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Social audit of governance and delivery of public services: Haripur district 2005 -- Preventive child health

Anne Cockcroft, Khalid Omer, Amir Khan, Md Ijas, S Begum, Sohail Saeed, Amar Dass, Deborah Milne, and Neil Andersson

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District Govt. Haripur

Social audit of governance and delivery of public services

Haripur District 2005

Preventive child health

A Cockcroft, K Omer, A Khan, M Ijaz, S Begum, S Saeed, A Dass, D Milne, N Andersson
Haripur, February 2006

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Summary

Commissioned by the National Reconstruction Bureau (NRB), the CIET social audit tracks the public views, use and experience of public services under devolved local government and provides a mechanism for including citizens' views and suggestions in planning and policy making, particularly at local level.

The first and second national social audits took place in 2001/2 and 2004/5. During the first half of 2006 findings from the second national social audit will be discussed widely with the public, civil society, service providers, planners and policy makers. The social audit programme continues until 2009, with alternating years of data collection and dissemination and use of findings.

To help involve citizens in local planning and to support evidence-based planning, CIET is implementing a district social audit in five focus districts. Work in Lasbela began in 2003, and Khairpur, Haripur, Sialkot, and Khanewal joined in late 2004. In these districts the social audit aims to help governments to plan and implement services tailored to the needs of their people. A national core group supports the social audit in the focus districts.

Methods

After discussions in all the focus districts, the NCG agreed the topic of 'public and preventive health' as the main area for the first district social audit. Working with sub technical groups in each district, we designed the instruments for the cycle, including a household questionnaire, a community profile record, an institutional review of government health facilities, an interview with lady health workers (LHWs), and a feedback focus group guide.

In each district we drew a stratified random cluster sample of communities to represent the tehsils (talukas) of the district. In Haripur the sample comprised 18 rural and 2 urban communities across the tehsils.

Trained field teams (mainly women) collected household information in January and February 2005 and facilitated the feedback focus groups in July 2005.

Double data entry with validation ensured a clean dataset. We categorized household vulnerability of the

basis of roof construction, room occupancy, and occupation of the main breadwinner. Analysis produced data on key indicators across the district, weighted to reflect any uneven sample distribution, and examined the potential effects of interventions to improve outcomes.

Findings

Information base

Table s1. The household sample by tehsil

Tehsil	No. households	Total people
Haripur	1617	11345
Ghazi	400	2894

The survey covered 2017 households (representing 14239 people). The number of households covered in each tehsil is shown in Table s1. Some 23% of the households were 'vulnerable' and 5% were 'very vulnerable'. Table s2 shows household features by tehsil.

Table s2. Household features by tehsil

Feature	Very vulnerable	Vulnerable	Educated Head	Male head
Haripur	4	21	69	95
Ghazi	12	35	51	94
Haripur District	5	23	66	95
NWFP	13	48	49	94
Pakistan	13	48	53	93

In the 2017 households we interviewed 2091 mothers or caregivers. Less than half of them had any formal education (46%; 949/2082). The 2091 mothers provided information about 2682 children age less than 60 months. We also interviewed 40 LHWs covering sample communities.

Childhood diarrhoea

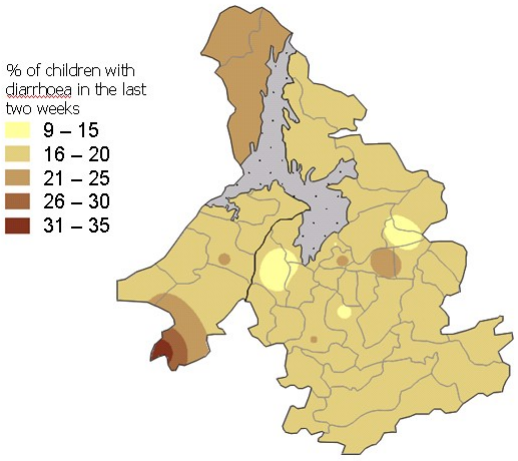


Figure s1 % children under 5 years with diarrhoea in the last two weeks

Among children aged less than 60 months, 18% had suffered diarrhoea during the last two weeks and 58% had suffered diarrhoea in the past 12 months. The proportion of children with diarrhoea during the last two weeks varied across the district (Figure s1).

Some household features and practices are potentially related to the risk of diarrhoea in children.

Drinking water
Nearly all (92%) households in Haripur rely on piped water as their main source of drinking water and a significant number (8%) also rely on ground water, particularly in Ghazi Tehsil. Nearly all households (92%) have a water source defined as protected.

Of the drinking water containers inspected, 95% were covered, 92% were clean, 72% were raised, and 68% were covered, clean *and* raised.

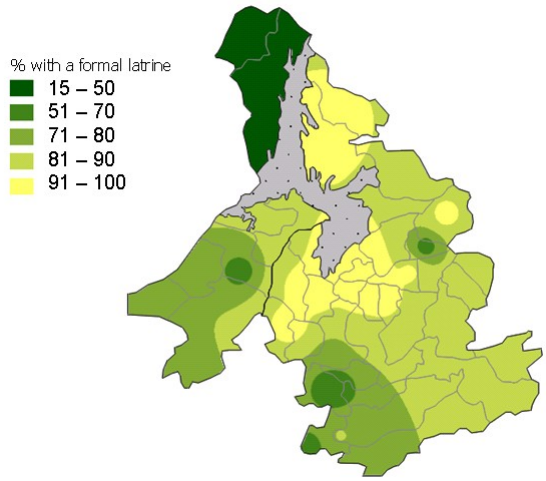


Figure s2 % households with a formal latrine

Latrines and household hygiene

Some 88% of households used a latrine and 82% had some formal type of latrine (Figure s2). Most households without a latrine (91%) said this was because they could not afford one.

Most community focus groups believed that having a latrine in the household could help prevent diarrhoea in children but they pointed out it was important to keep it clean. They felt households would need financial and technical support to help them install latrines.

The field teams observed garbage inside or at the doorstep in 41% of households, sewage water in 45%, and excreta in 26%.

Information and knowledge about diarrhoea

Some 62% of mothers said an LHW visited their household, but few of these mothers (13%) recalled the LHW telling them about preventing diarrhoea in children. About three quarters of mothers (73%) could correctly identify a cause of childhood diarrhoea.

Analysis of risk of diarrhoea

Children with mothers who had some education and who had been informed about diarrhoea from an LHW were less likely to have suffered diarrhoea in the past 2 weeks. Children of better nutritional status, girls, older children and children in Haripur tehsil were also less likely to have suffered diarrhoea.

Treatment of diarrhoea

Only 19% of mothers visited by an LHW recalled she told them about treating diarrhoea in children. Most (73%) mothers said they would give a child more fluids during an episode of diarrhoea and 75% said they would give the child either the same or more food. When actually treating an episode of diarrhoea, mothers gave 71% of the children more fluids and 74% either the same or more food.

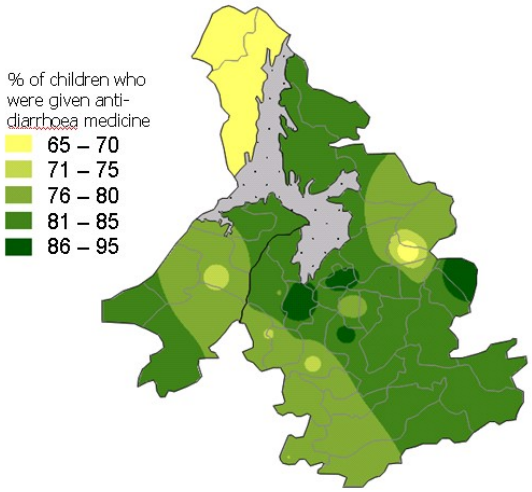


Figure s3 % children under 5 years old given anti-diarrhoea medicine during last episode of diarrhoea

In most cases (81%) the mother gave the child medicine to stop the diarrhoea (Figure s3). This is generally *not* good practice and these anti-diarrhoeal medications can be dangerous for young children.

Almost half (44%) of children with diarrhoea were not taken anywhere for treatment. Some 13% were taken to an unqualified practitioner, 25% to a private facility or practitioner, 15% to a government facility, 2% to an

NGO service and less than 1% to an LHW/LHV. Private facilities more often gave children ORS (71%) than government facilities (60%) or unqualified practitioners (66%). Unqualified practitioners (92%) and private facilities (67%) more commonly provided other medicines than did government facilities (19%).

More parents who used a private practitioner felt they were given a full explanation about the child's condition (71%), than parents who used a government facility (48%) or an unqualified practitioner (51%). For all service providers, more than 9 out of every 10 parents were satisfied with the behaviour of the health worker.

Most parents paid for travel to government (78%) or private practitioners (67%) and fewer (25%) to unqualified practitioners. The average payments for treatment were lowest in government facilities. Most parents at a government facility (84%), a third of those at a private facility (34%), and a few (10%) at unqualified practitioners had to pay for medicines or investigations outside the facility.

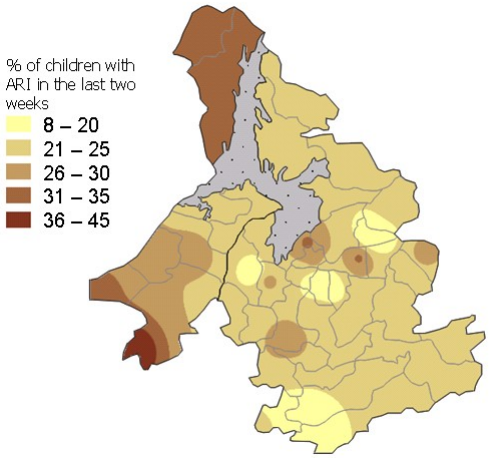


Figure s4 % children under 60 months with ARI in the last two weeks

Childhood respiratory infections

Among children under 60 months old, 24% had suffered an acute respiratory infection (ARI) during the last two weeks and 60% during the past year (Figure s4).

Some household features and practices are potentially related to the risk of ARI in children.

Cooking and heating
Some 86% of households had their cooking area separate from the main living area, and 87% had their cooking area separate from the sleeping area. Most cooking was on wood stoves and 19 used non-smoky cooking fuels. A third of households (38%) had some type of heating system, mostly wood stoves or gas heaters.

Smoking and ventilation
About a third (33%) the households had at least one member who smoked inside the household. Most (91%) households had some form of ventilation arrangement.

Analysis of risk of ARI

Most of the household features we studied were not related to the risk of ARI. Children from households with ventilation were less likely to have ARI. The analysis model indicates that just 8 per thousand additional children could potentially be protected from ARI if all households had a ventilation arrangement; the benefit would be almost all in Ghazi tehsil.

Treatment of ARI
Of mothers visited by an LHW, very few recalled being told how to recognize (3%) or treat (5%) ARI.

Of children with ARI in the last 12 months, 31% were not taken anywhere for treatment, 17% to an unqualified practitioner, 35% to a private qualified practitioner, 14% to a government facility, and 3% to an NGO service.

Private practitioners provided a full explanation for 69% of children, government practitioners for 53%, and unqualified practitioners for 57%. All the medicines were provided in the facility for 94% of visits to unqualified practitioners, 69% to private facilities, and 24% to government facilities.

Most families paid for travel to government or private facilities but fewer paid for travel to unqualified practitioners. Payments for treatment in government facilities were less than those for private or unqualified practitioners. But most of those visiting government facilities had to pay for medicines outside the facility.

Childhood measles

The description of measles frequency is among children 10-59 months old and excludes cases in children less than 10 months old. In these children, 12% were reported to have had measles (Figure s5).

Analysis of risk of measles
Younger children were less likely to have had measles than older children as were children from rural communities. But we found no significant reduction in the risk of measles among children who had been vaccinated, perhaps reflecting the low rate of measles and high rate of vaccination in the district (see below).

Costs of measles

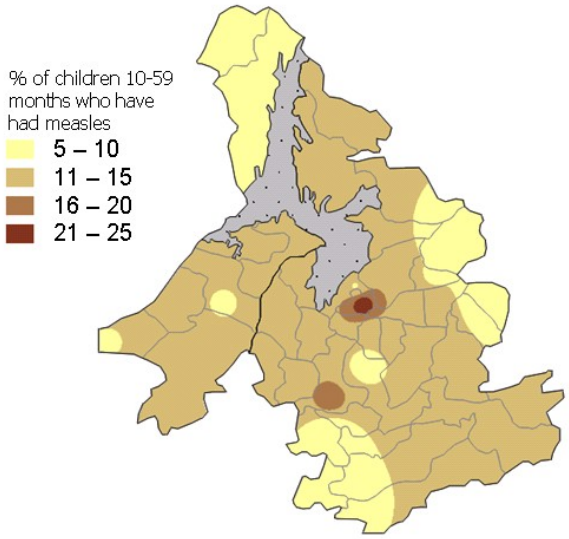


Figure s5 % children 10-59 months who have had measles

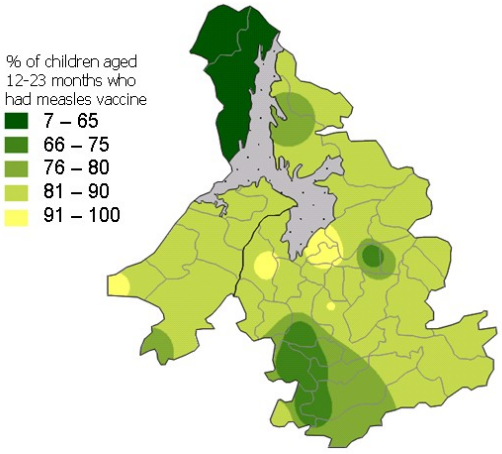


Figure s6 % children 12-23 months who had measles vaccine

Of those children aged 10-59 months who had measles in the last 24 months, 82% of their parents paid something for treatment. Among those who paid, the mean amount was Rs 499 (median Rs 200).

Childhood immunisations

Among children aged 12-23 months, 90% had received BCG vaccine, 85% had received a full course of DPT injections, and 80% had received measles vaccine (Figure s6). Virtually all children under 60 months had received polio drops at least once during the last year, and most of them had received drops many times.

Knowledge and perceptions about immunisation
Nearly all mothers had heard something about immunisations, but sometimes no more than information about where to go to get the immunisation. Some 83% of mothers were able to mention at least one illness preventable by immunisation. Almost all (97%) thought it was worthwhile to immunise children. Only 4% had heard of any adverse effect of immunisation. Among mothers visited by an LHW, 30% recalled being told something about immunisations. Most (91%) of mothers had discussed immunisation in the family. For 43% of the children mothers alone had made the decision about immunisation, for 32% the mother and father decided together, and for 24% mothers were not involved in the decision.

Analysis of receiving measles vaccine
Children were more likely to be immunised if: they were from less vulnerable households, their mother had heard something about immunisations, their mother knew of some vaccine preventable diseases, their mother had been told by the LHW about immunisations, their family had discussed immunisations, and if their community was visited by a vaccination team or was within 5Km of a government facility offering vaccinations.

Public satisfaction with basic services

Isolated satisfaction ratings must be interpreted with caution as they may be influenced by many factors, but they nevertheless offer a feedback to district governments about a range of services provided by district and tehsil governments.

Roads

Some 56% of households were satisfied with the roads and 98% said they had access to roads.

Public transport
Some 65% of households were satisfied with public transport and 99% said they had access to it.

Government garbage disposal
Only 6% of households were satisfied with garbage disposal and 13% said they had access to a service.

Government sewerage system
A third (39%) of households were satisfied with garbage disposal and 87% said they had access to a service.

Government water supply
Some 74% of households were satisfied with government water supply and 96% said they had access to a supply. The proportion of households with access to a supply could be over-estimated because whole communities tend to be supplied or not and the sample of communities might by chance not include the few non-supplied communities.

Agriculture services
A quarter (26%) of households were satisfied with agriculture services and 57% said they had access to a service.

Government education services
Some 71% of households were satisfied with education services and 99.5% said they had access to a service.

Government health services
A third (35%) of households were satisfied with health services and 90% said they had access to a service.

Gas supply
Only 14% of households were satisfied with gas supply and 16% said they had access to a supply.

Electricity supply
Some 82% of households were satisfied with the electricity supply and 99.9% said they had access to a supply. The proportion of households with access to an electricity supply could be over-estimated because whole communities tend to be supplied with electricity or not and the sample of communities might by chance

not include any of the few communities in the district not supplied.

Commentary

This report presents the main findings of the social audit in Haripur. It will hopefully be a useful reference. But the main work of disseminating the findings and making use of them to support evidence-based planning is only just beginning. Over the coming months the social audit findings will be presented and discussed in many settings within the district, both within and outside government.

Some findings worth highlighting for further discussion include:

- the high use of anti-diarrhoea medicines in children
- the low use of government health services and preference for private qualified practitioners for treatment of both diarrhoea and ARI
- the low rate of measles and high immunisation rates, so no significant protective effect of measles vaccine demonstrated
- the possible interventions to increase the rate of childhood immunisations, even though this is already quite high
- the contrast between LHW reports of giving information to most mothers and few mothers recalling being given information
- the information about public satisfaction with services and services for which Haripur is above the overall figures for NWFP

Introduction

Commissioned by the National Reconstruction Bureau (NRB), the CIET social audit tracks the public views, use and experience of public services under devolved local government and provides a mechanism for including citizens' views and suggestions in planning and policy making, particularly at local level.

The aims of the five year social audit programme are:

- To provide citizen's views and experience of devolution
- To examine delivery of public services to citizens and track changes over time
- To provide a means of input for citizens into district level planning
- To support evidence-based planning, especially at district level

CIET conducted the baseline national social audit in 2001/2 and the second cycle in 2004/5. The second cycle allowed an assessment of changes since the baseline at the beginning of devolution, and identified factors related to positive outcomes. During the coming months the findings of the second national social audit will be shared and discussed widely with the public, civil society, service providers, planners and policy makers. The third national social audit will begin in the second half of 2006. The social audit programme is set to continue until 2009, with alternating years of data collection and dissemination and use of the findings.

The national social audit collects information from a representative sample of some 54,000 households in communities in all districts. The social audit goes beyond information gathering, analysis, and reporting. It goes on to facilitate discussion with communities, formulation of solutions and strategies, validation with other institutions such as health and education facilities, and discussion with local government authorities.

The social audit in focus districts

In order to achieve the second two aims of the social audit (above) it is necessary to work in more detail within districts, and CIET is implementing a district social audit in five focus districts. Experience in these districts will facilitate the roll-out of district level social audit to additional districts over time. Work in the first

focus district, Lasbela, began in 2003, and four further districts – Khairpur, Haripur, Sialkot, and Khanewal – joined towards the end of 2004.

In the focus districts the social audit aims to help governments to plan and implement services tailored to the needs of their local populations. It is a means of giving form to the intention of the Local Government Order 2001 to empower citizens to participate in an informed way in decisions that affect their lives, and encourage them to engage in local democratic processes. A key element of the district social audit is the close involvement of government officers, elected representatives and civil society groups, building their skills over time institutionalising the process so that it can be sustained beyond the time of the project. In summary, the aims of the district social audit are:

- To assist evidence-based planning at district, tehsil and union levels
- To provide a means of input for citizens into district level planning
- To build capacities of district officers and elected representatives for evidence-based planning
- To produce a sustainable process (over a five year programme)

The five focus districts all joined the scheme based primarily on the interest and enthusiasm of the nazims and other members of their district governments, beginning at the time of disseminating the findings of the baseline (2001/2) social audit in regional meetings. Provincial governments, especially through the provincial departments of local government and rural development, endorsed the choice of focus districts in their respective provinces.

Operationalising the social audit in focus districts

In each of the five districts, CIET and the district government have made similar arrangements for the social audit.

An initial *district orientation meeting(s)*, attended by key stakeholders inside and outside government (at district and tehsil levels), introduced the concepts of the social audit and the objectives of the district social audit scheme, and provided an opportunity for questions and

discussion about the proposed processes in the district. Participants identified the issues they considered to be the first priorities to be covered by the district social audit, bearing in mind that the priority issue should be one where it could possible for the district to act to change the situation. Participants also agreed to form a district social audit steering group, identified a suitable person to be the social audit focal point on behalf of the district government, agreed arrangements for providing office space for the CIET social audit district coordinator, and agreed arrangements for tehsil level orientation meetings. In Haripur district the initial district orientation meeting took place on November 1, 2004.

A series of *tehsil orientation meetings* across the district introduced participants to the social audit and heard their priority topics for the district social audit. The office of the EDO community development facilitated these tehsil meetings. Participants included tehsil level government officers and elected representatives, as well as representatives from union councils, from civil society, and from the media.

The *district steering group* discusses policy issues and makes decisions about the social audit at district level. It coordinates support to the CIET team for social audit activities. It also gives inputs into the design of the social audit cycles. It is the forum for discussing recommended actions emerging from the social audit evidence and helping to incorporate these into district planning.

In general, the steering group comprises:

- District Nazim & Naib Nazim
- From district administration:
    - DCO
    - Finance and planning department
    - Community development department
    - Key line departments such as health, education, public health engineering, agriculture, livestock
- Representatives from the district council
- Representatives from tehsil councils and administrations
- Civil society representatives such as NGOs/CBOs/CCBs, academic institutions, media, or other professional bodies

Annex 1 gives the list of members of the social audit district steering group in Haripur district.

Each district government nominated a *sub-technical group* to work in detail with the CIET team on selection of the household sample and design of the instruments for the social audit. The groups generally included representation from relevant line departments including finance and planning, community development, health, public health engineering, members from the district council, selected TMOs, and relevant civil society representatives. Annex 2 lists the members of the sub-technical group in Haripur district.

The CIET district coordinator collected *basic information about the district* to facilitate sampling, mapping and communication. This included:

- A list of all important contacts within the district and all tehsils with full contact details
- Population data about district tehsil and union councils with urban and rural distribution.
- A list of union councils in each tehsil, marked as urban or rural
- A recent map of the district with tehsil and union boundaries

Focus district national core group

A national core group supports the social audit in the focus districts. The group includes representation from all the focus districts, from provincial local government departments, and from NRB, with CIET providing the logistic and secretarial support. The terms of reference for the national core group are shown in Annex 3. The national core group shares experiences of the district social audit between the focus districts, identifying what has worked especially well, so that a tool-box for district social audit in other districts can be developed.

The inaugural meeting of the group took place on 3 December 2004 in Islamabad, with a follow-up meeting on 11 June 2005 in Lasbela. In these meetings the group agreed their terms of reference, approved a memorandum of understanding between CIET and focus districts (subsequently sent to provincial governments for endorsement), agreed a common topic for the social audit in all the focus districts, received preliminary findings from the social audit and discussed plans for their dissemination.

A social audit cycle

- Clarify the strategic focus
- Design instruments, pilot test
- Collect information from households on use, perceptions and their experience of public services
- Link this with information from key informants and relevant services
- Analyse the findings in a way that points to action
- Take findings back to the communities for their views about how to improve the situation
- Bring evidence and community voice into discussions between service providers, planners and community representatives to plan and implement changes

Methods

Annex 4 gives a general description of the CIET social audit methods. The concept of the social audit is simple: collect information about a key problem from the people concerned and from service providers. Then use this information as a basis for involving the public and service providers in making changes to improve the services. The key steps include: collect information from women and men in households in representative communities about their knowledge, use, perceptions and experience of the problem and their use of relevant services; link this with information from the services and service providers; analyse the findings in a way that points to what actions might improve matters; take the findings back to the communities for their views about what could improve the situation; bring the findings and suggestions to discussions between service providers, planners and community representatives to plan and implement changes. The loop is closed when a repeat fact-finding exercise assesses the changes and their effects.

The topic for the social audit cycle

In each district, a short list of topics emerged from the consultative process in district and tehsil level meetings including government and civil society (see Introduction). Four topics came up in all the focus districts, in slightly differing orders of priority.

1. Health (including public and preventive health issues such as hygiene, sanitation and drinking water)
2. Education (with emphasis on girls' education, special and technical education)
3. Irrigation (*islahe aabpashi*)
4. Roads and communication

These district priorities were discussed in the first national core group meeting. The group agreed on "Public and preventive health" as the topic for the first cycle, noting that others on the shortlist could be topics of subsequent social audit cycles. In the case of Lasbela, some aspects of public health, water supply and sanitation had already been covered in their first social audit cycles, so they extended the focus more onto aspects of childhood immunisation.

Data collection instruments

CIET worked with district sub-technical groups to design the instruments for social audit, with an emphasis on collecting information that could be useful for planning service improvements. This exercise was also an opportunity for skills transfer to the district teams. Sharing of expertise and suggestions between districts ensured that a common set of instruments emerged with inputs from all districts, suitable for collecting information in the diverse circumstances of the five focus districts.

The social audit instruments are standards-based, drawing on CIET experience as well as other relevant sources. In this case, we used in particular the experience of the first social audit in Lasbela as a guide for relevant sections of the instruments.

The instruments for the social audit cycle included: a household questionnaire, a community profile, an institutional review of health facilities, a key informant interview for lady health workers, and a feedback focus group guide.

The household questionnaire comprised two sections:

- general household information from a household respondent, including demographics of the household, household hygiene practices and water supply, and satisfaction and perceived access to a range of public services
- information from mothers of under five years old children, concerning their education, knowledge, attitudes and practices, as well as illnesses in the children and their management, and immunisation of the children

The community profile was completed by means of discussion with a knowledgeable person in the community and observations by the field workers. It covered garbage disposal, the sewerage system, community drinking water sources, type and location of health facilities, and information about any community organizations.

The institutional review of government health facilities serving communities collected information about records and supplies, and, by observation, the presence and functioning of facilities and equipment. It included

an interview with the vaccinator or other person responsible for the facility vaccination services.

A *key informant interview* collected information from lady health workers in those sites where they worked, including their education and training, visits to the households, any problems they faced, and their relevant knowledge and practice.

Feedback focus group guides were developed once the basic findings from the households were available. They presented tehsil level key findings and invited discussion and suggestions for solutions. The guide covered the use of latrines and childhood diarrhoea, management of diarrhoea, the household environment and respiratory infection in children, and how to encourage and support parents to vaccinate children.

