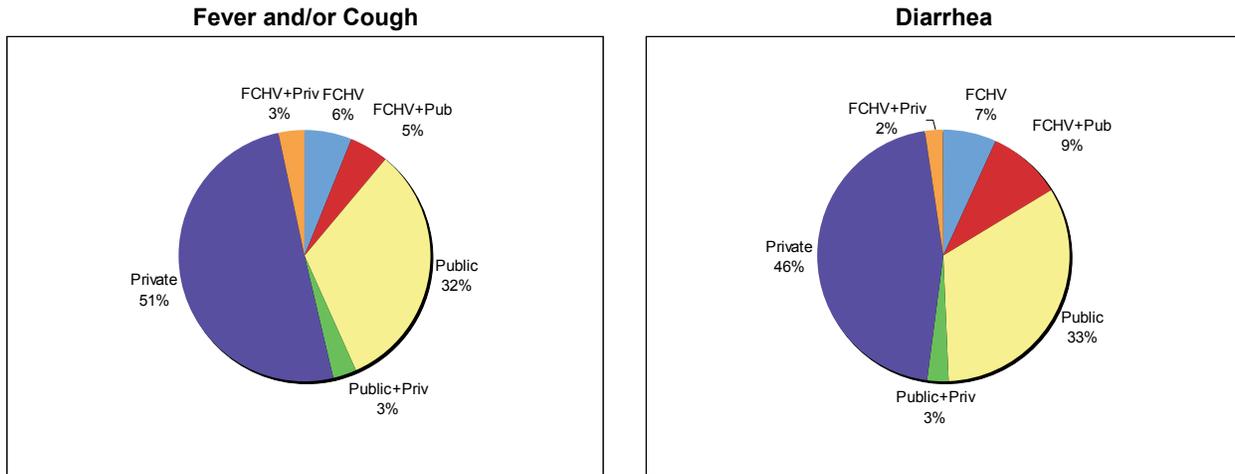
Symptom	Any provider	Public (any government)	FCHV	Private, NGO or Pharmacy with exam	Number
ARI	59	25	9	35	277
Fever	50	20	7	28	890
Fever or cough	43	17	7	24	1,212
Diarrhea	40	18	9	20	623

Note: Totals do not add up to 100 percent because a child may be seen by more than one provider.

In Figure 3.1, the children who did not go to any of the providers are removed, showing only the proportion of care provided by the private sector, public sector and FCHVs. This also shows the proportion of patients who saw more than one provider.

If FCHVs are considered part of the public sector, then about half of the children sick with fever, cough or diarrhea are seen by public providers and half by private providers. Among children who see any provider, FCHVs see 14 percent to 18 percent of them. Thus, FCHVs are a substantial source of care. However, well over half of children who are seen by an FCHV are also seen by either a public or private provider as well. Given that FCHVs can offer only ORS for diarrhea and cotrim for a minority of children with ARI who have pneumonia, then it is not surprising that most caretakers go to other providers to get additional treatments.

Figure 3.1 Percentage of children under five with fever and/or cough and diarrhea who saw a provider, Nepal 2006



Note: Less than 1 percent of fever/cough patients and a tiny percent of children with diarrhea went to all three types of providers.

#### 4 Equity in childhood illness treatment by wealth and location

The 2006 NDHS divided households into five quintiles according to a wealth index based on household possessions and other indicators of wealth. Reported rates of illness were not substantially different from the wealthiest to the poorest quintile. It might be expected that symptoms would be more common among the poor or less educated or in rural areas, but it is also expected that wealthier families may be more responsive to minor symptoms. Data from the 2006 NDHS show that these factors may have counterbalanced each other.

The 2006 NDHS final report found a marked discrepancy between children taken to a provider and wealth quintile for those with cough and/or fever (24 percent in the lowest quintile to 44 percent in the highest) and a moderate discrepancy for children with diarrhea (21 percent to 32 percent). Tables 4.1 and 4.2 re-examine this finding when children who have had an examination during pharmacy visits are re-classified as having been seen by a private provider. The tables also show the type of provider preferred by wealth quintiles.

