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BORDER AREA CHIN HILL HEALTH IMPROVEMENT PROJECT (BACHIP) (2003-2006): END EVALUATION

CARE INTERNATIONAL
YANGON, MYANMAR

SUMMARY

End evaluation of Border Area Chin Health Improvement Project (BACHIP) (2003 - 2006) was done in Tiddim Township, Chin State in October-November, 2006. The major aim was to find out the KAP of target beneficiaries (comparing base-line, mid-term and end evaluation surveys) and perspectives of providers in project sites in relation to: diarrhoea, malaria, tuberculosis, HIV/AIDS, malnutrition, acute respiratory infections, and reproductive health. An operations research: a quasi-experimental pre-test and post test without control group design was used to detect changes in KAP following intervention measures targeted to men, women of reproductive age and young migrants. Quantitative structured interviews focused 416 respondents from 208 households (52 in 4 urban wards and 156 in 10 villages) to integrate with findings from qualitative in-depth interviews of 2 project staff and 5 village health committee working group (VHCWG) members and 12 focus group discussions (participated by 44 men and equal number of women).

Key findings

1. Demography

In 208 households, there were 1496 family members. The mean number of family size was 5.27 ± 0.24 in urban wards and 7.82 ± 1.44 in villages. Male to female ratio was 1:1.03 in surveyed households (1:1.02 in urban sites, and 1:1.04 in rural sites). Population of children under 10 years in both urban and rural study sites was higher than the remaining age groups (558/1496; 37%). The proportion married was higher in urban than in rural sample (88.5% *vs.* 73.5%). Some 42.1 % (98/217) passed middle school and above education in urban study sites but 21.6% (229/1058) of rural householders from study villages had similar education level. Some 41% in urban study sites and only 21% in rural study sites were dependents.

Of 1496 householders, 238 (15.9%) reported migratory works. From rural study sites, more migrant workers were reported compared to urban study sites (94.9% *vs.* 5.1%). Their mean ages were 31.9 ± 9.2 years for males and 26.9 ± 8.9 years for females. Seasonal migration was common (128/236; 54.2%).

Some 238 (15.9%) were married women of reproductive age (15 - 49 years) that is 52 (21.8%) from urban study sites and 186 (78.2%) from rural study sites. Mean age at marriage (in years) was slightly higher among urban respondents, compared to their rural counterparts (21.8 ± 3.0 *vs.* 20.6 ± 3.6). Mean number of pregnancies were one and a half times higher among rural respondents compared to that of urban women (5.3 ± 3.2 *vs.* 2.9 ± 1.8). Most of the rural respondents had reported their last pregnancy between 30-39 years (47.8%) while urban respondents reported at younger age between 20-29 years (73.1%).

2. KAP of householders and changes after intervention

Altogether 206 males and 210 females from 208 households responded to structured interviews. Their mean ages were 35.2 ± 7.0 years for males (range of 20 to 49) and 31.0 ± 6.5 years for females (range of 18 - 49).

Diarrhoea

Eight causes of diarrhoea were widely known in end evaluation survey (over 90%) when compared to base line survey and mid term assessment. During end evaluation, men from urban study sites were less likely than women to state: "unclean utensils can cause loose motion" (78.4% *vs.* 88.2%) and "eating fruits and vegetables not thoroughly washed can cause loose motion" (72.5% *vs.* 92.2%). Practice of giving ORS at home for loose motion was almost universal. During base-line assessment, only 19.2% (14/73) of urban households and 5.2% (4/73) of rural households kept ORS. But in end evaluation, proportions were increased (over 90% in rural study sites and 59% in urban study sites). In addition to drinking boiled water, six preventive measures practiced were widely reported from urban and rural respondents of both sexes in end evaluation. Prior to the intervention in 2004, the use of sanitary fly proofed latrines was only 46.6% (34/73) in urban study sites and 19.2% (14/73) in rural study sites. But in end evaluation, the use was cent percent. Going to public facilities for seeking treatment for loose motion in children was also reported higher than base-line and mid-term surveys especially in rural study sites but using western medicine at home and going to private clinics were considerably declined.

Malaria

During end evaluation, every respondent knew that malaria was due to mosquito bite. Bed net use was increased (100%) when compared to base-line (49.3%) and mid-term surveys (97.1%). Perceived benefits of sleeping under bed-nets as revealed during FGDs included: protection from disease, specifically malaria, protect from insects, rats, mosquito bite, to have a sound sleep etc. Self-purchase of western medicine was much decreased in end evaluation (16.1%) compared to base-line (56.7%) and mid-term surveys (56.8%). Going to public health facilities to seek confirmation and treatment for malaria was much higher in end-evaluation (87%) compared to base line (37%) and mid term surveys (58.8%).

HIV/AIDS

Knowledge of six modes of transmission (sharing needles and syringes, from mother to fetus, sexual relations, blood transfusion, sexual relations with CSWs or those with multiple partners and narcotics injection) were very high in all three surveys. Transmission of HIV through breast milk was known by 86.8% of respondents in end-evaluation, higher than in base line (66.1%) and in mid term surveys (70.2%). During end evaluation, three preventive measures practiced were reported very much higher than in base-line and mid-term surveys: keeping single marital partner (16.7% and 16.2% to 99.3%), avoiding unnecessary injections (12.2% and 25.9% to 83.4%) and systematic condom use (6.7%, and 16.4% to 51.4% respectively).