Sample and sampling

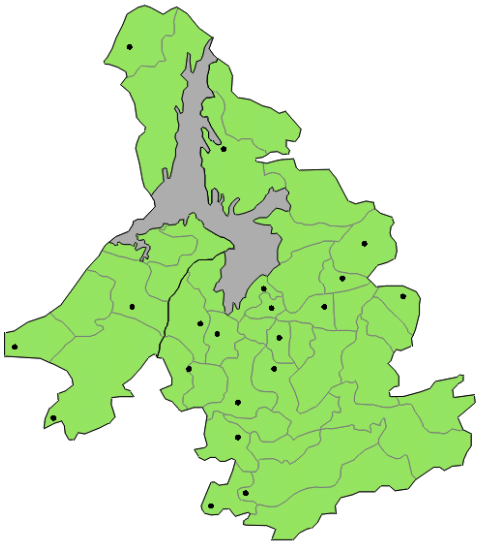


Figure 1. Sample sites for Haripur social audit 2005

The CIET team and the sub-technical group in each district selected a stratified random cluster sample of communities to give representation of the situation in the different tehsils or talukas. First union councils were randomly selected from each tehsil, reflecting urban/rural spread and with the number according to the population in each tehsil. We included a minimum of four union councils per tehsil. The official list of union councils provided by the district government was used as the sampling frame for the selection of union councils. From each union council we randomly selected one community (village or mohalla) from the list of communities in the union.

Haripur district consists of two tehsils and has 44 union councils – 5 urban and 39 rural. The sample (Figure 1) comprised the following urban and rural sites from each tehsil:

	Urban	Rural
Haripur	2	14
Ghazi	0	4
Total	2	18

In each selected community, the sample included a group of 100 contiguous households with children under five years, spreading out from a random starting point. There was no sampling within the site, all the households were included.

Field teams

The field teams comprised district residents, with a majority of women since the main household interviews were with women. In the different focus districts, team members included members of NGOs, senior university students, recent graduates, and councillors.

Training of field teams

Teams for the household survey and key informant interviews attended a three-day training, including classroom sessions and field practice. Each field team comprised eight female interviewers, one female quality control associate and one male logistic control associate.

The field teams trained to conduct the community focus group discussions each comprised two men and two women. More than half of them had participated in the household data collection. Their training lasted three days, including classroom and field practice.

Data collection

The field teams undertook data collection for the 20 sites in the sample of Haripur district in January and February 2005.

Quality check during data collection

Generally, each team completed the household survey in one community in one day. In come cases a site could not be completed in a single day due to difficult terrain or weather conditions. The field teams took with them a letter from DCO, giving official status to the work. On entering each community, the team logistic control associate made contact with community leaders to explain the purpose of the survey and to seek their support for the field work in the community.

After preliminary analysis of the household findings, the teams returned to the same communities in and conducted focus group discussions. The focus group discussions in Haripur district took place in July 2005.

Data entry and analysis

The field supervisers checked the registers and sent them to the CIET data management unit (DMU) in Karachi. Data entry by trained operators used the public domain software package Epi Info. Double data entry with validation reduced key stroke errors.

After validation further cleaning of the dataset looked for logical errors, out of range responses and duplications. The cleaning was completed by checking back to the original data registers as necessary.

Analysis used CIETmap software. For questions that had multiple responses, we used SPSS software to generate frequencies. Analysis followed and elaborated the analysis plan outlined during the design phase, which identified key outcomes of interest in relation to preventive child health, and factors potentially related to these outcomes. Initial analysis generated frequencies of all main indicators were generated. The values for all main indicators at district and tehsil level are shown in the tables in Annex 5.

Although the sample size in each tehsil reflected the relative population in that tehsil, this was not exact. Therefore, to take into account under- and over-sampling between tehsils, we calculated *weights* and applied these when making district level estimates. All the figures shown in this report are weighted, unless stated otherwise.

Further analysis examined the associations between outcomes and related risk and resilience factors, first in a univariate analysis and then in a multivariate model to examine the effects of relevant variables simultaneously. In this analysis, we included factors measured in instruments other than the household questionnaire, linked to the household and child data by means of linking code numbers. For example, this *meso-analysis* allowed us to examine the relationship between the distance of the nearest government health facility from the community and vaccination in children, taking into account the effects of other variables related to vaccination.

To investigate the relationship between household economic status and important outcomes, we defined a composite variable for household vulnerability, based

on household roof construction, degree of overcrowding, and occupation of the main breadwinner. If all three factors were adverse, we defined the household as very vulnerable, while if two out of three were adverse, we defined the household as vulnerable.

In analysing the reports of the focus group discussions, we identified certain themes mentioned by groups and coded the reports according to whether the theme was present or not. We entered this into the computer to allow us to compare it with household findings. We also used the reports to provide a qualitative understanding of some of the quantitative findings, including extracting quotes of people describing the situation in their own words.

Findings

The information base

Household information base

- 2017 households
- 14239 people
- 1402 boys aged less than 60 months
- 1279 girls aged less than 60 months

Table 1. The household sample by tehsil

Tehsil	No. households	Total people
Haripur	1617	11345
Ghazi	400	2894

Table 2. Household features by tehsil

Feature	Very vulnerable	Vulnerable	Educated Head	Male head
Haripur	4	21	69	95
Ghazi	12	35	51	94
Haripur District	5	23	66	95
NWFP	13	48	49	94
Pakistan	13	48	53	93

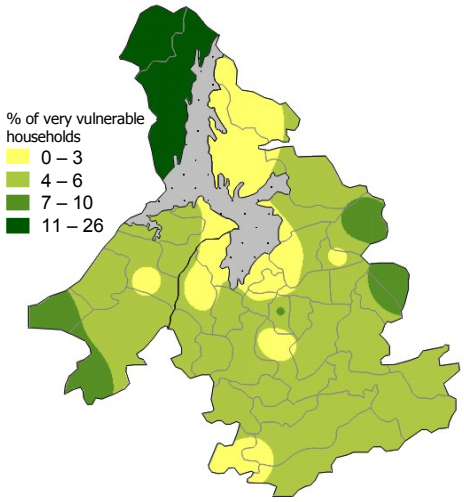


Figure 2 % of "very vulnerable" households

Table 3 Children in the survey by tehsil

Feature	Total children	Children <60 months	Children 12-23 months
Haripur	2472	2190	408
Ghazi	565	492	104
Haripur District	3037	2682	512

Households

The survey covered 2017 households (representing 14239 people) in 20 representative communities (Box). The households in each tehsil and the total population covered in the households are shown in Table 1.

The household respondent was a woman in 94% (1881/2016) of households. Almost all (95%; 1905/2008)) household heads were male. About two thirds 66% (1322/2013) of them had some formal education.

Some 23% (468/1982) of the households were 'vulnerable' and 5% (115/1982) were 'very vulnerable'. (Table 2). There are less vulnerable and very vulnerable households in Haripur than in NWFP and in Pakistan in general, and more with an educated head. The map in Figure 2 shows household vulnerability across the district.

Mothers/caregivers

In the 2017 households we interviewed 2091 mothers or caregivers. Most of them were the mothers of the children being inquired after (93%; 1929/2082). Less than half had any formal education (46%; 949/2082).

Children

The 2091 mothers provided information on 2682 children below the age of 60 months. Just over half of these children were male (52%; 1402/2681). Table 3 shows the number of children in each tehsil by age group.

Lady health workers (LHW)

We interviewed 40 LHWs. Most (26/40) of these were young women between the ages of 18 and 30, 6/40 had less than a 10th grade education while 34/40 had at least a 10th grade education. About half (18/40) had been working as an LHW for more than five years and just 1/40 was new to the position within the past year.

Childhood diarrhoea

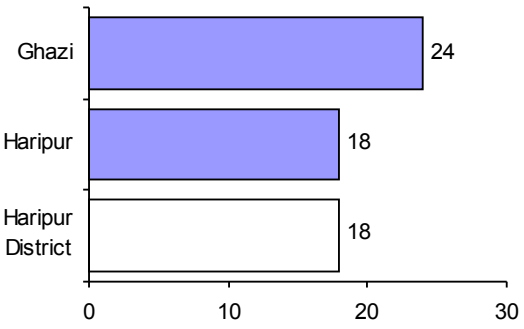


Figure 3 % children under 60 months with diarrhoea in the last two weeks

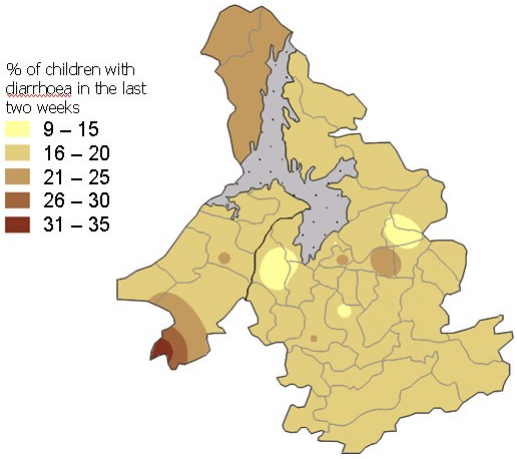


Figure 4 Map of % children under 60 months with diarrhoea in the last two weeks

Table 4 % households with different sources of drinking water(% weighted)

	Haripur District	Haripur	Ghazi
Piped water	92	94	81
Ground water	8	6	18
Surface water	<1	<1	2
Tanker water	<1	<1	-
N	2017	1617	400

Table 5 % households with differing conditions for drinking water containers (% weighted)

	Haripur District	Haripur	Ghazi
Households allowing inspection	96	97	91
Covered containers	95	96	92
Clean containers	92	93	83
Raised containers	72	74	60
Covered, clean and raised	68	71	55

Frequency of childhood diarrhoea

Among children aged less than 60 months, 18% (480/2568) had suffered diarrhoea during the last two weeks and 58% (1494/2568) had suffered diarrhoea in the past 12 months.

As shown in Figure 3, the proportion of children with diarrhoea during the last two weeks was greater in Ghazi than in Haripur Tehsil. The map in Figure 4 shows the variation across the district in the proportion of children under 5 years old with diarrhoea in the last two weeks.

For about two thirds (63%; 908/1430) of the children who suffered diarrhoea in the past 12 months their last episode went on for longer than three days and 4% (62/1475) had blood in their stool during the last episode.

Variables potentially related to childhood diarrhoea

The field teams collected information about factors at household level that might have an impact on the risk of diarrhoea in children.

Drinking water

Most households in Haripur rely on piped water as their main source of drinking water and a significant number also rely on ground water, particularly in Ghazi Tehsil (Table 4). As a consequence nearly all households have a water source defined as a protected source (92%; 1794/1978).

Very few households treated their drinking water in any way (4%; 74/2011) and those that did most commonly boiled it or used a filter.

Across the district 96% (1933/2012) respondents allowed interviewers to inspect the household drinking water container. Of these, 95% (1833/1925) were covered, 92% (1755/1922) were clean, and 72% (1371/1921) were raised above ground level. Some

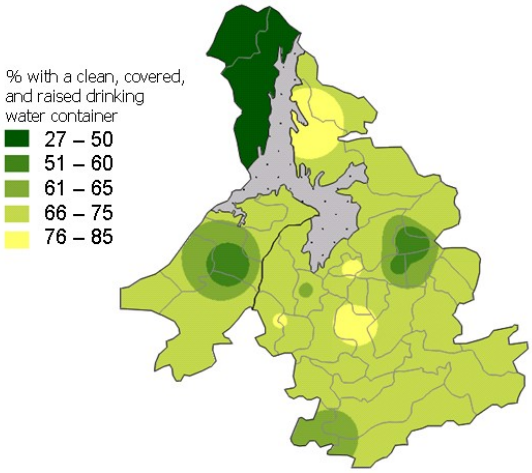


Figure 5 Map of % households with covered, clean, raised drinking water container

68% (1302/1920) met the ideal conditions of being covered, clean *and* raised (Table 5).

The map in Figure 5 shows the variation in proportion of households with a covered, clean, raised drinking water container across the district.

Latrines

Across the district some 88% (1755/2017) of households used a latrine (either a communal or household latrine). Some 82% (1611/2004) of households had some formal type of latrine. The large majority of those without a latrine did not have one because they could not afford one or it did not come with the house (92%; 228/251). (Table 6)

Table 6 % households using and having latrines

	Haripur District	Haripur	Ghazi
Use a latrine	88	91	71
Have a latrine	82	86	56

The map in Figure 6 shows the variation in households with a formal latrine across the district.

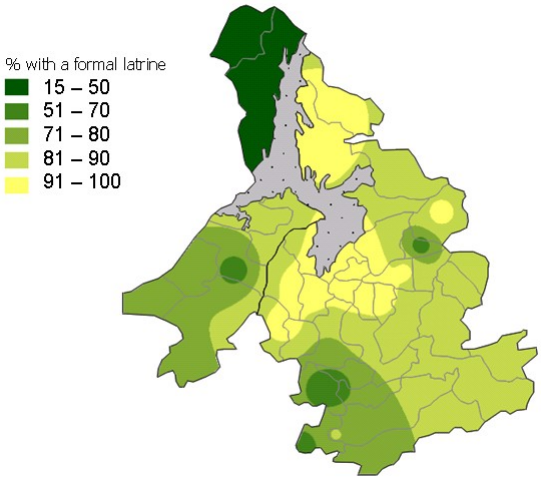


Figure 6 % households with a formal latrine

Focus group views about latrines

The community focus groups (of men and women separately) in the sample communities discussed some of the issues around latrines. They first discussed whether, from what they knew, children from households where the members did not use a latrine seemed to get more diarrhoea. Most groups agreed this was the case. Some people noted that the latrines did not help unless they were kept clean.

Coming to the issue of what could be done to help households install and use latrines, about half of the groups considered that outside financial or technical support was needed, and men mainly felt that it was the responsibility of the government to help them. Some also mentioned the need to raise awareness of the benefits of latrines in some households. About half of the groups were of the opinion that there was little communities could do while half also felt that something could result from a collective effort within the community. Women in particular thought that funds could be contributed within the community.

When asked what could be done by the government to help communities install and use latrines, most groups suggested the government should provide financial and technical help. About half the male groups suggested

"The issue here is not whether to have a latrine or not; the issue is to keep it clean and to keep children clean."
Female focus group, Haripur tehsil

"We don't see much difference between using and not using a latrine. Children get diarrhoea even when they use one"
Male focus group, Haripur tehsil

"Keeping the entire house clean is important since no one spends the entire day in a latrine"
Female focus group, Haripur tehsil

"This is a shameful matter, people will not be willing to cooperate in this matter."
Male focus group, Haripur tehsil

"The government and the people will have to help one another to solve this issue."
Male focus group, Haripur tehsil

"The government should initiate a scheme to help people construct latrines the same way as it constructs drains and streets in communities."
Female focus group, Haripur tehsil

the government could also raise awareness while a few female groups raised this issue.

Household hygiene

The field teams conducting the household interviews observed and noted some aspects of household hygiene. They observed garbage in the household compound or at the doorway in 41% (840/2009) of households. They noted sewage water inside the compound or at the doorstep in 45% (914/2010) of households and excreta (animal or human) inside or at the doorstep of 26% (533/2007) of households. Table 7 summarises the observations about household hygiene in the four tehsils.

Table 7 % households observed with different hygienic conditions in the household or around the doorway (% weighted)

	Haripur District	Haripur	Ghazi
Garbage observed	41	37	62
Sewage water observed	45	41	62
Excreta observed	26	23	41

The map in Figure 7 shows the variation in proportion of households with excreta observed in or around the homestead across the district.

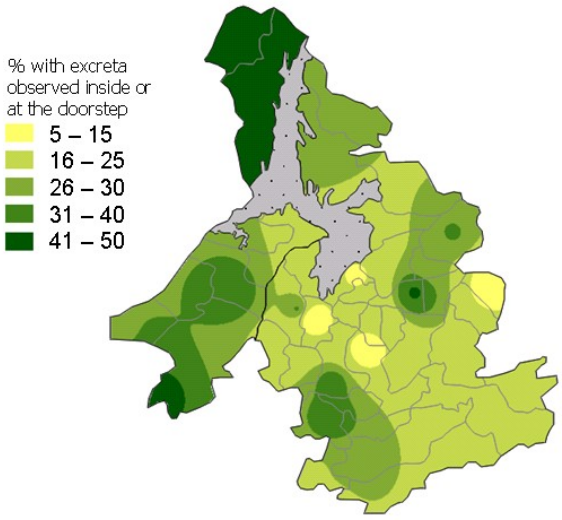


Figure 7 % households with excreta observed inside or at the doorstep

Information about prevention of diarrhoea from the lady health worker (LHW)

Some 62% (1256/2083) of mothers said an LHW visited their household. In some households more than one mother was interviewed. Among households, 64% (1256/2009) were visited by an LHW and about half (58% (1118/1966) were visited within the last month (Table 8).

Table 8 Frequency of LHW visits to households

	% households
Never visited	37
Within the last month	58
More than a month ago, within last 3 months	5
More than 3 months ago, within last 6 months	<1
N	1966

Few (13%; 156/1233) of those mothers who reported being visited by an LHW recalled that the LHW told them anything about preventing diarrhoea in children. Considering all mothers (including those not visited by an LHW), only 8% (156/2060) had been told by an LHW about prevention of diarrhoea.

The mothers' recall of what the LHW told them about prevention of childhood diarrhoea contrasts with the information from the interviews with LHWs covering some of the sample communities (see later section). Most of the LHWs reported telling the mothers they visited about prevention of diarrhoea.

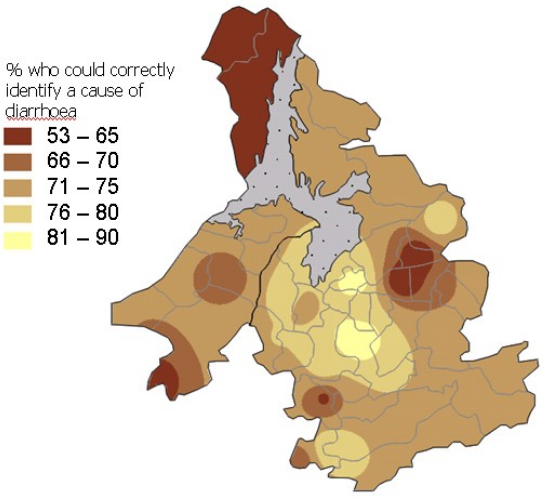


Figure 8 Map of % of mothers who could correctly cite a cause of diarrhoea in children

Table 9 Variables potentially associated with the risk of diarrhoea in children

- Urban/rural location*
- Tehsil*
- Education of the household head
- Education of the mother*
- Household vulnerability
- Sex of the child*
- Age of the child*
- Nutritional status of the child*
- Mother's knowledge of causes of diarrhoea*
- LHW advice about diarrhoea*
- Protected water source
- Good water storage
- Household latrine
- Sewage in household or around door
- Excreta in household or around door
- System for collecting garbage in community*
- Government system for removing waste and sewage water from community
- Garbage in household or around door
- Garbage in streets (from community profile)
- Sewage in streets (from community profile)
- Stagnant water in streets (from CP)*

* variables related to risk of measles in univariate

Table 10 Model of effects of variables on risk of diarrhoea in children

	Crude OR	Weighted OR	95% CI of weighted OR
Educated mother	0.75	0.77	0.63-0.96
Male children	1.30	1.29	1.05-1.58
Normal or big child	0.63	0.62	0.46-0.83
Younger children	1.32	1.31	1.05-1.62
LHW information	0.54	0.58	0.37-0.90
Tehsil	0.69	0.73	0.57-0.93

OR=Odds Ratio, a measure of relative risk

Mothers' knowledge of causes of diarrhoea

About three quarters of mothers (73%; 1497/2072) could correctly identify a cause of diarrhoea in children. The map in Figure 8 shows the variation across the district in the proportion of mothers who could cite a correct cause of diarrhoea in children.

Analysis of risk of diarrhoea in children

We collected information about a number of variables that might be associated (positively or negatively) with the risk of diarrhoea in children (diarrhoea in the last two weeks in children aged less than 60 months old). These are listed in Table 9. Several of these variables, examined separately, were associated with the risk of diarrhoea in children. These are marked (*) in Table 9. We then undertook a multivariate analysis to examine the effects of each of these variables, taking into account the effects of the others. The model from the multivariate analysis is shown in Table 10.

Education of the mother
Children whose mothers had some formal education were less likely to have suffered diarrhoea in the last two weeks, taking account of the effects of other variables[1].

Nutritional status of the child
Children who were viewed by their mothers to be either normal or big for their age were less likely to have had diarrhoea in the past two weeks than children who were viewed by their mothers to be small for their age[2].

Sex of the child
Boys were more likely than girls to have suffered diarrhoea in the last two weeks[3]

Age of the child
Younger children (0-36 months) were more likely to have had an episode of diarrhoea in the last two weeks compared with older children (37-59 months)[4].

Information from LHW

[1] Weighted OR 0.77, 95% CI 0.63-0.96, 198/1198 children whose mothers had some education had diarrhoea compared with 281/1359 whose mothers had no education
[2] Weighted OR 0.62, 95%CI 0.46-0.83, 404/2269 children viewed as normal or big for their age had diarrhoea compared with 73/289 children viewed as small for their age
[3] Weighted OR 1.29, 95%CI 1.05-1.58, 278/1344 boys had diarrhoea compared with 202/1223 girls

Children whose mothers had been told about prevention of diarrhoea by an LHW were less likely to have had diarrhoea in the last 2 weeks[5].

Tehsil
Children in Haripur tehsil were less likely to have suffered diarrhoea in the last 2 weeks than children in Ghazi tehsil[6].

Potential population gains in preventing diarrhoea

We can estimate the number of children who could be protected from diarrhoea by different interventions. In Table 11, the "gain" per thousand children is the number of children who could be protected from having diarrhoea if all children had the intervention in question.

If all mothers received *and recalled* information about diarrhoea prevention from a LHW, this could prevent diarrhoea in 59/1000 children in Haripur. Overall education of mothers could prevent diarrhoea in 25 per thousand children. Ensuring all children are considered by their mothers as normal or big for age (an indicator of nutritional status) would prevent few children from having diarrhoea (9 per thousand children), since few children are presently considered small for their age. The higher risk of diarrhoea in children with poor nutrition may also reflect that children with frequent diarrhoea are more at risk of malnutrition.

[4] Weighted OR 1.31, 95%CI 1.05-1.62, 336/1659 younger children had diarrhoea compared with 144/909 older children

[5] Weighted OR 0.58, 95%CI 0.37-0.90, 23/204 children whose mother had been told something about preventing diarrhoea by an LHW had diarrhoea compared with 454/2332 children whose mother had not been told anything

[6] Weighted OR 0.73, 95%CI 0.57-0.93, 367/2096 children in Haripur tehsil had diarrhoea compared with 113/472 children in Ghazi tehsil

Table 11 Potential gains in diarrhoea prevention

Intervention	Proportion requiring intervention (%)	Weighted risk difference	95% CI weighted risk difference	Weighted gain per 1000 children
All mothers had some education	53.6	0.047	0.015-0.079	25
Risk in boys no higher than in girls	52.5	0.039	0.009-0.070	21
Younger children same risk as older children	64.5	0.041	0.010-0.072	26
All children well nourished	11.4	0.081	0.029-0.132	9
LHWs inform all mothers about diarrhoea prevention	91.8	0.064	0.015-0.113	59

Proportion requiring intervention means those who do not currently have the favourable condition, eg % children not presently well nourished

Treatment of diarrhoea in children

The following descriptions of experiences with treating diarrhoea are based on the 58% (1494/2568) of children less than 60 months old who had suffered an episode of diarrhoea in the last 12 months. Recall of episodes longer than 12 months ago is less likely to be clear.

Advice from the LHW

Few of those mothers reporting being visited by an LHW recalled that the LHW told them anything about treating (19%; 227/1213) diarrhoea in children. When considered all mothers (including those not visited by an LHW) only 11% (227/2040) had been told about treatment of diarrhoea.

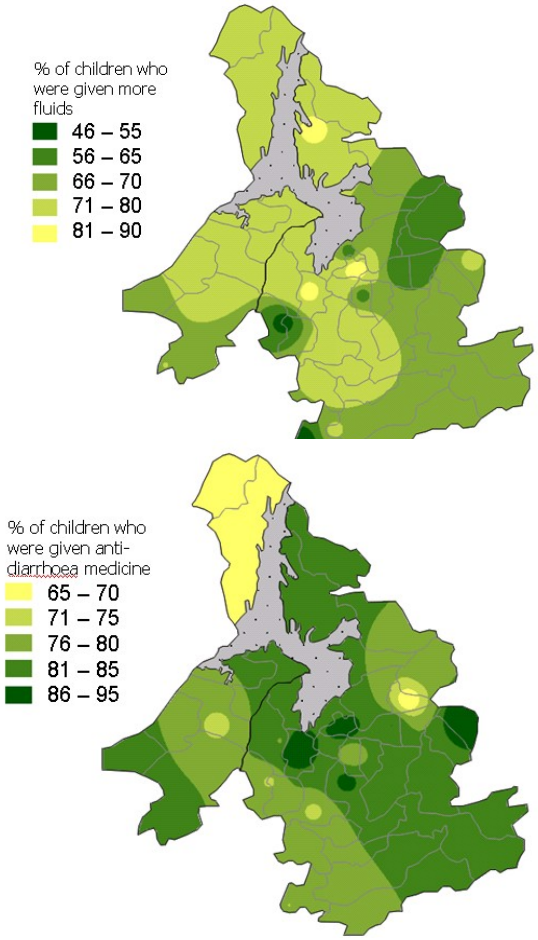


Figure 10 % children under 5 years old given anti-diarrhoea medicine during last episode of diarrhoea

Mothers' knowledge and household management of diarrhoea

Some 73% (1509/2070) of mothers reported they would give a child more fluids during an episode of diarrhoea while 75% (1547/2073) said they would give the child either the same or more food.

When actually treating an episode of diarrhoea in the last 12 months in children under five years old, mothers provided 71% (1056/1485) of the children with more fluids and 74% (1090/1484) with either the same or more food. The variation across the district in the proportion of children given more fluids in their last episode of diarrhoea during the last year is shown in the map in Figure 9.

In most cases (81%; 1202/1486) the mothers or other carers in the home gave the child medicine to stop the diarrhoea. The variation across the district is shown in

Figure 10. This is generally <u>not</u> good practice and these anti-diarrhoeal medications can be dangerous for young children. However, it is clearly a common practice in home management and favoured by LHWs (see later section on LHWs).

