

# Annex 20- KAP Survey report

ACF Mondolkiri

## Rural Water Supply Project

*Project Contract No: ECHO/KHM/210/2003/02006*

# **Knowledge, Attitude & Practices (KAP) Survey**

March 2005

Consultant: Richard Tracey  
[rktracey@online.com.kh](mailto:rktracey@online.com.kh)

## Table of contents

1.0	Introduction.....	2
	Current ACF projects .....	3
	Objectives of the consultancy.....	4
	Staffing for the survey.....	4
2.0	Methodology.....	4
	Limitations .....	5
3.0	Findings .....	6
	Ethnicity & religion .....	6
	Sex of Head of Household.....	6
	Sex & age of respondent .....	7
	Schooling & Knowledge of the Khmer language .....	7
	Education & training.....	8
	Village house .....	9
	Chamkar house.....	11
	Water sources .....	12
	Average distance to the water source .....	13
	User perceptions of the 'safety' of water sources .....	13
	Water Collection .....	14
	Water Storage .....	15
	The boiling of drinking water .....	16
	Illnesses prevented by boiling water .....	18
	Handwashing .....	18
	Handwashing Materials.....	18
	Reasons for Handwashing.....	19
	Reasons for Handwashing.....	19
	Diarrhoea .....	21
	Defecation .....	23
	Skin infections & worms/tapeworms .....	23
	Household sanitary survey .....	24
4.0	Conclusion & recommendations.....	26

## 1.0 Introduction

Mondolkiri is Cambodia's least populous province and is situated in north-eastern Cambodia. It is bordered to the east and the south by Vietnam, in the north by Ratanakiri, the north-west by Stung Treng and the west by Kratie province. Mondolkiri is comprised of five districts in two geographical areas. The districts of Sen Monourom, O'Reang and eastern Pich Rada are all on a plateau of over 300m while the districts of Koh Niek, Kao Seima and western Pich Rada are situated in low-lying areas. Figure 1.1 below illustrates the topography of Mondolkiri with the officially recognised villages shown as small yellow stars.

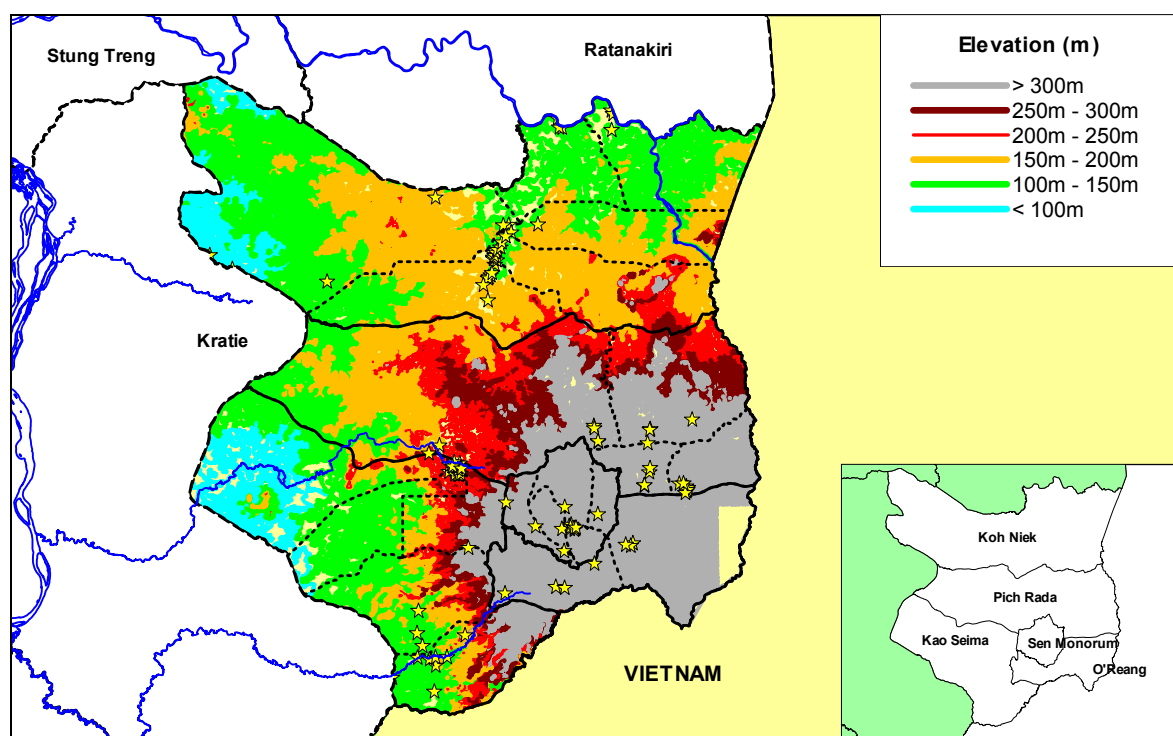


Fig 1.1 Topology of Mondolkiri

### Current ACF projects

Action Contre la Faim (ACF) is currently implementing an ECHO-funded, 12-month, second phase WatSan project in Mondolkiri province targeting the more isolated communities. Outputs include: the construction of 40 community boreholes, the rehabilitation of 20 traditional wells and the provision of 200 rainwater harvesting units and 400 concrete water storage jars.

Project implementation follows ACF's 20-step procedure for the establishment of community water points with all community related activities, e.g. participatory surveys, beneficiary selection, water point committee election, training and hygiene promotion, conducted by an 8-member community organisation (CO) team. This team who are also responsible for conducting surveys, assessments and regular monitoring conducted the fieldwork for this Knowledge, Attitude and Practice (KAP) survey.

Mondolkiri province is comprised of a variety of ethnic groups the dominant ethnic group being the indigenous Phnong (65%). Action Contre la Faim (ACF) is attempting to target all ethnic groups in their rural water supply activities. As community organisation and hygiene promotion activities form an integral part of the ACF water source implementation process, it is important obtain clear initial feedback of the impact of these activities. This KAP survey is intended to provide indicators with which to measure the impact of the hygiene promotion activities and will subsequently used as a key reference for an external Impact Assessment of the project, planned for later in the year.

## Objectives of the consultancy

The terms of reference (ToR) stated 5 objects for this assignment as stated below:

- Provide KAP survey training for ACF's 8-member community organisation team in Sen Monourom, Mondolkiri province ensuring the team is better prepared to conduct similar surveys or monitoring activities in the future
- Design a KAP survey questionnaire in both English and Khmer languages to be used by ACF's CO team and assist in the oral translation of the questionnaire from Khmer into the Phnong language
- Translate and enter data from the questionnaire forms into an appropriate computer software
- Analyse the results together with ACF senior staff and management in order to increase their knowledge and capacity
- Provide feedback to staff on the KAP survey results and individual performance in data collection

## Staffing for the survey

It was intended that the consultancy team would comprise of three members; one ex-patriot WatSan consultant, one Khmer WatSan advisor/translator/trainer and one Khmer data input trainer. However, as ACF were unable to provide any senior staff for training in data input and analysis the third member was not required to attend the training in Sen Monourom.

All eight of ACF's community organisation & hygiene education team were trained in general survey techniques and specifically in the KAP survey used for this assessment. ACF have ensured that hygiene education and community organisation techniques are conducted in the Phnong language for Phnong communities by employing one male and three female indigenous Phnong facilitators to complement the activities of the 4 Khmer CO team members. For some of these facilitators, it is their first job and had little experience of hygiene promotion or other participatory activities such as implementing a KAP survey before this project. To build their capacity, ACF provided a 1-week community organisation and hygiene promotion training course conducted by Cambodian Health Education for Development (CHED). This training did not include facilitation, reporting skills or KAP survey design, as CHED was regarded as having the specific knowledge regarding the indigenous populations of the north-east.

## 2.0 Methodology

Survey design, staff training and field testing of the KAP survey was conducted over an 8-day period; 14<sup>th</sup> - 22<sup>nd</sup> February 2005. As the indigenous Phnong are the predominant ethnic group in Mondolkiri, a KAP survey previously used by the consultant in Ratanakiri, a province with a dominant indigenous population was adapted to the Mondolkiri context. The survey was adapted by the consultant with translation and advice provided by Mr. Ouk Buntha (Moch).

Following the design and translation of the survey forms, the training of surveyors was conducted by the consultant and Mr. Ouk Buntha in two phases; a two-day classroom phase and two days of field testing. As ACF staff had little experience of conducting long surveys, considerable care was taken to avoid the primary pit-falls of surveying.

Often inexperienced surveyors are so preoccupied with filling-out their survey forms and asking questions in precisely the way phrased on the survey form, that they lose contact with their respondent and spoil the atmosphere of the survey. To avoid this, it was considered imperative surveyors fully understood the survey and were able to commit the main points to memory to promote continuity during interviews. Continuity was further promoted by using two surveyors per household; one to question and one to complete the survey form.

Rather than giving surveyors the survey form at the beginning of the training session, the consultant presented surveyors with only the main subject headings. The relevant questions related for each subject heading were then elicited from participants who were finally presented with a list of the questions to be used in the survey in Khmer. Phnong surveyors were then given time to discuss among themselves how best to phrase each question in the Phnong language.

On the second day of the training, participants were exposed to the survey form. With the aid of an LCD projector, kindly provided by ACF Phnom Penh, each of the 43 questions was re-examined and participants were instructed how to complete the survey form.

Following the two-day classroom session, the survey was field tested for two days in two villages in Sen Monourom district. At the end of each field test a comprehensive feedback session was conducted to examine any problems or misunderstanding experienced by the surveyors. The data from the field test was not included in the final survey.

The KAP survey was conducted over a three week period in February-March 2005 by ACF's 8-member CO and hygiene education team. The team was accompanied for the first three days by the consultant's trainer/translator/advisor to ensure surveyors were fully confident in conducting the KAP survey.

To ensure data quality, the data was screened a number of times before analysis. During the fieldwork, surveyors were responsible for checking the quality of each other's form filling before sending the completed forms to the consultant in Siem Reap. Data input using an Excel spreadsheet was performed by Ms. Neou Sovattha of ZOA Refugee Care, Samrong who screened data before input. To minimise errors, the spreadsheet was designed using validation restrictions and colour-coding and data was given a final screening by the consultant before analysis. Analysis of the data was performed by the consultant in both MS Excel and SPSS software packages; MS Excel was used for multi-response answers while SPSS was used for single response answers.

### **Limitations**

Although considerable care was taken in designing the KAP questionnaire to avoid ambiguity, the quality of the responses to a number of questions was highly dependent on the skills of the surveyors. Of particular concern were questions requiring respondents to list the reasons. Although instructions were given in the survey form when to 'prompt' and when to 'probe' for answers, it is expected that mistakes were made in the field.

The greatest limitation for this survey was that the consultant was unable to spend very much time in the field during the survey as this was outside the terms of reference. Consequently the analysis was performed from an academic perspective regarding the data as fact and interpreting the results accordingly rather than using the consultant's normal methodology of confirming the survey results by direct observation. The consultant therefore apologises in advance for any assumptions that were incorrectly made.

### 3.0 Findings

#### Ethnicity & religion

Three ethnicity groups were identified in the target area by 196 of the 197 respondents; Phnong (65%), Khmer (27%) and Cham (8%). The Phnong are the predominant ethnic group and are well-represented in all 5 districts; O'Reang was almost exclusively Phnong (98%), Sen Monourom, three-quarters (78%) and approximately half the respondents in Kao Seima (48%), Koh Niek (55%) and Pich Rada (47%) were Phnong.

Approximately a quarter of all respondents were Khmer. The percentage of ethnic Khmer respondents was greatest in Kao Seima (53%) and Koh Niek (45%) districts while in Sen Monourom, 22% of respondents were Khmer. The remaining two districts, Pich Rada and O'Reang had smaller proportions of Khmer respondents; 8% and 3% respectively.

In addition to the Phnong and the Khmer, the survey identified a third ethnic group, the Cham. All the Cham respondents identified by the survey lived in Pich Rada where they represented 44% of the district.

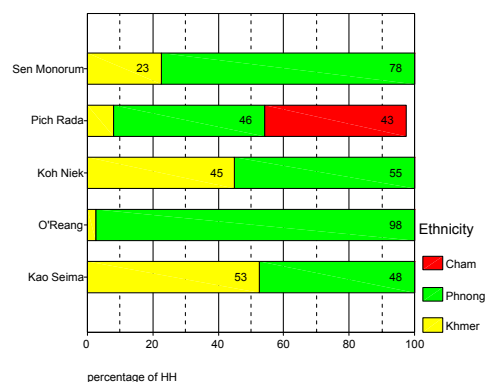


Fig 3.01 Ethnicity by district (2005)

The survey identified three primary religions in the target area; Animism (62%), Buddhism (28%) and Islam (8%). Religion is closely associated with ethnicity with the Phnong being predominantly animist (94%), the ethnic Khmer, Buddhist (98%) and the ethnic Cham, Muslim (88%). The survey found little sign of the influence of Christian missionaries in the target area with only 3 Phnong families claiming to follow Christianity (1.5% of all respondents).