ARI

Knowledge of five common symptoms of ARI in under-five children was greatly improved in surveyed households in end-evaluation when compared to base-line survey. Parents/care-takers provided western medicine by themselves and much higher responses were obtained during end-evaluation than in base-line survey (50.7% to 79.3%). Improvements were found markedly during end evaluation in home-based care of children with ARI: keep warm (67.1% to 98.1%), give less food (2.7% to 95.7%), more breast milk (20.5% to 78.1%), more liquid (11.6% to 74.7%) when compared to base-line survey.

TB

Knowledge of four symptoms indicating tuberculosis was very much improved during end-program evaluation when compared to base-line survey. Common modes of transmission were widely known and their understanding was much improved in transmission through direct contact with infected person or utensils used by an infected person. During the base-line survey, respondents cited public facilities as their resort (41.1%) while in end-evaluation, 95.9% relied on western medicine probably anti TB drugs (DOTS) at home.

Nutrition

Household knowledge of seven symptoms indicating malnutrition in under-five children was markedly increased in end evaluation compared to base-line survey. The reported treatment seeking practices for malnourished children was improved during end-evaluation indicated by highest rank attained by public health facilities (78%) compared to ranking three during base-line survey (14.4%)

Reproductive health

The use of male condoms reported during end evaluation survey was far greater than during the base-line survey (3.4% to 26.9%; P ≤ 0.05) but the use of daily oral contraceptive pills was not changed. During end-evaluation, the use of injection Depot Provera and IUD were slightly increased than in base line survey (1.4% to 7.2%; P ≤ 0.05 and 1.4% to 5%; P = Not significant).

3. Views of BACHIP Project Staff and Village Health Committee Working Group

Most of the project staff and VHCWG members felt that more easier task was to ask villagers to build sanitary fly proofed latrines when compared to reducing the problem of malnutrition by asking them to feed their children with balanced diet.

Available human resources from other sectors were well utilized for capacity building. An opportunity arose for the active villagers to form a village health committee working group (VHCWG).

Participatory approaches improved in-sights and visions of villagers to solve their own health problems through collaborative efforts of INGO and basic health services.

Community facilitators and VHCWG became competent in reporting and other accounting and management procedures.

Villagers gained opportunity to read current information materials in Chin language at the village library.

Project manager had an opportunity for 'cross-project learning' by studying the activities of livelihood project sponsored by CARE in Maungdaw Township in Rakkhine State.

Challenges in organizing local people to change their traditional practices in food handling, other hygienic practices, excreta disposal etc. were noted.

Ideas collated were mostly linked to their good will, sense of ownership, commitment and positive attitudes towards sustainable preventive actions already developed among the villagers.

Conclusions

- The effect of BACHIP in project villages and selected urban wards was optimal and satisfactory. Knowledge level was increased regarding symptoms, causation, and modes of transmission of selected diseases and those related to nutrition.
- Desirable practices were much improved: hygienic practices, use of sanitary fly proofed latrine, use of oral rehydration solution, checking for suspected malaria, use of bed nets, systematic condom use, and home-based care for ARI except for regular weighing of under five children and contraceptive practices for which perceived barriers related to food scarcity, strained household economy and positive attitudes towards big families were underscored.
- ECHO Project implemented by CARE in selected villages prior to BACHIP had synergistic and complementary effect by sustaining the use of sanitary fly proofed latrines and insecticide treated nets.
- Community facilitators and VHCWG members in study sites became competent in BCI and PLA technologies transferred by BACHIP and their performances were adequate and accepted by inhabitants in project sites.

Recommendations

- Clear specification of key indicators in the corresponding logical framework from the beginning of the project to enhance in drawing inferences on distinctive output, effect and impact of planned interventions.
- Development of monitoring and surveillance system of key health problems and deaths of infants and children in rural households lead by VHCWG members should pay attention to obtain reliable impact indicators linking to corresponding behaviors.
- Priority options for future programs should be directed towards economic and food security of rural households and reproductive health services combined with PLA so as to bring about much improvement than at present for feeding practices and spacing of births.
- Partnership networks and sustainability issues should be taken into account by arrangements of regular multi-sectoral co-ordination meetings at township and village levels concerning with health, livelihood and development projects.

ACKNOWLEDGEMENTS

1. Background

Magnitude of the problem

Community development depends on improved health and living conditions. Alleviation of prevailing health problems is mandatory so as to get better quality of life. Chin State in north-eastern part of Myanmar is one of the States with poor economy and UNICEF classified as 'high risk and most disadvantaged area'. Around 41% of under-five children in Chin State had moderate to severe degree of malnutrition. The State has the highest infant mortality rate of 91 per 1000 and under-five mortality rate of 118 per 1000 as of 2002. Initial needs assessment including 'Livelihood Analysis Framework' in four villages of Tiddim Township reported malaria, diarrhoea, cholera, typhoid, skin diseases, inadequate access to safe drinking water, poor environmental sanitation, malnutrition and goitre as common problems. Moreover, among migrant young people, vulnerable conditions to acquire HIV/AIDS were ascertained. Besides, there was a need to improve treatment seeking practices, bed-net use, hygienic practices, birth-spacing and infant/child feeding practices (CARE, 2003; CARE, 2005).

The role of the organization in dealing with selected priority health problems in the assigned project area

CARE International in Myanmar has implemented 'Border Area Chin Health Improvement Project' (BACHIP) in Tiddim since 2003. The project aims to mobilize the community in Tiddim for preventive activities against ARI, malnutrition, diarrhea, malaria and HIV/AIDS. The principle goal is to increase linkages between communities and the health system. The capacity of communities to undertake their own prevention initiatives will be boosted up thus achieving positive impact without requiring unsustainable inputs. Structure, technology and set of procedures in the respective organization could enable the capacity building process (La fond and Brown, 2003).