Focus group views about fluids for children with diarrhoea

Clearly not all mothers or caregivers know to give children with diarrhoea extra fluids, and even less manage to do this in practice. We discussed this in the community focus groups.

The groups first discussed why many mothers *do* give extra fluids to children with diarrhoea. Participants explained that giving fluids prevented children from becoming sick with dehydration. A few also mentioned that the child would be thirsty and ask for water, while others noted that it could avoid having to take the child for medical attention outside the home.

In discussing why some mothers do *not* give children with diarrhoea extra fluids, most groups mentioned poor education or lack of knowledge among mothers, while others noted mothers may not have time to give the extra fluids, or that they had misconceptions about adverse effects of giving extra fluids.

The groups suggested that mothers could learn to provide extra fluids through media campaigns, from doctors and health workers, and from community and religious leaders.

"Flowers wither without water. Loss of water from their bodies has the same effect on children."
Female focus group, Haripur tehsil

"Their mothers tell them that they never gave water to them when they had diarrhoea as a child."
Male focus group, Haripur tehsil

"Giving more water swells up a child's stomach. That's why mothers don't give their children more water during diarrhoea. "
Male focus group, Haripur tehsil

"Some mothers have a lot of children to tend to. They are too busy and hence don't have the time to give water to a child suffering from diarrhoea."
Female focus group, Haripur tehsil

"Some mothers follow household remedies. They think that their child will get better through that."
Female focus group, Ghazi tehsil

"First of all, men should be taught all this. A meeting should be convened to advise them on such matters."
Female focus group, Haripur tehsil

"A 'ladies group' could be successful; it should go door to door."
Male focus group, Haripur tehsil

Taking children with diarrhoea for treatment

Among those children less than 60 months old and who had suffered diarrhoea in the last 12 months, almost half (45%; 664/1482) were not taken anywhere for treatment. The most popular choice for treatment was a qualified private facility/practitioner. A quarter of the children (25%; 371/1482), were taken for treatment to a private practitioner, 15% (211/1482) to a government facility, 13% (198/1482) to an unqualified practitioner, 2% (34/1482) to an NGO service and less than 1% (4/1482)to an LHW/LHV. The type of service used is shown by tehsil in Table 12.

Table 12 % children taken to different types of facilities for treatment of diarrhoea in the past 12 months (% weighted)

	Haripur District	Haripur	Ghazi
No where	45	43	52

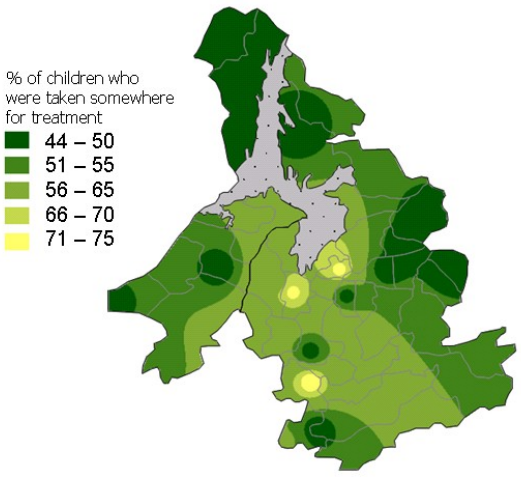


Figure 11 % children under 5 years old taken for treatment during their last episode of diarrhoea

The variation across the district in the proportion of children with diarrhoea taken somewhere for medical care is shown in the map in Figure 11.

Experience of treatment of diarrhoea

Virtually all (99%; 800/804) children who went for treatment were seen by a doctor/ practitioner or health worker regardless of the type of facility they went to.

ORS and other medication

More than half the children taken to any type of health practitioner for treatment were given ORS: 72% (263/366) of those taken to a private practitioner, 60% (124/206) of those taken to a government facility, and 64% (131/197) of those taken to an unqualified practitioner. Unqualified practitioners (92%; 178/194) and private facilities (67%; 248/364) more commonly provided any other medicines if prescribed, than did government facilities (19%; 41/204) (Figure 12). As mentioned above, the use of medicines to stop diarrhoea is not good practice in young children, and nor is the use of antibiotics advisable in most cases of diarrhoea.

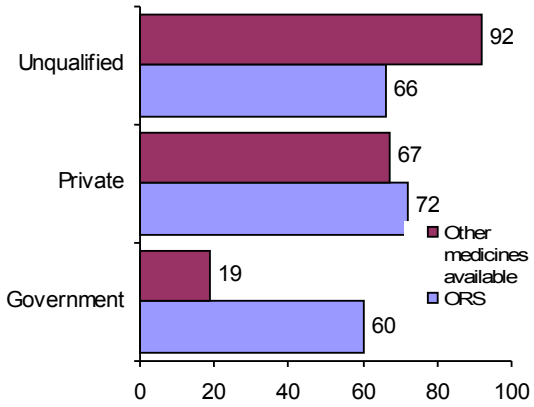


Figure 12 % of children provided ORS and other medicines from health facilities or practitioners

Explanation of illness

More of the parents who took their child to a private practitioner or clinic felt they were given a full explanation about the child's condition (71%; 255/364), than the parents who took their child to a government facility (48%; 98/206) or to an unqualified practitioner (51%; 97/192) (Figure 13).

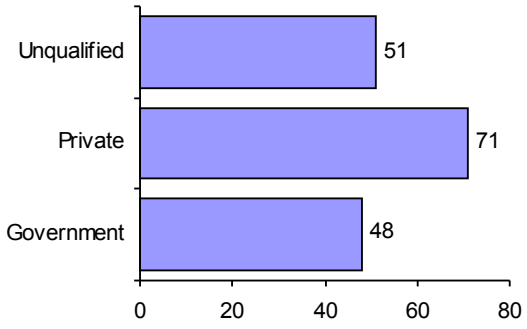


Figure 13 % of mothers of children with diarrhoea who thought they got a full explanation of their child's illness

Satisfaction with services received

Generally, satisfaction with the behaviour of the doctor or health worker was high. Satisfaction among users of private practitioners (99%; 365/368) and of unqualified practitioners (94%; 184/197) was slightly greater than among users of government facilities (91%; 190/210). But for all service types, more than 9 out of every 10 parents of children with diarrhoea said they were satisfied with the behaviour of the doctor or health worker.

Similarly, nearly all mothers were satisfied with the treatment received from the facility for all facility types. Some 92% (192/210) were satisfied with the treatment at a government facility, 98% (361/368) were satisfied with treatment from a private facility and 93% (183/197) were satisfied with their treatment an unqualified practitioner.

For all facility types mothers most frequently reported being satisfied with the treatment at the facility simply because they received "good treatment". Some were satisfied because of the good doctors and staff available at the facility (Table 13).

Table 13 Why mothers were satisfied with the treatment from the facility

Reasons	Govt	Private	Unqualified
Good doctor/staff	2	6	4
Good treatment	98	93	95
Good access/nearby	-	1	1
No other choice	<1	-	1
N	189	360	177

Those few people who were dissatisfied with the facility most commonly simply cited "poor treatment" as their reason for all types of facilities. Other reasons mentioned are shown in Table 14.

Table 14 Why mothers were dissatisfied with the treatment from the facility

Reasons	Govt	Private	Unqualified
Doctor/staff not available	11	-	6
Poor facilities/services	15	-	12
Poor treatment	57	100	59
Medicines not available	11	-	-
No other choice	6	-	23
N	18	7	14

Costs of treatment

Travel

In 78% (162/210) of cases where children were taken for treatment to a government facility, families had to pay something for travel. The mean amount for these families was Rs31. For private treatment families had to pay for travel in 67% (246/361) of cases with a mean amount of Rs51. About a third (25%; 46/195) of families who took their children to unqualified practitioners had any travel costs averaging Rs31. (Table 15).

Table 15 % cases that paid, weighted mean and median amounts paid (of those who paid) for travel for treatment of diarrhoea

Facility type	% cases paid	Mean amount (Rs)	Median amount (Rs)
Government	78 (162/210)	31	20
Private	67 (246/361)	51	30
Unqualified	25 (46/195)	31	12

Treatment at the facility

Most families had to pay for treatment at the facility or practitioner for all types of facilities. The mean amount paid at a government facility (Rs40) was less than that paid at either an unqualified practitioner (Rs141) or private facility (Rs337) (Table 16).

Table 16 % cases that paid, weighed mean and median amounts paid (of those who paid) for diarrhoea treatment at the facility

Facility type	% cases paid	Mean amount (Rs)	Median amount (Rs)
Government	90 (186/206)	40	5
Private	93 (334/359)	337	200
Unqualified	97 (183/190)	141	100

Medicines or investigations outside the facility

In about three quarters cases of children going for treatment at a government facility (85%;170/202) and in about a third for those going to a private facility (34%; 119/360) families had to pay for medicines or investigations outside the facility. Families had to pay in fewer cases (10%; 20/195) when getting treatment at unqualified practitioners. The mean amount paid for

Table 17 % cases that paid, weighted mean and median amounts paid (out of those who paid) for diarrhoea medicines or investigations outside the facility

Facility type	% cases paid	Mean amount (Rs)	Median amount (Rs)
Government	85(170/202)	301	250
Private	34 (119/360)	454	300
Unqualified	10 (20/195)	163	120

medicines or investigations after visiting a government facility (Rs301) was higher than an unqualified facility (Rs164) but lower than for a private practitioner (Rs454). (Table 17).

Childhood respiratory infections

Frequency of childhood respiratory infections

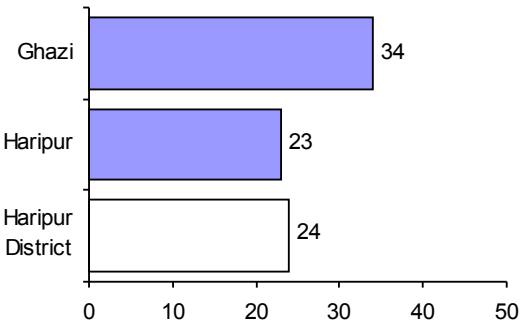


Figure 14 % children under 60 months with ARI in the last two weeks

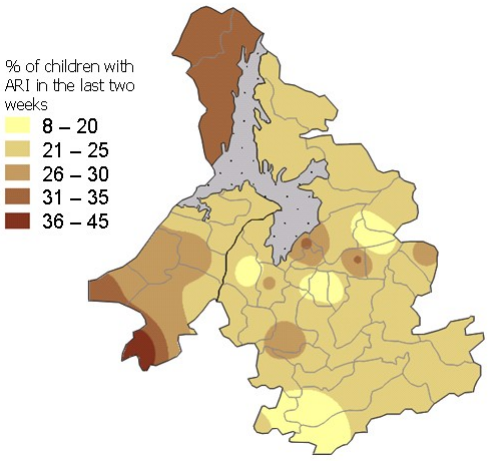


Figure 15 Map of % children under 60 months with ARI in the last two weeks

Among children aged less than 60 months, 24% (647/2631) had suffered an acute respiratory infection (ARI) during the last two weeks and 60% (1599/2631) suffered from ARI in the past year. The information about episodes of ARI came from the mother or main carer of the child. They were asked about episodes when the child had a cough, fever and rapid breathing.

The proportions of children with ARI during the last two weeks are shown by tehsil in Figure 14. ARI seems to be rather less frequent in Haripur than in Ghazi.

The map in Figure 15 shows the variation across the district in proportion of children under 60 months old with ARI in the last two weeks.

Variables potentially related to ARI

The field teams collected information about factors at household level that might have an impact on the risk of respiratory infections in children.

Kitchen and cooking arrangements

Some 86% (1735/2017) of households had their kitchen or cooking area separate from the main living area. And 87% (1740/2017) had their kitchen or cooking area separate from the sleeping area.

The types of cooking stove used are shown in Table 18. They were mostly wood stoves. We categorized stoves into those producing smoke and those not producing smoke on the basis of the type of fuel. Across the district 19% (373/2014) of households used a cooking stove that did not produce smoke. Some 23% (366/1615) of households in Haripur Tehsil and just 2% (7/399) of households in Ghazi Tehsil had stoves that did not produce smoke.

Table 18 % households with different stove types for cooking

Stove type	Haripur district	Haripur	Ghazi
Wood stove	80	77	99
Sui gas stove	18	21	1
Gas cylinder	1	1	<1
Coal stove	<1	<1	<1
Kerosene stove	<1	<1	-
Electric stove	<1	<1	-
Cow dung	<1	<1	-
N	2014	1615	399

n

Table 19 % households with different heating systems

Heating system	Haripur District	Haripur Tehsil	Ghazi Tehsil
No heat	62	63	59
Wood heater	16	14	29
Sui gas heater	13	15	-
Coal heater	6	6	10
Electric stove	2	3	2
Gas cylinder	<1	<1	<1
N	2014	1615	400

Heating arrangements

Table 19 shows the heating methods used in households. Some 38% (765/2014) of households used some type of heating system. We categorised heating systems into those producing smoke and those not producing smoke. Some 78% (1548/2014) of households used a heating system not producing smoke (or no heating system at all) and 23% used a heating system likely to produce smoke.

Smoking in the household

We asked about smoking by members of the household, and in particular about smoking within the household. Some 33% (668/2004) of households had a least one member who smoked inside the household.

Ventilation

The field teams observed ventilation arrangements in the households. They recorded some sort of ventilation system in 91% (1808/2004) of households across the district.

Focus group views about smoke in the household

There is evidence from the literature that exposure to smoke in the household, through cooking stoves, heating arrangements, or smoking by members of the household, increases a child's risk of ARI and can have adverse long term consequences for lung development. In the community focus groups we discussed what could be done to improve the household environment so as to prevent children's exposure to smoke.

"We leave our children with their grandmothers when we cook food."
Female focus group, Haripur tehsil

"People can ill afford one-room houses. How can they make a separate room for eating in?"
Male focus group, Haripur tehsil

"People use wood as fuel because they are poor. What else can they do?"
Male focus group, Ghazi tehsil

"If the government gives us gas, we will be able to preserve our forests as well."
Male focus group, Haripur tehsil

The group participants suggested using alternative fuels, providing more ventilation, keeping the kitchen and sleeping areas separate, ensuring that household members did not smoke indoors, and improving ventilation in the house. However, they also mentioned problems with implementing these ideas.

The groups suggested that while they themselves could do things like avoiding smoking in front of children, and keeping children away from cooking areas, the government would have to help, for example by providing access to gas as a fuel or provide funds to construct ventilation arrangements.

Analysis of risk of childhood ARI

Table 20 Variables potentially associated with the risk of ARI in children

- Urban/rural location
- Tehsil
- Education of the household head
- Education of the mother
- Household vulnerability
- Sex of the child
- Age of the child
- Nutritional status of the child
- Measles vaccination of the child
- Household heating system
- Heating system producing smoke
- Kitchen separate from living area
- Sleeping area separate from kitchen
- Cooking stove producing smoke
- Ventilation for household
- Household members smoking inside

As described above, we collected information about several variables that might be associated (positively or negatively) with the risk of ARI in children (ARI in the last two weeks in children aged less than 60 months old). These are listed in Table 20.

We found no association between most of these variables and the risk of ARI in the last two weeks. The only variables that were associated with the risk of ARI were the tehsil where the child was residing, the education of the household head and whether the household had some arrangement for ventilation with the house. We examined the effects these three variables together, each taking into account the effect of the other. The model from the multivariate analysis is shown in Table 21.

Table 21 Model of effects of variables on risk of ARI in children

	Crude OR	Weighted OR	95% CI of weighted OR
Household ventilated	0.62	0.71	0.53-0.94
Tehsil Haripur	0.57	0.59	0.48-0.74

OR=Odds Ratio, a measure of relative risk

Ventilation in house

Children in houses with some arrangement for ventilation were less likely to have had an episode of ARI in the past 2 weeks[7] but this was limited to households in Ghazi tehsil.

Tehsil

Children in Haripur tehsil were less likely to have had an episode of ARI in the past 2 weeks than children in Ghazi tehsil[8].

Potential population gains in preventing ARI

We can estimate the number of children who could be protected from ARI by ensuring all houses have some ventilation arrangements. Across the district, if children were in houses with some ventilation arrangement, just 8 per thousand children more could be saved from having ARI. This benefit would be almost entirely felt in Ghazi tehsil.

[7] Weighted OR 0.71, 95% CI 0.53-0.94, 562/2366 children in households with some ventilation had ARI compared with 84/251 in households without ventilation

[8] Weighted OR 0.59, 95%CI 0.48-0.74, 484/2149 children in Haripur tehsil had ARI compared with 163/482 children in Ghazi tehsil

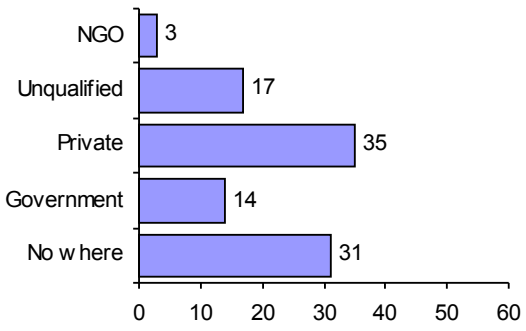


Figure 16 % children with ARI taken to different health care providers

Table 22 % children taken to different types of facilities for treatment of ARI in the past 12 months (% weighted)

	Haripur District	Haripur	Ghazi
No where	31	29	38
Government facility	14	15	10
Private facility	35	37	31
Unqualified	17	16	20
NGO service	3	3	1
N	1595	1228	367

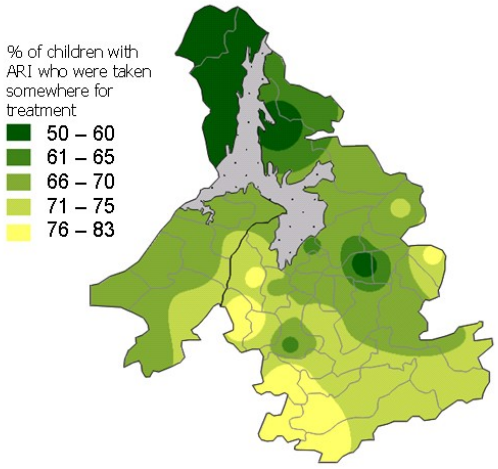


Figure 17 % children under 60 months old taken anywhere for treatment in last episode of ARI

"Poor people like us can either put food in our children's mouths, or take them to the doctor."
Male focus group, Ghazi tehsil

"Mothers have to undertake many household responsibilities. That's why they are unable to take their children to hospitals.
Female focus group, Haripur tehsil

"We take our children to the hospital. They are treated only if we know the doctor, otherwise we are thrown out."
Male focus group, Ghazi tehsil

Information from the lady health worker

Of the 62% (156/2083) of mothers that said an LHW visited the household, few recalled that the LHW told them anything about recognising (3%; 41/1226) or treating (5%; 66/1212) a child with ARI.

Considering all mothers, including those not visited by an LHW, only 2% (41/2053) were told by an LHW about recognition of ARI and 3% (66/2039) about treating ARI.

Treatment of ARI

The following description of experiences with treating ARI are based on the 60% if children under 60 months who had suffered an ARI episode in the last 12 months. Recall of episodes longer than 12 months ago is less likely to be clear.

Source of treatment

Among those children less than 60 months old and who had suffered an ARI episode in the last 12 months, 31% (497/1595) were not taken for treatment anywhere. The most common choice for treatment was a private practitioner or facility. Across the district 35% (562/1595) were taken to a private facility or practitioner, 17% (268/1595) to an unqualified practitioner, 14% (227/1595) to a government facility and 3% (41/1595) to a NGO service (Figure 16). Table 22 shows the proportions of children taken to different types of facilities for treatment for ARI in each tehsil.

The map in Figure 17 shows the variation across the district in the proportion of children with ARI taken anywhere for treatment.

Views of community focus groups

The focus groups discussed why some children with ARI are not taken anywhere for treatment. They also considered the ways in which could be encouraged and supported to take children with ARI for treatment.

Focus group participants explained the problems of poverty, meaning they could not afford the visit, the

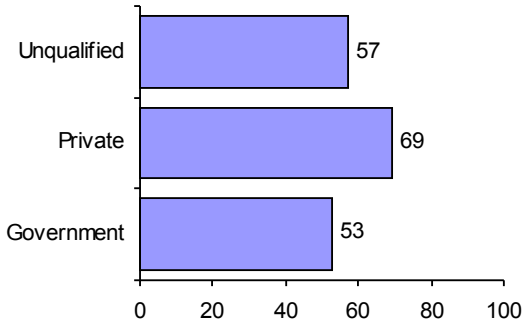
"We have to spend 300 rupees to get to the hospital. And we get medicine worth 50 rupees. Who will bother to go there in these conditions?"
Male focus group, Haripur tehsil

"Even when we take our children to the hospital, we are given fake medicines. Children don't get well after taking them."
Female focus group, Haripur tehsil

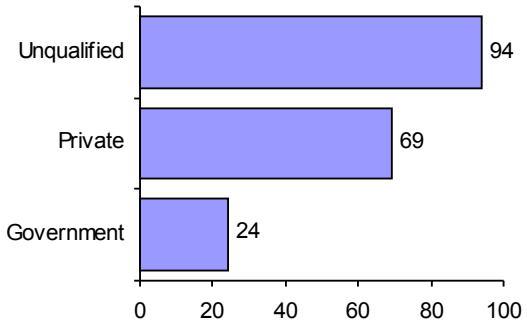
"People have greater faith in household remedies."
Female focus group, Haripur tehsil

"Parents can be encouraged if they get free medicine."
Male focus group, Ghazi tehsil

"Men have to be taught about the importance of taking ill children to hospitals."
Female focus group, Haripur tehsil



F igure 18 % of parents of children with ARI given a full explanation of their child's illness



F igure 19 % of parents of children with ARI provided with all medicines prescribed

poor treatment received from doctors, and the lack of access to health facilities. A few expressed the view that the medicines were not available or were of poor quality, and that there was a lack of awareness or a tradition of self medication.

The main suggestions from the groups to support people to take their children with ARI for treatment were concerned the availability of good quality, affordable medicines, as well as better access to health facilities and health workers and better treatment from doctors and health workers.

Service received from health care providers

All children who (100%; 1083/1084) taken for treatment were seen by a doctor/ practitioner or health worker regardless of the type of facility they went to.

Private practitioners provided a full explanation of the child's illness more often than either government or unqualified practitioners. Private practitioners provided a full explanation for 69% (379/551) of children, government practitioners for 53% (116/222) of children and unqualified practitioners for 57% (149/265) of children (Figure 18).

There was greater variation between facility/practitioner types around providing all the prescribed medicines when the child with ARI was taken for treatment. Parents taking their children with ARI to an unqualified practitioner were more frequently (94%; 253/268) provided with all medicines than those who sought treatment at a private (69%; 384/550) or government (24%; 56/227) facility (Figure 19).

Satisfaction with services received

Nearly all mothers were satisfied with the behaviour of the doctor or health worker (96%; 1023/1057) and with the treatment from the facility (95%; 1006/1056) for all facility types.

For all three types of facilities/practitioners the most common reason for being satisfied was the "good treatment" received (94%; 942/ 1004) followed by the good doctors/staff at the facility (6%; 55/1004).

Those few who were dissatisfied with the facility most commonly cited "poor treatment" as their reason for all

types of facilities (27/39). Having no choice (5/39) and the unavailability of a good doctor or staff (4/39) were also mentioned.

Costs of treatment of ARI

Travel

In 77% (173/227) of cases where children were taken for treatment to a government facility, families had to pay something for travel. The mean amount for these families was Rs42. For private treatment families had to pay in 71% (394/553) of cases with a mean amount of Rs56. Few families who took their children to unqualified practitioners had any travel costs (22%; 56/266) averaging Rs46 (Table 23).

Table 23 % cases that paid, weighted mean and median amounts paid (out of those who paid) for travel for treatment of ARI

Facility type	% cases paid	Mean amount (Rs)	Median amount (Rs)
Government	79 (173/227)	42 49	20
Private	74 (394/553)	58 55	30
Unqualified	25 (56/266)	48 53	20

Treatment costs at the facility

Fewer families had to pay for treatment at a government facility (79%; 177/223) than at either a private facility (91%; 494/540) or unqualified practitioner (97%; 255/262). The mean amount paid at a government facility (Rs72) was less than that paid at either an unqualified practitioner (Rs170) or private facility (Rs366) (Table 24).

Table 24 % cases that paid, weighted mean and median amounts paid (out of those who paid) for ARI treatment at the facility

Facility type	% cases paid	Mean amount (Rs)	Median amount (Rs)
Government	79(177/223)	72	5
Private	91 (494/540)	366	200
Unqualified	97 (255/262)	170	100

Medicine or investigation costs outside the facility

In about three quarters of the cases of children taken for treatment at a government facility (78%; 171/222) and a third of those to a private facility (34%; 186/547) families had to pay for medicines or investigations outside the facility. Families had to pay in fewer cases (10%; 24/264) after getting treatment at unqualified practitioners. The mean amount paid after visits to a government facility (Rs405) was less than after visits to a private qualified (Rs419) and more than after visits to an unqualified practitioner (Rs218) (Table 25).

Table 25 % cases that , weighted mean and median amounts paid (out of those who paid) for ARI medicines/investigations outside the facility

Facility type	% cases paid	Mean amount Rs)	Median amount (Rs)
Government	78 (171/222)	405	300
Private	35 (186/547)	419	300
Unqualified	10 (24/264)	218	170

Childhood measles

Frequency of childhood measles

The following analysis and description of the frequency of measles excludes children who were less than 10 months old at the time of the survey as well as those children who had measles at less than 10 months of age because diagnosis of measles in children under 10 months of age can be unreliable.

Among children 10-59 months old 12% (232/2015) have had measles, excluding measles cases at under 10 months old. The rate of measles infection in the different tehsils is shown in Figure 20. Measles was slightly more common in Haripur tehsil (12%; 193/1673) than in Ghazi tehsil (10%; 39/378).