Table 4.1 Percentage of children under five years with cough and/or fever according to type of provider by wealth quintile (adjusted for pharmacy with examination as a type of provider), Nepal 2006

Wealth quintile	Any provider	Public	FCHV	Private	Pharmacy (no exam)	Number
Lowest	34	18	5	15	4	268
Second	41	16	8	21	8	234
Middle	38	16	10	19	14	235
Fourth	57	23	8	35	7	230
Highest	46	13	2	34	8	252
Total	43	17	7	24	8	1,218

Note: Any provider is public, FCHV or private (including pharmacy with exam).

Table 4.2 Percentage of children under five years with diarrhea according to type of provider by wealth quintile (adjusted for pharmacy with examination as a type of provider), Nepal 2006

Wealth quintile	Any provider	Public	FCHV	Private	Pharmacy (no exam)	Number
Lowest	27	20	4	7	2	176
Second	44	19	13	23	8	130
Middle	40	20	6	19	19	109
Fourth	45	17	9	24	12	107
Highest	55	13	7	40	4	95
Total	40	18	8	20	8	616

Note: Any provider is public, FCHV or private (including pharmacy with exam).

The percentage of children taken to a provider for treatment of childhood illnesses varies positively with wealth status. When pharmacy with examination is considered as a provider, the pattern remains the same, with smaller differences by wealth for children with fever and/or cough (ranging from 34 percent to 46 percent between the lowest and highest wealth quintile for any provider) and more obvious differences for children with diarrhea (ranging from 27 percent to 55 percent).

Government health services (public) appear to be accessible to all income groups, although they are a bit less used by the wealthiest. Private providers, on the other hand, are clearly used much more by wealthier groups and account for the disparity in overall coverage. In addition to financial reasons, this difference may be reinforced by the geographic distribution of providers. The richest quintile is heavily urban, where private providers are abundant. The poor are disproportionately found in remote locations where private providers are less common.

FCHVs are more likely to be seen by the middle quintile groups and do not appear to be heavily used by the poorest quintile. The remaining pharmacy visits, which do not include an examination of the child and are not considered “provider” visits, are also more favored by the middle income groups than by the poorest or richest groups.

It can be assumed that the incidence of illness is either similar among the various quintile groups or higher among the poorest, so the discrepancy in care could mean lack of needed care. However, it is also possible that some care is provided that is not needed, particularly in the wealthiest quintile. It is not possible to say what the “right” amount of care should be. However, the greatly reduced use of care among the poorest quintile for diarrhea (and to a lesser extent for fever and/or cough) compared to others may be an indication that care for this group is inadequate.

If the data is split by urban-rural residence and geographic zone (*terai*, hill and mountain), then there is a shift from mostly private treatment in urban areas and the *terai* to mostly public treatment in the mountains, with the hills accessing roughly equal treatment from both sources (Figure 4.1). The *terai* and hill zones contain both rural and urban areas, so a graph of only the rural population would be shifted towards public providers.

The percentage of children under five years seen by any provider is similar across the zones with the exception of children living in mountain areas, who are least likely to be seen by any provider (Table 4.3). Also, in mountain areas FCHVs see a much larger share of all sick children, even as a sole provider, presumably due to the large distances to other sources of care.

Figure 4.1 Percentage of children under five by geographic variation in the type of providers for the treatment of fever and/or cough, Nepal 2006