Interventions included behavioral change interventions (BCI) and preventive education through participatory learning approaches (PLA) at grass-roots in phase wise manner. There were awareness raising activities in the first phase, followed by increased linkages between existing health activities and systems through opportunities and priorities identified by the community themselves and eventual capacity building to undertake prevention and paying attention to inequities in

accessing health in order to promote sustainability. BACHIP started with BCI and PLA sessions were introduced late in March, 2006.

Township Health Department and personnel from UNDP conducted training of trainers programs on HIV/AIDS, malaria, diarrhea, nutrition and personal hygiene and ARI. Moreover, training on basic book-keeping was conducted by Administration and Financial Officer of the project and personnel from Township Cooperative Department. Materials for information, education and communication (IEC) were developed and distributed in local Chin language. In addition, existing IEC materials were used in support of behavioral change interventions.

Altogether 13 village health committee working groups (VHCWG) have been established, each comprises 7 community elected representatives (3 women and 4 men). They act as community organizers to stimulate participatory village assessments, prioritization and action planning. Governmental and other international nongovernmental organizations (GRET, World Vision Myanmar, MERLIN), United Nations Agencies (UNICEF, CDRT/UNDP) were the partners of BACHIP project staff and trained volunteers in 13 villages of Tiddim. 'ECHO' project from CARE, Myanmar dealing with water and sanitation and distribution of bed-nets for malaria has provided synergistic action for BACHIP. In urban wards, IEC materials were distributed and several health talks were held.

1.3 Rationale to carry out the rapid assessment in end-evaluation

End–evaluation had been carried out to assess any improvement in KAP in project villages after the period of three years. In that case, description of project inputs and its process was necessary to explain KAP as an outcome indicator and to identify and address the successful type of interventions (Bessinger, 2003). Therefore, qualitative research techniques were integrated with quantitative field survey to accomplish the rapid assessment procedure. This end evaluation was aimed to measure the effectiveness of BACHIP, identify problem areas if any, gather lessons learned, and improve overall performance. By doing so, the success of a project can be ascertained for scale-up or replication. Measurements are intended at population level (householders) and program level (project staff and volunteers).

2. Objectives of End Evaluation and Methodology

2.1 Objectives

2.1.1 General objective

To find out the KAP of target beneficiaries (for comparison with base-line, mid term assessment and end evaluation) and perspectives of providers involved in Border Area Chin Hill Health Improvement Project (BACHIP) (2003 - 2006) delivered by CARE, INTERNATIONAL in Myanmar in Tiddim Township through community outreach approaches to men, women and young migrants.

2.1.2 Specific objectives

- To compare the knowledge, attitudes, opinions, perceptions, and practices of target beneficiaries related to diarrhoea, ARI, malaria, malnutrition, TB, HIV/AIDS and birth spacing in selected urban and rural project sites stratified by sex;

- To find out the viewpoints of project staff and village health committee working group (VHCWG) members focusing their knowledge, experiences and perceptions towards different program components;

- To compare the selected KAP indicators between base line, mid-term and end evaluation surveys.

2.2 Methodology

2.2.1 Study design

A pre-test and post–test quasi experimental design was used (Fisher *et al*., 1998; Rossi *et. al.,* 2004). The specific operations research design was chosen to compare the two/three sets of measurements reflecting an estimate of the program effect. However, major limitation is that "the design will be biased if it includes the effects of other influences that occur during the period between the before and after measurements" (Rossi *et al.,* 2004: P 290).

2.2.2 Study area and study population

Tiddim Township in Chin State is in the western part of Myanmar, situated 2,567 feet above sea level. The nearest airport in Kalay Myo is 55 miles away and Hakka, the capital city of Chin State is 80 miles away from Tiddim. As of 2002, around 70,000 people are residing in 55 village tracts and 122 villages. Mountainous and rocky terrain and depleted forest and weather conditions remain as geographical barriers. Communications and transportation are difficult and impassable particularly in the rainy season due to frequent landslides. Economic opportunities are limited. There is a traditional subsistence farming and seasonal out-migration for seeking labor such as road construction in neighboring State in north-East India is common and also to Hpakant and Mogok. In Tiddim Township, there are one 50-bedded hospital, 9 Rural Health Centers and 39 Sub Rural Health Centers. BACHIP targets urban wards and 2500 households in 13 project villages of Tiddim and 2,000 young migrant men and women (13 - 35 years of age) as primary beneficiaries. Profile of study sites is attached (Annex 1).

2.2.3 Methods of data collection

Both qualitative and quantitative indicators are required to measure the effect of the program. Methods include:

- In-depth interviews of village health committee working group (VHCWG) members to find out their enthusiasm, attitudes, opinions towards program impact and sustainability;
- In-depth interviews of project staff to elucidate their performances linked to contextual factors, their opinions and suggestions for future programs like BACHIP;
- Structured interviews of target beneficiaries (married men and women of 15 - 49 years with at least one child under five years old) to determine household composition, patterns of migratory work, their KAP on diarrhoea, ARI, malaria, malnutrition, TB, HIV/AIDS and birth spacing;
- Informal discussions with the project manager and the project staff to determine whether the systems are effectively supporting the project;
- Document review to analyze the logical framework, findings from situation analysis (base line survey) and mid term assessment.