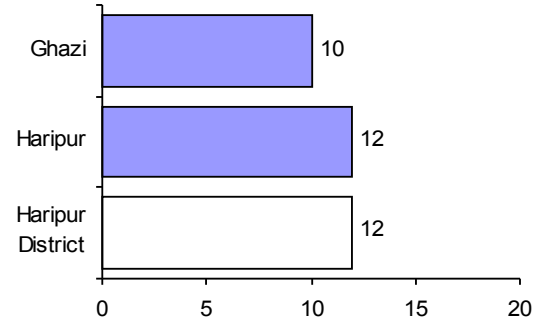


Figure 20 % children aged 10-59 months who had measles (excluding measles cases at under 10 months old)

The map in Figure 21 shows the variation across the district in the proportion of children aged 10-59 months who have had measles.

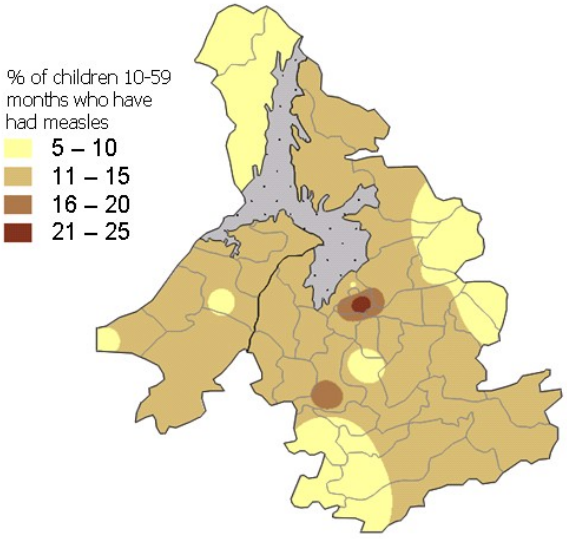


Figure 21 % children 10-59 months who have had measles

Analysis of risk of measles

We collected information about a number of variables that might be associated (positively or negatively) with the risk of measles in children (measles children aged 10-59 months and excluding 'measles' occurring at less than 10 months old). These are listed in Table 26. Note that we excluded from the analysis cases of measles that occurred before measles vaccination or within one month after the vaccination (it takes a month for the protection to be fully developed). Those associated with the risk of measles when examined separately are marked with a (*). We then undertook multivariate analysis to examine the effects of each of these variables, taking into account the effects of the others.

Table 26 Variables potentially associated with the risk of measles in children

- Urban/rural location*
- Tehsil
- Education of the household head
- Education of the mother
- Household vulnerability
- Sex of the child
- Age of the child*
- Nutritional status of the child
- Measles vaccination of the child

* variables related to risk of measles in univariate analysis

In Haripur district we did **not** find a reduced risk of measles among children who had received measles vaccine. This may reflect the low overall rate of measles in the district and the relatively high rate of measles immunisation (see next section). The only two variables associated with the risk of measles were the age of the child and the urban/rural location.

The final model from the multivariate analysis is shown in Table 27.

Table 27 Model of effects of variables on risk of *not* having measles

	Crude OR	Weighted OR	95% CI of weighted OR
Younger child	3.43	3.47	2.62-4.61
Rural location	1.70	1.77	1.19-2.62

OR=Odds Ratio, a measure of relative risk

Age of the child

Younger children were less likely to have had measles than older children[9]. This may simply reflect that they have had a longer time at risk, since we are examining the risk of *ever* having had measles.

Urban or rural location

Children in urban areas were more likely to have had measles than rural children[10].

Payment for cases of measles

We asked mothers whose children had had measles about the cost of treating the child. In order to ensure a reasonable recall of events, we restricted our analysis of costs to cases of measles in the last 24 months, among children 10-59 months old.

Of those children aged 10-59 months who had measles in the last 24 months, 82% (124/150) of their parents paid something for the treatment of the disease. Among those 124 who paid, the weighted mean amount was Rs 499 (median Rs 300, range Rs 20-5000).

[9] Weighted OR 3.47, 95% CI 2.62-4.61, 1074/1145 children aged 10-36 months did not have measles compared with 709/870 children aged 37-59 months

[10] Weighted OR 0.59, 95%CI 0.40-0.94, 169/204 urban children did not have measles compared with 1614/1811 rural children

Table 28 Immunisations for children 12-23 months

Vaccinations received	Haripur District	Haripur	Ghazi
BCG	90	94	70
DPT (full course)	85	89	66
Measles	80	84	64
Polio drops (within the last 12 months)	99	100	98

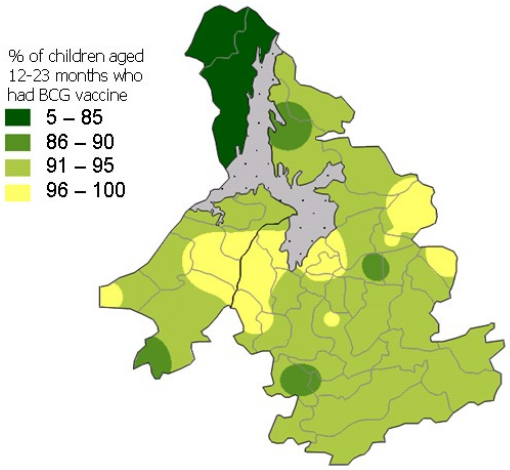


Figure 22 % children 12-23 months who BCG vaccine

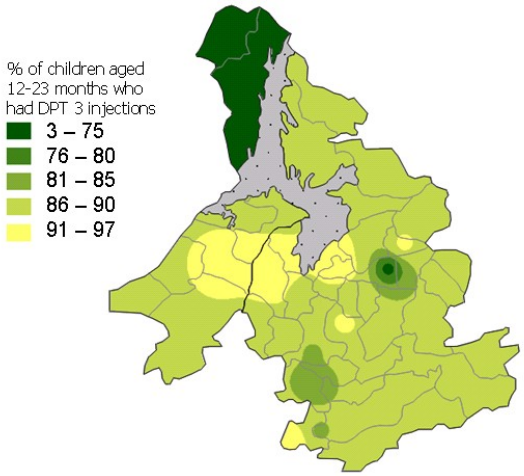


Figure 23 % children 12-23 months who had full course DPT

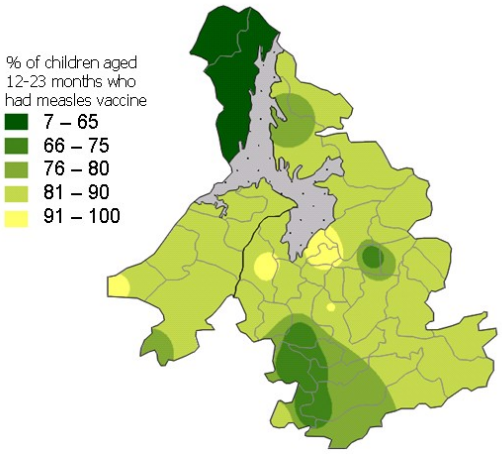


Figure 24 % children 12-23 months who had measles vaccine

Childhood immunisations

Immunisation status of the children

Immunisation status of the children is described for children aged 12-23 months old, who should by then have completed all their immunisations.

BCG

Some 90% (452/506) of the children aged 12-23 months had received BCG vaccine, normally given at birth or soon after (Table 28). The map in Figure 22 shows the variation in BCG vaccination rate across the district.

DPT

Among the children aged 12-23 months, 89% had received at least one DPT injection, and 85% (428/507) had received at least three injections (or a 'full course') during their first year of life. We may have over-estimated the number of children who received three injections of DPT vaccine because we included children whose mothers were only able to say they had "completed the course" without saying how many injections this comprised. The proportion of children who had received three injections, or a full course, of DPT vaccine, was rather lower in Ghazi than in Haripur tehsil (Table 28). The map in Figure 23 shows the variation in rate of completion of a full course of DPT vaccine across the district.

Measles

Some 80% (396/497) of children aged 12-23 months had received the measles vaccine, usually given at around nine months old. The measles vaccine is the last in the series of childhood vaccines, and some children have apparently "dropped out" of the immunisation schedule before the age of nine months. Ghazi tehsil had a lower rate of measles immunisation than Haripur tehsil (Table 28). The variation in measles immunisation rate across the district is shown in the map in Figure 24

Polio

Among children aged 12-23 months, virtually all (99%; 502/506) had received polio drops at least once in the last 12 months (Table 28). This was also the case when all children aged 12-59 months were included (99%; 2040/2056). Many of the children had received polio drops several times during the last year, with mothers

Table 29 Reasons why children (12-59 months) are not immunised

	Haripur District	Haripur	Ghazi
Careless on part of the family	27	26	25
Family members don't have time/anyone to take child	10	11	6
Vaccination could harm child	13	15	1
Lack of awareness/ misperceptions about schedule	15	12	13
No facility nearby	10	9	37
Don't believe useful	11	11	15
Family members don't allow	12	13	2
Can't afford/ poor	2	4	2
N	328	199	129

reporting they got them "every time" the polio team visited.

Why children are not immunised

For each child (12-59 months) that had not received all the immunisations (or any of them), we asked the mother or main giver why not. The mothers most commonly cited carelessness on the part of the family and problems of access: either the heath facility for immunisations was too far away or the family could not spare the time for someone to take the child for immunisation. Table 29 shows the reasons given for children not being immunised. Carelessness or lack of awareness implied that immunisation of children could not be prioritised by the family over other calls on their time and household economy. A few mothers said they thought vaccination caused harm or that they did not believe in it.

Views from community focus groups

The community focus groups explored the reasons why some families did not have their children immunised. The participants were asked if they thought parents who did not immunise their children understood the risk they were taking and why they might still not immunise even if they did understand the risk.

About half of the focus groups agreed that probably people did not fully understand the risk they were taking by failing to immunise their children. Mostly they ascribed this to lack of education. Some mentioned that people did not realise how serious measles could be.

To explain why people who understood the risk would still not immunise their children, the groups mentioned the problems of access, especially difficulties for women travelling a distance from their homes. Some mentioned fears and misconceptions about adverse effects of immunisation and the inability to afford vaccinations.

To help parents to have their children immunised, the groups suggested both increasing public awareness of the importance of immunisation, and at the same time increasing access to immunisation services. The idea of visiting immunisation teams was especially popular, but

"Whether a child is vaccinated or not, he is bound to get measles once in his lifetime."
Male focus group, Haripur tehsil

"Elders say measles is a good thing. It takes away the heat from the body."
Male focus group, Haripur tehsil

"Our elders don't see any benefit of these injections. They say they have spent their life fine. So why should we have our children immunized?"
Female focus group, Haripur tehsil

"People think these injections are for family planning."
Male focus group, Haripur tehsil

"The government promises to provide vaccinations free. When the teams get here, we are charged 100 rupees for each injection."
Male focus group, Haripur tehsil

"Men don't listen to us. Even if women want to get their children immunised, their in-laws won't allow them to."
Female focus group, Haripur tehsil

"We are only bothered about earning 100 rupees a day. We don't have time to think about measles vaccinations."
Male focus group, Ghazi tehsil

"We must have a proper dispensary, not just its structure."
Male focus group, Ghazi tehsil

participants also mentioned improving access to health facilities offering immunisation and providing more staff at these health facilities.

Mothers' knowledge and perceptions about immunisations

Awareness about immunisation

Some 94% (1950/2083) of the mothers (or carers) had heard about immunisation for children from some source. Mothers sometimes gave more than one source for their information. Their sources of information about immunisation for children are shown in Table 30.

Table 30 Mothers' sources of information about immunisation for children

	Haripur District	Haripur	Ghazi
Electronic media	48	52	36
Family, neighbours, friends	31	33	25
Doctor, hospital	10	9	16
LHV/LHW/Dai	9	10	6
Nowhere	4	1	17
Don't know, myself	2	2	4
Announcements	2	2	3
Vaccination team	1	1	<1
Written material	<1	<1	-
NGO	<1	<1	-
School	<1	<1	-
N	2253	1816	437

Among the mothers, 85% (1752/2079) were able to mention least one illness preventable by immunisation. In some cases, their perceptions about which diseases could be prevented by immunisation were incorrect. For example, some mothers thought diabetes, cancer, or chronic malnutrition could be prevented by immunisation. Including only correct perceptions about diseases preventable by immunisation, 83% (1717/2074) of mothers were able to mention at least one illness preventable by immunisation.

Views about utility of immunisation

The interviewers first asked the mothers what they believed their neighbours thought about immunising children. Not all the mothers knew what their neighbours' views on this matter were. Some 87% (1807/2085) of the mothers said their neighbours thought it was worthwhile to immunise children, 2% (48/2085) said their neighbours did not think it worthwhile, and 11% (230/2085) said they did not know what their neighbours thought about it.

Coming to their own views on the question, 97% (2007/2087) of mothers thought it was worthwhile to immunise children, 2% (48/2085) thought it was not worthwhile, and 1% (30/2087) did not know if it was worthwhile or not.

The most common reason given by mothers who thought it *was* worthwhile to immunise children was for protection against illness (98%; 1930/1959).

Table 31 Why mothers felt immunisation was not worthwhile

Reasons	No of mothers
Feel it is not necessary	13
Child gets sick from vaccine	10
No practice in the family	1
N	24

Those few mothers who thought it was *not* worthwhile to immunise children most frequently felt it was unnecessary (13/24), reported the child remained sick (10/24) and immunisation was not a practice in the family (1/24) (Table 31)

Views about bad effects of immunisation

One reason why parents might not immunise children would be concerns about bad effects of immunisation, whether or not these concerns are justified.

Among the mothers, only 4% (74/2074) mentioned some bad effect of immunisation they had heard of. Some of the bad effects they mentioned were actual side effects of immunisation, while others were not. The actual side effects they mentioned included fever and swelling or pain at the injection site. The other 'bad effects of immunisation' they mentioned included such things as death, polio, allergies, and family planning. This last perception is a belief that vaccinations will make children sterile or cause them to have only female children in the future. Overall, 96% (2000/2074) of mothers mentioned no bad effects of immunisation, 1% (18/2074) mentioned actual side effects, and 3% (56/2074) mentioned misconceptions about bad effects.

Table 32 Where mothers had heard about adverse effects of immunisations

Source	% mothers
Family, neighbours	72
Don't know, myself	16
Doctor/hospital	11
Newspapers, books	2
N	66

The interviewers asked mothers who mentioned they had heard of bad effects of immunisation where they heard this. Table 32 shows the main sources of information. In many cases, the mothers could not give a specific source for their information. Some 11% (7/66) said they had heard of the side effects from the doctor or health facility.

Information from the LHW

Table 33 Mother's recall about advice on immunisations given by LHWs

Advice given	% mothers
Nothing	70
Protects against illness	11
Important to immunise	16
Always complete the vaccination course	2
N	1228

Among the 62% (1256/2083)of mothers that reported an LHW visited their household, just 30% (364/1228) recalled that the LHW had told them anything about immunisations. Those who recalled any information mentioned the LHW told them immunisations were to protect against illness and that it was important to immunise children (Table 33). Among *all* the mothers (including those not visited by an LHW), only 18% (364/2055) had been given any advice about immunisations from an LHW.

The recall of mothers contrasts with the information from interviews with LHWs covering some of the

sample communities (see below). The LHWs nearly all reported telling the mothers they visited about the benefits and importance of immunising children.

Decision making about immunisation for children

Some 91% (1874/2067) of the mothers said they had discussed in the family about immunisation of children. For each child under 60 months we asked the mother who had been involved in deciding about immunisation for that child. For 43% (1085/2532) of the children mothers alone had made the decisions, for 32% (832/2532) of children the mother and father decided together and for 24% (615/2532) of children mothers were not involved in deciding about immunisations. Table 34 shows that in Haripur tehsil most commonly mothers alone are responsible while in Ghazi tehsil mothers and fathers together make the decisions.

Table 34 Mothers' involvement in decisions about immunisation for the child (% children)

Who decides	Haripur District	Haripur	Ghazi
Mothers alone	43	45	31
Mothers and fathers	32	30	48
Mothers not involved	24	25	21
n	2532	2121	411

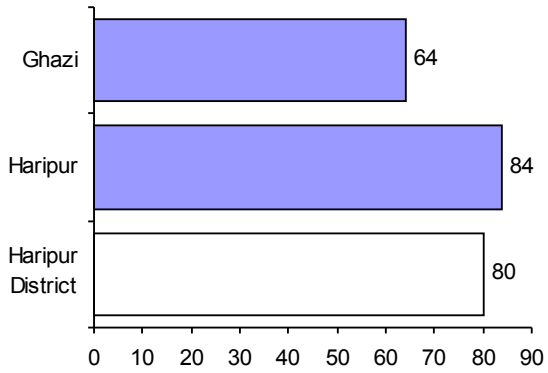


Figure 25 % children (12-23 months) who have received measles vaccine

Table 35 Variables potentially associated with the risk of measles in children

- Urban/rural location*
- Tehsil*
- Education of the household head*
- Education of the mother*
- Household vulnerability*
- Sex of the child
- Age of the child
- Mother has heard about immunisations*
- Mother knows a vaccine-preventable illness*
- LHW told mother about vaccines*
- Mother thinks it worthwhile to immunise*
- Family have discussed immunisations*
- Government immunisation facility within 5Km*
- Vaccination team visits community*

* variables related to risk of measles in univariate analysis

Table 36 Model of effects of variables on the chance of having measles vaccine

	Crude OR	Weighted OR	95% CI of weighted OR
Less vulnerable house	2.66	1.74	1.31-2.31
Mother heard about immunisations	10.75	2.72	1.50-4.94
Mother knows vaccine benefit	2.98	1.56	1.11-2.18
LHW vaccine info	1.90	1.82	1.19-2.80
Discussed immunisation	7.73	3.86	2.61-5.69
Imms facility within 5Km	1.55	1.52	1.16-1.99
Vaccination team visits community	1.56	1.60	1.22-2.11

OR=Odds Ratio, a measure of relative risk

Measles immunisation

We collected additional information about measles immunisation specifically and analysed the variables related to the chances of children being immunised against measles. This supplements the analysis of the variables related to the risk of contracting measles (see above), which showed the beneficial effects of measles immunisation on the risk of suffering measles.

Frequency of immunisation

As reported above, 80% (396/497) of children aged 12-23 months had received the measles vaccine, usually given at around nine months old. Figure 25 shows the variation in measles immunisation between the two tehsils.

Among children 10-59 months 83% (1713/2099) had received the measles vaccine.

Analysis of receiving measles vaccine

We collected information about a number of variables that might be associated (positively or negatively) with the chances of a child being immunised against measles. These are listed in Table 35. A number of these variables, examined separately, were associated with the chances of a child being immunised against measles. These are marked (*) in Table 35. We then undertook a multivariate analysis to examine the effects of each of these variables, taking into account the effects of the others. The model from the multivariate analysis is shown in Table 36.

Household vulnerability
Children from less vulnerable households were more likely to have been immunised than children from vulnerable households[11].

Mother hearing about immunisations
Children whose mothers had heard something about immunisations were more likely to have been immunised than children whose mothers had not[12].

[11] Weighted OR 1.74, 95% CI 1.31-2.31, 1345/1573 children from less vulnerable households had measles vaccine compared with 341/490 from vulnerable households

[12] Weighted OR 2.72, 95% CI 1.50-4.94, 1657/1960 children whose mothers had heard something about immunisations had measles vaccine compared with 51/134 whose mothers had not heard anything about immunisations

Knowledge about vaccine benefits
Children whose mothers could cite correctly at least one disease preventable by immunisation were more likely to have been immunised than children whose mothers did not have this knowledge[13].

Information from an LHW
Children whose mothers had been visited by an LHW and recalled information about vaccinations were more likely to have been immunised than children whose mothers did not recall information or had not been visited[14].

Discussion in the family about immunisations
Children whose families had discussed about immunisation were three times more likely to have been immunised than children whose families had not discussed immunisation[15].

Government immunisation facility nearby
Children from communities within 5 Km of a government facility offering immunisations were more likely to have had measles vaccine than children from communities further from an immunisation facility[16].

Vaccination team visiting community
Children from communities where a vaccination team had visited were more likely to have been vaccinated than children from communities not visited by a vaccination team[17].

[13] Weighted OR 1.56, 95% CI 1.11-2.18, 1471/1713 children whose mothers could identify an illness prevented by immunisation had measles vaccine compared with 234/371 whose mothers did not have this knowledge
[14] Weighted OR 1.82, 95%CI 1.19-2.80, 325/356 children whose mothers reported information about vaccines from an LHW had measles vaccine compared with 1328/1671 children whose mothers had not received information
[15] Weighted OR 3.86, 95% CI 2.61-5.69, 1609/1866 children whose family discussed immunisation had measles vaccine compared with 87/205 whose family did not discuss immunisation
[16] Weighted OR 1.52, 95% CI 1.16-1.99, 1078/1252 children from communities within 5Km of a vaccination facility had measles vaccine compared with 635/847 from communities further from a facility
[17] Weighted OR 1.60, 95% CI 1.22-2.11, 824/943 children from communities visited by a vaccination team had measles vaccine compared with 801/1054 from communities not visited by a vaccination team

Table 37 Potential gains in increasing measles immunisation

Intervention	Proportion requiring intervention (%)	Weighted risk difference	95% CI weighted risk difference	Weighted gain per 1000 children
Focus on vulnerable households	23.6	0.005	0.002-0.007	1
All mothers hear about immunisation	7.3	0.416	0.170-0.663	30
Mothers know about immunisation benefit	16.8	0.003	0.001-0.006	0.5
LHWs visit and inform about vaccines	79.9	0.002	0.0004-0.003	1
All families discuss about immunisation	9.3	0.127	0.091-0.164	12
Immunisation facility within 5Km of all communities	36.2	0.064	0.023-0.105	23
Vaccination teams visit all communities	50.9	0.080	0.033-0.126	41

Proportion requiring intervention means those who do not currently have the favourable condition, eg % children whose mothers do not know about immunisation preventable diseases

Potential population gains in measles immunisation

We can estimate the number of additional children in Haripur who could be vaccinated as a result of different interventions. The model of the potential population gains in measles immunisation is shown in Table 37.

From Table 37, we can see that vaccination teams visiting all communities could have the biggest impact and could increase the number of children who receive measles vaccine by 41 per thousand. Similarly, if there were government immunisation facilities located within 5Km of every community, this could increase the number of children receiving measles vaccine by 23 per thousand. However, both of these could be expensive options to put into practice.

Almost as big a gain could be made by ensuring all mothers hear about immunisation (30 per thousand additional children immunised) and encouraging discussion about immunisations in families could also be useful (12 per thousand additional children immunised).

In Haripur, the levels of knowledge about immunisations are already quite high and there would be only small gains from interventions to increase the knowledge of mothers about immunisations (Table 37).

Lady health workers

Training

All the LHWs interviewed had received some initial training to work as an LHW and most (37/40) had received additional training after this. For 22/36 LHWs this additional training this had been within the last 3 months for 28/36 within the last year.

Work load

Most of the LHWs (28/40) covered 150 households or fewer in their catchment area. All (38/38) said they visited each household at least once a month.

Some 11/40 LHWs reported having difficulty visiting the households in their catchment area and while half (20/40) said nothing more was needed, suggestions to help them to get to households included more community support (7/40), more medicines and equipment (6/40) and provision of transport (4/40).

Supervision

Most LHWs reported being visited by a supervisor once a month or less frequently (34/40) and 6/40 reported they were visited more than once a month.

Knowledge and attitudes about immunisation

All LHWs (40/40) could correctly identify at least one illness prevented by immunization. About half (18/40) had heard something about bad effects of immunisation. Of those who had heard about bad effects 13/18 mentioned actual side effects, 4/18 mentioned misconceptions about side effects and 1/18 felt the vaccine had no effect. The LHWs' sources of information about adverse effects of immunisation are shown in Table 38.

Table 38 Where LHWs heard about bad effects of immunisation

	No of LHWs
Family, neighbours, friends	6/17
Doctor/health worker	1/17
During visits (from parents)	10/17

Most LHWs said they provided their clients with information about the importance and benefits of immunisation (38/40) while 15/40 provided information about the scheduling of immunisations. This was not reflected in interviews with mothers visited by LHWs, few of whom could recall the LHW telling them anything about immunisations.

Table 39 Why children are not always immunised

Reason	No of responses
Fear of side effects	15
Lack of awareness	11
Carelessness	8
Family problem/migration	7
Facility too far away	5
Don't believe in it	4
Team does not come	1
Not allowed	1

Table 40 Suggestions to help ensure all children are immunised

Suggestion	No of responses
Nothing	2
Mobile teams	13
Facility nearby/transport	4
Provide information/ increase awareness	25
More staff/vaccinators/train LHWs	2
Ensure vaccine availability	2

Table 41 Advice reportedly given to prevent diarrhoea

Reason	No of responses
Hygiene/cleanliness	39
Good nutrition/food	10
Give more fluids/ ORS	1

Table 42 Advice reportedly given to treat diarrhoea

Reason	No of responses
Give more fluids/ ORS	44
Good nutrition/food	9
Contact doctor	12
Hygiene/cleanliness	3

Table 43 Advice reportedly given to treat ARI

Reason	No of responses
Take to doctor	15
Protect from cold	20
Breast feed	1
Provide medicines	29
Contact doctor	4
Feed eggs and honey/hot foods	6

LHWs most commonly (15/38) gave "fear of side effets" as the reason for children in their communities not being immunised. They also mentioned lack of awareness (11/38) and carelessness (8/38) (Table 39).

The most common suggestion from the LHWs to ensure that all children got immunised was to provide information and raise awareness about the issue (25/40). Other suggestions are shown in Table 40.

.

Knowledge and attitudes about diarrhoea

All LHWs could correctly state at least one cause of diarrhoea in children 0-5 years. Most (37/40) said a child should be given more fluids during an episode of diarrhoea and most (39/40) said a child should be given the same or more food.

All LHWs (40/40) reported they gave advice to mothers or families about preventing (40/40) and treating diarrhoea (Tables 41 and 42). Most (39/40) reported they gave advice about good hygiene practices and cleanliness to prevent diarrhoea and all (40/40) about providing more fluids and ORS to treat diarrhoea. This contrasts with reports from mothers visited by LHWs (see above), few of whom could recall the LHW telling them about diarrhoea prevention or management.

When directly asked, about half of the LHWs (22/40) said children with diarrhoea *should* be given anti-diarrhoeal drugs, although these can in fact be dangerous in young children. They may pass on this misconception to the mothers they visit.

Knowledge and attitudes about ARI

All LHWs (40/40) could give correct information about recognising ARI in children.