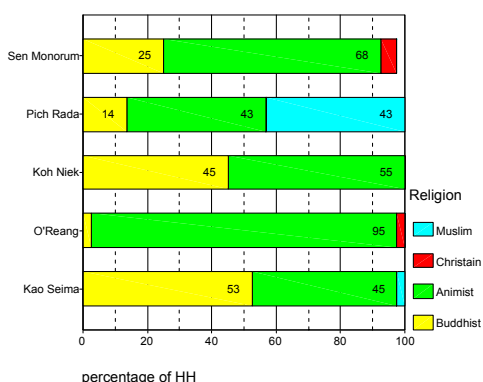


Fig 3.02 Religion by district (2005)

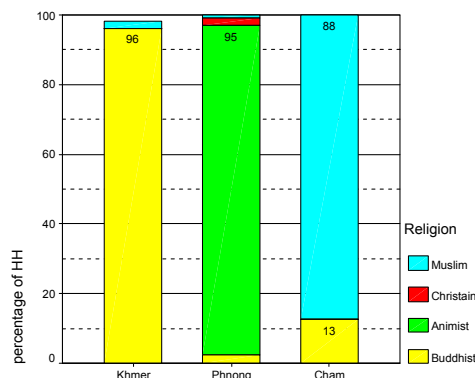


Fig 3.03 Religion by ethnic group (2005)

#### Sex of Head of Household

The survey intended to identify the sex of the head of household in order to investigate whether any correlations existed between the knowledge, attitudes and hygiene practices of the target community and the sex of the head of household. Unfortunately, data was only obtained from 82 respondents (41%) and almost no data was available for O'Reang and Kao Seima districts. Consequently, the sample size was not considered representative of the target community and breakdowns by sex of the head of household will not be presented in this report. Of the 41% answering the question, 93% were male-headed households while only 7% were headed by women.

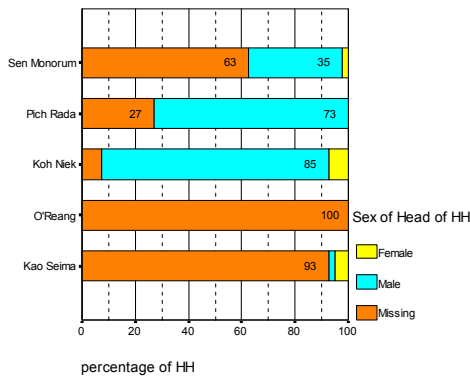


Fig 3.04 Sex of the head of household by district (2005)

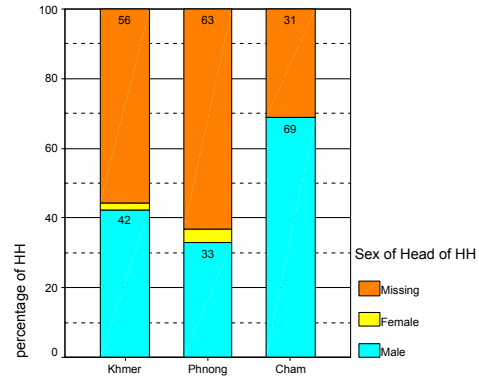


Fig 3.05 Sex of head of household by ethnic group (2005)

### Sex & age of respondent

Eighty-seven percent of respondents were female while only 13% were male. In Sen Monourom almost all the respondents were female (98%) while approximately 90% were female in Pich Rada, Koh Niek and O'Reang. The only district with an unusually high number of male respondents was Kao Seima where 35% were male.

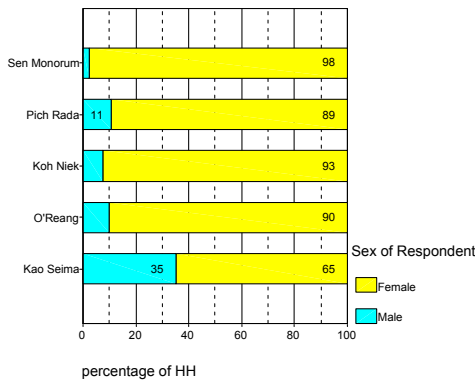


Fig 3.06 Sex of respondent by district (2005)

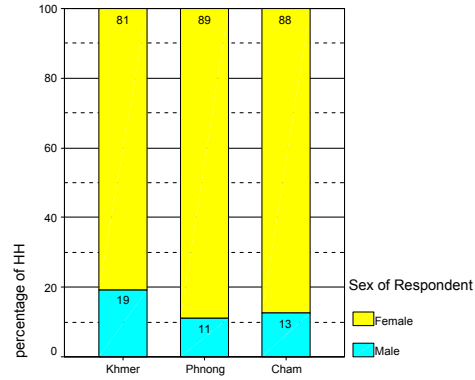


Fig 3.07 Sex of respondent by ethnic group (2005)

The average age of the 197 respondents was 36 years old; 50% of respondents were aged 15-35, 44% were aged 36-55 and 6% were over 55 years-old. The highest percentages of respondents under 35 years-old were found in Sen Monourom (65%), Koh Niek (60%) and amongst the Phnong (55%) while the older respondents, those over 35 years-old, were more represented in Kao Seima (65%) and amongst the Khmer (58%) and Cham ethnic groups (69%).

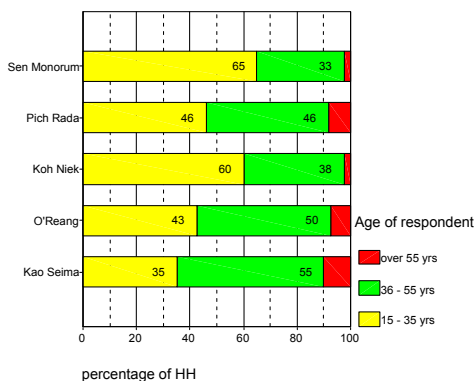


Fig 3.08 Age of respondent by district (2005)

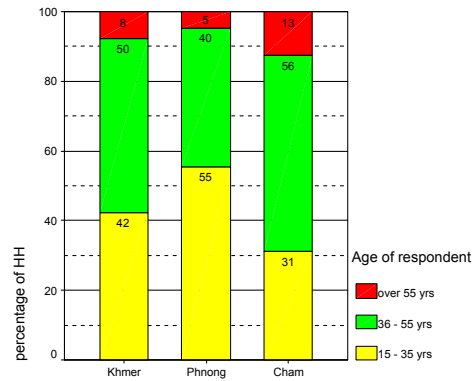


Fig 3.09 Age of respondent by ethnic group (2005)

### Schooling & Knowledge of the Khmer language

Eighty-eight percent of respondents in the target area were able to speak Khmer. All the ethnic Khmer and Cham respondents spoke Khmer. However, 19% of Phnong households did not. These Phnong, non-Khmer speaking households were distributed across all five districts with the largest percentages in O'Reang (23%) and Pich Rada districts (19%).

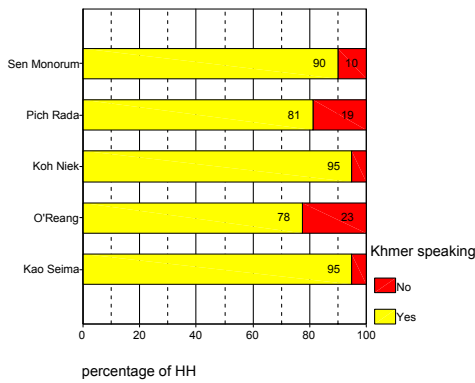


Fig 3.10 Khmer speakers by district (2005)

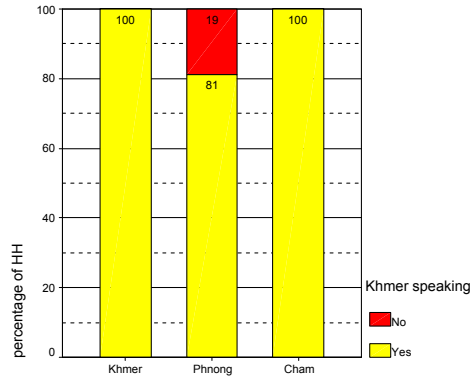


Fig 3.11 Khmer speakers by ethnic group (2005)

Although only 1 in 8 respondents in the target area were unable to speak Khmer, 3 out of every 4 respondents were unable to read or write Khmer. Literacy levels were highest in Kao Seima district (45%) and amongst the ethnic Khmer (57%) whilst only 19% of the Cham and 16% of the Phnong were able to read or write.

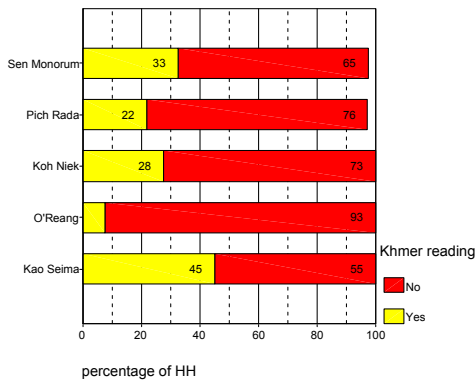


Fig 3.12 Ability to read Khmer by district (2005)

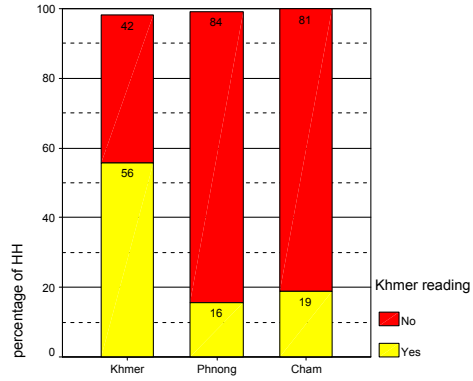


Fig 3.13 Ability to read by ethnic group (2005)

This is most usual for rural Cambodia. It is more usual for the percentage of respondents able to read simple Khmer to be considerably higher than those able to write. It is likely this discrepancy arose due to it being a self-reported answer not requiring respondents to prove their ability by reading or writing anything.

An association was observed between literate respondents and those receiving formal schooling with almost identical percentages for respondents claiming an ability to read simple Khmer (27%) and those receiving some formal education (27%). Almost all respondents receiving formal education claimed to be able to read. Twenty-five percent claimed to have attended primary school; (1-3 years [17%]; 4-6 years [8%]) while only 2% claimed to have attended secondary school.

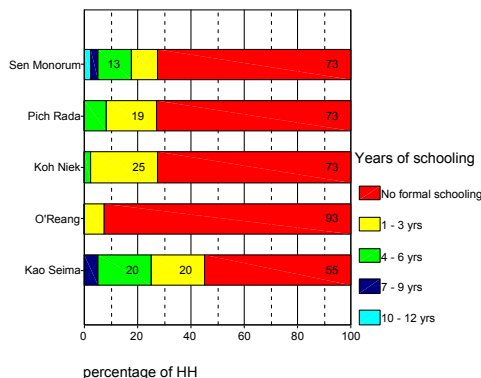


Fig 3.14 Years of schooling by district (2005)

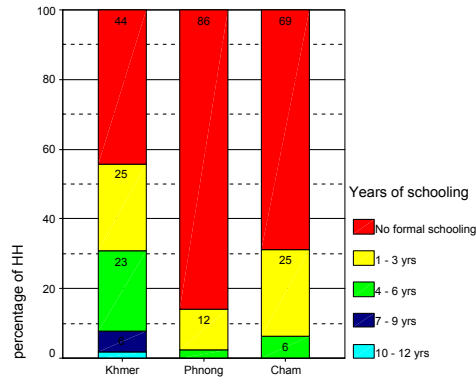


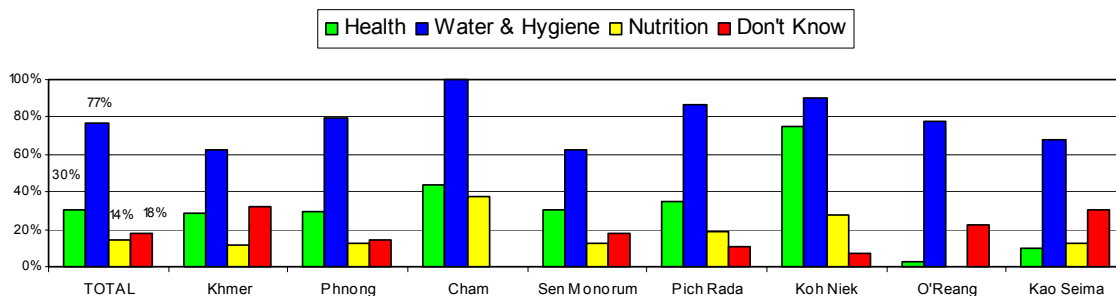
Fig 3.15 Years of schooling by ethnic group (2005)