Structured interview questionnaire and FGD guidelines [1] developed during base-line assessment were reused after some modification (Annexes 2 - 3). Interviewers were recruited and trained at the selected venue in Kalay Myo through presentations, discussions, and mock interviews. Pre-testing and field training was carried out at one village in Tiddim supervised by Project Manager. Their education level was at least passing 8th standard with good communication skills. Those who have previous experience in interviews were given priority.

Data collection was done in four urban wards and 10 villages of Tiddim lasting two days in each study site. Project Manager, senior and junior Project Officers contributed their supervisory role in the fields. Form checks and necessary corrections were done immediately after data collection. Moreover, 12 focus group discussions were held (2 groups each of men and women from 4 project villages totaling 8 FGDs and two groups each from two urban wards totaling 4 FGDs). Those FGDs were convened by trained moderators and note-takers. Document reviews and informal discussions with Project Manager were done by the evaluation team in last week of November 2006. Concurrently, in-depth interviews were conducted in the private place by using pre-tested guidelines (Annex 4) lasting from 60 - 90 minutes per interview.

2.2.4 Sample size, sample saturates and sampling procedures

Present sample of 416 respondents for final evaluation met the required assumptions for at least 10% difference and 80% power to detect differences in desired practices between base line data and subsequent mid-term survey. Two stage stratified cluster sampling procedure was used. For the first stage, within two strata, 10 villages out of 13 and 4 out of 6 urban wards were chosen purposively. Two villages with less than 100 households and one village with poor access were excluded. For the second stage, 16 households from each village and 13 households from each ward were chosen randomly from the available list. Then, two eligible respondents (one married man and married woman of 15 - 49 years) from each household were selected randomly. But in two households, due to the absence of men, two eligible women from each household were recruited. In the total sample, the ratio of urban to rural respondents was 1:3 which was in consistency with the national figure of 70% being resided in rural areas of Myanmar (Ministry of Health, 2006).

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[1] Those were developed on the basis of findings from livelihood analysis framework and situation analysis in project villages during 2003.

For qualitative data, focus group discussants were selected purposively from corresponding villages and wards. Residence (urban and rural) and sex (male and female) were used as break characteristics. Village Health Committee Working Group (VHCWG) members were not included in focus groups. For in-depth interviews, four categories of VHCWG were selected: patron, chair-person, general secretary and financial secretary. Of three managerial level project staff, Project Manager and Junior Project Officer joined the key informant interviews.

2.2.5 Data processing and analysis

After household surveys, immediate form checks were done by field supervisors. Data entry and analysis were carried out by using SPSS version 11.5. Range and consistency checks were done. Summary measures and percentages were computed for comparison between urban and rural areas stratified by sex. Frequency distributions and cross tabulations were done for variables of interests. Differences in KAP in two/three rounds of survey were tested by using Chi square or Fisher's Exact Test as appropriate. $P \leq 0.05$ was considered significant. For group of knowledge items in respective health problem, reliability analysis was done to compute 'Cronbach's alpha' (reliability co-efficient) for which the value of 0.7 (standardized item alpha) was considered as high internal consistency and less variability of responses across all respondents (Annex 5). For qualitative data generated from FGDs and IDIs, matrix analysis was done by thorough reading of transcripts and themes and sub-themes were underscored. Further content analysis was carried out. Triangulation was done to explain quantitative data.

2.2.6 Ethical considerations

During household surveys, the assigned interviewers thoroughly explained about the purpose of the study before starting structured interviews. Subsequently, interviewees were informed that he/she could stop the interview if he/she felt inconvenient or question back for something unclear. Likewise, the responsible moderators/interviewers obtained verbal informed consent from FGD discussants/in-depth interviewees following detailed explanation about purpose of evaluation. Their rights to discontinue the group discussion or in-depth interviews without affecting any opportunities were well informed.

3. Findings and Discussion

3.1 Demography

3.1.1 Household composition

In 208 surveyed households, there were 1496 family members. The mean number of family size was 5.27 ± 0.24 in urban wards and 7.82 ± 1.44 in villages. Male to female ratio was 1:1.03 in surveyed households (1:1.02 in urban sites, and 1:1.04 in rural sites). Of 1496 householders, 238 (15.9%) reported migratory works. Among migrant workers, males exceeded females in the total sample (1:0.2). However in urban study sites, 51 migrants reported were males (Table 1).

Table 1. Summary of total population in households and migratory work by site

Site of survey	Summary	Total population	Migratory work*
Urban	n	51	51
	Sum	269	12
	Mean	5.27	0.24
	Std. Deviation	1.93	0.43
	Minimum	3	0
	Maximum	13	1
	Sex ratio	1:1.02	-
Rural	n	157	157
	Sum	1227	226
	Mean	7.82	1.44
	Std. Deviation	2.91	0.98
	Minimum	3	0
	Maximum	20	5
	Sex ratio	1:1.04	1:0.2
Total	n	208	208
	Sum	1496	238
	Mean	7.19	1.14
	Std. Deviation	2.91	1.02
	Minimum	3	0
	Maximum	20	5
	Sex ratio	1:1.03	1:0.2

Note: Reported migratory works included both past and present conditions.

Age

The mean age of householders was 20.7 ± 18.04 years in urban study sites and 19.7 ± 16.95 years in study villages. In urban sites, mean age of males was higher than females (22.9 ± 19.0 years *vs.* 18.5 ± 16.9 years) while in study villages, the reverse was true (19.4 ± 16.3 years for males *vs.* 20.0 ± 17.5 years for females; Tables 2a and b). Population of children under 10 years in both urban and rural study sites were higher than remaining age groups probably due to high levels of fertility in the past.