Most reported they advised mothers to treat a child with ARI by giving medicines (29/40) or taking the child to a doctor (15/40) (Table 43).

Again, the report from the LHWs contrasts with the information from mothers visited by LHWs, few of whom could recall the LHW telling them anything about recognition or treatment of ARI.

Public satisfaction with basic services

We asked households about their satisfaction with a range of basic public services provided by the government. In some cases, household respondents responded that they had no such service available to them. This same information was also collected as part of the 2004/05 national social audit, so comparison with national and provincial figures is possible.

As mentioned in the report of the national social audit, isolated satisfaction ratings of public services must be interpreted with caution, as they may be influenced by many factors other than the quality of a service. However, they do provide some guide to how citizens view the public services supposed to be available to them. It can be useful to track satisfaction ratings over time, but again care must be taken not to over-interpret changes, especially small changes, which may even be due to chance. In the focus districts, we have the opportunity to compare satisfaction with a range of public services in different parts of the district.

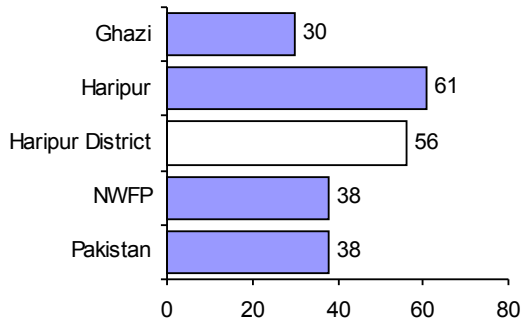


Figure 26 % households satisfied with roads

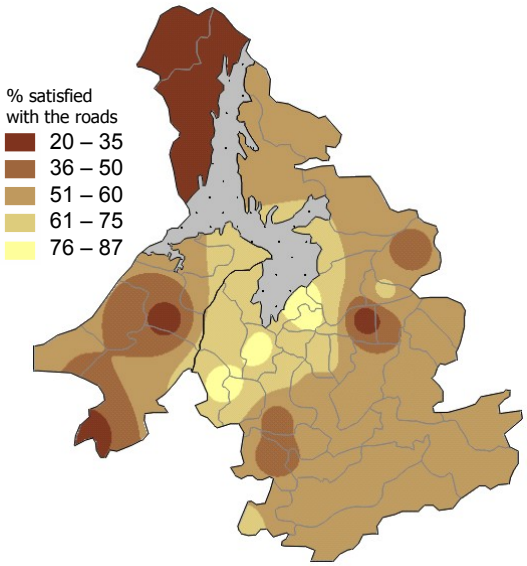


Figure 27 % households satisfied with the roads

Roads

Across the district, just over half of the households (56%; 1100/2000) were satisfied with the roads in their area. Figure 27 includes a comparison with the findings about satisfaction with roads at national and provincial levels.

The map in Figure 27 shows the variation across the district in household satisfaction with roads.

Nearly all (98%; 1959/2000) households across the district and both tehsils considered they had access to roads in their area. This is shown by tehsil and in comparison with national and provincial figures in Table 44.

Table 44. % Household reporting access to roads and public transport

	Roads	Public transport
Ghazi	99	100
Haripur	98	99
Haripur District	98	99
NWFP	96	94
Pakistan	92	93

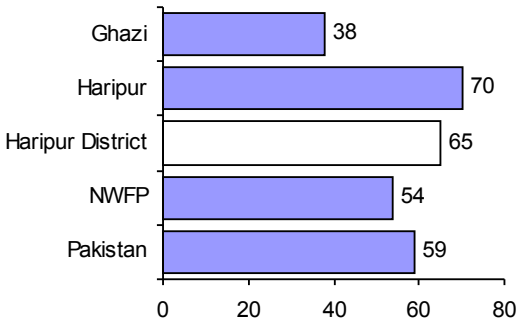


Figure 28 % households satisfied with public transport

Public transport

Across the district, two thirds of households (65%;1279/2012) were satisfied with the public transport in their area. Figure 28 includes a comparison with the findings about satisfaction with public transport at national and provincial levels.

The map in Figure 29 shows the variation across the district in the proportion of households satisfied with public transport.

As with roads, virtually all (99%; 1987/2012) of households across the district and in both tehsils considered they had access to public transport in their area. This is shown by tehsil and in comparison with national and provincial figures in Table 44.

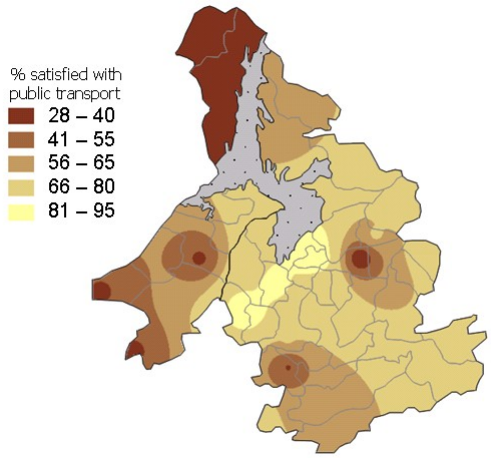


Figure 29 % households satisfied with public transport

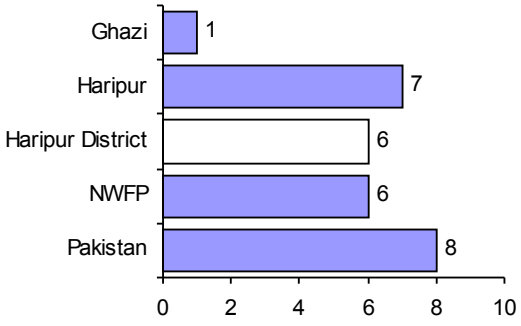


Figure 30 % households satisfied with garbage disposal

Government garbage disposal

Across the district, only 6% (121/2010) of households were satisfied with the garbage disposal in their community. Satisfied households were limited to Haripur tehsil, Figure 30 includes a comparison with the findings about satisfaction with garbage disposal at national and provincial levels.

The map in Figure 31 shows the variation across the district in household satisfaction with government garbage disposal services.

Only 13% (247/2110) of households across the district considered they had access to garbage disposal in their community. This is shown by tehsil and in comparison with national and provincial figures in Table 45.

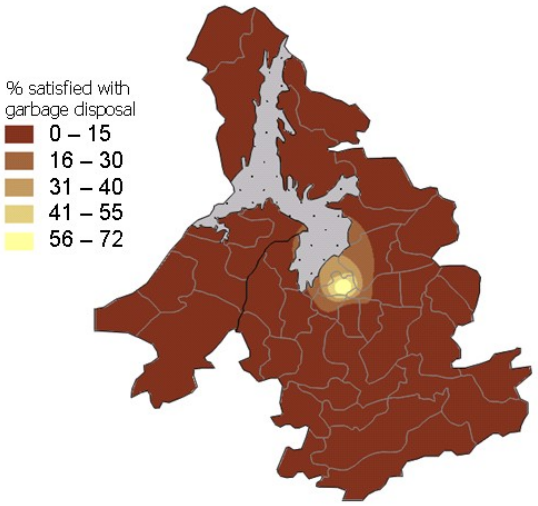


Figure 31 % households satisfied with garbage disposal

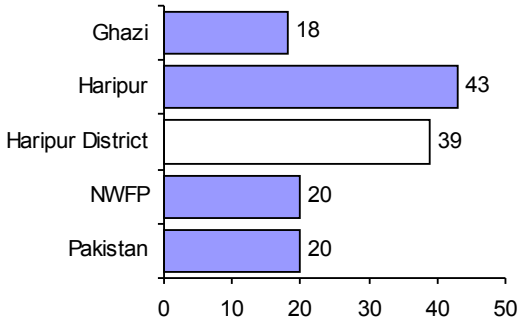


Figure 32 % households satisfied with government sewerage services

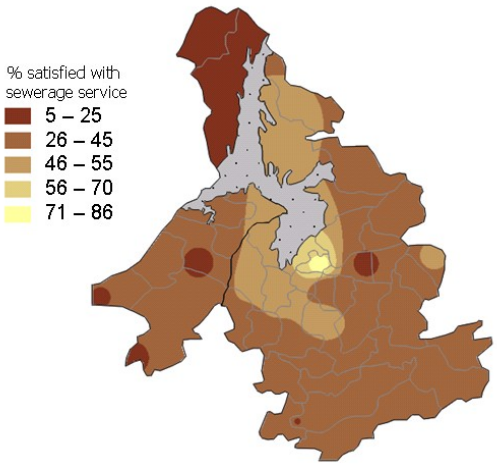


Figure 33 % households satisfied with government sewerage services

Table 45. % Household reporting access to garbage, sewerage, and water services (weighted %)

	Garbage	Sewerage	Water
Ghazi	3	90	88
Haripur	15	87	98
Haripur District	13	87	96
NWFP	20	60	71
Pakistan	36	66	44

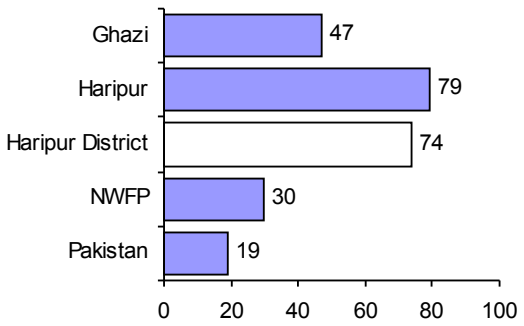


Figure 34 % households satisfied with government water supply

Government sewerage services

Across the district, just over a third of households (39%; 769/2009) were satisfied with the sewerage services in their community but satisfaction was much higher in Haripur Tehsil than in Ghazi Tehsil. Figure 32 includes a comparison with the findings about satisfaction with sewerage services at national and provincial levels.

The map in Figure 33 shows the variation across the district in household satisfaction with government sewerage services.

Some 87% (1756/2009) of households across the district considered they had access to sewerage services in their community. This is shown by tehsil and in comparison with national and provincial figures in Table 45.

Government water supply

Across the district, three quarters (74%; 1466/2013) of households were satisfied with the government water supply in their area. Figure 34 includes a comparison with the findings about satisfaction with government water supply at national and provincial levels.

The map in Figure 35 shows the variation across the district in the proportion of households satisfied with the government water supply.

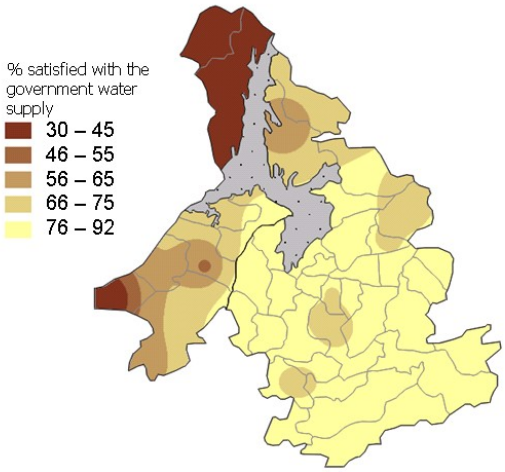


Figure 35 % households satisfied with government water supply

Nearly all (96%; 1929/2013) of households across the district considered they had access to government water supply in their area. This is shown by tehsil and in comparison with national and provincial figures in Table 45. The proportion of households with a government water supply in the sample in Haripur tehsil (89%) may be an *over*-estimate because government water supply tends to be provided or not to whole communities. On the other hand, if one or more of the 20 sample communities had happened to be one of the few without a government water supply, this would have led to the proportion of households in the sample with a supply being an *under*-estimate of the actual proportion with a supply.

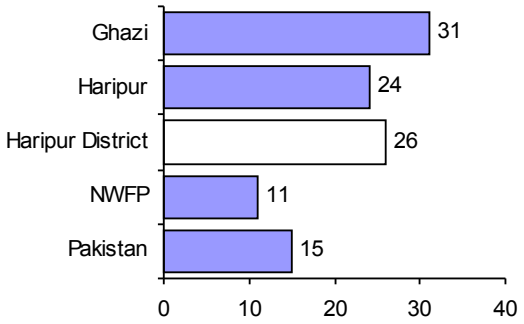


Figure 36 % households satisfied with government agriculture services

Agriculture services

Across the district, a quarter of households (26%; 431/1686) were satisfied with the agriculture services in their area. Figure 36 includes a comparison with the findings about satisfaction with agriculture services at national and provincial levels.

The map in Figure 37 shows the variation across the district in the proportion of households satisfied with government agriculture services.

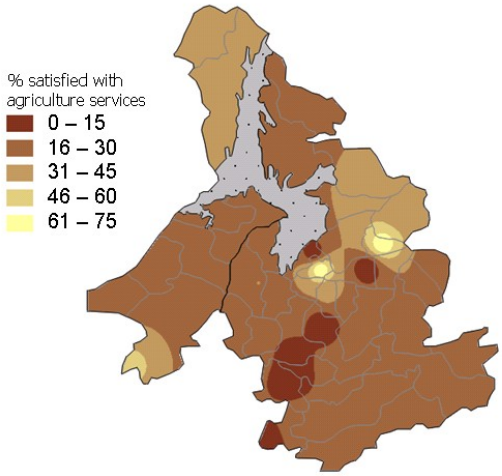


Figure 37 % households satisfied with agriculture services

Just over half of households (57%; 987/1686) across the district considered they had access to agriculture services in their area. This is shown by tehsil and in comparison with national and provincial figures in Table 46.

Table 46 % Households reporting access to agricultural, education and health services

	Agriculture	Education	Health
Ghazi	92	100	100
Haripur	49	99	88
Haripur District	57	100	90
NWFP	45	99	83
Pakistan	49	96	77

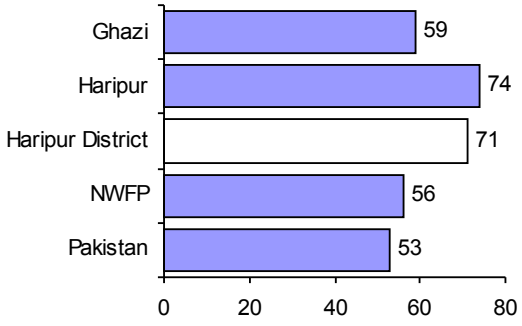


Figure 38 % households satisfied with government education services

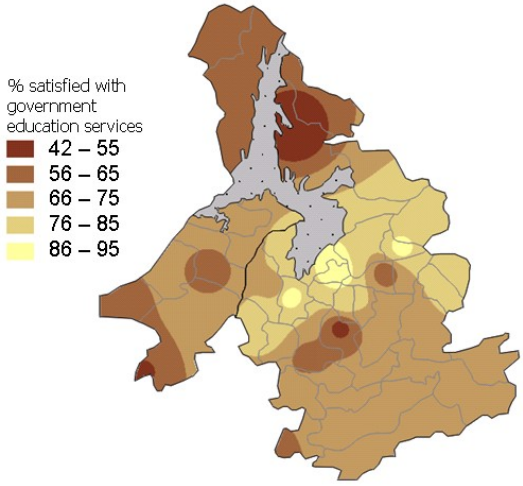


Figure 39 % households satisfied with government education services

Education

Across the district, almost three quarters of households (71%; 1420/2013) were satisfied with the government education service in their area. Figure 38 includes a comparison with the findings about satisfaction with the government education service at national and provincial levels.

The map in Figure 39 shows the variation across the district in proportion of households satisfied with the government education services in their area.

Virtually all (99.5%; 2004/2013) of households across the district and both tehsils considered they had access to a government education service in their area. This is shown by tehsil and in comparison with national and provincial figures in Table 46.

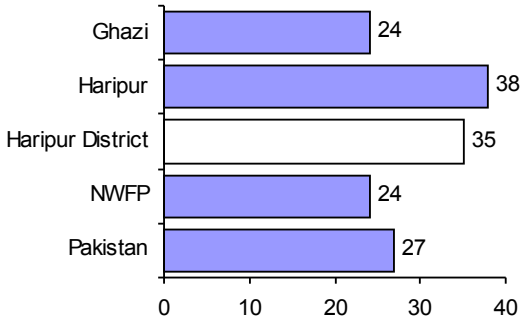


Figure 40 % households satisfied with government health services

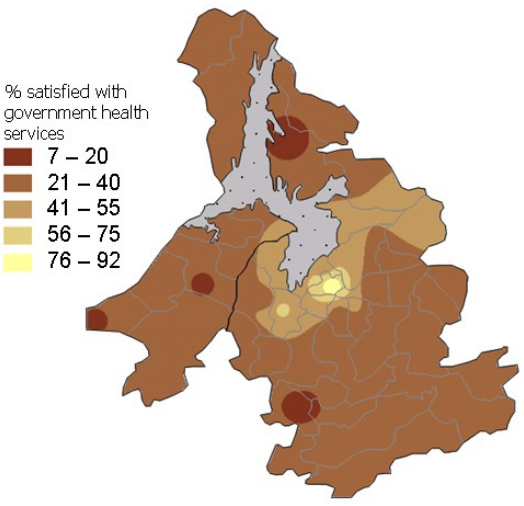


Figure 41 % households satisfied with govt health services

Health

Across the district, one third of households (35%; 697/1998) were satisfied with the government health services in their area. Figure 40 includes a comparison with the findings about satisfaction with the government health services at national and provincial levels.

The map in Figure 41 shows the variation across the district in the proportion of households satisfied with the government health services in their area

Some 90% (1808/1998) of households across the district considered they had access to government health services in their area. All respondents (100%; 398/398) in Ghazi Tehsil and 88% (1410/1600) of respondents in Haripur Tehsil reported having access. This is shown by tehsil and in comparison with national and provincial figures in Table 46.

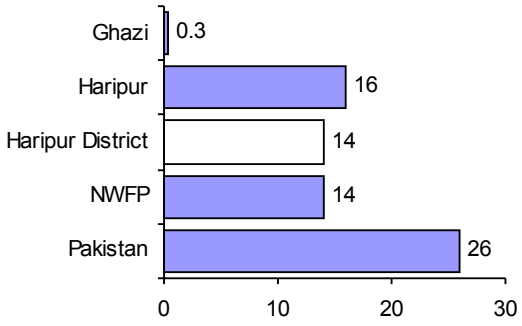


Figure 42 % households satisfied with government gas supply

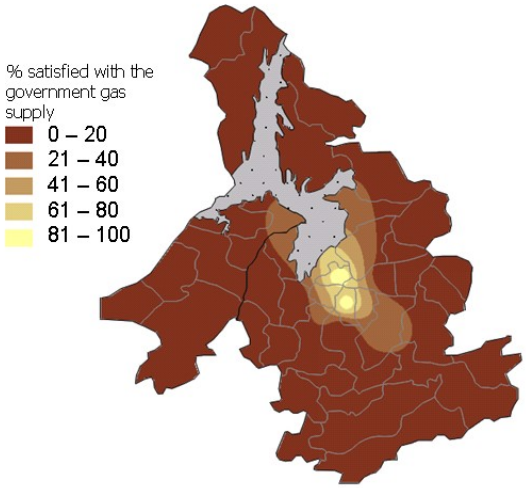


Figure 43 % households satisfied with gas supply

Table 47. % Household reporting access to gas and electricity services

	Gas	Electricity
Ghazi	1	100
Haripur	19	100
Haripur District	16	100
NWFP	16	94
Pakistan	30	93

Gas supply

Across the district, 14% (261/2016) were satisfied with the gas supply in their area and these were all in the Haripur Tehsil where 16% (260/1616) of households were satisfied. Figure 42 includes a comparison with the findings about satisfaction with gas supply at national and provincial levels.

The map in Figure 43 shows the variation across the district in the proportion of households satisfied with the gas supply.

Some 16% (301/2016) of households across the district reported they had a gas supply and these were virtually all in the Haripur Tehsil . This is shown by tehsil and in comparison with national and provincial figures in Table 47.

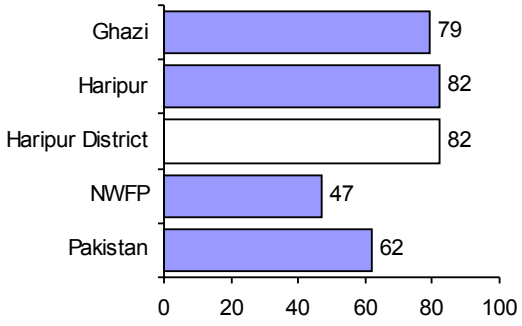


Figure 44 % households satisfied with government electricity services

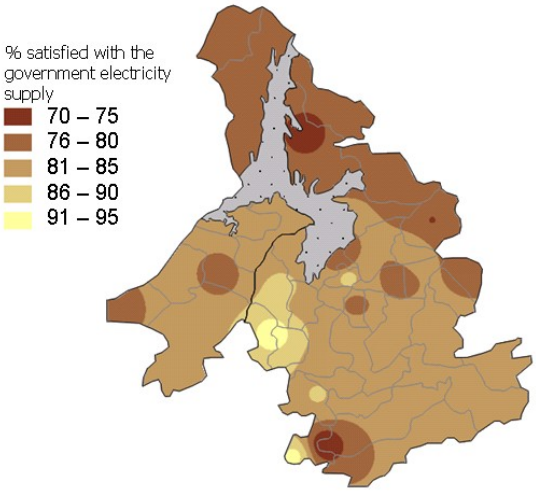


Figure 45 % households satisfied with electricity supply

Electricity supply

Across the district, 82% (1647/2016) were satisfied with the electricity supply in their area. Figure 44 includes a comparison with the findings about satisfaction with electricity supply at national and provincial levels.

The map in Figure 45 shows the variation across the district in the proportion of households satisfied with the government electricity supply.

Virtually all (99.9%; 2014/2016)) of households n the sample across the district and in each tehsil reported they had an electricity supply. This is shown by tehsil and in comparison with national and provincial figures in Table 47. Note that this does not mean that every household in the district has an electricity supply. In general, electricity is either supplied or not to whole communities. When it is supplied to the vast majority of communities in the district, as is the case in Haripur, by chance a sample of communities may not include any of the few communities without a supply, so the proportion of households with a supply is slightly *over*-estimated. On the other hand, if the sample of 20 communities had happened to include one or even two communities without a supply of electricity, then the proportion of households in the sample with a supply would have been *under*-estimated.

Commentary

This report presents the main findings of the social audit in Haripur. It is by no means the end of the process. It will hopefully be a useful reference. But the main work of disseminating the findings and making use of them to support evidence-based planning is only just beginning. Over the coming months the social audit findings will be presented and discussed in many settings within the district, both within and outside government.

During this process many people will no doubt examine the findings closely and look beyond what is included in this report, relating the findings to what they know about the district and tehsil settings and looking for feasible ways to improve outcomes. Some findings bear highlighting even at this stage.

Childhood diarrhoea

The rate of diarrhoea – 19% of children under five years old with diarrhoea in the last two weeks – is quite high by international standards, although lower than in some other parts of Pakistan. In many studies the quality of drinking water is found to be a factor, with children whose households do not have a protected water source having a higher rate of diarrhoea. In Haripur, almost all households have a water source that is classified as 'protected': they use piped or, less commonly, ground water. So it was not possible to examine the effect of water source protection on the risk of diarrhoea.

In Haripur we were not able to demonstrate a protective effect of latrines on childhood diarrhoea, perhaps because of the already high rate of latrine use in the district. More important was education of mothers, which is likely to be related to better overall hygiene in the household, as well as information from the LHW about diarrhoea prevention, recalled by the mothers.

Coming to treatment of diarrhoea, it is encouraging that most mothers know (and believe) children with diarrhoea should be given extra fluids. There is still work to be done to convince them all and to help them do it in practice. Of concern is the high rate of use of anti-diarrhoea medicines. It is not good practice to use these for young children and it can be dangerous. But many LHWs believed in the use of anti-diarrhoea medicines for children and other health practitioners may also be prescribing them.

About half the children with diarrhoea were taken for treatment outside the home and the most popular source of treatment was private practitioners (25%), while only 15% of children with diarrhoea were taken to a government facility. It is encouraging to note that around two thirds of children taken to any type of health care provider were given ORS, which is appropriate treatment.

Childhood acute respiratory infections (ARI)

Evidence from the literature suggests that smoke in the household increases the risk of ARI in children. In Haripur the finding that children from households without ventilation arrangements had a higher risk of ARI is in line with the evidence of smoke exposure increasing the risk.

Children with ARI do need medical attention so it was of concern that nearly a third (30%) were not taken anywhere for treatment. Once again, the most popular choice of parents was private qualified practitioners (35%), while only 16% of children with ARI were taken to a government facility for treatment.

Childhood measles

Measles is not very common in Haripur: 12% of children aged 10-59 months old have had measles, excluding those cases under 10 months old (which may not be measles). Unlike in other focus districts, in Haripur, taking other factors into account, we were not able to show a protective effect of measles immunisation. This might reflect the already quite low rate of measles in the district, together with a high rate of measles immunisation.

Childhood immunisations

Haripur is already achieving good rates of immunisations. Nearly all (91%) children receive BCG at birth. The rates of immunisation fall off somewhat afterwards, so that 85% of children receive the full course of DPT injections, and 81% receive measles vaccine, usually given at nine months old.

Some of the discussions held with parents in focus groups help to explain reasons why not all children are immunised and could be useful inputs into an advocacy campaign to encourage still higher immunisation rates,

especially in those parts of the district presently lagging behind. The analysis of variables related to the chances of a child being immunised against measles offers a number of options for interventions that could help to increase further the number of immunised children. Which of these options might be feasible in Haripur will be a subject for discussion over the coming months. Some interventions would be much cheaper than others.

The role of lady health workers (LHWs)

The coverage of mothers by LHWs in Haripur is quite good: 62% of mothers reported they were visited by an LHW. However, it is striking that most mothers visited by an LHW did not recall being told anything about prevention or treatment of diarrhoea in children, recognition and treatment of ARIs in children, or immunisations. On the other hand, nearly all the LHWs we interviewed said they did tell mothers about these things. The reasons for this contrast need to be explored and perhaps LHWs need to be equipped with different methods of getting over information to mothers. Information from LHWs can clearly have an impact; recall of information about immunisations from an LHW was a variable that increased the chances of a child being immunised against measles.