### Education & training

A number of government and outside agencies have provided training in the target area. The survey found that 77% of respondents had received training in water use and hygiene (WUHE), 30% health training and 14% nutrition training while a further 18% claimed to have received a training but were unable to recall the subject. With Action Against Hunger active in providing water use and hygiene education (WUHE) in all of the target villages, 77% was an encouraging percentage. Attendance at WUHE training was significantly



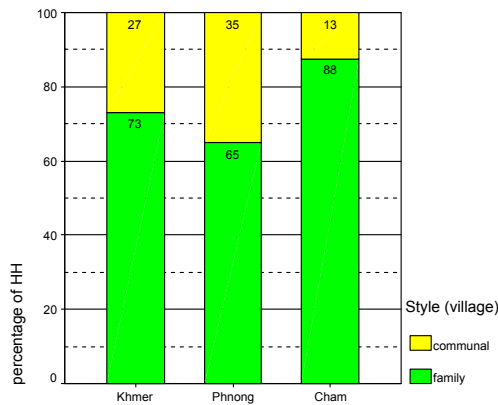
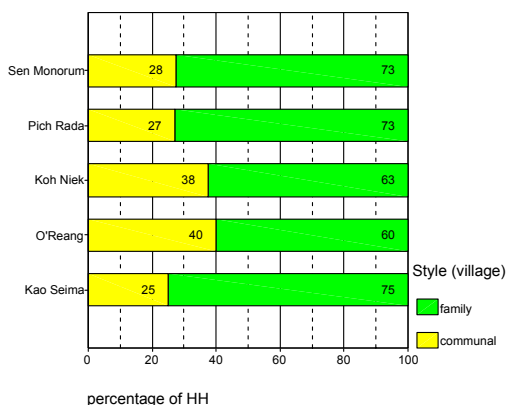
higher amongst the Phnong than the Khmer (Ph-80%; Kh-63%) whilst all the Cham respondents in Pich Rada district had attended the training. At least 60% of respondents in all 5 districts attended WUHE training workshops and in Koh Niek, Pich Rada and O'Reang over 75% attended.



**Fig 3.16 Attendance of respondents at trainings offered by government partners and outside agencies**

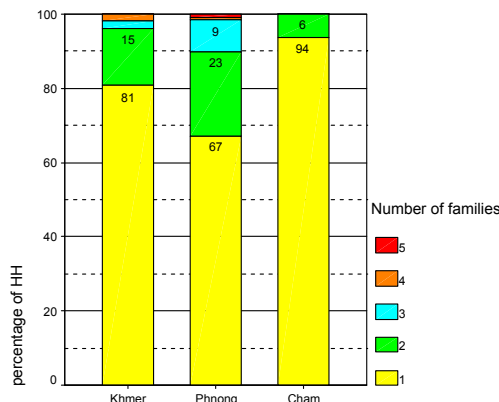
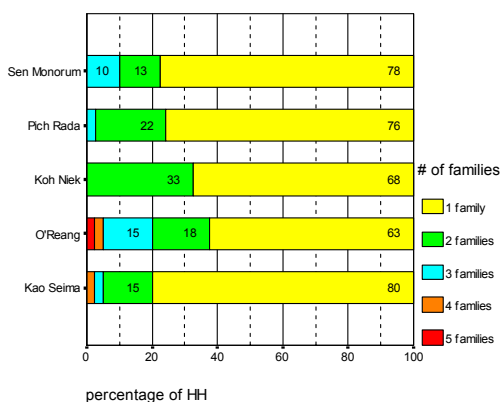
### Village house

All the respondents owned a house in their village; 69% lived in a house with their immediate family while 31% lived in communal houses of more than one family. At least a quarter of respondents in each district lived in communal housing with the percentage ranging from a high of 40% in O'Range, a predominantly Phnong district, to a low of 25% in Kao Seima where almost half are Phnong. It was surprising to notice there was little difference between the percentages of Khmer and Phnong living in family housing.



**Fig 3.17 Style of village house by district (2005)** **Fig 3.18 Style of village house by ethnic group (2005)**

The majority of respondents live in households of one or two families (92%); 73% live in single family households while 19% live in two-family households. The largest percentage communal households was in O'Reang district where almost 40% of households lived communally and 20% lived in households of 3 or more families. Sen Monourom also had a significant number of multiple family households with 10% living in households of 3 or more families.



**Fig 3.19 Families per household by district (2005)** **Fig 3.20 Families per household by ethnic group 2005**

The number of villagers living in a single household ranged between 1 and 14 people with the average household size being 5.1 members. Twenty-two percent lived in households of 1-3 members, 46% in households of 4-6 members, 26% in households of 7-9 members and 6% in households of 10 or more. Household size was similar across all three ethnic groups.

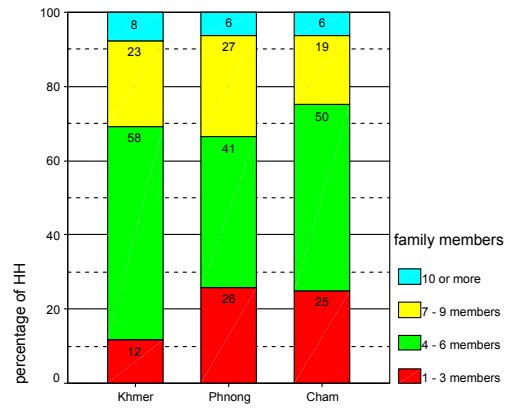
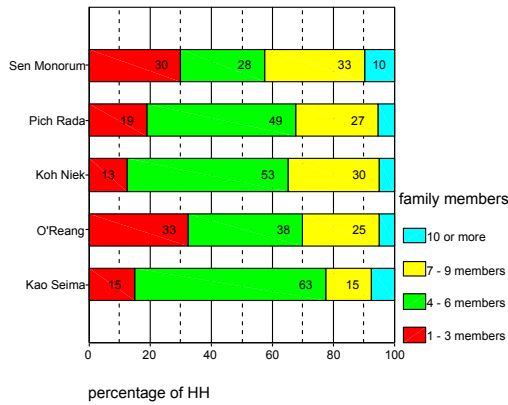


Fig 3.21 Families members per household by district (2005)

Fig 3.22 Families members per household by ethnic group (2005)

Fifty-seven percent of houses were raised off above ground level while 43% were constructed at ground level. Eighty-three percent of respondents in Sen Monourom and O'Reang raised their houses while all the respondents in Koh Niek and 89% of respondents in Pich Rada lived in houses constructed at ground level. As a formal land title law has not yet been established, no question relating to ownership of an official land title was asked.

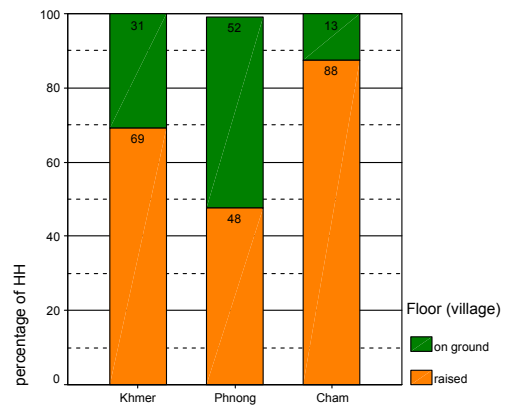
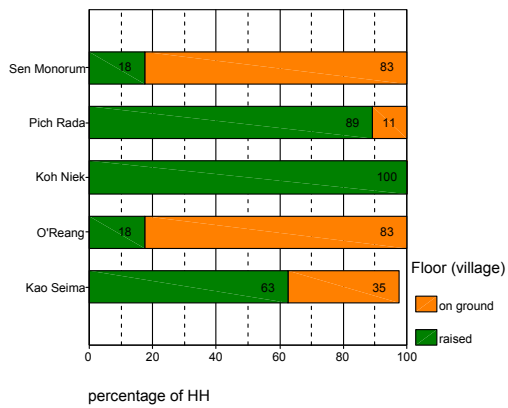


Fig 3.23 Floor of village house by district (2005)

Fig 3.24 Floor of village house by ethnic group (2005)

The type of roofing material behaves as a good proxy indicator in measuring increases in wealth and degree of permanence. Fifty-eight percent of households in the target area had thatch roofing while 40% have metal or tin. Percentages were similar across all three ethnic groups but the percentage of metal roofing in Sen Monourom, Pich Rada and Kao Seima (43-54%) were considerably higher than Koh Niek and O'Reang; 33% and 18% respectively. 52% of communal houses had a metal roof while only 34% of family houses had metal roofing.

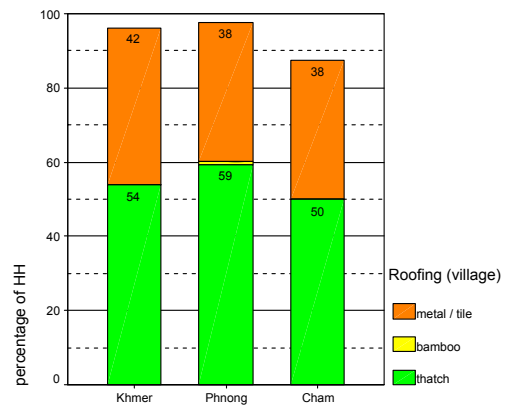
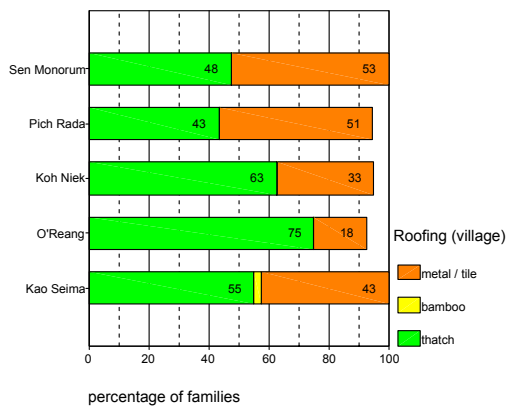


Fig 3.25 Roofing material by district (2005)

Fig 3.26 Roofing material by ethnic group (2005)

### Chamkar house

In addition, houses in the village, 60% of respondents also had houses in their chamkar. Phnong respondents were more than twice as likely to have a chamkar house as the Khmer [Ph-78%; Kh-31%]. However, only 18% of both the Phnong and Khmer respondents regularly sleep in them during the rainy season. The districts with the highest percentages of chamkar houses were, O’Rang (87%), Sen Monourom (83%) and Koh Niek (65%).

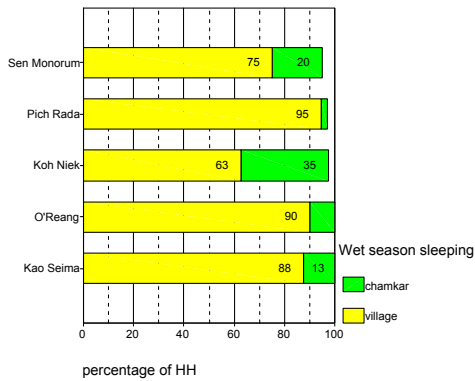


Fig 3.27 Wet season sleeping by district (2005)

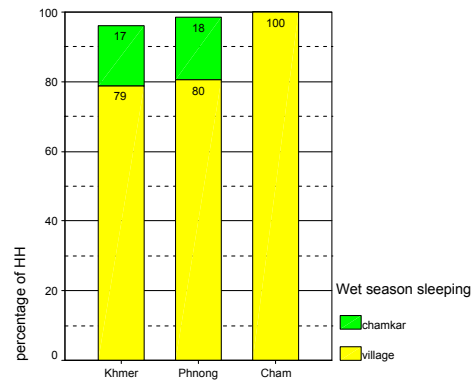


Fig 3.28 Wet season sleeping by ethnic group (2005)

All except one respondent had thatch roofing on their chamkar house. Of the 58% of all respondents with Chamkar houses, 62% were raised while 38% were constructed on ground level. Chamkar houses in Sen Monourom and O’Rang tended to be raised while houses in Koh Niek and Pich Rada tended to be constructed at ground level.