Table 2 a. Age group of household members by study site

Age group	Urban		Rural		Total	
	No.	%	No.	%	No.	%
< 10 years	103	38.3	455	37.1	558	37.3
10 - 19 years	33	12.3	257	20.9	290	19.4
20 - 29 years	53	19.7	187	15.2	240	16.0
30 - 39 years	45	16.7	163	13.3	208	13.9
40 - 49 years	14	5.2	89	7.3	103	6.9
50 + years	21	7.8	76	6.2	97	6.5
Total	269	100.0	1227	100.0	1496	100.0
Mean ± SD	20.7 ± 18.04		19.7 ± 16.95		19.9 ± 17.15	
Range	< 1 year to 75		< 1 year to 90		< 1 year to 90	

Table 2 b. Age group of household members by study site by sex

Age group		Urban		Rural		Total	
		No.	%	No.	%	No.	%
Male	< 10 years	46	34.6	224	37.2	270	36.7
	10 - 19 years	18	13.5	130	21.6	148	20.1
	20 - 29 years	19	14.3	86	14.3	105	14.3
	30 - 39 years	28	21.1	82	13.6	110	15.0
	40 - 49 years	10	7.5	50	8.3	60	8.2
	50 + years	12	9.0	30	5.0	42	5.7
	Total	133	100.0	602	100.0	735	100.0
	Mean ± SD	22.9 ± 19.0		19.4 ± 16.3		20.0 ± 16.9	
	Range	< 1 year to 74		< 1year to 78		< 1 year to 75	
Female	< 10 years	57	41.9	231	37.0	288	37.8
	10 - 19 years	15	11.0	127	20.3	142	18.7
	20 - 29 years	34	25.0	101	16.2	135	17.7
	30 - 39 years	17	12.5	81	13.0	98	12.9
	40 - 49 years	4	2.9	39	6.2	43	5.7
	50 + years	9	6.6	46	7.4	55	7.2
	Total	136	100.0	625	100.0	761	100.0
	Mean ± SD	18.5 ± 16.9		20.0 ± 17.5		19.7 ± 17.4	
	Range	< 1 year to 74		< 1year to 90		< 1year to 90	

Marital status

The proportion married was higher in urban than in rural sample (88.5% *vs.* 73.5%) but more or less equal between males and females (Tables 3 a and b).

Table 3a. Marital status of household members by study site

Marital status	Urban		Rural		Total	
	No.	%	No.	%	No.	%
Married	123	88.5	407	73.5	530	76.5
Single	15	10.8	123	22.2	138	19.9
Widow	1	0.7	21	3.8	22	3.2
Divorcee/separated	0	0.0	3	0.5	3	0.4
Total	139	100.0	554	100.0	693	100.0

Table 3b. Marital status of household members by study site by sex

Marital status		Urban		Rural		Total	
		No.	%	No.	%	No.	%
Male	Married	63	87.5	202	74.3	265	77.0
	Single	9	12.5	68	25.0	77	22.4
	Widow	0	0.0	2	0.7	2	0.6
	Total	72	100.0	272	100.0	344	100.0
Female	Married	60	89.6	205	72.7	265	75.9
	Single	6	9.0	55	19.5	61	17.5
	Widow	1	1.5	19	6.7	20	5.7
	Divorcee/separated	0	0.0	3	1.1	3	0.9
	Total	67	100.0	282	100.0	349	100.0

Education

As for education level, 42.1 % (98/217) passed middle school and above education in urban study sites but 21.6% (229/1058) of rural householders from study villages had similar education level (Table 4a). In both urban and rural study sites, proportions of males with middle school education level and above were higher than females (52.1% *vs.* 37.2% in urban sites; 25.4% *vs.* 18.1% in rural sites) (Table 4b).

Table 4a. Education status of household members by study site

Education status	Urban		Rural		Total	
	No.	%	No.	%	No.	%
Illiterate	12	5.5	67	6.3	79	6.2
3 R/nursery	27	12.4	114	10.8	141	11.1
Primary	37	17.1	379	35.8	416	32.6
Passed primary	41	18.9	263	24.9	304	23.8
Middle	73	33.6	180	17.0	253	19.8
High school	14	6.5	25	2.4	39	3.1
University	3	1.4	11	1.0	14	1.1
Graduate	8	3.7	12	1.1	20	1.6
Diploma	0	0.0	1	0.1	1	0.1
Pre religious	0	0.0	1	0.1	1	0.1
Religious	2	0.9	5	0.5	7	0.5
Total	217	100.0	1058	100.0	1275	100.0

Table 4b. Education status of household members by study site by sex

Education status		Urban		Rural		Total	
		No.	%	No.	%	No.	%
Male	Illiterate	4	3.6	10	1.9	14	2.2
	3 R/nursery	11	9.8	52	10.0	63	10.0
	Primary	17	15.2	179	34.4	196	31.0
	Passed	19	17.0	145	27.8	164	25.9
	Middle	39	34.8	102	19.6	141	22.3
	High school	14	12.5	16	3.1	30	4.7
	University	1	0.9	5	1.0	6	0.9
	Graduate	5	4.5	9	1.7	14	2.2
	Pre religious	0	0.0	1	0.2	1	0.2
	Religious	2	1.8	2	0.4	4	0.6
Total		112	100.0	521	100.0	633	100.0
Female	Illiterate	8	7.6	57	10.6	65	10.1
	3 R/nursery	16	15.2	62	11.5	78	12.1
	Primary	20	19.0	200	37.2	220	34.3
	Passed Primary	22	21.0	118	22.0	140	21.8
	Middle	34	32.4	78	14.5	112	17.4
	High school	0	0.0	9	1.7	9	1.4
	University	2	1.9	6	1.1	8	1.2
	Graduate	3	2.9	3	0.6	6	0.9
	Diploma	0	0.0	1	0.2	1	0.2
	Religious	0	0.0	3	0.6	3	0.5
Total		105	100.0	537	100.0	642	100.0