Satisfaction with a range of government services

We asked households a general question about their satisfaction (and access) to a range of basic services, provided from different levels of government. While we caution against over-interpretation of these isolated satisfaction ratings, they do provide a general guide. Haripur is doing relatively well for public satisfaction with most services, including roads, sewerage, government water supply, agriculture, health, and education, in comparison with NWFP as a whole. These ratings can provide an ongoing feedback from citizens, but bearing in mind their limitations.

Annexes

1. Members of Haripur district social audit steering group
2. Members of Haripur district social audit sub-technical group
3. Terms of reference of social audit national core group
4. CIET methods
5. Main indicators from household interviews, by tehsil
6. Main indicators from community profiles and LHW interviews
7. Main themes from focus group discussions

Annex 1

Members of Haripur social audit district steering group

Mr. Yousaf Ayub Khan, District Nazim Haripur
Mr. Khayyam Hasan Khan, DCO Haripur
Maj R Safdar Zaman Khan, District Naib Nazim Haripur
Mr. Mumtaz Umar EDO FP&D Haripur
Dr. Mohammad Qasim, EDO Health Haripur
Mr. Haidar Zaman, EDO S&L Haripur
Mr. Saeed Afradi, EDO W&S Haripur
Mr. Mahmood Elhai, EDO Agriculture Haripur
Dr Fazal Mahmood, EDO Social Welfare and CD Haripur
Mr. Mohammad Farooq Khan DOR and TMO Haripur
Mr. Sikandar Mansoor Shah TMO Ghazi
Mr. Asif Ali Jah Nazim UC Beer
Mr. Masood Shah Nazim UC Pind Hashim Khan
Mr. Anjum Farid Naib Nazim UC Qazipur
Mr. Malik Afzal Khan Naib Nazim UC Kothera
Ms. Raheela Kausar Zila Councilor Haripur
Raja Ehtisham Tehsil Councillor Haripur
Ms. Gul Ambreen Tehsil Councillor Haripur
Chaudhry Akhtar Nawaz Community member Village Hattar.
Prof. Dr. Amir Khan CIET Coordinator NWFP
Mr. Muhammad Ijaz, District Coordinator for CIET in Haripur

Annex 2

Members of Haripur social audit sub-technical group

Mr. Yousaf Ayub Khan District Nazim Haripur
Mr. Khayyam Hasan Khan DCO Haripur
Maj R Safdar Zaman Khan, District Naib Nazim Haripur
Mr. Mumtaz Umar EDO FP&D Haripur
Dr. Mohammad Qasim, EDO Health Haripur
Dr Fazal Mahmood, EDO Social Welfare and CD Haripur
Mr. Mohammad Farooq Khan DOR and TMO Haripur
Mr. Sikandar Mansoor Shah TMO Ghazi
Mr. Anjum Farid Naib Nazim UC Qazipur
Ms. Raheela Kausar Zila Councillor Haripur
Ms. Gul Ambreen Tehsil Councillor Haripur
Prof. Dr. Amir Khan CIET Coordinator NWFP
Mr. Muhammad Ijaz, District Coordinator for CIET in Haripur

Annex 3: Terms of reference of social audit national core group

Membership

The membership will include:

- From each focus district: the zila nazim or representative and the DCO or district focal person for the social audit
- The social audit focal point from each provincial department of Local Government and Rural Development
- The CIET district coordinator from each focus district, CIET provincial coordinators and national coordinator, and representation from the CIET liaison office in Islamabad
- A representative from NRB
- Other members as may be co-opted for specific purposes from time to time

The group will be chaired by one of the members from the focus districts, to be elected by the core group members. The group members will elect a chair every six months. CIET will provide the secretariat for the group.

Purposes of the group

The intention of the national core group is to share experiences of the district social audit scheme between the districts, identifying what has worked especially well, so that a tool-box for district social audit schemes in other districts can be developed.

The group will:

- develop means of *horizontal connectivity*: methods of sharing learning between the participating districts, both in terms of how best to apply the social audit effectively and in terms of findings and action plans developed as a result. These might include email listserves, a newsletter, shared reports, and meetings.
- explore means of increasing *vertical connectivity*: identifying common issues arising from the social audit to bring to the attention of the NRB; developing the role of the provincial LGRD departments in supporting the district social audit schemes; and findings ways to involve sub-district governments and civil society in social audit.
- provide a forum for discussing and agreeing matters of common interest, such as the focus of each social audit cycle and methods of publicizing the findings
- act as a point of reference for other districts that wish to develop district social audit schemes

Meetings

Meetings will be held six monthly. The venue for each meeting will be one of the participating districts, to be agreed in the preceding meeting.

The Minutes of the meetings will be circulated to the members and to the Chief Secretary, the head of the Planning and Development, and the head of the Local Government department in each province.

In between physical meetings, matters of interest or importance to the Group will be circulated for comment and discussion, mostly electronically.

Annex 4: CIET methods

Rooted in modern epidemiology and participatory research techniques, CIET methods have been applied in health[18], education[19], water and sanitation[20], land mines[21], economic sanctions[22], prevention of sexual violence[23] and the impact of structural adjustment measures on the vulnerable. The method has been used to measure impact, coverage and cost in the fields of environment[24], urban transport[25], agricultural extension[26] and judiciary[27]. It has proved useful for community-designed strategies to combat corruption in the public services in several countries[2829]. CIET processes have been established in over 40 countries during the last decade.

A representative sample of communities is selected to represent conditions across the entire country. In these sentinel communities, *all* public services to be included in the audit are reviewed. This allows for conclusions not just on the performance of each department, but on the performance of the services taken together. In each sentinel community, several types of interaction are developed with the community, including a service delivery household survey. The fact that the public services are reviewed in the same sentinel communities as the household survey and focus groups means that these different types of information – community and service, quantitative and qualitative – can be combined economically and rapidly.

There are several specific steps in the social audit that examine and strengthen community participation:
- the sample is carefully chosen to cover all types of community; information they provide includes their experience with services, their satisfaction and willingness to pay;
- community members and service providers participate in the fact finding;
- community members and service providers participate in analysis of the evidence, adding their experience and ideas to formulate local solutions;
- the workshopping process allows both one-to-one interaction and group discussion of the evidence and the ways forward; and
- the reiterative nature of the process helps to build community capacities and confidence.

[18] Cockcroft A. Performance and Perceptions of Health and Agriculture Services in Uganda. CIETinternational/World Bank/UNICEF/CIDA: Washington, D.C., December 1996.

[19] CIETinternational. Gender gap in primary education. Secretary Planning & Development Department, Government of Sindh, Pakistan/UNICEF Karachi 1996.

[20] Andersson N, Villegas A, Paredes S. Micro-regional Planning. in Four Essays on Evidence-based Planning . EDI/World Bank, 1995.

[21] Andersson N, da Sousa C, Paredes C. Social costs of land mines in four countries: Afghanistan, Bosnia, Cambodia and Mozambique. *British Medical Journal.* 1995;311:718-721.

[22] Andersson N. The social conditions for health in Serbia. CIETinternational: New York. 1994

[23] Andersson, N., Mhatre S, Mqotsi N., Penderis, M. Prevention of sexual violence - a social audit of the role of the police in the jurisdiction of Johannesburg's Southern Metropolitan Local Council. Johannesburg, October 1998.

[24] Arostegui J and Andersson N. Nicaragua: Impact of the National Environmental Program. EDI/World Bank, December 1995.

[25] Arostegui J and Andersson N. Results-oriented management of Managua urban public transport. EDI/World Bank December 1995.

[26] Cockcroft A. Performance and Perceptions of Health and Agriculture Services in Uganda. CIETinternational/World Bank/UNICEF/CIDA: Washington, D.C., December 1996.

[27] Massoud N. Measuring client satisfaction and expectations: The Case of the Mali Public Service. EDI/World Bank. September 1995.

[28] Cockcroft A. Tanzania Service Delivery Survey: Corruption in the Police, Judiciary, Revenue & Lands Service. EDI/World Bank July 1996.

[29] Cockcroft A, Legorreta J. National Integrity Survey, Uganda. Inspectorate of Government, Uganda & CIETinternational, August 1998.

Taken together with hard evidence of what needs to change and how it should be changed, this participation can produce a radical change in public services, increasing accountability and providing the public with value for money.

In addition to a detailed review of public services, and interviews with service providers, community-based social audits collect information on users and non-users of a service from the standpoint of the community. A community-based audit compares users and non users in the same community, and it can compare entire communities that benefit form a service with entire communities that do not benefit. This is a strong analytical position for understanding programme performance. Since it places community dynamics at the centre of the audit, it is very easy to answer questions about who the programme leaves out and why they are left out, something that service-based approaches cannot do easily. It also allows for evaluation of 'knock-on' or secondary effects, for example, when some women in a community are exposed to programme content and they relay the benefits to others in some way or another.

Analysis

The most basic level of analysis is simply a description of the levels of the different indicators of service performance. However, this does not in itself contribute to changing the situation. Formal epidemiological analysis probes behind the indicators to reach a deeper understanding of what is happening and how it be changed to improve outcomes for the well-being of the population in question.

The CIET community-based cross-design methods focus principally on what is working (the proof that something is not working requires considerably bigger sample sizes). Even when a relationship is found between a particular intervention or service and a positive outcome, in order to be sure it is the intervention that produces the positive outcome, it is necessary to exclude other possible factors as explanations of the outcome. This leads to the development of several higher-level indicators, each with a purpose in planning.

Modern epidemiological methods, for example the Mantel-Haenszel[30] procedure and the Mantel-Extension[31] test for trend, widely used for studying causes in the medical sphere, have been adapted to look behind the indicators in management in other sectors, including justice, transport, environment, customs services, water, sanitation, agriculture, food security and education. These techniques allow detailed analysis of factors that contribute to impact at national and sub-national levels. They can be used in analysis of data from social audits.

GIS component: maps for planning

CIET mapping techniques are an important means of displaying findings for planners and policy makers. The CIETmap geographic information process is designed for communication and modelling of epidemiological data for planning.[32] It represents the spatial variations of

[30]Mantel N, Haenszel W. Statistical aspects of the analysis of data from retrospective studies of disease. *J Natl Cancer Inst* 1959;22:719_748.

[31]Mantel N. Chi_square tests with one degree of freedom: extensions of the Mantel Haenszel procedure. *J Amer Stat Assoc* 1963;58:690_700.

[32] Andersson N., Mitchell S. CIETmap: free GIS and epidemiology software from the CIET group, helping to build the community voice into planning. World Congress of Epidemiology, Montreal, Canada, 19 August, 2002.

indicators but it can also model the effects of interventions, programme changes, and time-series data.

Sample data collected in the field are linked to a set of sentinel sites on the map and interpolated to create a raster surface of the study area. An adjustment is made to the interpolation in order to account for the population weighting of the sites. This transforms the map into one which represents proportion of the population rather than simply geographic area. A colour palette is then applied to show the gradient changes between classes of data, with darker colours representing high values and lighter colours representing low values.

CIET raster maps are interpreted much like a standard weather map where regional trends are more accurate than the exact location of any contour gradient. However, since they are population weighted, if 30% of the map falls within a certain class range then 30% of the population is in that range.

CIETmaps can be used to measure community participation and coverage of services in different sectors including social welfare, health, education, sports, art and culture. Each level of CIET indicators can be displayed on the maps in order to show access to services, the current effect of services on the community, and the possible effects of any programme change or reallocation.

For example, a level 0 ‘coverage’ map can show which households have access to, say, government health services and which do not. This can be helpful in determining where the gaps of services occur based upon community reported needs.

This map can then be compared with the coverage with roads of different types in different areas. Satisfaction is partly a function of expectations. The level 0 maps can demonstrate regional variations of satisfaction or access to services which may be important to consider for any reallocation or reform of services.

CIETmaps can then be used to determine how any projected road construction might change overall satisfaction with this service. These ‘gains’ can be clearly modelled on the maps through a ‘morph’ series. The morph series is so named due to the visible change that occurs in the indicator on the map, much like a series of steps in an animation. For example, the morph series may show a significant increase in user satisfaction if ‘Reform A’ was implemented. The Morph series not only shows how much of an effect there may be, but also where the effect takes place. Morph series maps can also be used to compare interventions, such as the effect of Reform A vs. Reform B, or the effect of A and B together.

Annex 5: Main indicators from household interviews

Table 1. General household indicators by tehsil

Indicator	DISTRICT % wt (unwt) 95% CI	Based on	HARIPUR % unwt 95% CI	Based on	GHAZI % unwt 95% CI	Based on
Household demographic and socio-economic characteristics						
Total households interviewed	2017		1617		400	
Total population covered	14239		11345		2894	
Mean household size	7.0 6.8 - 7.2	2017	7.01 6.8 - 7.1	1617	7.2 6.9 - 7.5	400
Households where a women responded	93.53(93.3) 92.43 - 94.63	2016	94.43 93.29 - 95.58	1617	88.72 85.49 - 91.95	399
Households with a male head	94.89(94.87) 93.90 - 95.88	2008	94.98 93.88 - 96.08	1613	94.43 92.04 - 96.82	395
Household head with any education	66.4(65.67) 64.31 - 68.49	2013	69.33 67.05 - 71.61	1614	50.88 45.85 - 55.91	399
Houses with poor roof construction	25.45(26.54) 23.52 - 27.38	2012	21.03 19.01 - 23.05	1612	48.75 43.73 - 53.77	400
Houses with >4 people/room	24.78(24.9) 22.87 - 26.69	2012	24.3 22.18 - 26.43	1613	27.32 22.82 - 31.82	399
Main breadwinner unemployed or unskilled	39.65(39.88) 37.48 - 41.82	1991	38.73 36.32 - 41.14	1606	44.68 39.58 - 49.77	385
Vulnerable households	23.09(23.61) 21.21 - 24.97	1982	20.96 18.94 - 22.99	1598	34.64 29.75 - 39.52	384
Very vulnerable households	5.49(5.8) 4.47 - 6.52	1982	4.26 3.23 - 5.28	1598	12.24 8.83 - 15.65	384
General opinion about services						
Roads		*n=2000*		*n=1601*		*n=399*
Satisfied	56.21(55) 54.02 - 58.41	1100	61.15 58.73 - 63.57	979	30.33 25.69 - 34.96	121
Not satisfied	41.7(42.95) 39.51 - 43.88	859	36.6 34.21 - 38.99	586	68.42 63.73 - 73.11	273
No service	2.09(2.05) 1.44 - 2.74	41	2.25 1.49 - 3.01	36	1.25 0.04 - 2.47	5
Public transport		*n=2012*		*n=1612*		*n=400*
Satisfied	64.82(63.57) 62.71 - 66.93	1279	69.91 67.64 - 72.18	1127	38 33.12 - 42.88	152
Not satisfied	33.89(35.19) 31.79 - 35.98	708	28.6 26.36 - 30.83	461	61.75 56.86 - 66.64	247
No service	1.29(1.24) 0.77 - 1.81	25	1.49 0.87 - 2.11	24	0.25 -0.36 - 0.86	1
Sewerage service		*n=2009*		*n=1611*		*n=398*
Satisfied	39.28(38.28) 37.12 - 41.44	769	43.33 40.88 - 45.78	698	17.84 13.95 - 21.73	71
Not satisfied	47.98(49.13) 45.77 - 50.19	987	43.33 40.88 - 45.78	698	72.61 68.11 - 77.12	289
No service	12.74(12.59) 11.26 - 14.23	253	13.35 11.65 - 15.04	215	9.55 6.53 - 12.56	38
Garbage service		*n=2010*		*n=1611*		*n=399*
Satisfied	6.29(6.02) 5.20 - 7.38	121	7.39 6.08 - 8.69	119	0.5 -0.32 - 1.32	2
Not satisfied	6.47(6.27) 5.37 - 7.57	126	7.26 5.96 - 8.56	117	2.26 0.67 - 3.84	9
No service	87.24(87.71) 85.76 - 88.73	1763	85.35 83.59 - 87.11	1375	97.24 95.51 - 98.98	388
Government water supply		*n=2013*		*n=1613*		*n=400*
Satisfied	74.11(72.83) 72.17 - 76.04	1466	79.29 77.28 - 81.30	1279	46.75 41.74 - 51.76	187
Not satisfied	22.11(23) 20.27 - 23.94	463	18.47 16.55 - 20.40	298	41.25 36.30 - 46.20	165
No service	3.79(4.17) 2.93 - 4.65	84	2.23 1.48 - 2.98	36	12 8.69 - 15.31	48
Gas supply		*n=2016*		*n=1616*		*n=400*
Satisfied	13.57(12.95) 12.05 - 15.09	261	16.09 14.27 - 17.91	260	0.25 -0.36 - 0.86	1

Indicator	DISTRICT % wt (unwt) 95% CI	Based on	HARIPUR % unwt 95% CI	Based on	GHAZI % unwt 95% CI	Based on
Not satisfied	2.07(1.98) 1.42 - 2.72	40	2.41 1.63 - 3.19	39	0.25 -0.36 - 0.86	1
No service	84.36(85.07) 82.75 - 85.97	1715	81.5 79.57 - 83.42	1317	99.5 98.68 - 100.3	398
Electricity supply		*n=2016*		*n=1617*		*n=399*
Satisfied	81.84(81.7) 80.14 - 83.55	1647	82.44 80.55 - 84.32	1333	78.7 74.55 - 82.84	314
Not satisfied	18.07(18.2) 16.36 - 19.77	367	17.5 15.62 - 19.38	283	21.05 16.93 - 25.18	84
No service	0.09(0.1) -0.07 - 0.25	2	0.06 -0.09 - 0.21	1	0.25 -0.37 - 0.87	1
Government health service		*n=1998*		*n=1600*		*n=398*
Satisfied	35.43(34.88) 33.30 - 37.55	697	37.63 35.22 - 40.03	602	23.87 19.56 - 28.18	95
Not satisfied	54.6(55.61) 52.39 - 56.80	1111	50.5 48.02 - 52.98	808	76.13 71.82 - 80.44	303
No service	9.98(9.51) 8.64 - 11.32	190	11.88 10.26 - 13.49	190	0	0
Government education service		*n=2013*		*n=1613*		*n=400*
Satisfied	71.13(70.54) 69.13 - 73.14	1420	73.53 71.34 - 75.71	1186	58.5 53.55 - 63.45	234
Not satisfied	28.4(29.01) 26.40 - 30.39	584	25.91 23.75 - 28.08	418	41.5 36.55 - 46.45	166
No service	0.47(0.45) 0.15 - 0.79	9	0.56 0.16 - 0.95	9	0	0
Government agriculture service		*n=1686*		*n=1321*		*n=365*
Satisfied	25.27(25.56) 23.17 - 27.38	431	24.07 21.73 - 26.42	318	30.96 26.08 - 35.84	113
Not satisfied	31.45(32.98) 29.21 - 33.70	556	25.13 22.76 - 27.51	332	61.37 56.24 - 66.50	224
No service	43.27(41.46) 40.88 - 45.67	699	50.79 48.06 - 53.53	671	7.67 4.80 - 10.54	28
Household environment and ventilation						
Houses with some arrangement for ventilation	90.8(90.22) 89.51 - 92.09	2004	93.15 91.88 - 94.42	1606	78.39 74.22 - 82.56	398
Kitchen/cooking area separate from main living area	86.48(86.02) 84.97 - 88.00	2017	88.37 86.78 - 89.97	1617	76.5 72.22 - 80.78	400
Kitchen/cooking area separate from sleeping area	86.66(86.27) 85.15 - 88.17	2017	88.25 86.65 - 89.85	1617	78.25 74.08 - 82.42	400
Types of cooking stove used by households		*n=2014*		*n=1615*		*n=399*
Sui gas stove	18.27(17.48) 16.56 - 19.98	352	21.49 19.45 - 23.52	347	1.25 0.04 - 2.47	5
Wood stove	80(80.83) 78.22 - 81.77	1628	76.59 74.50 - 78.69	1237	97.99 96.49 - 99.50	391
Coal stove	0.25(0.25) 0.01 - 0.49	5	0.25 -0.03 - 0.52	4	0.25 -0.37 - 0.87	1
Kerosene stove	0.21(0.2) -0.02 - 0.43	4	0.25 -0.03 - 0.52	4	0	0
Electric	0.21(0.2) -0.02 - 0.43	4	0.25 -0.03 - 0.52	4	0	0
Cow dung (Ooplay)	0.21(0.2) -0.02 - 0.43	4	0.25 -0.03 - 0.52	4	0	0
Gas Cylinder	0.86(0.84) 0.43 - 1.29	17	0.93 0.43 - 1.43	15	0.5 -0.32 - 1.32	2
Households using cooking stove that doesn't produce smoke	19.34(18.52) 17.59 - 21.09	2014	22.66 20.59 - 24.74	1615	1.75 0.34 - 3.17	399
Households use some heating system	37.84(37.98) 35.69 - 39.98	2014	37.24 34.85 - 39.63	1614	41 36.06 - 45.94	400
Types of heating system used by households		*n=2014*		*n=1614*		*n=400*
None	62.16(62.02) 60.02 - 64.31	1249	62.76 60.37 - 65.15	1013	59 54.06 - 63.94	236
Sui gas stove	12.76(12.16) 11.28 - 14.24	245	15.18 13.40 - 16.96	245	0	0
Wood stove	16.08(16.68) 14.45 - 17.71	336	13.63 11.93 - 15.34	220	29 24.43 - 33.57	116
Coal stove	6.35(6.5) 5.26 - 7.43	131	5.7 4.54 - 6.86	92	9.75 6.72 - 12.78	39

Indicator	DISTRICT % wt (unwt) 95% CI	Based on	HARIPUR % unwt 95% CI	Based on	GHAZI % unwt 95% CI	Based on
Electric	2.48(2.43) 1.77 - 3.18	49	2.66 1.85 - 3.48	43	1.5 0.18 - 2.82	6
Gas Cylinder	0.17(0.2) -0.03 - 0.38	4	0.06 -0.09 - 0.21	1	0.75 -0.22 - 1.72	3
Households using heating system that doesn't produce smoke	77.58(76.81) 75.73 - 79.42	2014	80.67 78.71 - 82.63	1614	61.25 56.35 - 66.15	400
Households with someone smoking inside the household	33.28(33.33) 31.19 - 35.36	2004	33.04 30.71 - 35.38	1604	34.5 29.72 - 39.28	400
Household drinking water supply						
Type of water supply		*n=2017*		*n=1617*		*n=400*
Piped water	92.01(91.47) 90.80 - 93.22	1845	94.19 93.02 - 95.36	1523	80.5 76.49 - 84.51	322
Underground water	7.61(8.08) 6.43 - 8.79	163	5.69 4.53 - 6.85	92	17.75 13.88 - 21.62	71
Surface water	0.33(0.4) 0.06 - 0.61	8	0.06 -0.09 - 0.21	1	1.75 0.34 - 3.16	7
Tanker/vendor/hydrant/bottled	0.05(0.05) -0.07 - 0.18	1	0.06 -0.09 - 0.21	1	0	0
Distance of source from the household						
Household with water supply within the household	90.73(89.64) 89.44 - 92.02	2017	95.18 94.10 - 96.25	1617	67.25 62.53 - 71.97	400
Water source with in 500m of the households including those within the household	99.37(99.24) 98.99 - 99.74	1973	99.88 99.67 - 100.0	1604	96.48 94.46 - 98.49	369
Protection of water source						
Households getting their drinking water from a protected source	91.85(90.7) 90.62 - 93.08	1978	96.5 95.57 - 97.43	1600	66.14 61.23 - 71.04	378
Use some method to treat drinking water	3.79(3.68) 2.93 - 4.65	2011	4.22 3.21 - 5.23	1612	1.5 0.18 - 2.82	399
Household use of latrine						
Use household or communal latrine	87.79(87.01) 86.34 - 89.25	2017	90.97 89.54 - 92.40	1617	71 66.43 - 75.57	400
Household with formal type of latrine	81.58(80.39) 79.86 - 83.30	2004	86.42 84.71 - 88.12	1605	56.14 51.15 - 61.13	399
Reasons for not having a latrine		*n=251*		*n=139*		*n=112*
No Money/Latrine not provided	90.81(90.84) 87.04 - 94.58	228	90.65 85.45 - 95.85	126	91.07 85.34-96.80	102
No need/no tradition/no awareness	5.92(5.58) 2.80 - 9.04	14	7.91 3.07 - 12.76	11	2.68 -0.76 - 6.12	3
No space/damaged by rain	2.25(2.39) 0.22 - 4.29	6	1.44 -0.90 - 3.78	2	3.57 -0.31 - 7.45	4
No water/no electricity/no sewerage/bad smell	1.02(1.2) -0.42 - 2.46	3	0	0	2.68 -0.76 - 6.12	3
Observations on household hygiene						
Garbage present in the household around the door step	40.81(41.81) 38.64 - 42.99	2009	36.77 34.38 - 39.16	1610	62.16 57.27 - 67.04	399
Excreta present in the household around the doorstep	25.87(26.56) 23.93 - 27.81	2007	23.07 20.98 - 25.16	1608	40.6 35.66 - 45.55	399
Sewage water present in the household around the doorstep	44.67(45.47) 42.47 - 46.87	2010	41.43 38.99 - 43.87	1610	61.75 56.86 - 66.64	400
Proportion of households where observation of drinking water container was possible	96.34(96.07) 95.49 - 97.18	2012	97.4 9 6.59 - 98.20	1613	90.73 87.76 - 93.70	399
Drinking water container is covered	95.37(95.22) 94.41 - 96.34	1925	95.97 94.97 - 96.98	1564	91.97 89.02 - 94.91	361
Drinking water container was clean	91.68(91.31) 90.42 - 92.94	1922	93.15 91.87 - 94.44	1563	83.29 79.29 - 87.29	359
Water container is raised from ground level	71.88(71.37) 69.85 - 73.92	1921	73.94 71.73 - 76.15	1562	60.17 54.96 - 65.37	359
Households with their water container clean, covered and raised	68.38(67.81) 66.28 - 70.49	1920	70.66 68.37 - 72.95	1561	55.43 50.15 - 60.71	359
LHW visits to the household						
Proportion of households ever visited by a LHW	63.87(62.52) 61.75 - 66.00	2009	69.36 67.08 - 71.64	1609	35 30.20 - 39.80	400
Time since last visit by an LHW		*n=1966*		*n=1577*		*n=389*
Never visited by an LHW	36.91(38.3) 34.75 - 39.07	753	31.26 28.94 - 33.58	493	66.84 62.03 - 71.65	260