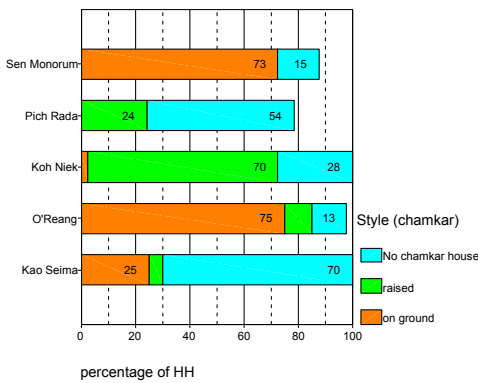


Fig 3.29 Style of chamkar house by district (2005)

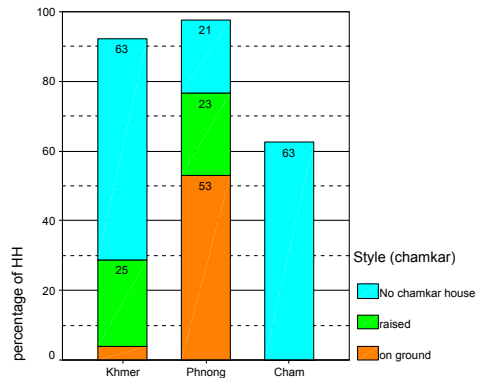


Fig 3.30 Style of chamkar house by ethnic group

## Water sources

Eighty-six percent of respondents collect water from an improved water source<sup>1</sup> in the dry season while 84% use them in the rainy season. However, respondents tend to use more than one water source, the choice being dependant on its use. Although the improved water sources implemented by agencies are well used, traditional water sources remain popular. In addition to use, the choice of water source is also highly dependent on the availability of water. Thus, in the rainy season, although respondents still claim to use improved sources, traditional water sources such as rainwater, shallow pit wells, traditional wells and streams become more popular. [see annex 2 for a full breakdown of the main uses of each water source]

When questioned specifically as to the primary and secondary choices for drinking water, a similar pattern emerged. In the dry season, users claimed to prefer improved water sources with over 60% of respondents claiming to collect drinking water from a borehole and a further 20% from a ring well fitted with a windlass. However, a greater variety of traditional water sources are used indicating that although some drinking water may be collected from improved water sources there remains a preference for traditional drinking water sources.

In the rainy season, 60% of respondents drink rainwater. Although it was not possible to ascertain from this KAP survey, it is presumed that rainwater is the primary drinking water source in the target area when available due to its ease of collection and availability.

Of primary interest for this KAP survey is not so much whether respondents are using 'safe' water sources but rather whether respondents are drinking 'safe' water. In order to investigate this, 'safe' water sources require defining. Usually in reports of this nature, traditional water sources are defined as 'unsafe' sources. However, both the ECHO-funded provincial needs assessment of Mondolkiri (2002) and the provincial needs assessment for neighbouring Ratanakiri (May 2003) concluded that amongst the indigenous populations of Cambodia's north-east, natural pits springs and bamboo pipe springs should be regarded as 'safe' water sources due to users hygienic habits of thoroughly cleaning both the source and the storage containers before use. In addition to flowing springs, rainwater was also defined as a safe water source in the survey.

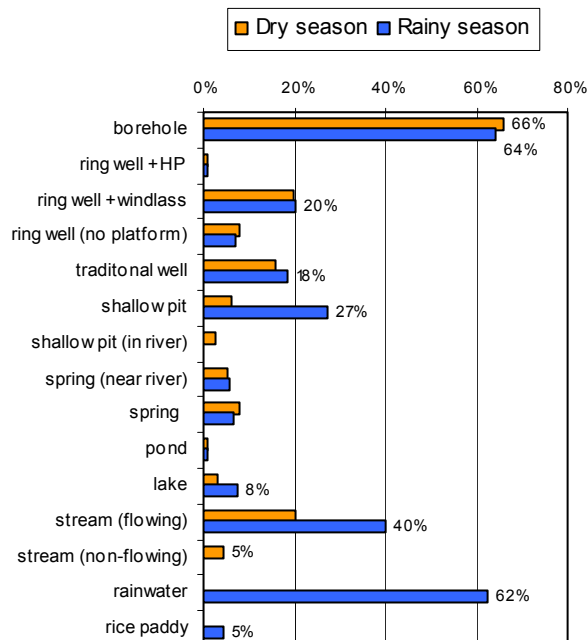


Fig 3.31 Water sources used in the target area

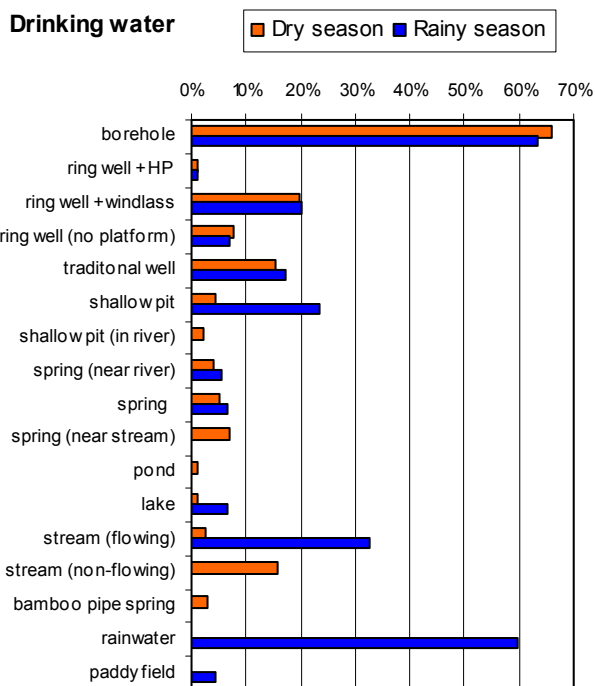


Fig 3.32 Water sources used in the target area

Figure 3.32 above implies that a considerable proportion of respondents are drinking water from 'unsafe' sources, particularly during the dry season. Closer examination reveals that over 80% of respondents collect drinking water from a mixture of both 'safe' and 'unsafe' water sources. Only 8% of the Khmer respondents were found to solely rely on drinking water from 'unsafe' sources. What is of particular interest regarding interventions implemented by AAH is that less than 20% of respondents are collecting their drinking water from 'safe' water sources only and the ethnic Khmer are only slightly more likely to solely rely on drinking

<sup>1</sup> An improved water source was defined as a borehole or a ring well

water from these sources than the Phnong. [see Annex 3 for a seasonal breakdown of 'safe' source usage for drinking water]

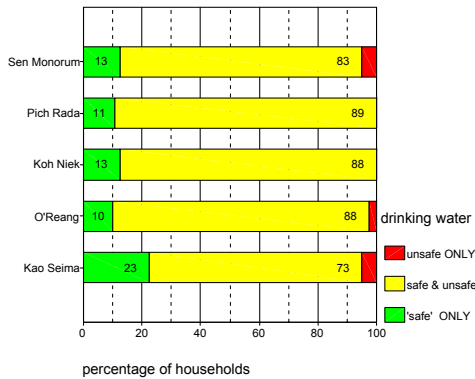


Fig 3.33 Safety of drinking water sources by district

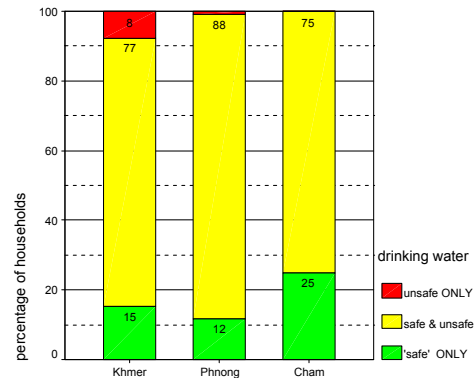


Fig 3.34 Safety of drinking water sources by ethnic group

### Average distance to the water source

Distance to a water source is often a governing factor determining the choice of water source. However, both the previously mentioned provincial needs assessments noted that villagers were prepared to make considerably more efforts to collect drinking water from a cool, good-tasting source and were consequently prepared to travel considerable distance to ensure this. Figure 4.35 below illustrates that the average distances to each water source is generally reduced in the wet season. The average distance to improved water sources is well below Sphere Standards with all improved ring well users living within 100m of the source and approximately 70% of borehole users within 100m and a further 22% living between 100m and 250m of the source.

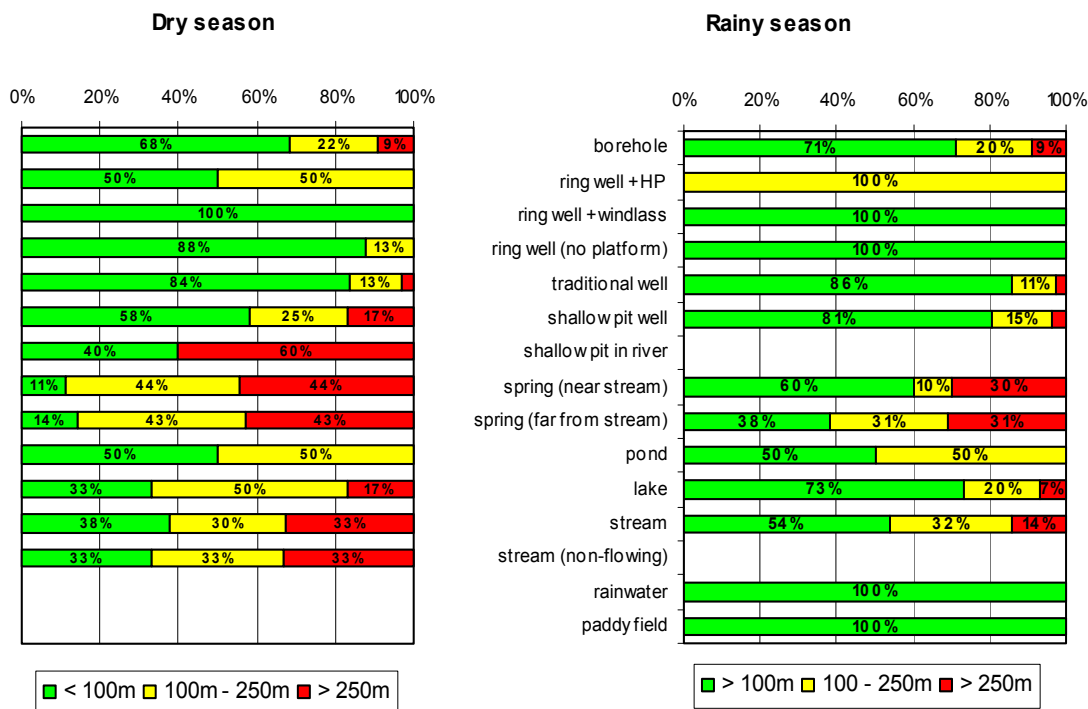


Fig 3.35 Distance to water sources in the dry & wet seasons

### User perceptions of the 'safety' of water sources

Respondents were questioned as to which water sources they regarded as a 'good' source. 'Good' was not defined; end users were free to apply their own definitions of 'good' water. Springs and rainwater were regarded as the best water sources and less than half regarded water from 'improved' water sources as 'good'. Thirty-six percent thought shallow pit wells were 'good' and flowing streams and ponds by 20%. Interestingly, only 11% of respondents classified open wells or traditional wells as 'safe' water sources. [see annex 4 for a full breakdown of the user perceptions of each water source]

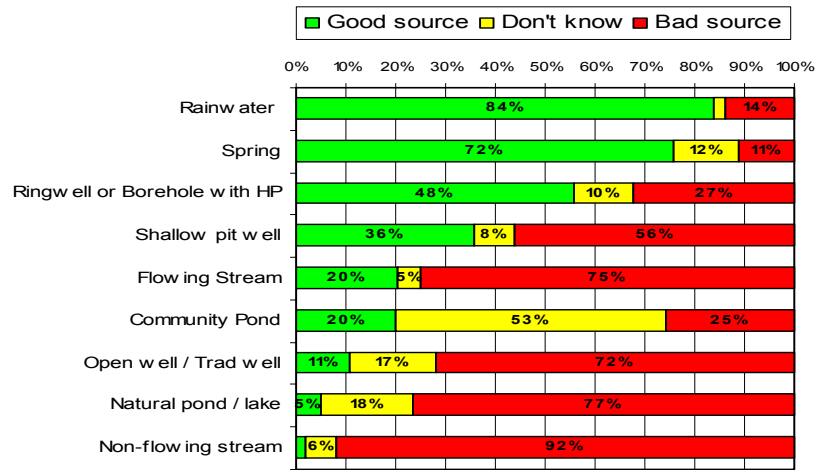


Fig 3.36 User perceptions of 'good' and bad' water sources

### Water Collection

Both adult women and adult men are the primary collectors of water in the target area. However, there are distinct differences between the two main ethnic groups. In Khmer households, men are more likely to be the primary collectors of domestic water whereas in ethnic Phnong households, women are twice as likely. [see annex 5 for a full breakdown of the frequency of water collection for each domestic group; adult women, adult men, girls, boys and the elderly]

Twenty-litre jerry cans are the most popular collection container in the target area [Ch-94%; Ph-78%; Kh-67%] whilst buckets were popular amongst Khmers living in Sen Monourom district [Kh-33%; Sen Mon: 48%]. Unlike neighboring Ratanakiri province where gourds are the most popular container for collecting domestic water, only a very small minority of Phnong in O'Rand district collected their domestic water in traditional gourds.