Occupation

According to Table 5 (a), currently reported migratory work was only by 1.3% of total sample (19/1496). Most of the householders from villages were engaged in farming (37.7%; 462/1227). Dependents were more in urban than in rural study sites.

Table 5a. Occupation of household members by study site

Occupation	Urban No.	Urban %	Rural No.	Rural %	Total No.	Total %
Migrant	0	0.0	19	1.5	19	1.3
Farm	49	18.2	462	37.7	511	34.2
Student	68	25.3	434	35.4	502	33.6
Dependent	110	40.9	259	21.1	369	24.7
Others*	42	15.6	53	4.3	95	6.4
Total	269	100.0	1227	100.0	1496	100.0

* Others included: brokers, vendors, school teacher, government staff, manual laborers, church staff

Table 5b. Occupation of household members by study site by sex

Occupation		Urban No.	Urban %	Rural No.	Rural %	Total No.	Total %
Male	Migrant	0	0.0	16	2.7	16	2.2
	Farm	27	20.3	206	34.2	233	31.7
	Student	40	30.1	230	38.2	270	36.7
	Dependent	36	27.1	110	18.3	146	19.9
	Others*	30	22.6	40	6.6	70	9.5
	Total	133	100.0	602	100.0	735	100.0
Female	Migrant	0	0.0	3	0.5	3	0.4
	Farm	22	16.2	256	41.0	278	36.5
	Student	28	20.6	204	32.6	232	30.5
	Dependent	74	54.4	149	23.8	223	29.3
	Others*	12	8.8	13	2.1	25	3.3
	Total	136	100.0	625	100.0	761	100.0

* Others included: brokers, vendors, school teacher, government staff, manual laborers, church staff

3.1.2 Selected characteristics of migrants in the household

From rural study sites, more migrant workers were reported compared to urban study sites (94.9% *vs.* 5.1%). Their mean ages were 31.9±9.2 years for males and 26.9±8.9 years for females. Some 73% (172/236) in the total sample were married, of whom males comprised 75.5% (154/204). Approximately 38% of males (77/204) and 25% of (8/32) females were educated above middle school level. Over half of females worked in another town while 64.2% of males worked in other country. Seasonal migration was common in the total sample (128/236; 54.2%).

Table 6. Selected characteristics of migrants in end-evaluation survey

Characteristic	Male (n = 204)		Female (n = 32)		Total (n = 236)*	
	No.	%	No.	%	No.	%
Site						
Urban	12	5.9	0	.0	12	5.1
Rural	192	94.1	32	100.0	224	94.9
Total	204	100.0	32	100.0	236	100.0
Mean age ± SD	31.9 ± 9.2		26.9 ± 8.9		31.2 ± 9.3	
Range	14 - 57		14 - 55		14 - 57	
Marital status						
Married	154	75.5	18	56.3	172	72.9
Single	49	24.0	13	40.6	62	26.3
Widow	1	0.5	1	3.1	2	0.8
Education						
Illiterate	3	1.5	1	3.1	4	1.7
3 R	2	1.0	1	3.1	3	1.3
Primary	43	21.1	12	37.5	55	23.3
Passed primary	77	37.7	10	31.3	87	36.9
Middle	64	31.4	6	18.8	70	29.7
High school	9	4.4	1	3.1	10	4.2
Graduate	4	2.0	0	0.0	4	1.7
Diploma	0	0.0	1	3.1	1	0.4
Pre religious	1	0.5	0	0.0	1	0.4
Religious	1	0.5	0	0.0	1	0.4
Place of migration						
Other village	9	4.4	1	3.1	10	4.2
Other town	64	31.4	17	53.1	81	34.3
Other country	131	64.2	14	43.8	145	61.4
Type of migration						
Seasonal	118	57.8	10	31.3	128	54.2
Long term	43	21.1	8	25.0	51	21.6
Short term	37	18.1	10	31.3	47	19.9
Daily commuters	6	2.9	4	12.5	10	4.2

Note: Reported migratory works included both past and present conditions;
* Total does not add up to 238 due to missing values.

3.2 Knowledge, attitudes and practices related to selected health problems

Altogether 206 males and 210 females from 208 households responded to structured interviews. Their mean ages were 35.2 ± 7.0 years for males (range of 20 to 49) and 31.0 ± 6.5 years for females (range of 18 - 49).

3.2.1 Diarrhoea

Causation

Very high level of knowledge was reported for eight causes of diarrhoea. Proportions were more or less equal between men and women from both urban and rural study sites. But, men from urban study sites were less likely than women to state: "unclean utensils can cause loose motion" (78.4% *vs.* 88.2%) and "eating fruits and vegetables not thoroughly washed can cause loose motion" (72.5% *vs.* 92.2%). Women usually prepared food at home and their high knowledge of unclean utensils and not properly washed fruits and vegetables as causes of diarrhoea could prevent the undesirable episodes of loose motion in their households.