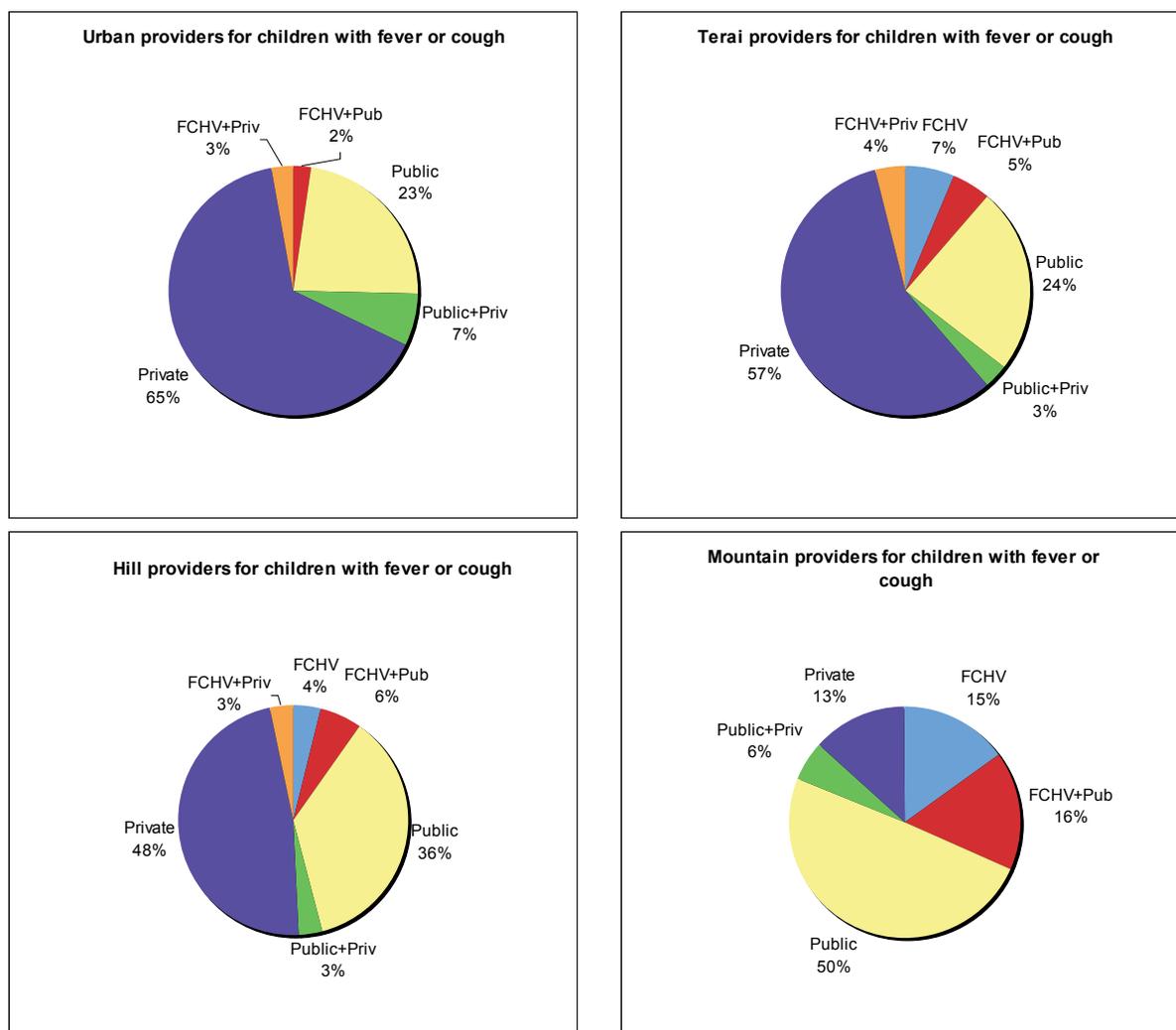


Table 4.3 Percentage of children under five years by geographic variation in treatment for fever/cough, Nepal 2006

Residence	Any provider	Public (any government)	FCHV	Private, NGO or Pharmacy with exam	Number
Urban	47	15	2	35	207
Terai	46	15	7	30	570
Hill	42	19	6	23	531
Mountain	32	23	10	6	105

## 5 The role of FCHVs, the public and the private sector

In CB-IMCI districts, Community Health Workers (CHWs), who are predominately FCHVs, are presented to their communities as providers and they are trained to assess the symptoms of ARI and treat pneumonia. CHWs might, therefore, be more commonly visited than FCHVs for the treatment of ARI in

non-CB-IMCI districts. FCHVs in rural areas of the 17 core program districts (CPDs) supported by the NFHP districts received additional ongoing support and might be expected to be even more commonly used. Table 5.1 shows the use of providers by type, according to the type of district they live in.