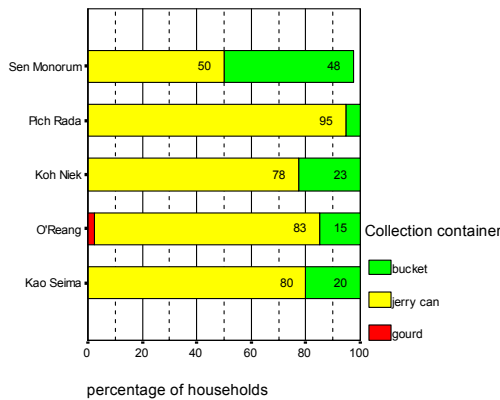


Fig 3.37 Water collection container by district

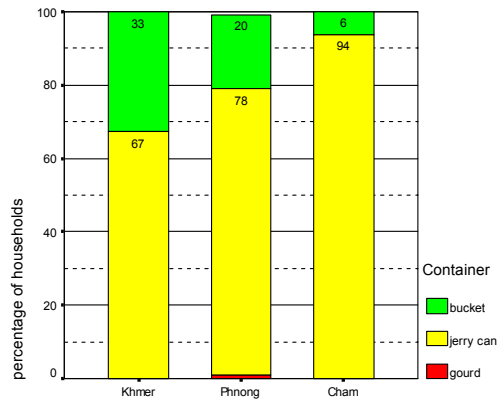


Fig 3.38 Water collection container by ethnic group

To better understand the burden on water collectors, the average number of daily trips to the water point was 4.5 with the ethnic Khmer tending to make slightly more trips than the Phnong. Sen Monourom district had the highest percentage of respondents making at least 5 trips per day (60%) while in O'Reang and Kao Seima less than 5 trips were made by over 80%.

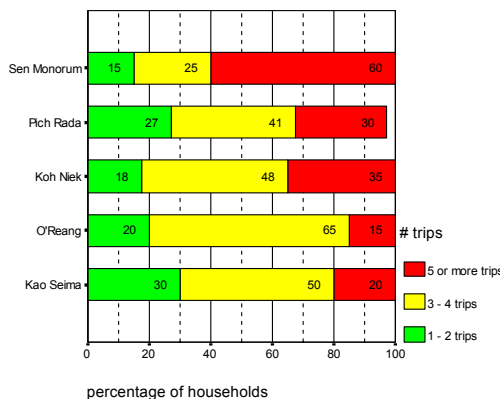


Fig 3.39 Number of daily trips for water by district

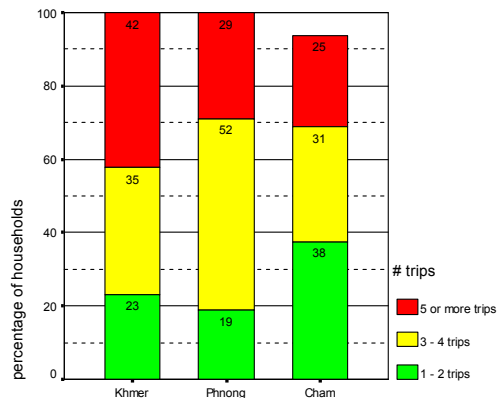


Fig 3.40 Number of daily trips for water by ethnic group

The overwhelming majority of respondents walk to the water point (89%). Only in Pich Rada district were alternative modes of transport noticeably evident with 24% of respondents using a bicycle and 11% a motorbike. This transportation tended to be owned by the ethnic Cham households.

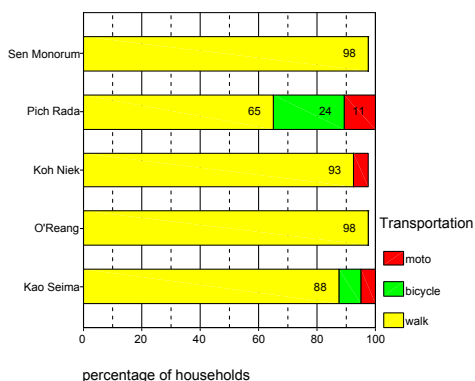


Fig 3.41 Transportation for water collection by district

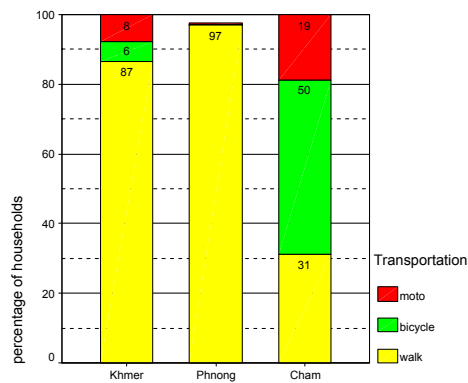


Fig 3.42 Transportation for water collection by ethnic

## Water Storage

Just over half of all respondents stored domestic water in jerry cans (52%) with the ethnic Phnong almost twice as likely as the Khmer to use them for household storage. Jerry cans were particularly popular in O' Rang (78%), Kao Seima (65%) and Pich Rada districts (57%) while a third of Khmer respondents stored their domestic water in oil drums, also popular with a quarter of the ethnic Cham. Buckets were also used by a quarter of the Khmer and the Cham whilst the Phnong tended not to use buckets for household water storage. Unlike neighboring Ratanakiri province, gourds are not commonly found household water storage containers (3%).

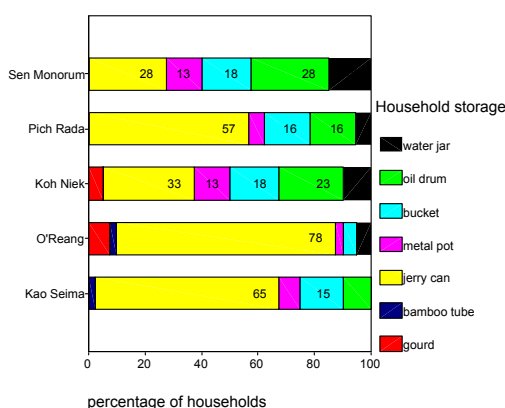


Fig 3.43 Type of household water storage container by district

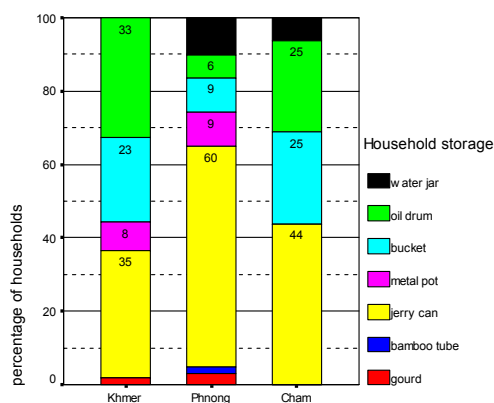


Fig 3.44 Type of water storage container by ethnic group

Sixty-percent of respondents only had one household water storage container, 24% had two and 16% had three or more. Respondents in O' Rang district had the most water storage containers per household. However, negligible difference was observed between ethnic groups.

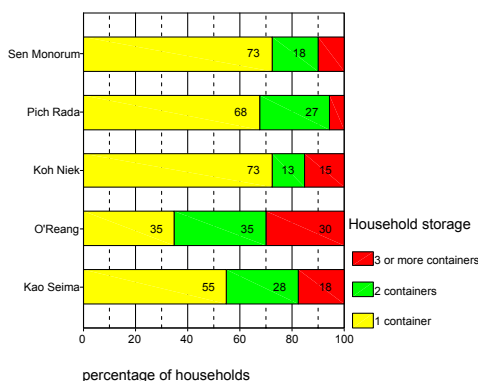


Fig 3.45 Number of household storage containers by district

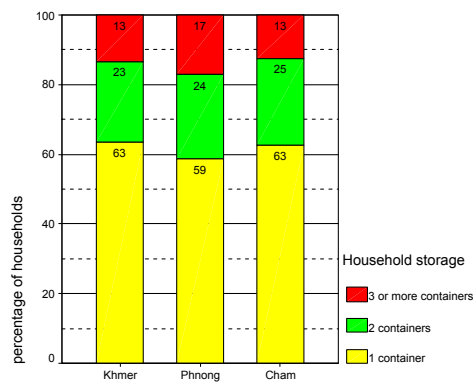


Fig 3.46 Number of household storage containers by ethnic group

When the total volume of water stored is considered, little difference is observed with the majority of households either storing in excess of 200 litres (43%) or less than 50 litres (47%). The lowest total storage capacity was observed in Pich Rada and Kao Seima while the greatest storage capacity was observed in Sen Monourom and Koh Niek districts.

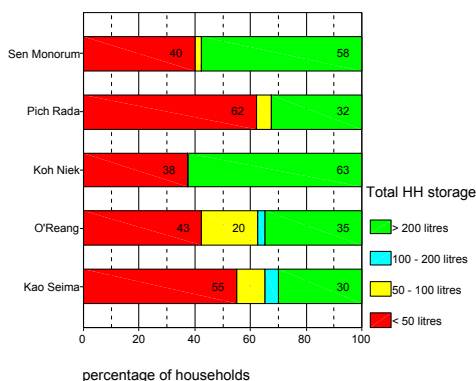


Fig 3.47 Total household storage capacity by district

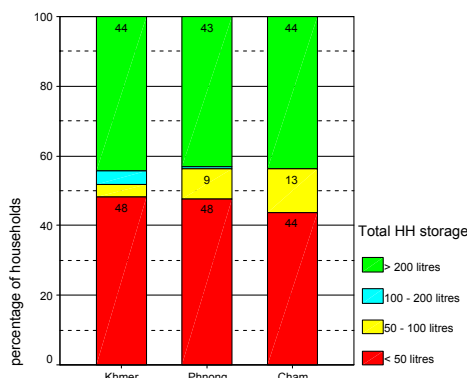


Fig 3.48 Total household storage capacity by ethnic group

When storage capacity was examined by storage per person, a similar pattern emerged. In Pich Rada and Kao Seima districts over half the respondents stored less than 10 litres of water per person while in Koh Niek, household storage per person considerably higher with 43% of respondents storing over 50 litres per person. As with the total household water storage capacity, similarity was observed across the ethnic group at least 60% were unable to store 30 litres of water per person.

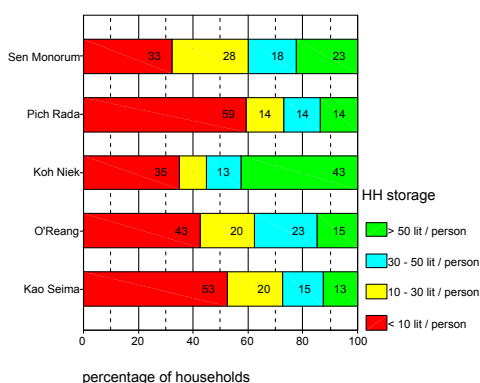


Fig 3.49 Household storage capacity by district

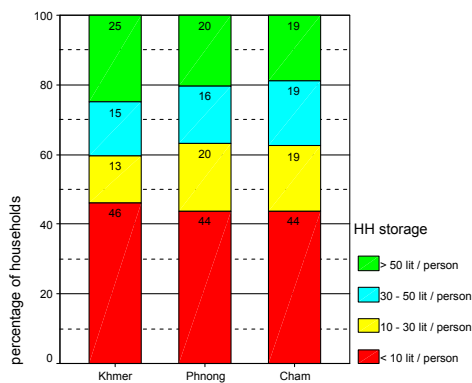


Fig 3.50 Household storage capacity by ethnic group

### The boiling of drinking water

Although over 80% of respondents collect their drinking water from 'unsafe' sources, 83% claim to always boil it before drinking. Percentages of regular boiling were over 90% in Koh Niek and Pich Rada while still high at 70-80% in the other three districts. Although more than three quarters of the Phnong respondents claimed to always boil their water, the level was considerably less than the 90% plus for the Khmer and the Cham.