During FGDs, apart from causes stated during structured interviews, loose motion due to ingestion of over ripe fruits and left-over food were frequently mentioned from both urban and rural study sites. Mostly discussants were convinced that poor environmental sanitation can cause diarrhoea. One 36 year old village woman revealed her understanding: 'Previously, I thought loose motion was seasonal. In fact, it was not true. It was mainly due to lack of cleanliness in the surroundings'.

Table 7. Percentage distribution of knowledge of causation of diarrhoea by study site by sex

Causation	Urban		Rural		Total	
	Male (n= 51)	**Female (n = 51)**	**Male (n = 155)**	**Female (n = 159)**	**Male (n = 206)**	**Female (n = 210)**
	%	**%**	**%**	**%**	**%**	**%**
• Eating fly contaminated food	100.0	100.0	100.0	100.0	100.0	100.0
• No hand washing before meals	94.1	100.0	100.0	100.0	98.5	100.0
• No hand washing after toilet	86.3	100.0	99.4	100.0	96.1	100.0
• Drinking un - boiled water	100.0	100.0	99.4	98.7	99.5	99.0

Table 7 continued:

Causation	Urban		Rural		Total	
	Male (n = 51)	**Female (n = 51)**	**Male (n = 155)**	**Female (n = 159)**	**Male (n = 206)**	**Female (n = 210)**
	%	**%**	**%**	**%**	**%**	**%**
• Not using fly proofed latrine	94.1	96.1	100.0	99.4	98.5	98.6
• No hand washing before handling food	98.0	98.0	98.7	97.5	98.5	97.6
• Unclean utensils	78.4	88.2	99.4	100.0	94.2	97.1
• Eating fruits and vegetables not thoroughly washed	72.5	92.2	94.2	95.0	88.8	94.3

Treatment practices

In both urban and rural sites, practice of giving ORS for loose motion was almost universal. Men and women responded alike. One urban male discussant put value on ORS: "By using ORS, we can save life of those with loose motion even there is a delay in arrival to health facilities". One urban woman also expressed her view: "If only one can try ORS, loose motion is relieved without any medicine". One rural man stated: "CARE people told us that ORS was important. I agreed to it and always keep one ready at home".

Changes in treatment practice for loose motion after intervention were distinguished: "Previously I gave saffron powder and cool boiled water to my children for loose motion. Now, I know that ORS is magic and I tend to give immediately to them" *(36 years old woman, Lamzang village, Tiddim).* Knowledge of correct technology can prevent severity as noted by one woman: "Before, I did not know how to prepare ORS. That's why my young daughter had loose motion but not relieved by ORS prepared in a wrong way. VHCWG showed us the method" *(33 year old woman, Teeklui village, Tiddim).*

Over 70% of both males and females in the total sample sought help from public health facilities for loose motion. Rural respondents were more likely than those from urban study sites to visit public health facilities (82.6% of males *vs.* 82.4% of females in rural study sites; 56.9% of males *vs.* 51.0% of females in urban study sites). However, urban respondents were more likely than their rural counterparts to report purchase of western medicine for loose motion (33.3% of both males and females in

urban study sites; 14.8% of males *vs.* 18.9% of females in rural study sites; Table 8). It was apparent that rural respondents relied more on public health facilities rather than self-purchase of western medicine at home for loose motion compared to urban respondents. Results indicated the necessity to maintain positive attitudes of staff from public health facilities in managing cases with loose motion and timely referral if severe.

Table 8. Percentage distribution of treatment practices related to diarrhoea by study site by sex

Treatment practices	Urban		Rural		Total	
	Male (n = 51)	**Female (n = 51)**	**Male (n = 155)**	**Female (n = 159)**	**Male (n = 206)**	**Female (n = 210)**
	%	**%**	**%**	**%**	**%**	**%**
• Give ORS	100.0	100.0	100.0	99.4	100.0	99.4
• Public health institutions	56.9	51.0	82.6	82.4	76.2	74.8
• Private clinics	51.0	64.7	32.5	36.5	37.1	43.3
• Western medicine	33.3	33.3	14.8	18.9	19.4	22.4
• Indigenous medicine	0.0	0.0	1.9	5.0	2.8	7.0
• Stop feeding	5.9	2.0	7.1	5.1	6.8	4.3

During FGDs, details were mentioned in relation to preparation and use of ORS:

> *6,1,7,2:* There are instructions written on ORS packets. One packet should mix with 1000 cc of cool boiled water. One should not keep prepared solution over 24 hours or if there are changes in color within 24 hours, one should discard immediately.

> *5:* Prior to opening of ORS packet, one should check the expiry date and need also to shake. If ORS is not in powder form one should not use the packet.
> *(Male FGD, urban ward, Tiddim)*

Following behavioral change interventions by BACHIP, village women revealed their concerns on proper technology of preparing ORS.

> *Moderator*: Do you think everyone should know how to prepare ORS?

> *5:* If the method of preparing ORS is incorrect, there will be no relief. Everyone should know the correct technique.

3: In the absence of housewives, if someone has loose motion, who will prepare for him/her? That's why, every one should know how to make it.
(Female FGD, Lamzang village, Tiddim)

Majority of both male and female rural respondents were more likely than their urban counterparts to mention that ORS packets were available at home (91% of males *vs.* 92.5% of females in rural study sites and 59% for both males and females in urban study sites; Table 9). Frequently stated source of ORS was 'shops' by urban respondents (90.2% of males *vs.* 84.3% of females) and from 'VHCWG's place' by rural respondents (86.5% of males *vs.* 90.6% of females). During base-line assessment, only 19.2% (14/73) of urban households and 5.2% (4/73) of rural households kept ORS. In line with material and technology support (ORS packets and how to prepare ORS) from BACHIP, active VHCWG members in project villages kept ORS packets in their place and made available to villagers any time at reasonable price.