Table 5.1 Percentage of children under five years with symptoms of ARI taken to providers by type of district, Nepal 2006

Districts	Any provider	Public (any government)	FCHV	Private, NGO or Pharmacy with exam	Number
Not CB-IMCI	54	28	7	26	115
CB-IMCI	63	23	10	43	158
NFHP CPDs rural only	59	20	13	41	81

As expected, the use of FCHVs for ARI is higher in CB-IMCI districts and highest in the rural parts of NFHP-supported districts. The pattern is based on small numbers, however. The pattern might also be partly obscured since CB-IMCI districts are mostly in the *terai*, where private providers are more popular and FCHVs may have been a less common source of care even before the introduction of this program.

The same pattern is seen for diarrhea (Table 5.2), which has larger numbers of children. FCHVs are seen substantially more often in NFHP districts. In fact, since the NFHP districts are part of the CB-IMCI districts it is likely that the other CB-IMCI districts may have done no differently than non-CB-IMCI districts. This is likely to be due to improvements in FCHV ORS supplies that were limited to NFHP-supported districts (as documented in the 2005 National FCHV survey).

Table 5.2 Percentage of children under five years with diarrhea taken to providers by type of district, Nepal 2006

Districts	Any provider	Public (any government)	FCHV	Private, NGO or pharmacy with exam	Number
Not CB-IMCI	35	19	8	13	259
CB-IMCI	48	19	10	28	363
NFHP CPDs rural only	52	20	14	30	199

While FCHVs appear to be more popular in CB-IMCI/NFHP districts than elsewhere, they treat only 10 to 14 percent of sick children and in the majority of cases patients go to both the FCHV and another provider. If children who were not taken to any provider are excluded, then FCHVs cover about 16 to 27 percent of children who see a provider in NFHP districts.

In CB-IMCI program reports, CHWs treat as many or more cases of pneumonia as do health workers in health facilities. In order to look at this with data from the 2006 NDHS, ARI is used as the closest proxy for pneumonia and a comparison is done between the numbers of children who are taken to government rural facilities (PHC, HP, SHP and ORC) versus to FCHVs. Government hospitals are not part of the comparison.

Table 5.3 Percentage of children under five years taken for treatment of symptoms of ARI at government rural facilities and FCHVs by type of district, Nepal 2006

Districts	Government Rural (PHC, HP, SHP, ORC)	FCHV	Number
Not CB-IMCI	21	7	120
CB-IMCI	19	10	157
NFHP CPDs rural only	17	13	79

At least within the rural areas of NFHP districts, the proportion of children seen by FCHVs is close to that seen at government health facilities. Since the lowest level government workers (MCHWs and VHWs) are counted as “Community Health Workers,” a portion of the treatments that are listed as being from the health facility would shift to the CHW group. It is plausible that the NDHS data is compatible with the program data. A similar picture is seen in the case of diarrhea treatment (Table 5.4).

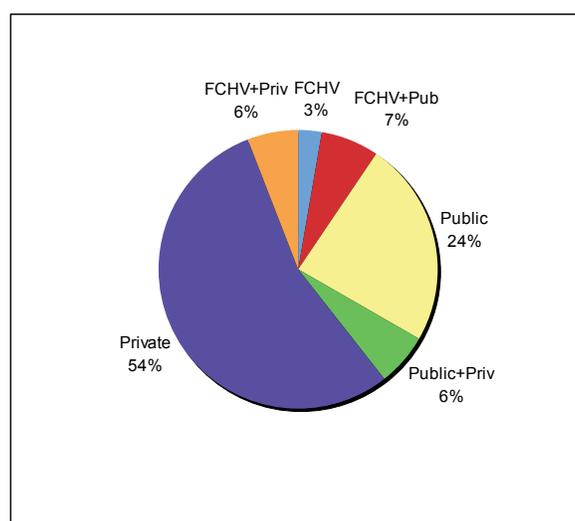
Table 5.4 Percentage of children under five years taken for treatment of diarrhea at government rural facilities and FCHVs by type of district, Nepal 2006