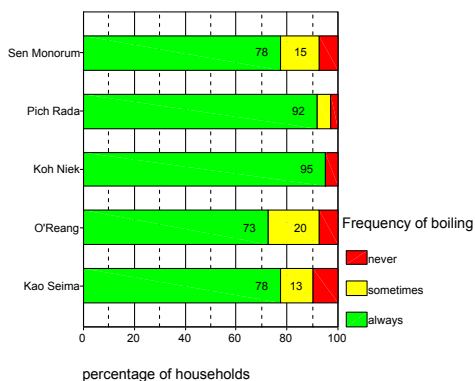


Fig 3.51 Frequency of boiling by district

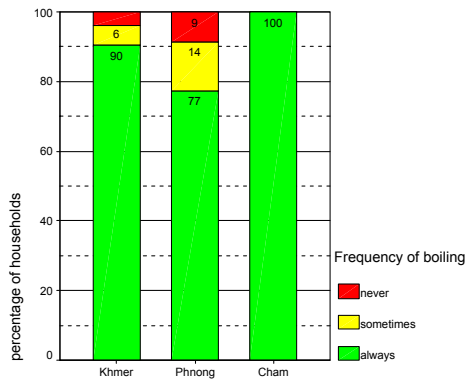
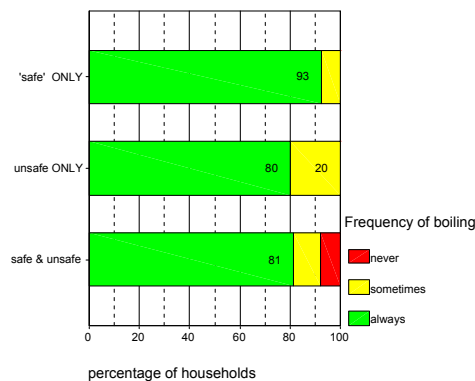


Fig 3.52 Frequency of boiling by ethnic group

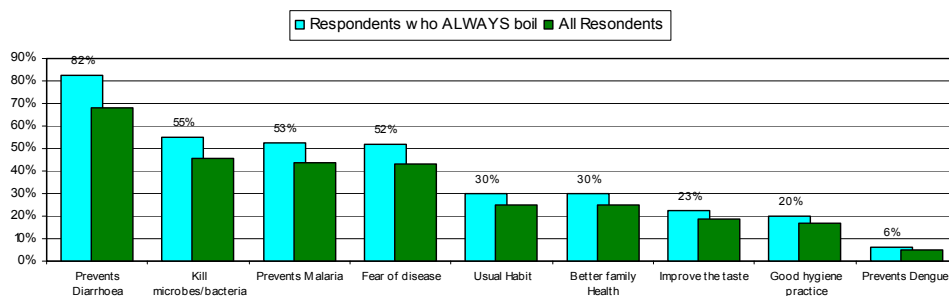


To ascertain whether respondents are drinking contaminated water, it is necessary to consider the safety of the water sources and the frequency of boiling. Figure 4.53 (right) illustrates that only a minority of respondents are drinking contaminated water. Eighty percent of those drinking contaminated water always boil their water and less than 10% of respondents using a mixture of safe and unsafe sources never boil their drinking water.

The 83% of respondents claiming to always boil their water gave nine reasons for doing this. Preventing diarrhoea was the single most popular answer (82%) while killing bacteria and microbes was given by approximately half of the respondents as was fear of disease. Thirty percent said it was for better family health or it was their habit while a further 23% said it improved the taste and 20% for good hygiene practices. In addition to the reasons mentioned above, over half the respondents thought that they could prevent malaria by boiling drinking water.

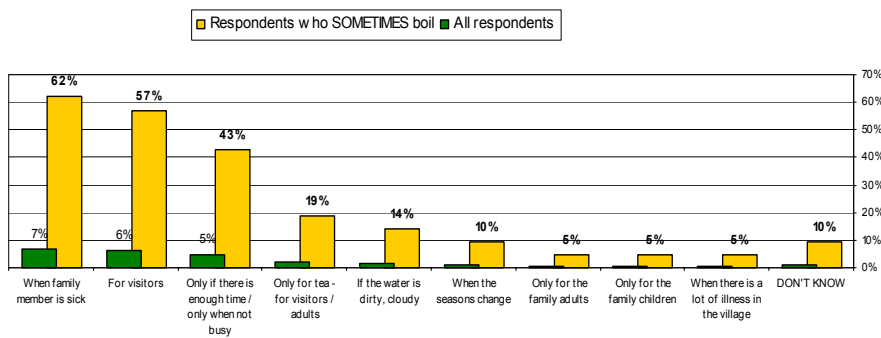


**Fig 4.53** Frequency of boiling by 'safe' and 'unsafe' water sources



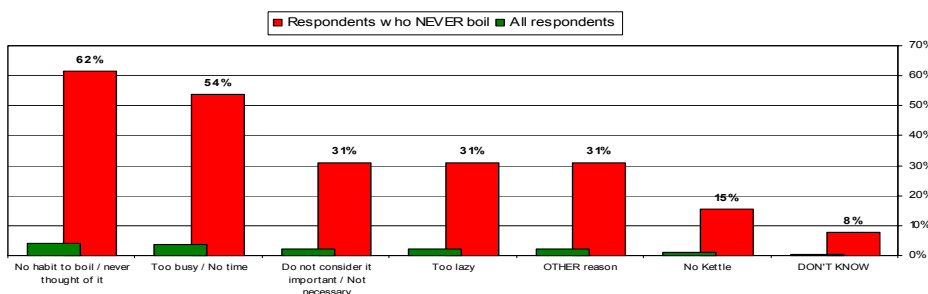
**Fig 4.54** Reasons for always boiling water

The 11% of respondents were asked why they only sometimes boiled their water. Sixty-two percent claimed to boil water when a family member was sick and 57% for visitors indicating an awareness that boiled water is healthy. However, for 43% the boiling of water was a secondary consideration and they only boiled when they had enough time. Yet this also indicates awareness that boiling drinking water is a good idea.



**Fig 4.55** Reasons for sometimes boiling water

The 6% of respondents that never boil were asked to explain their reasons. All the reasons given indicated a lack of awareness in the benefits of drinking boiled water; 62% claimed to have never thought of boiling, 54% claimed insufficient time, 31% did not consider it important or were too lazy, 15% claimed not to have a kettle and 8% were unable to give a satisfactory reason.



**Fig 3.56** Reasons for never boiling water

## Illnesses prevented by boiling water

To determine the level of knowledge concerning water related diseases, respondents were asked to list the illnesses that could be prevented by boiling drinking water. As predicted from figure 3.54: the reasons why respondents always boil their drinking water, diarrhoea was identified by 86%. However, the knowledge of other water-related illnesses was considerably lower with the Khmer showing slightly greater knowledge than the Phnong.

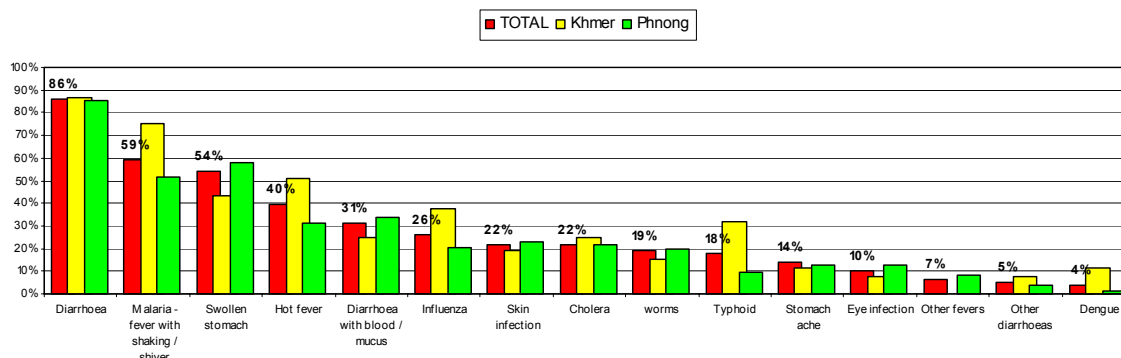


Fig 3.57 Knowledge of water-related diseases which can be prevented by the boiling of drinking water

## Handwashing

The vast majority of respondents claimed to wash their hands more than once-a-day (97%) while the remaining 3% said they washed their hands once-a-day [4% Khmer (Sen Monourom); 2% Phnong (Pich Rada)]. No respondents claimed to wash their hands less frequently than this and differences between the three ethnic groups and the five districts were minimal.

Respondents spoke of ten different hand washing times of which the vast majority washing their hands when returning home from the forest or the rice fields (95%) and when they are considered dirty (82%). However, it was unclear how frequently this was. A strong association was observed between hand washing and food hygiene; 87% of respondents claimed to wash their hands before preparing food, 81% before eating meals and 71% after meals. However, there was less of an association between defecation and hand washing with only 57% washing their hands after defecating and only 49% after cleaning up after babies' that have defecated. Three alternative times were mentioned; when waking up in the morning (62%), before sleeping (41%) and after bathing babies (45%).

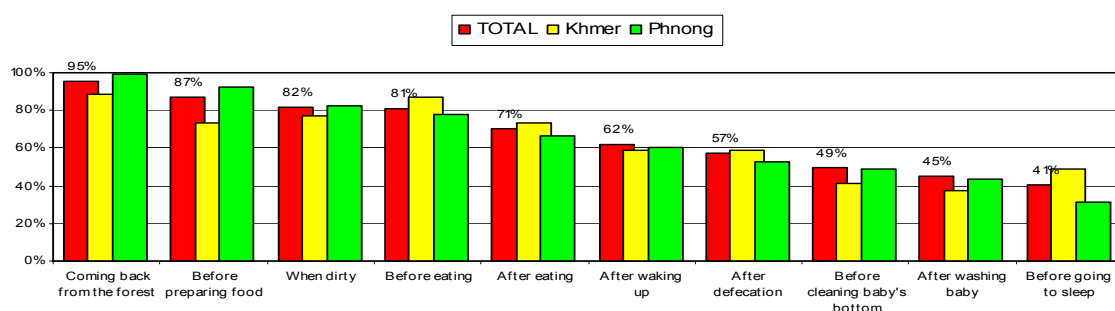
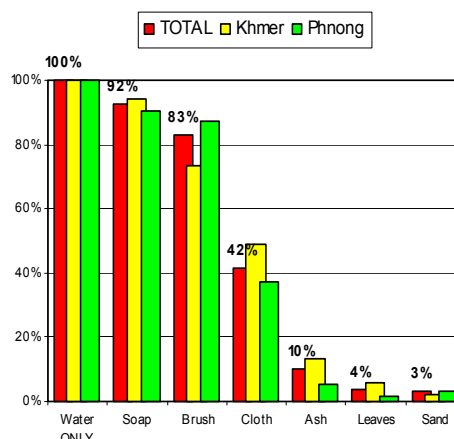


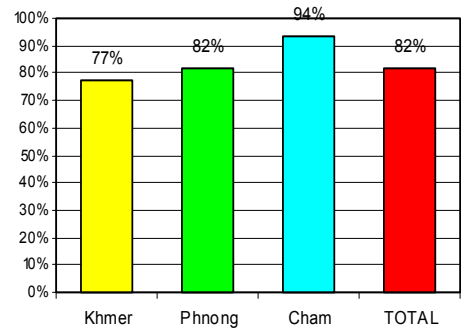
Fig 3.58 Handwashing times

## Hand washing Materials

Ninety-two percent of respondents claimed to wash their hands using soap, 83% used a brush and 42% a cloth. However, although the question asked respondents what they usually used to wash their hands, it was unclear whether respondents always washed their hands using these materials as 100% of respondents claimed to clean their hands by rinsing them in water only. In addition to hand washing with a brush and soap, 10% of respondents claimed to use ash, 4% leaves and 3% sand. Only minor differences were observed between districts or ethnic groups as presented in the two figures below.

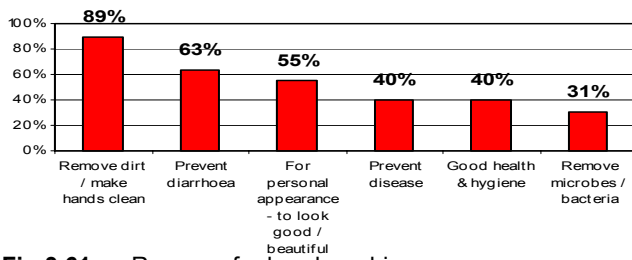


**Fig 3.59** Materials used for hand washing



### Reasons for Hand washing

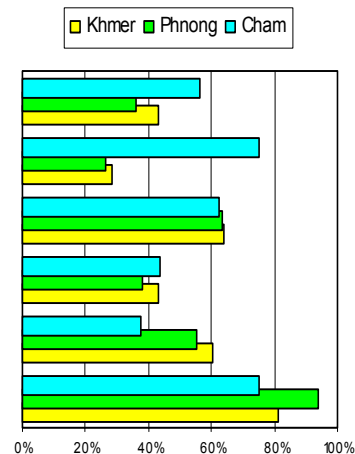
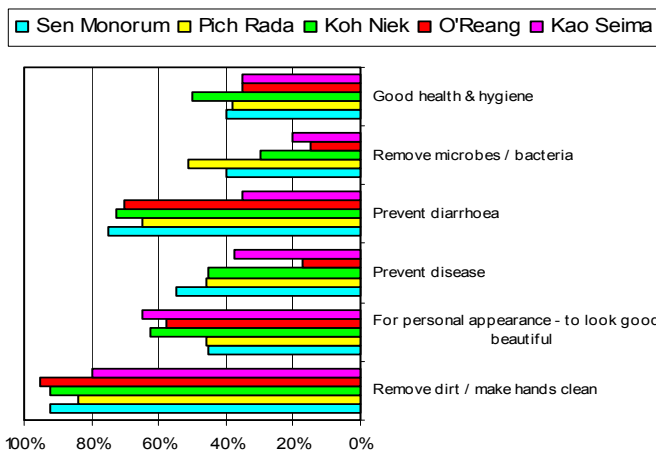
Eighty-two percent of respondents said that they believed that regular hand washing can prevent certain illnesses. Surprising the percentage of Phnong (82%) was slightly higher than the Khmer (77%). However, when asked more specifically to list the reasons why the respondent washed their hands, 63% mentioned the prevention of diarrhoea and 40% the prevention of diseases and illnesses. The most popular response to this question, given by almost 90% of respondents, was the removal of dirt.