Indicator	DISTRICT % wt (unwt) 95% CI	Based on	HARIPUR % unwt 95% CI	Based on	GHAZI % unwt 95% CI	Based on
Last visit within a month	58.06(56.87) 55.85 - 60.27	1118	62.9 60.49 - 65.32	992	32.39 27.61 - 37.17	126
More than one but within last three months	4.92(4.73) 3.94 - 5.91	93	5.71 4.53 - 6.88	90	0.77 -0.23 - 1.77	3
More than three but within last six months	0.11(0.1) -0.06 - 0.28	2	0.13 -0.08 - 0.33	2	0	0

Table 2. Mother and child indicators by tehsil

Indicator	District % wt (unwt) 95% CI	Based on	HARIPUR Unwt 95% CI	Based on	GHAZI unwt 95% CI	Based on
INFORMATION BASE						
Total mothers/care takers interviewed	2091		1675		416	
Respondents in each age group		*n=2084*		*n=1670*		*n=414*
Less then 18 years	0.05	1	0.1	1	0.00	0
18-30 years	64.32	1342	64.0	1069	65.9	273
31-50 years	33.36	629	34.0	568	30.0	124
51 years and above	2.27	49	1.9	32	4.1	17
Mothers/caretakers with some formal education	46.32(45.58) 44.16 - 48.49	949/2082	49.34 46.91 - 51.77	823/1668	30.43 25.88 - 34.99	126/414
Total children aged <60 months	2682		2190		492	
Among children 0-59 months of age						
Proportion of boys	52.09(52.29) 50.18 - 54.00	1402/2681	51.28 49.16 - 53.39	1123/2190	56.82 52.34 - 61.31	279/491
Proportion of girls aged	47.91(47.71) 46.00 - 49.82	1279/2681	48.72 46.61 - 50.84	1067/2190	43.18 38.69 - 47.66	212/491
Children for whom their mothers provided the information						
MOTHERS'/CARETAKERS' KNOWLEDGE, ATTITUDE AND PRACTICES ABOUT CHILD HEALTH AND CARE						
Awareness about immunization						
Mothers having heard about immunization	94.3(93.61) 93.28 - 95.32	1950/2083	97.06 96.22 - 97.90	1618/1667	79.81 75.83 - 83.79	332/416
Sources to hear about immunization from (multiple responses recorded)		*n=2083*		*n=1667*		*n=416*
Nowhere	4.2	87	1.1	18	16.6	69
Electronic media	48.3	1007	51.5	858	35.8	149
Written material (newspaper, pamphlet)	0.4	9	0.5	9	0	0
Family, neighbors, friends	30.9	664	32.5	542	24.5	102
School	0	1	0.1	1	0	0
Doctor, hospital	10.1	210	8.7	145	15.6	65
LHW, LHV, Dai	9	188	9.9	165	5.5	23
Vaccination team	.6	13	0.7	12	0.2	1
NGO	.1	2	0.1	2	0	0
Announcement	2.0	42	1.9	31	2.6	11
Don't know (incl. I knew myself)	2.4	50	2.0	33	4.1	17
Mothers mentioning at least one illness prevented by immunization (even if incorrect)	84.76(84.27) 83.19 - 86.33	1752/2079	86.75 85.09 - 88.41	1447/1668	74.21 69.86 - 78.56	305/411
Mothers mentioning at least one correct illness that can be prevented by immunization	83.22(82.59) 81.59 - 84.85	1717/2079	85.79 84.09 - 87.50	1431/1668	69.59 65.02 - 74.16	286/411
Views about benefits of immunization						
Neighbours' views about immunizing as reported by mothers/caretakers		*n=2085*		*n=1670*		*n=415*
Thinks it's worthwhile	86.96(86.67) 85.49 - 88.43	1807	88.14 86.56 - 89.72	1472	80.72 76.81 - 84.64	335
Don't think it's worthwhile	2.13(2.3) 1.49 - 2.78	48	1.44 0.84 - 2.04	24	5.78 3.42 - 8.15	24
Don't know	10.91(11.03) 9.55 - 12.27	230	10.42 8.92 - 11.91	174	13.49 10.09 - 16.90	56
Mothers' own perception about immunizing the child		*n=2087*		*n=1672*		*n=415*
Thinks it's worthwhile	96.5(96.17) 95.69 - 97.31	2007	97.85 97.12 - 98.57	1636	89.4 86.32 - 92.48	371
Don't think it's worthwhile	2.21(2.4) 1.55 - 2.86	50	1.44 0.84 - 2.04	24	6.27 3.81 - 8.72	26
Don't know if it's worthwhile or not	1.3(1.44) 0.79 - 1.80	30	0.72 0.28 - 1.15	12	4.34 2.26 - 6.42	18

Indicator	District % wt (unwt) 95% CI	Based on	HARIPUR Unwt 95% CI	Based on	GHAZI unwt 95% CI	Based on
Reasons for being worthwhile		*n=1959*		*n=1612*		*n=347*
Protection against illness	98.47(98.52) 97.90 - 99.04	1930	98.26 97.59 - 98.83	1584	99.71 99 - 100.42	346
Important to immunize	1.16(1.12) 0.66 - 1.66	22	1.30 0.72 - 1.89	21	0.29 -0.42 - 1.0	1
Get vaccination form birth	0.16(0.15) -0.04 - 0.36	3	0.19 -0.06 - 0.43	3	0 	0
Create immunities against	0.16(0.15) -0.04 - 0.36	3	0.19 -0.06 - 0.43	3	0 	0
Govt order	0.05(0.05) -0.07 - 0.18	1	0.06 -0.09 - 0.21	1	0 	0
Reasons for not being worthwhile		*n=24*		*n=20*		*n=4*
Felt it is not necessary	54.34(54.17) 32.32 - 76.35	13	55 30.70 - 79.30	11	50 -11.50 - 111.50	2
Child gets sick from vaccine	41.33(41.67) 19.54 - 63.11	10	40 16.03 - 63.97	8	50 -11.50 - 111.50	2
No practice in family	4.34(4.17) -5.90 - 14.57	1	5 -7.05 - 17.05	1	0 	0
Views about adverse effects of immunization						
Mothers who have heard about any bad effects of immunization	3.61(3.57) 2.91 - 4.31	74/2074	3.79 2.84 - 4.73	63/1664	2.68 1.00 - 4.37	11/410
Types of bad effects of immunization that mothers had heard of		*n=2074*		*n=1664*		*n=410*
Nothing	96.39(96.43) 95.56 - 97.22	2000	96.21 95.27 - 97.16	1601	97.32 95.63 - 99.00	399
Actual side-effects	0.9(0.87) 0.47 - 1.33	18	1.02 0.51 - 1.53	17	0.24 -0.36 - 0.84	1
Incorrect perceptions	2.71(2.7) 1.99 - 3.44	56	2.76 1.95 - 3.58	46	2.44 0.82 - 4.05	10
Heard from somewhere specific	84.29(84.85) 74.75 - 93.83	56/66	82.14 71.22 - 93.07	46/56	100 95.00 - 105.00	10/10
Source of information about bad effects of immunization		*n=66*		*n=56*		*n=10*
Written material (newspaper, books, pamphlets)	1.57(1.52) -2.19 - 5.33	1	1.79 -2.58 - 6.15	1	0 	0
Family, neighbours, friends	71.72(72.73) 60.10 - 83.34	48	67.86 54.73 - 80.98	38	100 95.00 - 105.00	10
Doctor/hospital	11(10.61) 2.69 - 19.30	7	12.50 2.95 - 22.05	7	0 	0
Don't know where (including " I knew it from myself")	15.71(15.15) 6.17 - 25.25	10	17.86 6.93 - 28.78	10	0 	0
Mothers who had discussed immunization in their family	91.22(90.66) 89.98 - 92.46	1874/2067	93.48 92.26 - 94.70	1549/1657	79.27 75.22 - 83.31	325/410
Knowledge about diarrhoea and its management						
Mentioned something as a reason for diarrhoea even if incorrect or non specific	87.51(87.16) 86.06 - 88.96	1806/2072	88.91 87.37 - 90.45	1475/1659	80.15 76.18 - 84.11	331/413
Mentioned correct reasons for diarrhoea	72.69(72.25) 70.75 - 74.64	1497/2072	74.5 72.38 - 76.63	1236/1659	63.2 58.42 - 67.97	261/413
Mother would give more fluid during diarrhoea	72.81(72.9) 70.86 - 74.75	1509/2070	72.43 70.25 - 74.61	1203/1661	74.82 70.49 - 79.15	306/409
Mother would give same or more food during diarrhoea	74.88(74.63) 72.99 - 76.77	1547/2073	75.9 73.82 - 77.99	1263/1664	69.44 64.85 - 74.02	284/409
Mothers' interaction with LHW						
Proportion of mothers ever visited by a LHW	61.67(60.3) 59.56 - 63.78	1256/2083	67.25 64.96 - 69.53	1121/1667	32.45 27.83 - 37.07	135/416
Period since last LHW visit		*n=2042*		*n=1635*		*n=407*
Never	39.1(40.5) 36.95 - 41.24	827	33.39 31.08 - 35.71	546	69.04 64.43 - 73.66	281
Within the last one month	55.8(54.6) 53.62 - 57.98	1115	60.67 58.27 - 63.07	992	30.22 25.64 - 34.81	123
More than one but within last 6 months	5(4.8) 4.03 - 5.97	98	5.81 4.65 - 6.97	95	0.74 -0.22 - 1.69	3
More than six month but within 1 year	0.1(0.1) -0.06 - 0.27	2	0.12 -0.08 - 0.32	2	0 	0
Among mothers/caretakers ever visited by LHW						
LHW did tell something about diarrhoea prevention	12.63(12.65) 10.73 - 14.52	156/1233	12.53 10.53 - 14.54	138/1101	13.64 7.40 - 19.87	18/132

Indicator	District % wt (unwt) 95% CI	Based on	HARIPUR Unwt 95% CI	Based on	GHAZI unwt 95% CI	Based on
LHW did tell something about diarrhoea treatment	18.63(18.71) 16.40 - 20.86	227/1213	18.32 15.96 - 20.67	198/1081	21.97 14.53 - 29.41	29/132
LHW did tell something about recognizing ARI	3.37(3.34) 2.32 - 4.42	41/1226	3.48 2.34 - 4.61	38/1093	2.26 -0.64 - 5.16	3/133
LHW did tell something about treatment for ARI	5.33(5.45) 4.02 - 6.64	66/1212	4.91 3.58 - 6.25	53/1079	9.77 4.35 - 15.20	13/133
LHW did tell something about vaccination	29.63(29.64) 27.04 - 32.23	364/1228	29.59 26.84 - 32.34	324/1095	30.08 21.91 - 38.24	40/133
CHILD HEALTH AND CARE						
Total children aged <60 months	2682		2190		492	
Proportion of children attending a school (incl. pre-primary schooling)	7.79(7.55) 6.75 - 8.84	199/2636	8.76 7.55 - 9.98	189/2157	2.09 0.70 - 3.47	10/479
Proportion of children 0-6 months of age being exclusively breastfed	82.05(82.61) 77.99 - 86.11	304/368	79.8 75.06 - 84.53	237/297	94.37 88.30 - 100.43	67/71
Childhood Diarrhoea						
Prevalence of diarrhoea						
Children 0-59 months who suffered from diarrhoea during last 15 days	18.45(18.69) 16.93 - 19.97	480/2568	17.51 15.86 - 19.16	367/2096	23.94 19.99 - 27.90	113/472
Children 0-59 months who suffered from diarrhoea during last 12 months	57.8(58.18) 55.87 - 59.73	1494/2568	56.3 54.15 - 58.45	1180/2096	66.53 62.16 - 70.89	314/472
Among those who suffered from diarrhoea during last 12 months						
Children whose last episode of diarrhoea lasted for more than 3 days	63.23(63.50) 60.69 - 65.76	908/1430	62.11 59.24 - 64.99	700/1127	68.65 63.26 - 74.04	208/303
Children who had blood in stools during last episode of diarrhoea	4.24(4.2) 3.18 - 5.30	62/1475	4.39 3.17 - 5.61	51/1163	3.53 1.32 - 5.73	11/312
Treatment of diarrhoea (among those who suffered from diarrhoea during last 12 months)						
Household management of diarrhoea						
Proportion of children who were given more fluid during last episode of diarrhoea	70.94(71.11) 68.60 - 73.29	1056/1485	70.25 67.59 - 72.91	824/1173	74.36 69.35 - 79.36	232/312
Proportion of children who were given same or more quantity of food during diarrhoea	73.61(73.45) 71.33 - 75.88	1090/1484	74.25 71.71 - 76.80	871/1173	70.42 65.18 - 75.65	219/311
Proportion of children who were given anti-diarrhoeal drugs during last episode of diarrhoea	81.05(80.82) 79.02 - 83.08	1201/1486	82.00 80.11 - 83.89	961/1172	76.43 71.58 - 81.29	240/314
Taking children with diarrhoea to a health facility/provider						
Type of health facility where the child taken for treatment		*n=1482*		*n=1173*		*n=309*
Nowhere	44.46(44.8) 41.90 - 47.02	664	43.05 40.18 - 45.93	505	51.46 45.72 - 57.19	159
Government health facility	14.52(14.24) 12.69 - 16.35	211	15.69 13.56 - 17.81	184	8.74 5.43 - 12.05	27
Private qualified facility/practitioner	25.14(25.03) 22.90 - 27.38	371	25.58 23.04 - 28.11	300	22.98 18.12 - 27.83	71
Private, non medically qualified practitioner	13.25(13.36) 11.49 - 15.01	198	12.79 10.83 - 14.74	150	15.53 11.33 - 19.73	48
NGO/services facility	2.35(2.29) 1.54 - 3.15	34	2.56 1.61 - 3.50	30	1.29 -0.13 - 2.72	4
LHW/LHV	0.28(0.27) -0.02 - 0.59	4	0.34 -0.04 - 0.72	4	0 0	0
Proportion of children taken somewhere for treatment	55.54(55.2) 52.98 - 58.10	818/1482	56.95 54.07 - 59.82	668/1173	48.54 42.81 - 54.28	150/309
Experience at the health facility						
Doctor or a health worker present at the time of visit						
Government health facility	99(99.03) 97.40 - 100.60	204/206	98.88 97.06 - 100.70	177/179	100 98.15 - 101.85	27/27
Private qualified health provider	100(100) 99.86 - 100.14	366/366	100 99.83 - 100.17	297/297	100 99.28 - 100.72	69/69
Private unqualified health provider	98.91(98.97) 97.19 - 100.63	192/194	98.64 96.43 - 100.85	145/147	100 98.94 - 101.06	47/47
Proportion of children who were provided ORS						
Government health facility	59.8(60.19) 52.86 - 66.74	124/206	58.33 50.85 - 65.81	105/180	73.08 54.10 - 92.05	19/26
Private qualified health provider	71.74(71.86) 66.99 - 76.49	263/366	71.28 65.96 - 76.61	211/296	74.29 63.33 - 85.24	52/70
Private unqualified health provider	66.23(66.5) 59.38 - 73.09	131/197	65.1 57.11 - 73.09	97/149	70.83 56.93 - 84.73	34/48

Indicator	District % wt (unwt) 95% CI	Based on	HARIPUR Unwt 95% CI	Based on	GHAZI unwt 95% CI	Based on
Proportion of children who had all prescribed medicines from the health facility						
Government health facility	19.08(20.1) 13.44 - 24.71	41/204	15.25 9.67 - 20.83	27/177	51.85 31.15 - 72.55	14/27
Private qualified health provider	67.41(68.13) 62.46 - 72.36	248/364	64.51 58.86 - 70.15	189/293	83.10 73.68 - 92.52	59/71
Private unqualified health provider	91.63(91.75) 87.47 - 95.78	178/194	91.1 86.13 - 96.06	133/146	93.75 85.86 - 101.64	45/48
Proportion of children for whom the health worker gave full explanation about illness						
Government health facility	47.67(47.57) 40.61 - 54.74	98/206	48.04 40.45 - 55.64	86/179	44.44 23.85 - 65.04	12/27
Private qualified health provider	71.04(70.05) 66.25 - 75.84	255/364	75 69.90 - 80.10	222/296	48.53 35.92 - 61.14	33/68
Private unqualified health provider	51.33(50.52) 44.00 - 58.66	97/192	54.86 46.39 - 63.34	79/144	37.5 22.76 - 52.24	18/48
Satisfaction with the service provider						
Government health facility						
Proportion of children whose parents were satisfied with behaviour of doctor/health worker	90.64(90.48) 86.46 - 94.82	190/210	91.26 86.89 - 95.62	167/183	85.19 69.93 - 100.44	23/27
Proportion of children whose parents were satisfied with the treatment	91.97(91.43) 88.06 - 95.88	192/210	93.99 90.27 - 97.71	172/183	74.07 55.69 - 92.46	20/27
Reason for being satisfied		*n=189*		*n=169*		*n=20*
Good doctor/staff available	2.17(2.12) -0.17 - 4.51	4	2.37 -0.22 - 4.95	4	0	0
Good treatment	97.83(97.88) 95.49 - 100.17	185	97.63 95.05 - 100.22	165	100	20
Reason for being dissatisfied		*n=18*		*n=11*		*n=7*
good doctor/staff not available	10.79(11.11) -6.32 - 27.90	2	9.09 -12.44 - 30.63	1	14.29 -18.78 - 47.35	1
Poor facilities/services	15.47(16.67) -4.01 - 34.95	3	9.09 -12.44 - 30.63	1	28.57 -12.04 - 69.18	2
Treatment not good	56.83(55.56) 31.17 - 82.49	10	63.64 30.66 - 96.61	7	42.86 -0.95 - 86.66	3
Medicines not available	10.79(11.11) -6.32 - 27.90	2	9.09 -12.44 - 30.63	1	14.29 -18.78 - 47.35	1
No other choice	6.11(5.56) -7.73 - 19.96	1	9.09 -12.44 - 30.63	1	0	0
Private qualified health provider						
Proportion of children whose parents were satisfied with behaviour of doctor/health worker	99.2(99.18) 98.15 - 100.24	365/368	99.66 98.84 - 100.49	296/297	97.18 92.63 - 101.74	69/71
Proportion of children whose parents were satisfied with the treatment	97.99(98.1) 96.42 - 99.56	361/368	97.98 96.21 - 99.75	291/297	98.59 95.15 - 102.04	70/71
Reason for being satisfied		*n=360*		*n=291*		*n=69*
Good doctor/staff available	5.61(5.56) 3.10 - 8.13	20	5.84 2.98 - 8.71	17	4.35 -1.19 - 9.88	3
	93.22(93.33) 90.49 - 95.96	336	92.78 89.64 - 95.93	270	95.65 90.12 - 101.19	66
Good treatment	1.16(1.11) -0.08 - 2.41	4	1.37 -0.14 - 2.88	4	0	0
Reason for being dissatisfied		*n=7*		*n=6*		*n=1*
Treatment not good	100(100) 92.86 - 107.14	7	100 91.67 - 108.33	6	100 50.00 - 150.00	1
Private unqualified health provider						
Proportion of children whose parents were satisfied with behaviour of doctor/health worker	93.76(93.4) 90.13 - 97.39	184/197	95.3 91.57 - 99.04	142/149	87.5 77.10 - 97.90	42/48
Proportion of children whose parents were satisfied with the treatment	92.97(92.89) 89.14 - 96.79	183/197	93.29 88.94 - 97.64	139/149	91.67 82.81 - 100.53	44/48
Reason for being satisfied		*n=179*		*n=136*		*n=43*
Good doctor/staff available	3.55(3.35) 0.56 - 6.54	6	4.41 0.59 - 8.23	6	0	0
Good treatment	95.26(95.53) 91.87 - 98.65	171	94.12 89.80 - 98.44	128	100 98.84 - 101.16	43
Good access/nearby	1.18(1.12) -0.68 - 3.05	2	1.5 -0.94 - 3.95	2	0	0

Indicator	District % wt (unwt) 95% CI	Based on	HARIPUR Unwt 95% CI	Based on	GHAZI unwt 95% CI	Based on
Reason for being dissatisfied		*n=14*		*n=10*		*n=4*
good doctor/staff not available	5.86(7.14) -10.01 - 21.73	1	0	0	25 -29.94 - 79.94	1
Poor facilities/services	11.71(14.29) -8.70 - 32.13	2	0	0	50 -11.50 - 111.50	2
Treatment not good	59.46(57.14) 30.17 - 88.75	8	70 36.60 - 103.40	7	25 -29.94 - 79.94	1
No other choice	22.97(21.43) -2.63 - 48.58	3	30 -3.40 - 63.40	3	0	0
Cost of treatment of diarrhoea						
Travel cost						
Government health facility						
Paid some cost	78.39(77.14) 72.59 - 84.20	162/210	83.06 77.35 - 88.77	152/183	37.04 16.97 - 57.10	10/27
Mean amount paid in Pak Rs.	31.20 (31.89) 22.76 - 39.64	162	28.809 21.33 - 36.289	152	78.7 6.201 - 151.199	10
Private qualified health provider						
Paid some cost	67.24(68.14) 62.26 - 72.22	246/361	63.57 57.87 - 69.27	185/291	87.14 78.59 - 95.70	61/70
Mean amount paid in Pak Rs.	50.66 (51.67) 39.78 - 61.54	245	46.20 36.71 - 55.69	184	68.21 50.693 - 85.733	61
Private unqualified health provider						
Paid some cost	24.5(23.59) 18.20 - 30.79	46/195	28.38 20.78 - 35.98	42/148	8.51 -0.53 - 17.55	4/47
Mean amount paid in Pak Rs.	30.93 (30.62) 12.98 - 48.88	45	32.0 14.0 - 50.0	41	16.25 5.992 - 26.508	4
Treatment cost at the facility						
Government health facility						
Paid some cost	90.12(90.29) 85.81 - 94.44	186/206	89.5 84.76 - 94.24	162/181	96 86.32 - 105.68	24/25
Mean amount paid in Pak Rs.	39.76 (40.38) 18.40 - 61.12	186	37.43 18.86 - 56.01	162	60.3 24.16 - 96.42	24
Private qualified health provider						
Paid some cost	92.78(93.04) 89.96 - 95.59	334/359	91.72 88.38 - 95.07	266/290	98.55 95.01 - 102.10	68/69
Mean amount paid in Pak Rs.	337.14 (344.89) 246.06 - 428.21	334	305.5 236.2 - 374.8	266	498.97 289.23 - 708.71	68
Private unqualified health provider						
Paid some cost	96.5(96.32) 93.62 - 99.37	183/190	97.26 94.27 - 100.25	142/146	93.18 84.60 - 101.77	41/44
Mean amount paid in Pak Rs.	141.48 (139.10) 89.59 - 193.38	183	151.5 87.4 - 215.5	142	96.3 71.8 - 120.9	41
Cost of medicines or investigations outside the facility						
Government health facility						
Paid some cost	84.88(84.16) 79.70 - 90.07	170/202	87.57 82.43 - 92.71	155/177	60 38.80 - 81.20	15/25
Mean amount paid in Pak Rs.	301.33 (299.94) 221.67 - 380.99	170	306.29 238.7 - 373.9	155	234.333 47.94 - 420.73	15
Private qualified health provider						
Paid some cost	33.82(33.06) 28.79 - 38.84	119/360	36.9 31.17 - 42.62	107/290	17.14 7.60 - 26.69	12/70
Mean amount paid in Pak Rs.	454.46 (455.67) 199.52 - 709.40	119	450.09 177.9 - 722.3	107	505.4 310.8 - 700.1	12
Private unqualified health provider						
Paid some cost	10.11(10.26) 5.62 - 14.59	20/195	9.46 4.41 - 14.51	14/148	12.77 2.16 - 23.37	6/47
Mean amount paid in Pak Rs.	163.73 (159) 85.60 - 241.86	20	185.7 81.8 - 289.7	14	96.7 47.9 - 145.5	6
Childhood Acute Respiratory Infections (ARI)						
Prevalence of ARI						
Proportion of 0-59 children who suffered from ARI within last 15 days	24.18(24.59) 22.78 - 25.57	647/2631	22.52 20.73 - 24.31	484/2149	33.82 29.49 - 38.14	163/482
Proportion of 0-59 children who suffered from ARI in the last 12 months	60.06(60.78) 58.17 - 61.96	1599/2631	57.24 55.12 - 59.35	1230/2149	76.56 72.67 - 80.44	369/482