Districts	Government Rural (PHC, HP, SHP, ORC)	FCHV	Number of cases
Not CB-IMCI	14	8	265
CB-IMCI	15	10	359
NFHP CPDs rural only	17	14	196

Based on the number of reported treatments and an estimated rate of pneumonia in children under five years of 30 per 100 children per year, it has been estimated that CHWs treat about one-third of all pneumonia cases in CB-IMCI districts in Nepal. Other government health facility staff treat another third.

This is not compatible with the 2006 NDHS ARI findings for CB-IMCI districts or even for NFHP districts (Figure 5.1). The proportion of ARI patients seen by FCHVs and government facilities in CB-IMCI districts is less than half of the total.

Figure 5.1 Percentage of children under five years with symptoms of ARI seen in NFHP districts-rural, Nepal 2006



There is no reason to believe that the most severe ARI cases (those most likely to be pneumonia) would be more likely to visit FCHVs or public health facilities than the private sector. It also appears from routine monitoring that FCHVs know the diagnostic criteria for pneumonia well and do not diagnose a majority of ARI cases as pneumonia. So, even if FCHVs sometimes over-diagnose, this is not done automatically for all children seen. It may be that the diagnostic criteria for pneumonia are generous and that the prevalence of pneumonia at the community level is actually higher, perhaps up to 60 cases per 100 children per year. This definition would accommodate both the reported rate of pneumonia treatment by the public sector in the CB-IMCI program and the findings of the 2006 NDHS. In any case, it is unlikely that CHWs and rural health facilities treat two-thirds of all pneumonia in CB-IMCI districts.

It is notable that three-quarters of the children with ARI seen by FCHVs also go to other providers. But this is similar to the ratio of ARI patients to pneumonia patients seen by FCHVs. It may be that most of those not diagnosed with pneumonia go to another provider to get some sort of treatment.

The 2006 NDHS was the first survey to look at the issue of FCHVs and the public sector in the treatment of childhood illness from a household perspective. The sample sizes are small and it would be useful to confirm these findings with another study, perhaps with in-depth follow-on studies to clarify how caretakers decide to go to providers and when to go from an FCHV to another provider.

Given the higher proportion of all sick child care that is handled by government and FCHV services in the rural hills and mountains, expansion of the CB-IMCI program to these areas will have a larger proportional impact than the program has in the *terai*.

## 6 Treatment of childhood illness by source of care

In the 2006 NDHS, caretakers were asked what medications the child received for their illness, if any. This question was asked regardless of whether the child went to a provider or not. Table 6.1 shows treatment for fever and/or cough according to the provider where the child was taken.

Table 6.1 Percentage of children under five years with fever and/or cough by type of medication, according to provider, Nepal 2006

Provider	Any medication	Antibiotic	Antipyretic	Cough syrup	Unknown medicine	Number
FCHV	88	0	82	29	0	17
Public	99	34	55	34	11	161
Private	97	33	49	45	8	262
Pharmacy/shop	98	20	36	48	13	98
No place	13	1	7	5	1	601
All children	55	16	28	24	5	1,204

Note: Children (4 percent) who saw more than one provider are not shown, but received similar treatment. Pharmacy/shop is only among children who did not see any provider and were not examined at the pharmacy. Private includes pharmacy visits if the child was examined.

Regardless of whether the child went to a public facility, a private clinic or to a pharmacy without an examination, the results are similar. Nearly all children who were taken to a facility received some form of medication. About one-third received an antibiotic, nearly half got an antipyretic, and nearly half got cough syrup. Between 9 and 14 percent received an “unknown” medicine.