**Fig 3.61** Reasons for hand washing

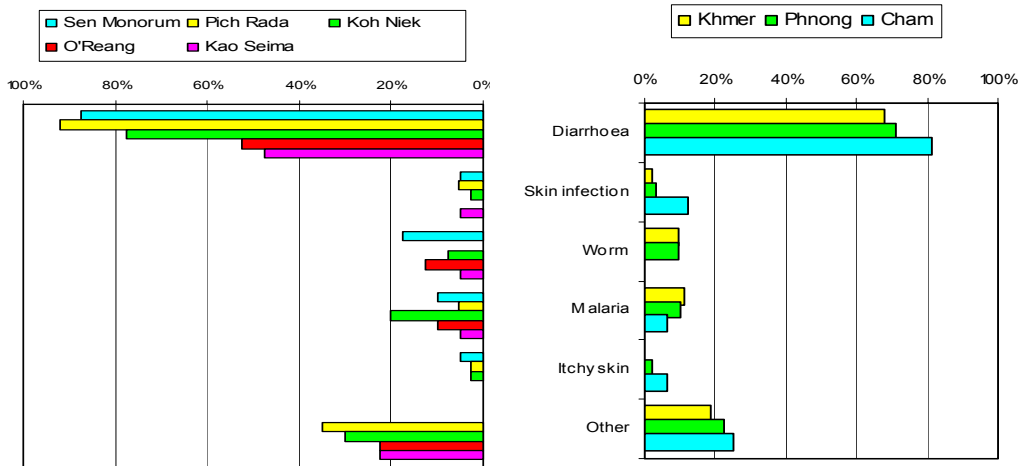
**Fig 3.60** Respondents who believe regular hand washing

Only minor differences were observed in the responses between the Khmer and the Phnong. However, the level of knowledge that regular hand washing prevents certain diseases was noticeably lower in O'Rand district.



**Fig 3.62** Reasons for regularly washing hands by district and ethnic group

Although 82% of respondents said that regular hand washing prevents disease, knowledge of which diseases and illnesses it can prevent was not widespread. Although 71% of respondents said that regular hand washing prevents diarrhoea, only a small proportion mentioned it could also prevent worms (10%) and skin infections (4%). One misunderstanding made 10% of respondents was that malaria can be prevented by regular hand washing.



**Fig 3.63** Illnesses prevented by regular hand washing by district and by ethnic group

## Diarrhoea

Respondents identified two distinct periods of the year when the prevalence of severe diarrhoea<sup>2</sup> is greatest; during the hot-dry season (48%) and when the seasons change to the rainy season (53%). Similarities were observed between ethnic groups and across all five districts. [see annex for a breakdown by district and by ethnic group]

Although the survey was conducted in February when the prevalence of severe diarrhoea would be expected to be low, 44% of respondents said that at least one family member had been suffering from severe diarrhoea in the previous two weeks [one family member: 30%; two family members: 10%; three family members: 4%]. Levels were slightly higher amongst the Phnong than the Khmer and the districts with the highest incidence were Koh Niek and O'Reang districts where over half the respondents reported at least one case of severe diarrhoea in the previous two weeks.

Respondents were asked what remedies were administered to children under five suffering from severe diarrhea. Thirteen distinct household treatment methods were mentioned as the first line of treatment before seeking advice. The two most popular treatments were to prepare 'bor bor' [rice soup] (73%) and or administer traditional remedies (62%). Western medicines; pills (61%), injections (40%) and serum drips (24%) were also popular. The administering of serum drips in the household was significantly more popular amongst the Khmer than the Phnong (Kh-38%; Ph-14%).

A variety of methods for rehydrating were also administered; extra water (34%), extra 'boiled' water (12%) and fruit juice (32%). However, only 15% purchased oral rehydration salts (ORS) sachets from a pharmacy or prepared home-made ORS using coconut water, salt and sugar (12%). Khmers respondents were considerably more likely to prepare home-made ORS (Kh-26%; Ph-6%). However, the Phnong were more likely to buy sachets of ORS (Ph-20%; kh-11%). [See annex for breakdown by district and ethnic group]

Respondents were asked from whom they would seek medical advice if the infant did not respond to household remedies. Three quarters put their faith in medical professionals rather than traditional healers with the majority reporting to visit either a health centre (38%) or a private doctor (36%). If the diarrhoea did not stop the other was usually sought as the second source of medical advice.

In addition to medical professionals, pharmacists and local medical vendors were reported by 15% while 10% preferred to visit the traditional healer. As respondents become increasingly more desperate, 30% of Phnong respondents turn to traditional healers while almost 60% of the Khmers turn to the health centre.

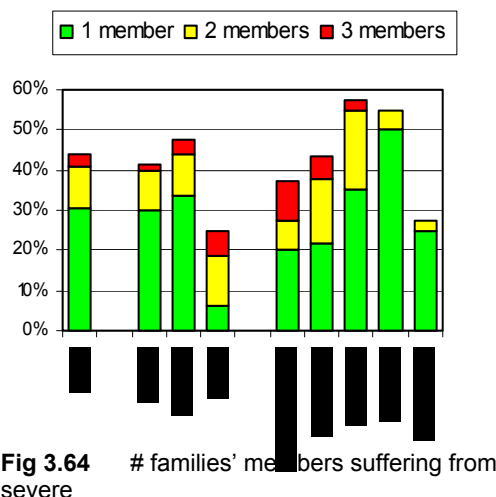


Fig 3.64 # families' members suffering from severe

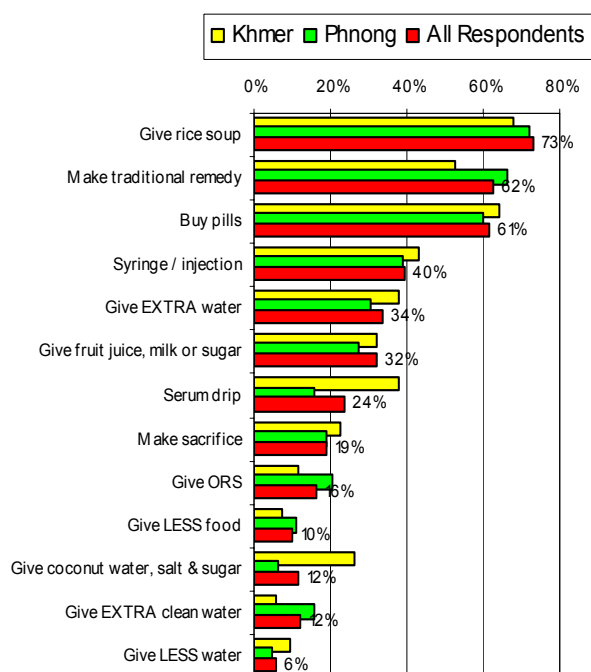


Fig 3.65 Treatments given to diarrhea sufferers under five

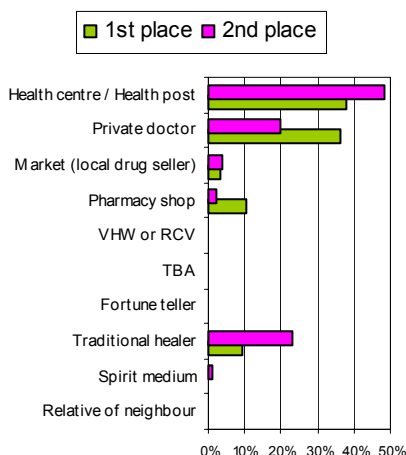
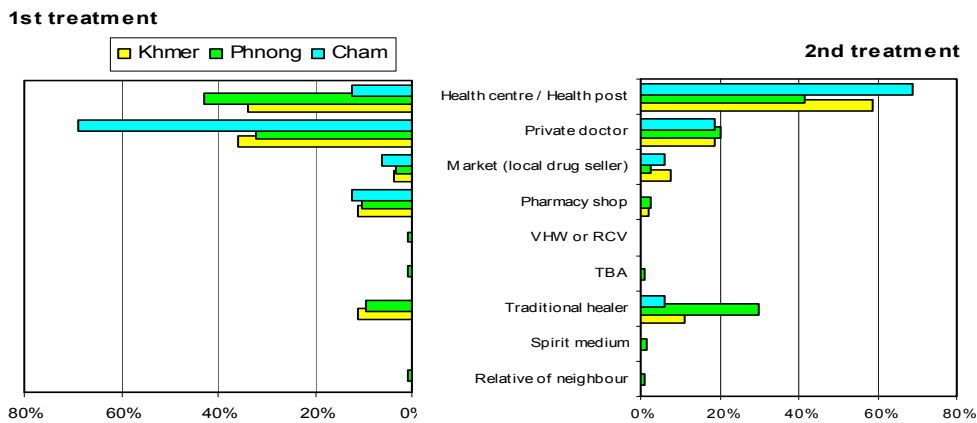


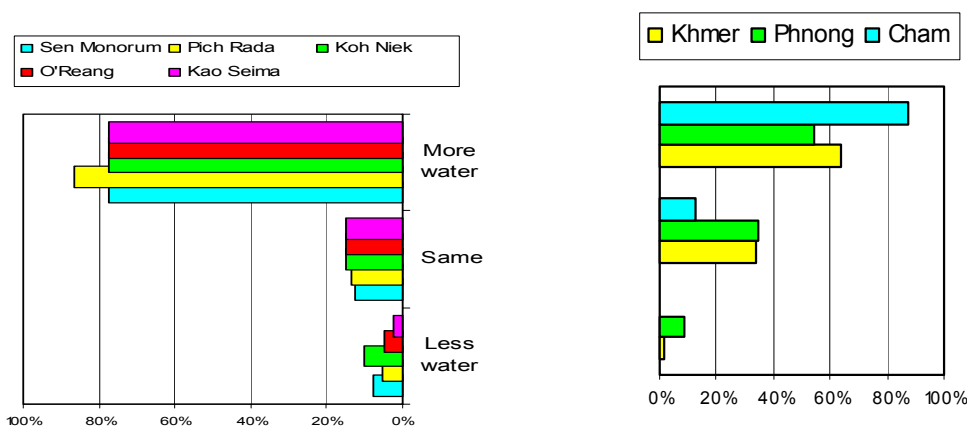
Fig 3.66 1st & 2nd places to seek advice for diarrhea

<sup>2</sup> Severe diarrhoea was defined as the passing of at least three water stools in a single day



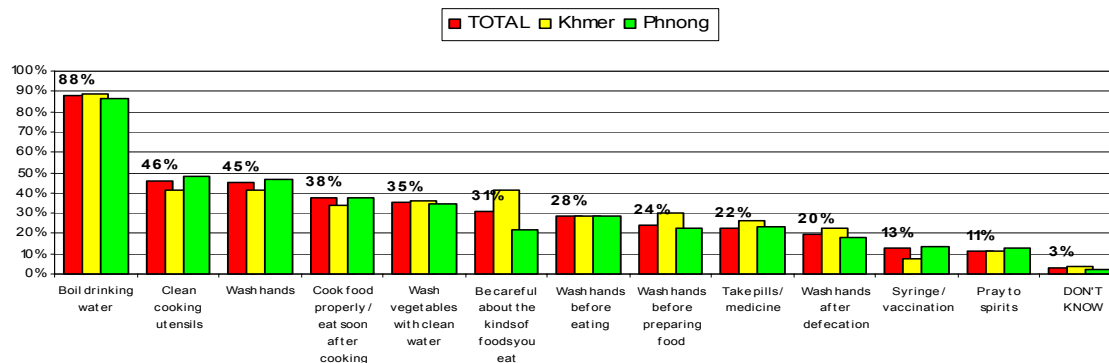
**Fig 3.67** The first and second choices of places to seek advice when a child has severe diarrhoea

To confirm whether respondents were aware of the importance of rehydrating patients, a separate question was asked concerning the quantity of water given to infant patients. While 60% of respondents claimed they would give more water, 40% did not appear aware of the importance of rehydrating patients; 36% said they gave the same fluid intake while 4% (mainly Phnong) said they reduce intake.



**Fig 3.68** Quantity of water given to children suffering from diarrhoea

In addition, to diarrhoea treatments, respondents were asked to list the methods they knew for preventing diarrhoea. Considerable similarity was observed between the two dominant ethnic groups; the Khmer and the Phnong. Eighty-eight percent of respondents were able to correctly identify that drinking boiled water could reduce the incidence of diarrhoea whereas alternative methods were identified by less than 50%. Hand washing was identified by 45% of respondents, whilst between 46% and 24% were able to give answers regarding the importance of good food hygiene; thoroughly cleaning cooking utensils (46%), cooking food thoroughly (38%), washing vegetables with clean water (35%), washing hands before eating (28%) and hand washing before preparing food (24%). However, only one in five respondents mentioned the importance of hand washing after defecation.