Indicator	District % wt (unwt) 95% CI	Based on	HARIPUR Unwt 95% CI	Based on	GHAZI unwt 95% CI	Based on
Taking children with ARI for treatment at the health facility (Among children who suffered from ARI during last 12 months)						
Type of health facility where the child was taken for treatment		*n=1595*		*n=1228*		*n=367*
Nowhere	30.78(31.16) 28.48 - 33.07	497	29.15 26.57 - 31.74	358	37.87 32.78 - 42.97	139
Government health facilities	14.45(14.23) 12.70 - 16.21	227	15.39 13.33 - 17.45	189	10.35 7.10 - 13.61	38
Private qualified facility/practitioners	35.47(35.24) 33.09 - 37.85	562	36.48 33.75 - 39.22	448	31.06 26.19 - 35.93	114
Private unqualified practitioners incl. spiritual or religious healer	16.63(16.8) 14.77 - 18.48	268	15.88 13.79 - 17.96	195	19.89 15.67 - 24.11	73
Ngo/services facilities	2.67(2.57) 1.85 - 3.49	41	3.09 2.09 - 4.10	38	0.82 -0.24 - 1.87	3
Proportion children taken somewhere or consulted for treatment of ARI	69.22(68.84) 66.93 - 71.52	1098/1595	70.85 68.26 - 73.43	870/1228	62.13 57.03 - 67.22	228/367
Experience at the health facility						
Doctor or a health worker present at the time of visit						
Government health facility	100(100) 99.78 - 100.22	226/226	100 99.73 - 100.27	188/188	100 98.68 - 101.32	38/38
Private qualified health provider	100(100) 99.91 - 100.09	554/554	100 99.89 - 100.11	445/445	100 99.54 - 100.46	109/109
Private unqualified health provider	99.59(99.62) 98.64 - 100.55	262/263	99.48 98.20 - 100.76	191/192	100 99.30 - 100.70	71/71
Proportion of children who had all prescribed medicines from the health facility						
Government health facility	23.95(24.67) 18.18 - 29.73	56/227	21.16 15.08 - 27.25	40/189	42.11 25.09 - 59.12	16/38
Private qualified health provider	68.76(69.82) 64.80 - 72.73	384/550	64.46 59.87 - 69.06	283/439	90.99 85.21 - 96.77	101/111
Private unqualified health provider	94.02(94.4) 90.99 - 97.05	253/268	92.31 88.31 - 96.30	180/195	100 99.32 - 100.68	73/73
Proportion of children for whom the health worker gave full explanation about illness						
Government health facility	52.73(52.25) 45.94 - 59.52	116/222	54.59 47.15 - 62.04	101/185	40.54 23.37 - 57.71	15/37
Private qualified health provider	69.31(68.78) 65.36 - 73.25	379/551	71.43 67.10 - 75.76	315/441	58.18 48.51 - 67.85	64/110
Private unqualified health provider	57.22(56.23) 51.07 - 63.37	149/265	61.66 54.54 - 68.78	119/193	41.67 29.58 - 53.75	30/72
Satisfaction with the service provider						
Government health facility						
Proportion of children whose parents were satisfied with behaviour of doctor/health worker	93.9(93.83) 90.57 - 97.24	213/227	94.18 90.58 - 97.78	178/189	92.11 82.22 - 101.99	35/38
Proportion of children whose parents were satisfied with the treatment	92.74(92.51) 89.15 - 96.34	210/227	93.65 89.91 – 97.39	177/189	86.84 74.78 - 98.91	33/38
Reason for being satisfied		*n=205*		*n=173*		*n=32*
Good doctor/staff available	2.51(2.42) 0.14 - 4.88	5	2.86 0.10 - 5.61	5	0	0
Good treatment	97.49(97.58) 95.12 - 99.86	202	97.14 94.39 - 99.90	170	100 98.44 - 101.56	32
Reason for being dissatisfied		*n=17*		*n=12*		*n=5*
Good doctor/staff not available	12.64(11.76) -6.10 - 31.38	2	16.67 -8.59 - 41.92	2	0	0
Poor facilities/services	11.15(11.76) -6.75 - 29.06	2	8.33 -11.47 - 28.14	1	20 -25.06 - 65.06	1
Treatment not good	76.21(76.47) 53.03 - 99.39	13	75 46.33 - 103.67	9	80 34.94 - 125.06	4
Private qualified health provider						
Proportion of children whose parents were satisfied with behaviour of doctor/health worker	97.89(97.86) 96.61 - 99.17	550/562	97.99 96.58 - 99.40	439/448	97.37 93.99 - 100.75	111/114
Proportion of children whose parents were satisfied with the treatment	98.5(98.57) 97.41 - 99.60	553/561	98.21 96.87 - 99.55	439/447	100 99.56 - 100.44	114/114
Reason for being satisfied		*n=547*		*n=435*		*n=112*
Good doctor/staff available	7.64(7.31) 5.32 - 9.95	40	8.97 6.17 - 11.77	39	0.89 -1.30 - 3.08	1
Good treatment	91.98(92.32) 89.61 - 94.35	505	90.57 87.71 - 93.44	394	99.11 96.92 - 101.30	111

Indicator	District % wt (unwt) 95% CI	Based on	HARIPUR Unwt 95% CI	Based on	GHAZI unwt 95% CI	Based on
Good access/nearby	0.19(0.18) -0.27 - 0.65	1	0.23 -0.34 - 0.79	1	0	0
Medicines available	0.19(0.18) -0.27 - 0.65	1	0.23 -0.34 - 0.79	1	0	0
Reason for being dissatisfied		*n=8*		*n=8*		*n=0*
Good doctor/staff not available	25(25) -11.26 - 61.26	2	25 -11.26 - 61.26	2	0	0
Treatment not good	62.5(62.5) 22.70 - 102.30	5	62.5 22.70 - 102.30	5	0	0
No other choice	12.5(12.5) -16.67 - 41.67	1	12.5 -16.67 - 41.67	1	0	0
Private unqualified health provider						
Proportion of children whose parents were satisfied with behaviour of doctor/health worker	96.81(97.01) 94.52 - 99.10	260/268	95.9 92.86 - 98.94	187/195	100 99.32 - 100.68	73/73
Proportion of children whose parents were satisfied with the treatment	94.79(94.78) 91.95 - 97.64	254/268	94.87 91.52 - 98.22	185/195	94.52 86.61 - 100.43	69/73
Reason for being satisfied		*n=250*		*n=183*		*n=67*
Good doctor/staff available	4.17(4) 1.49 - 6.85	10	4.92 1.51 - 8.32	9	1.49 -2.16 - 5.14	1
Good treatment	93.7(94) 90.48 - 96.91	235	92.35 88.23 - 96.47	169	98.51 94.86 - 102.16	66
Good access/nearby	2.13(2) 0.14 - 4.13	5	2.73 0.10 - 5.37	5	0	0
Reason for being dissatisfied		*n=14*		*n=10*		*n=4*
Good doctor/staff not available	5.86(7.14) -10.01 - 21.73	1	0	0	25.0 -29.94 - 79.94	1
Poor facilities/services	65.32(64.29) 36.81 - 93.82	9	70 36.60 - 103.40	7	50.0 -11.50 - 111.50	2
Treatment not good	28.83(28.57) 1.53 - 56.13	4	30 -3.40 - 63.40	3	25.0 -29.94 - 79.94	1
Cost of treatment of ARI						
Travel cost						
Government health facility						
Paid some cost	77.39(76.21) 71.73 - 83.06	173/227	82.01 76.27 - 87.75	155/189	47.37 30.18 - 64.56	18/38
Mean amount paid in Pak Rs.	41.56 (42.32) 27.46 - 55.66	173	38.79 25.16 - 52.42	155	72.78 23.43 - 122.13	18
Private qualified health provider						
Paid some cost	70.56(71.25) 66.67 - 74.44	394/553	67.73 63.25 – 72.21	298/440	84.96 77.92 - 91.99	96/113
Mean amount paid in Pak Rs.	55.76 (58.42) 47.48 - 64.04	394	44.29 38.04 - 50.55	298	102.29 76.54 - 128.05	96
Private unqualified health provider						
Paid some cost	21.65(21.05) 16.52 - 26.79	56/266	24.35 18.04 - 30.67	47/193	12.33 4.10 - 20.56	9/73
Mean amount paid in Pak Rs.	46.08 (47.80) 29.53 - 62.64	56	39.43 22.21 - 56.64	47	91.56 27.63 - 155.48	9
Treatment cost at the facility						
Government health facility						
Paid some cost	79.24(79.37) 73.69 - 84.79	177/223	78.72 72.61 - 84.84	148/188	82.86 68.94 - 96.77	29/35
Mean amount paid in Pak Rs.	71.63 (70.83) 14.97 - 128.28	177	74.72 17.56 - 131.88	148	50.97 19.6 - 82.38	29
Private qualified health provider						
Paid some cost	91.07(91.48) 88.57 - 93.56	494/540	89.38 86.36 - 92.39	387/433	100 99.53 - 100.47	107/107
Mean amount paid in Pak Rs.	365.78 (379.40) 262.19 - 469.38	494	309.3 252.3 - 366.3	387	633.0 354.7 - 911.3	107
Private unqualified health provider						
Paid some cost	97.35(97.33) 95.21 - 99.48	255/262	97.44 94.96 - 99.91	190/195	97.01 92.19 - 101.84	65/67
Mean amount paid in Pak Rs.	169.76 (168.65) 123.34 - 216.18	255	174.6 136.0 - 213.2	190	151.2 127.2 - 175.3	65

Indicator	District % wt (unwt) 95% CI	Based on	HARIPUR Unwt 95% CI	Based on	GHAZI unwt 95% CI	Based on
Cost of medicines or investigations outside the facility						
Government health facility						
Paid some cost	77.72(77.03) 72.02 - 83.42	171/222	80.43 74.43 - 86.44	148/184	60.53 43.67 - 77.38	23/38
Mean amount paid in Pak Rs.	405.23 (401.20) 331.46 - 479.00	171	420.37 322.1 - 518.6	148	277.83 163.15 - 392.50	23
Private qualified health provider						
Paid some cost	35.24(34) 31.15 - 39.34	186/547	40.27 35.56 - 44.99	176/437	9.09 3.26 - 14.92	10/110
Mean amount paid in Pak Rs.	418.95(422.31) 340.57 - 497.32	186	407.39 351.1 - 463.6	176	685 123.1 - 1246.9	10
Private unqualified health provider						
Paid some cost	9.71(9.09) 5.95 - 13.48	24/264	12.5 7.56 - 17.44	24/192	0	0
Mean amount paid in Pak Rs.	218.13(218.125) 167.27 - 268.96	24	218.1 154.0 - 282.2	24	0	0
Prevalence and cost on treatment of measles						
Proportion of children 10-59 months ever suffering from measles	11.51(11.57) 10.37 - 12.77	232/2015	11.79 10.20 - 13.38	193/1637	10.32 7.12 - 13.52	39/378
Proportion of children 10-59 months suffering from measles during last 24 months	7.87(7.84) 6.67 - 9.07	158/2015	8.00 6.66 - 9.35	131/1637	7.14 4.41 - 9.87	27/378
Among 10-59 children who suffered from measles during last 24 months						
Paid some cost for treatment of measles	82.23(82.67) 75.78 - 88.68	124/150	80.49 73.08 - 87.90	99/123	92.59 80.86 - 104.32	25/27
Mean amount paid in Pak Rs.	498.52 (497.79) 341.98 - 655.05	124	501.5 360.1 - 642.88	99	483.2 287.8 - 678.6	25
Immunization of Children						
Who decides about immunizing the child (children 0-59 months of age)		*n=2532*		*n=2121*		*n=411*
Mothers alone (incl step mother)	43.33(42.85) 41.38 - 45.28	1085	45.17 43.03 - 47.31	958	30.9 26.31 - 35.49	127
mother with father	32.26(32.86) 30.42 - 34.10	832	29.94 27.97 - 31.91	635	47.93 42.98 - 52.88	197
mother not involved at all	24.41(24.29) 22.72 - 26.11	615	24.89 23.03 - 26.76	528	21.17 17.10 - 25.24	87
Mother decides or is involved in the decision	75.59(75.71) 73.89 - 77.28	1917/2532	75.11 73.24 - 76.97	1593/2121	78.83 74.76 - 82.90	324/411
Vaccine coverage						
No. children aged 12 to 23 months	512		408		104	
Among children 12-23 months of age						
Proportion reported to have received BCG (TB) vaccine	90.3(89.33) 87.62 - 92.98	452/506	94.28 91.88 - 96.67	379/402	70.19 60.92 - 79.46	73/104
Proportion having BCG scar on the left upper arm	73.01(72.03) 68.41 - 77.61	237/379	76.97 72.08 - 81.87	234/304	52 40.03 - 63.97	39/75
Proportion reported to have received any DPT vaccine	88.5(87.57) 85.63 - 91.38	444/507	92.31 89.58 - 95.03	372/403	69.23 59.88 - 78.58	72/104
Proportion reported to have received full course of DPT vaccine	85.33(84.42) 82.16 - 88.51	428/507	89.08 85.91 - 92.25	359/403	66.35 56.78 - 75.91	69/104
Proportion reported to have received measles vaccine	80.47(79.68) 76.88 - 84.05	396/497	83.72 79.94 - 87.49	329/393	64.42 54.74 - 74.11	67/104
Mean age at which received measles vaccine	8.904 (8.909) 8.758 - 9.051	319	8.886 8.752 - 9.021	264	9.018 8.973 - 9.063	55
Proportion of children 10-59 months old reported to have received measles vaccine	82.50 (81.61) 81.11 - 83.89	1713/2099	86.04 84.37 - 87.71	1473/1712	62.02 57.05 - 66.98	240/387
Proportion reported to have received at least one dose of polio vaccine during last 12 months	99.21(99.27) 98.54 - 99.99	502/506	99.50 98.69 - 100.31	400/402	98.08 94.96 - 101.20	102/104
Among children 12-59 months of age						
Proportion reported to have received at least one dose of polio vaccine during last 12 months	99.27(99.22) 98.94 - 99.60	2040/2056	99.47 99.09 - 99.84	1675/1684	98.12 96.60 - 99.63	365/372
Among children 0-59 months of age						
Reasons for not being vaccinated at all or only partially vaccinated		*n=328*		*n=199*		*n=129*
Carelessness on part of family members	26.91(25.61) 21.96 - 31.86	84	26.13 19.78 - 32.49	52	24.81 16.97 - 32.65	32

Indicator	District % wt (unwt) 95% CI	Based on	HARIPUR Unwt 95% CI	Based on	GHAZI unwt 95% CI	Based on
Family members don't have time/no one to take	10.19(9.15) 6.77 - 13.62	30	11.06 6.45 - 15.66	22	6.2 1.65 - 10.75	8
vaccination would cause harm to the child	12.73(9.15) 8.97 - 16.49	30	14.57 9.42 - 19.73	29	0.78 -1.13 - 2.68	1
Lack of awareness/ misperception about schedule	15.23(12.5) 11.19 - 19.27	41	12.06 7.28 - 16.84	24	13.18 6.95 - 19.40	17
No facility nearby/access issue	10.15(20.12) 6.73 - 13.57	66	9.05 4.81 - 13.28	18	37.21 28.48 - 45.94	48
Don't believe/useless/no tradition	10.94(12.5) 7.41 - 14.47	41	11.06 6.45 - 15.66	22	14.73 8.23 - 21.23	19
Family members don't allow	11.74(8.23) 8.11 - 15.38	27	12.56 7.71 - 17.42	25	1.55 -0.97 - 4.07	2
Can't afford/poor	2.1(2.74) 0.40 - 3.81	9	3.52 0.71 - 6.33	7	1.55 -0.97 - 4.07	2
Nutritional status of the child (Mid upper arm circumference MUAC)						
Proportion of 0-59 months old children perceived by their mothers to be normal or big for their age	88.4(88.44) 87.16 - 89.64	2334/2639	88.23 86.85 - 89.61	1904/2158	89.4 86.54 - 92.25	430/481
Proportion of 0-59 months old children measured as malnourished (MUAC < 12.5 cm)	9.19(9.08) 7.76 - 10.36	1782/1960	9.64 8.16 - 11.12	1444/1598	6.63 3.39 - 9.33	338/362

Annex 6
Main indicators from community profiles and LHW interviews

Table 1. Indicators from community profiles

Indicator		Number of communities
Total number of communities visited		31
Urban communities		3
Rural communities		28
Garbage disposal system		
Communities with a system for removing garbage from individual households		1/31
Communities with a government system for removing garbage from the community		3/31
Frequency of removal of garbage by the government system		*(n=3)*
	Daily	1
	Not every day but at least once in a week	1
	Less frequently than once in a month	1
Communities with a proper method for disposal of garbage (including those with government system)		19/31
Communities with large amounts of garbage piled in the streets		28/31
Communities with large amounts of human/animal excreta in the streets		21/27
Sewerage system		
Communities with a government sewerage system		25/31
Communities with a better sewerage system		3/31
Communities with large amounts of stagnant water/ sewage in the streets		26/29
Drinking water		
Communities with sweet ground water		30/31
Availability of health facilities		
Within 5 km		
Availability of a health facility		*(n=31)*
	Government	28
	Private	22
	Any (government or private)	30
Availability of an evening/24 hr health facility		*(n=31)*
	Government	5
	Private	18
	Any (government or private)	19
Within 1 km		
Availability of a health facility		
	Government	13/31
	Private	19/30
	Any (government or private)	25/31
Availability of an evening/24 hr health facility		
	Government	3/31
	Private	15/30
	Any (government or private)	16/31
Availability of immunization services		
Availability of a health facility with immunization services for children within 5 km		*(n=31)*
	Government	20
	Private	2
	Any (government or private)	20
Availability of a health facility with immunization services for children within 1 km		
	Government	6/31
	Private	2/30
	Any (government or private)	7/31

Indicator	Number of communities
Usual place for people in the community to take their children to be immunized	*(n=28)*
Government health facility	26
Private qualified facility/practitioner	1
Vaccination team visit at home	1
Communities where people take their children to a health facility for immunization	27/28
Communities visited by a vaccination team/person for routine immunization	10/29
Frequency of visit by a vaccination team to the community for routine immunization	*(n=28)*
Never visited	19
At least once every month	2
Not every month but at least once every 6 months	6
Not every six months but at least once in a year	1
Period since last visit by a vaccination team for routine immunization	*(n=28)*
Never visited	19
Last visit with in a month	4
More than one month, but with in the last 6 months	4
More than 6 months , but with in last year	1
Polio campaign	
Communities with a Polio Campaign/Day celebrated within last one month	30/30
Number of polio campaign/days in the community in the last 12 months	*(n=27)*
2	1
3	10
4	16
Community organization	
Communities with any NGOs/CBOs/voluntary organizations/committees	11/31
Communities with any women organization	5/31
Communities with any existing CCB	7/30
Communities with any project done by a CCB	5/30
Type of projects done by CCBs	
Construction of Eidgah/graveyard/mosque	1
Water supply scheme	2
Sanitation/drainage	1
Pavement of Roads/street	2

Table 2. Indicators from LHW interviews

Indicator	Number of LHWs
General information	
Total number of LHWs interviewed	40
Age distribution of LHWs	*(n=40)*
18-30 years	26
31-40 years	10
41 years and above	4
Formal education level	*(n=40)*
Less than 10th grade	6
Up to 10th grade	32
More then 10th grade	2
Period since started working as an LHW	*(n=40)*
Less then one year	1
More then a year up to 5 years	21
More then 5 years up to 10 years	16
More then 10 years	2
Training of LHWs	
Period since received initial training	*(n=39)*
Within last one year	4
More than a year but within last two years	16
More than two years ago	19
LHWs receiving any further refresher training	37/40
Period since received refresher training	*(n=36)*
Within last three months/still going on	22
More than three months but within the last six months	2
More than six months but within the last one year	4
More than a year but within last five years	8
Household visits	
Number of households covered by LHWs	*(n=40)*
150 or less households	28
More than 150 households	12
Factors that would aid LHWs to visit the households (multiple responses recorded)	*(n=40)*
Nothing needed	29
Community support	7
More medicines/equipment	6
Provide transport	4
More LHWs/fewer households per LHW	1
Supervisory support	
Frequency of visit by a supervisor	*(n=40)*
Once a month or less frequently (including “no one visits”)	6
More than once a month	34
LHWs visited by a supervisor within last one month	33/39
Knowledge and practices about immunization	
LHWs that could mention at least one correct illness prevented by immunisation	40
LHWs that have heard about any bad effects of immunization	18
Type of bad effects of immunisation heard by LHWs	*(n=40)*
Nothing	22
Actual side-effects	13
Incorrect perceptions	4
Source from where heard about bad effects of immunization	*(n=17)*
Family/neighbours, (including knew myself)	6
Doctor/other health workers/health facility	1

Indicator	Number of LHWs
During training/material	10
Advice given by LHWs to mothers and care givers about immunization of their children	*(n=40)*
Illness protection	31
Important to immunize	11
Get vaccination form birth	2
Always complete course	6
Create immunity against diseases	6
Information provide by LHWs to mothers/care givers about immunization (multiple responses recorded)	*(n=40)*
Importance and benefit	38
Schedule/follow schedule/ follow rules	15
Main reasons as reported by LHWs for some children not being immunized (multiple responses recorded)	*(n=40)*
Carelessness	8
Facility too far	5
Fear of side effects	15
Lack of awareness	11
Wait for mobile team/team does not come	1
Don't believe in it	4
Not allowed	1
Family problem/migration	7
Suggestions to help ensure that all children get immunized (multiple responses recorded)	*(n=40)*
Nothing	2
Mobile teams	13
Facility nearby/transport	4
Provide information/awareness	25
Mare staff/vaccinators/train LHWs	2
Knowledge and practices about childhood diarrhea	
LHWs mentioning at least one correct reasons for diarrhoea among children 0-5 years	40/40
LHWs thinking that child should be given more fluids than usual during diarrhoea	37/40
LHWs thinking that child should be given more or same amount of food than usual during diarrhoea	39/40
Advice given by LHWs to the mothers about preventing diarrhoea in children (multiple responses recorded)	*(n=40)*
Hygiene/cleanliness	39
Nutrition/food	10
More fluids/ORS	1
Advice given by LHWs to the mothers about treating diarrhea in children (multiple responses recorded)	*(n=40)*
Hygiene/cleanliness	3
Nutrition/food	9
More fluids/ORS	44
Contact doctor	12
LHWs thinking that children suffering from diarrhea should be given anti-diarrhoeal drugs	22/40
Knowledge and practices about childhood Acute Respiratory Infections (ARI)	
LHWs telling mother at least one correct information about ARI recognition	40/40
Advice given by LHWs to the mothers about treating a child with ARI (multiple responses recorded)	*(n=40)*
Take to Doctor	15
Protect form coldness	20
Breast feeding	1
Provide medicine (co-trimoxazol/paraceutamol syrup)	29
Contact Doctor	4
Give eggs and honey/ hot foods	6

Annex 7. Main themes from community focus group discussions

Theme	Male	Female
Total number of focus groups	**20**	**20**
Urban	2	2
Rural	18	18
Most important problem in relation to child health in the community		
Lack of staff/bad behaviour of staff at health facility	16	7
Lack of medicines at the health facility	8	3
Poor services/management at the health facility	14	3
Expensive/extra payments at the health facility	6	3
Health facility too far/difficult access	6	12
Poor sanitation/unhygienic conditions in the community	22	18
Lack/poor quality of drinking water in the community	12	2
Specific diseases such as malaria/diarrhoea/ARI/skin diseases	6	1
Group agreed that children seem to get more diarrhoea if their family does not use a latrine	16/20	19/20
Suggestions for helping households to install and use latrines		
Government should help	15	6
Financial/material technical support to communities from outside	10	13
Raise awareness about importance benefits of latrines	12	5
Self help/already have latrine	2	6
Provide water supply/sewerage system	2	2
What can people in the community do install and use latrines?		
Can't do anything	11	8
Collective effort/self help	10	9
Make each other aware about importance/benefits	5	0
Collect funds/contributions within community	2	16
Provide material/labour	3	2
What can be done by the government to help communities install and use latrines?		
Govt. does not help	1	2
Financial/material/technical help	18	19
Construct latrines for us	4	6
Create awareness	10	1
Provide sewerage/water supply system	3	2
Create economic opportunities/employment	2	0
Reasons for mothers to give extra fluid to children during diarrhoea		
To avoid dehydration/ deficiency of water in the child	20	20
Child may die if water is not given	4	3
That's the only thing needed to manage diarrhoea/we won't have to go to the doctor	0	1
Child thirsty/ demands water frequently	1	0
They are aware about the importance of giving extra fluid during diarrhoea	4	1
Reasons for mothers who don't give extra fluid to the chills during diarrhoea		
Due to lack of awareness / illiteracy	18	15
Mothers don't have time to think about it	5	5
Misconception about giving extra fluid during diarrhea	4	5
Due to bad quality of drinking water	0	0
Such mothers are careless	7	15
Due to lack of awareness / illiteracy	1	0
Best person in the community to convince mothers about giving extra fluid to the child during diarrhoea		
No one in the community/only God can convince	1	0
Doctor/health department	4	5
Community leader/influential/Pesh Imam	17	5
Parents/family members	18	7
NGOs/social workers/teams from outside	0	6
Community women to each other	2	3

Theme	Male	Female
LHW	20	17
Other ways to convey such messages to mothers		
Pesh Imam in Friday sermon/prayers	4	3
Media/poster/pamphlet	21	17
Community meetings/events	1	5
NGOs/Social workers/trained community members/teachers/teams from outside	3	6
Through doctors and health workers	10	9
Community centres from info	1	0
Suggestions for improving household environment to prevent children's exposure to smoke from fuel and smoking		
Kitchen should be made away from the place of sitting/sleeping in home	11	14
Alternative fuels - If gas is made available then there would be no smoke	16	13
Smoking of cigarettes should not be done inside home	18	16
Cooking should be done when children were in school or not at home	0	4
Outlets to exit smoke out of kitchen/home	11	11
Create awareness about proper ventilation and hazards of smoky environment	2	0
What can householders and people in the community do improve household environment?		
Nothing	11	1
Form committee to create awareness	3	1
Separate cooking area/keep children away from cooking area	5	14
Use gas/alternate fuel with less smoke	3	4
Control smoking	6	10
Proper ventilation for smoke exit from kitchen/house	4	13
What can be done by the government/ NGOs to help communities for improving household environment?		
Provide gas	15	18
Awareness about hazards of smoking	7	3
Legislation to Ban smoking	9	7
Provide funds to construct separate kitchen/cooking area, ventilation	10	12
Reasons why children were not taken anywhere for treatment of ARI		
Poverty/too many children	19	20
Facility too far/No transport	8	8
No doctor/Bad behaviour of doctor	10	8
Medicines not available/poor quality of medicines	4	4
Lack of awareness/misconceptions/tradition/self medication	5	11
Careless/ignorant	2	6
Suggestions to encouraged /support parents so that they take their children to a health facility for treatment of ARI		
More/free/good quality medicines	14	16
Financial support/employment/control price	5	4
Health facility nearby/better roads	9	8
Awareness among people	8	6
Doctors available/better behaviour of doctors	8	12
Focus groups who parents who don't immunise fully understand the risk that they are taking	10/20	12/20
Reasons for those who don't understand the risk from not having their children immunized		
Illiteracy/lack of education	14	16
Don't take measles as a serious disease	4	5
No info about the risk/no one comes to tell	4	4
People ignorant/careless	4	8
Reasons for those who understand the risk, but still are unable to get their children immunized		
Lack/poor immunization services/no mobile team	13	14
No transport/roads	2	2
Poverty	12	3
Carelessness/no tradition/women not allowed	11	22
Misconceptions about vaccination/fear of side effects/family planning	4	2
No time to take child for vaccination	0	4

Theme	Male	Female
Suggestions to help parents to have their children immunized		
Send mobile vaccination teams	18	10
Better access to health facility/nearby/transport/employment	6	7
More staff at health facility	6	5
Create awareness about immunization	13	15
More vaccines/use of disposable syringe/stop corruption	4	0