About 55 percent of all children with cough or fever in the two weeks prior to the survey received medicines for their symptoms. Forty percent of ALL children, or 73 percent of those receiving medicine, were examined prior to treatment and only 27 percent of those who received drugs did so without an exam. Antibiotics were prescribed to about one-third of children seeing a provider. If it is assumed that “unknown” medicines were antibiotics, then less than half of children received them. Eighty-six percent of children receiving a known antibiotic did so only after an examination.

Among the antibiotics given, about two-thirds received amoxicillin and one-third received cotrim. Very few other antibiotics were mentioned. This was true for all sources of care. Either amoxicillin or cotrim are indicated for uncomplicated childhood pneumonia and would not be inappropriate drugs if the children who received them had pneumonia. However, there is no way to tell in this survey what proportion of children receiving antibiotics had indications.

In Table 6.1, “Private” source includes pharmacy visits if the child was examined and “Pharmacy/shop” if the child was not examined. In the survey, places of treatment were not prompted, except for FCHV, and so it is possible that a proportion of children who were not taken to a provider did have a caretaker buy medicine at the pharmacy, but did not report this in the survey. The survey shows that only 13 percent of children who were not taken for treatment received any medication and this was nearly always an antipyretic or cough syrup. If it is assumed that these medicines were bought in a pharmacy (instead of being available at home), then the proportion of all children with fever and/or cough who had medication from a pharmacy (but who were not examined at the pharmacy) rises from 9 percent to 15 percent. It is not clear if this increase represents children of caretakers who received advice at the pharmacy.

The few children who went only to an FCHV mostly received an antipyretic (which many FCHVs have as part of their first aid kit). FCHV treatment of pneumonia with cotrim was not observed, but this is not unexpected since the numbers are small. Most children with cough do not have pneumonia and many FCHVs are not trained to treat pneumonia.

Table 6.2 presents the same data limited to the smaller number of children who had ARI. They would be expected to show higher rates of treatment.

Table 6.2 Percentage of children under five years with symptoms of ARI by type of treatment according to provider, Nepal 2006

Provider	Any medication	Antibiotic	Antipyretic	Cough syrup	Unknown medicine	Number
Public	100	57	60	36	8	53
Private	98	27	49	57	9	81
Pharmacy/shop	100	12	47	82	0	17
No place	15	2	6	4	0	96
All children	69	25	36	36	5	272

Note: Children who received treatment from an FCHV only are not included due to small numbers.

While the rate at which these children see a provider is higher (58 percent versus 42 percent) and the rate of known antibiotics is higher (25 percent versus 16 percent), the differences are not as dramatic as one might expect. There is less “unknown” medicine so the potential increase in antibiotic coverage from this source (or from “other medicine”) is limited. It is not clear if this is because the questions in the NDHS used to separate out ARI are not very good at distinguishing sicker children or if providers don’t adjust their therapies adequately according to the severity of the illness.

In Table 6.3 the same data are shown for children with diarrhea. The table provides information on whether children received ORS or any increased fluids at home.

Table 6.3 Percentage of children under five with diarrhea, according to type of treatment, by provider, Nepal 2006

Provider	ORS	ORT	Any medication	Antibiotic	Other medicine	Unknown medicine	Number
FCHV	75	88	13	0	0	13	8
Public	51	60	74	14	18	39	80
Private/exam	41	54	92	19	28	46	113
Pharmacy/shop	18	20	94	6	30	54	50
No place	13	26	5	1	1	2	319
All children	28	40	42	8	13	22	607

Note: 6 percent of children who went to more than one provider (usually including FCHV) are not shown but received similar treatments.

FCHVs are clearly the most important health care providers for promoting ORS and ORT. The numbers are small, but the percentages are the same for the larger number of children for whom the FCHV was one of two providers. The role of the public sector as a source of ORS is disappointing and is only marginally better than the private sector. The data were looked at separately for NFHP CPDs (which had better ORS supply) and for other districts. This analysis resulted in a slightly better source of ORS among public facilities (63 percent) but was still much less than expected.