**Fig 3.69** Methods of preventing diarrhoea

## Defecation

Respondents were asked where adult men, women, children and infants usually defecate both during the daytime and at night. Little difference was observed between the defecation sites of adult men and women. Less than 15% of households use a latrine, preferring open defecation with different defecation sites for the daytime and at night. In the daytime, approximately 80% of adults defecate in the forest/bush at least 25m away from their houses whereas during the night, little over 20% of adults travel this distance and more than 50% of adults defecate in close proximity to their household. Children tended to defecate in a greater variety of sites than adults. However, almost 40% defecate within 25m of their household to be scavenged by pigs. Infants' faeces tend to be washed through the floor of houses with water or thrown to the pigs if solid.



Fig 3.70 Defecation sites

## Skin infections & worms/tapeworms

Other water related illnesses such as worms, tapeworms or eye infections were highly prevalent in the target area. At the time of the survey, 64% of respondents had at least one family member who was suffering from an eye infection and 52% of respondents suffering from either worms or tapeworms. The ethnic Cham were suffering the least from these illnesses while the incidence amongst the Khmer and the Phnong were similar.

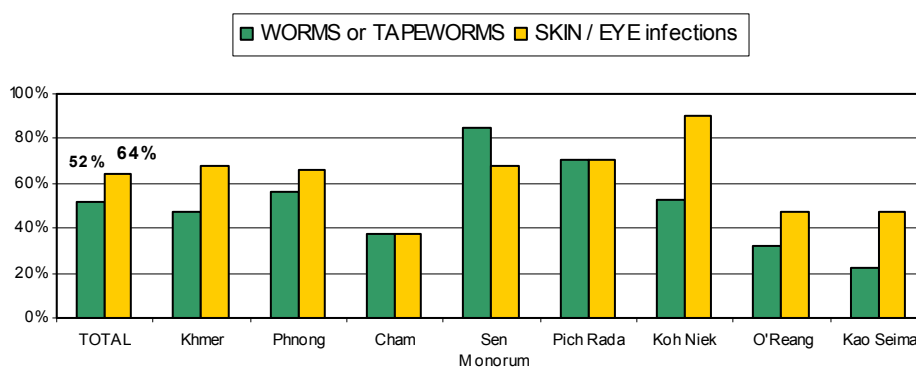


Fig 3.71 Prevalence of worms / tapeworms & skin / eye infections in February 2005

Sen Monourom district had the greatest percentage of patients suffering with worms or tapeworms while Kao Seima had the lowest. Over 40% of all respondent households had a family member suffering from an eye or skin infection. The highest incidence was in Koh Niek at 90%, while the incidence in Sen Monourom and Pich Rada was also high at over 60% of households. Approximately a third of all respondents displayed awareness in the association between bathing and eye infections 37% mentioned bathing in water containing small insects or in non-flowing streams whilst 31% spoke of bathing in water of a strange colour or smell. Just under a third of all respondents associated a lack of irregular bathing with eye infections whilst less than a quarter mentioned that not bathing properly could cause infections. One in five respondents also believed that bathing in rainwater could cause infections.

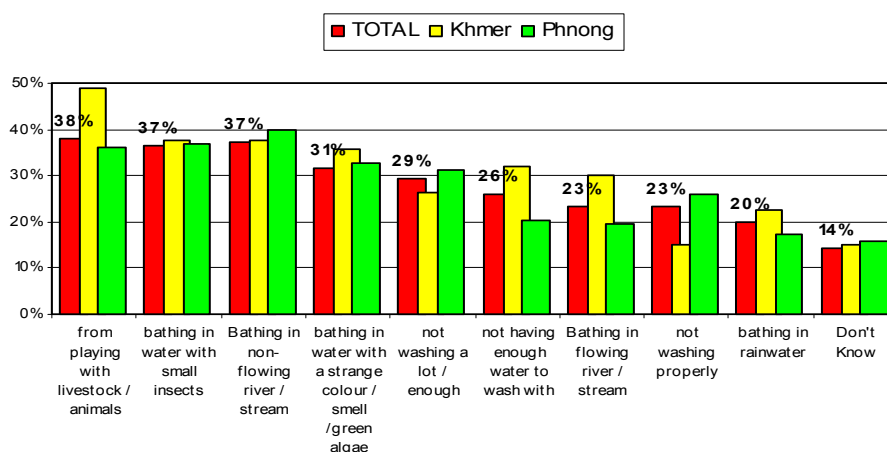


Fig 3.72 Reported causes of eye infections

Despite the similar incidence of worms and tapeworms amongst the Phnong and the Khmer, Phnong respondents were considerably more aware of the association between food hygiene and worms, with over 85% of Phnong respondents knowing that worms can be caused from eating uncooked or lightly cooked meat or fish or from eating unwashed vegetables. This was almost twice the percentage of Khmer. Only 30% of respondents associated regular hand washing with worms and 17% as a water related illness. However, little knowledge was displayed regarding the association between faeces, both animal & human and worms with only 4% making the association between worms and walking barefoot near faeces.

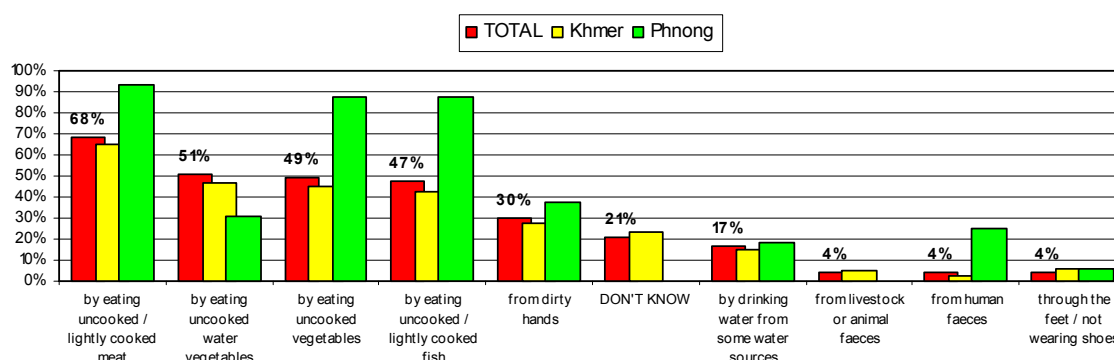


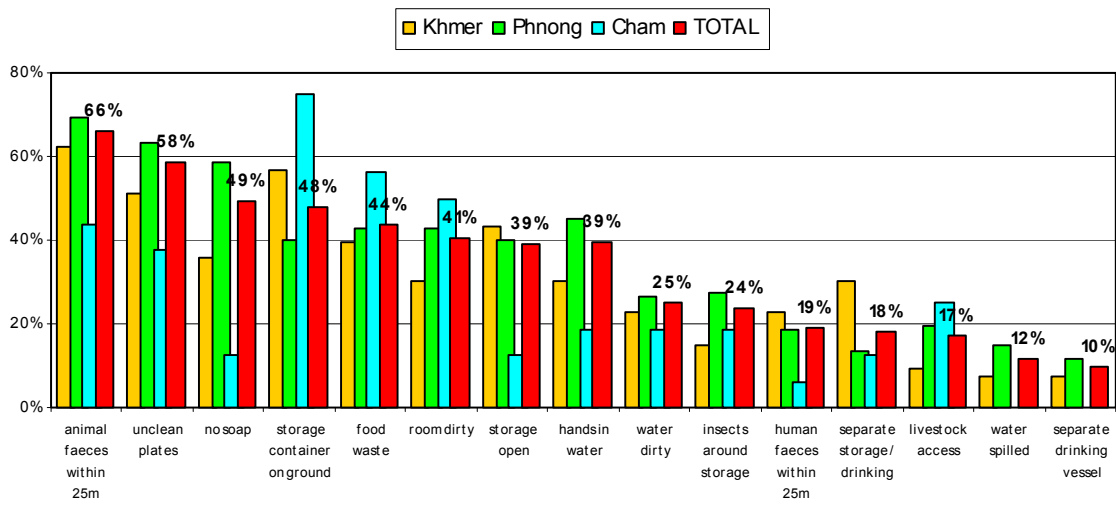
Fig 3.73 Reported causes of worms and tapeworms

### Household sanitary survey

In addition to the KAP questionnaire, surveyors also conducted household sanitary surveys. The average household was observed to have an average of 5.1 sanitary risks associated with it. (Ph-5.4; Kh-4.8; Ch-4.0). A considerable health hazard is posed by the presence of faeces; animal faeces were observed within 25m of 66% of households while 19% were observed with human faeces within this distance. In the kitchen area, unclean plates were observed in 58% of households with food waste in 44% in what was considered to be a dirty room by the surveyor in 41% of cases.

Although the observed 'safe' practices relating to sanitation and food hygiene were low, practices relating to 'safe' water use were slightly better. However, only 18% of respondents had a separate water container for their drinking water. Thirty-nine percent of drinking water storage containers were uncovered and a further 39% of respondents contaminated their drinking water containers with their hands while collecting water. A quarter of respondents were drinking noticeably dirty water and 24% had insects around their or in their containers.





**Fig 3.74** Sanitary risks observed during household sanitary surveys

## 4.0 Conclusion & recommendations

The KAP survey revealed that over three quarters of the respondents had received water use and hygiene education (WUHE) during the implementation of Action Contre la Faim's rural water supply projects in Mondolkiri. As end users do not tend to exclusively use one water source for all domestic water sources, it is difficult to fully comment on the impact of ACF's 'improved' water sources. However, these community water points are certainly well-used although not necessarily as primary drinking water sources.

The impact of hygiene education relating to the promotion of boiled drinking water appears considerable with 83% of respondents claiming to always boil their drinking water. Although this was a self-reported answer and thus, open to exaggeration, it was evident respondents' knowledge of the importance of boiling drinking water is extremely high. However, it is difficult to understand why ACF's hygiene promotion activities in Mondolkiri province should have such a high level of success in the promotion of boiled drinking water than the activities of other agencies in other Cambodian provinces.

Although the training conducted relating to drinking water appears to have been effective, the target population is still suffering from a high incidence of severe diarrhoea and other diseases relating to poor water and unsanitary practices. If ACF are to raise health standards in their target villages, beneficiaries require a more comprehensive health education package. ACF should, in co-ordination with other agencies active in the sector, consider expanding their water use and hygiene promotion activities into other health areas such as the promotion of good food hygiene practices, nutrition and handwashing, particularly amongst the younger generation.

The following recommendations have been made for consideration in future WatSan interventions:

Continue activities in the rural water supply sector:

- Using the results of this KAP survey as a reference, revise the hygiene education components relating to the promotion of handwashing and good food hygiene practices
- Expand the water quality testing program to focus on the bacteriological testing of household water at the point of consumption. Ensure that a full feedback is given to those households participating in the testing
- Continue conducting water use and hygiene education promoting the boiling of water as a method of ensuring 'safe' drinking water
- Consider conducting hygiene education workshops that focus solely on diarrhoea; causes, treatments & prevention
- Focus attention on the importance of safe water storage through the promote of separate drinking water containers fitted with a cover
- Raise awareness of the importance of good hygiene practices through the promotion of participatory sanitary monitoring of both the water points and households by water point committee members
- Consider providing beneficiaries with a subsidized distribution of International Development Enterprises' (IDE), colloidal silver, ceramic, water filters to those beneficiaries living further than 200m an ACF 'improved' community water point. As the filters are fitted with a 15-litre clean water storage reservoir, beneficiaries are also provided with containers for the safe storage of drinking water; something the KAP survey noticed as severely lacking in the province. In addition to the safety factor, these filters would also reduce the burden on women by ensuring bacteriologically 'safe' drinking water from any water source without the labour of collecting extra firewood. [Unit price; \$7.50]
- As poor food hygiene practices appear to be a major transmission route for a number of diseases, consider conducting a training that focuses solely on good food hygiene. Ensure the training is well-attended and the participants appropriately motivated by providing them with an appropriate incentive, such as having them cook a meal, provided by ACF, in order to consolidate what they had learnt in the training

Consider expanding activities into the sanitation sector in particular, school sanitation and hygiene promotion:

- Assess the demand for household latrines in the target area

- Conduct a full assessment of the water & sanitation situation in all schools in the province
- Ensure all schools in the province are equipped with a sanitary water supply and an appropriate number of latrines. Ensure that all school latrines are installed with handwashing stations. Consider raising the water points already in schools so that water can be gravity-fed directly into the handwashing stations and, should users demand a preference for pour-flush toilets, the latrine
- Consider providing beneficiaries with an extensive latrine program. Ensure such a program does not solely focus on the most vulnerable groups but targets entire communities by providing beneficiaries the opportunity to contribute to the construction costs of the latrine. Mechanisms for including the most vulnerable groups in the program, should be developed between ACF's CO team, the village chiefs, VDCs and key villagers