Although they almost always result in the sale of a medicine, pharmacy visits without an examination only result in the sale of ORS in 18 percent of cases. This is in spite of most caregivers reporting that they receive advice on what to buy. It appears pharmacies either fail to advise caretakers to buy ORS or caretakers fail to heed the advice. In either case, ORS use among these children is very low.

Use of ORT is about 10 percent higher than use of ORS for all providers, so it appears families are not generally making up for not taking ORS by giving ORT, that is ORS and increased fluids. Since small children with even mild diarrhea should be encouraged to drink more fluids, this is a serious deficiency.

In terms of medication, the information is harder to interpret because most respondents of children with diarrhea do not know what medicine they were given. The private sector and pharmacies treat nearly all children with medications, while the public sector treats only 74 percent of children with medicines. FCHVs, as expected, rarely give any treatment other than ORS (which may explain why people go to another provider).

Antibiotics are given to between 6 and 19 percent of children seen (but this could be as high as 58 percent to 72 percent depending on the “other and unknown” medications). Antibiotics are indicated for dysentery, so it is not possible to say if this is excessive or not. Metronidazole may frequently be the “other” medication, but this was not specifically asked in the survey. Since most childhood diarrhea is not due to giardia or ameba this medicine is mostly an ineffective treatment.

Injections and intravenous treatment (IVs), which are rarely indicated, are rarely given and do not appear to be a substantial problem from this survey. Only two percent of children who went to a provider or pharmacy received an injection and less than one percent received intravenous treatment. Anti-motility agents, which are contraindicated, were rarely reported, but given the high rate of “unknown” medicines, their actual use is not known.

Zinc was almost never reported as given, but with the introduction of the public and private sector zinc programs it is hoped that most medications for diarrhea will be replaced by zinc (in addition to improved ORS/ORT) by the time of the NDHS in 2011. Since FCHVs will be trained to give zinc treatments, this may also result in fewer patients going to a second provider after seeing an FCHV.

As with fever and cough, if it is assumed that all children who received a medication got it from a pharmacy, then the actual number of pharmacy (without exam) visits would increase from 8 percent to 11 percent of all children with diarrhea.

## 7 Conclusion

---

Combining visit and treatment information, Table 7.1 provides a new summary of the percentage of children with childhood illness in Nepal taken for treatment, according to the 2006 NDHS.

Table 7.1 Percentage of children under five years with fever and/or cough, diarrhea and symptoms of ARI, taken to a provider, Nepal 2006

	Seen by a provider (examined) and received medication	Received medication (not examined by provider)	Not examined or did not receive medication	Number of children
ARI	58	11	30	272
Fever or cough	42	15	43	1,204
Diarrhea	39	11	50	607

What is notable here is that about three-quarters of children who receive medicines receive them only after being seen by a provider. For example, 58 percent of children with ARI received medication after being seen by a provider compared to 11 percent who received medication only. Most families do not appear to provide empiric treatment based on their own decisions or a discussion at the pharmacy. Slightly more than half of provider visits are to the private sector, but it is not clear what proportion of private sector providers are also public sector employees. To influence the diagnosis and treatment children receive, it appears that the biggest area of work is among providers who see the child. It is also notable that a large proportion of children do not receive any medical treatment, although it is impossible in this survey to separate those who needed to be seen but were not from those who had a minor illness that did not warrant a visit or treatment.



## References

---

Ministry of Health and Population (MOHP) [Nepal], New ERA, and Macro International Inc. 2007. *Nepal Demographic and Health Survey 2006*. Kathmandu, Nepal: Ministry of Health and Population, New ERA, and Macro International Inc.

Ministry of Health and Population (MOHP) [Nepal], and New ERA, June 2007. *An Analytic Report on National Survey of Female Community Health Volunteers of Nepal*. Kathmandu, Nepal: Ministry of Health and Population, and New Era

Ministry of Health [Nepal], New ERA, and OCR Macro Inc. 2002. *Nepal Demographic and Health Survey 2001*. Calverton, Maryland, USA: Family Health Division, Ministry of Health; New ERA; and ORC Macro.