Table 9. Percentage distribution of ORS availability and source by study site by sex

ORS at home	Urban		Rural		Total	
	Male (n = 51)	**Female (n = 51)**	**Male (n = 155)**	**Female (n = 159)**	**Male (n = 206)**	**Female (n = 210)**
	%	**%**	**%**	**%**	**%**	**%**
Availability						
Yes	58.8	58.8	91.0	92.5	83.0	84.3
Source						
Shops	90.2	84.3	41.3	18.4	53.4	34.4
Health facilities	47.1	49.0	22.6	30.4	28.6	34.9
Private clinics	62.7	56.9	17.4	19.1	28.6	28.4
VHCWG* place	0.0	0.0	86.5	90.6	65.0	68.6

*VHCWG = Village Health Committee Working Group

Preventive measures practiced

BACHIP had promoted behavioral change interventions, participatory discussions and provided material supplies (water containers with taps to keep cool boiled water-*'ye kyet aye'*). As a result, every respondent mentioned that they drank boiled water to prevent diarrhoea. During FGDs, both male and female discussants from villages acknowledged the receipt of household drinking water containers distributed by CARE. Moreover, they commented upon unclean drinking water in villages and showed concern to boil drinking

water to prevent diarrhoea. Comparison of past and present habits of drinking boiled water was also underscored:

> *Moderator:* Do you think drinking water should be boiled?
>
> *1:*   Of course. In our village, there are many resources for water but not clean.
> *6:*   We keep animals and because of them there is no clean water.
> *2:*   Because of unclean water, we need to boil before drinking.
> *7:*   Drinking un-boiled water *(yay sein)* can cause diarrhoea. Previously, we do not carry boiled water to farms. We drank un-boiled water and there were many cases of loose motion in the farms and carried to health facilities for treatment by then.
> **(Female FGD, Suangzang village, Tiddim)**

Urban discussants also showed their concern over drinking boiled water:

> *Moderator:* Do you think drinking water should be boiled?
>
> 5:   There are no germs after boiling.
> 3:   Cool boiled drinking water is free of germs. Thus, one can prevent loose motion by drinking cool boiled water.
> *(Male FGD, urban ward, Tiddim)*

During in-depth interviews, one female VHCWG from Lailo village shared her experience about some constraints in behavioral change:

> "We have invited villagers to join BCI. Moreover, we went to every household and told them about benefits of cool boiled drinking water. At first, some would not like to do so. They thought that it caused them an extra burden. Their life style was difficult. They were poor and went to farms on the mountainside for the whole day. They could not look after their young children who stayed home to drink cool boiled water".
> *(Female key informant, 45 years old, passed 8th standard)*

In addition to drinking boiled water, six preventive measures practiced were widely reported from urban and rural respondents of both sexes (Table 10). However, urban respondents were less likely than their rural counterparts to report washing raw fruits and vegetables to prevent diarrhoea (70.6% of males *vs.* 78.4% of females in urban study sites and all males *vs.* 99.4% of females in rural study sites). This was probably

linked to low knowledge of that specific preventive measure particularly among urban males (72.5%) (already shown in Table 7).

Table 10. Percentage distribution of preventive measures practiced by study site

Preventive measures practiced	Urban		Rural		Total	
	Male (n = 51)	Female (n = 51)	Male (n = 155)	Female (n = 159)	Male (n = 206)	Female (n = 210)
	%	%	%	%	%	%
• Drinking boiled water	100.0	100.0	100.0	100.0	100.0	100.0
• Wash hands before handling food	88.2	98.0	99.4	100.0	96.6	99.5
• Wash hands before meals	88.2	98.0	99.4	100.0	96.6	99.5
• Covering food	92.2	94.1	98.7	98.7	97.1	97.6
• Washing raw fruits and vegetables	70.6	78.4	100.0	99.4	95.1	95.7
• Cleaning utensils	88.2	90.2	98.1	96.9	95.6	95.2
• Proper disposal of rubbish	90.2	90.2	93.5	92.5	92.7	91.9

Use of sanitary fly proofed latrines

According to Table 11, use of sanitary fly proofed latrines (SFPL) was reported as almost universal among urban and rural respondents. The construction of sanitary fly proof latrines was boosted up during the intervention period especially in project villages through provision of pipes, PVC pans, and slabs etc by BACHIP. Prior to the intervention in 2003, the use of sanitary fly proofed latrines was only 46.6% (34/73) in urban study sites and 19.2% (14/73) in rural study sites.

Table 11. Percentage distribution of use of sanitary fly proofed latrine by study site

Use of fly proofed latrine	Urban		Rural		Total	
	Male (n = 51)	Female (n = 51)	Male (n = 155)	Female (n = 159)	Male (n = 206)	Female (n = 210)
	%	%	%	%	%	%
Yes	100.0	98.0	99.4	100.0	99.5	99.5
No	0.0	2.0	0.6	0.0	0.5	0.5

FGD discussants reported their personal experiences, observations and opinions related to sanitary fly proofed latrines:

> *1:* More people use SFPL than before but still there are some who do not use as they can not afford to construct one.
>
> *7:* Our family initiated the use of SFPL. If one household uses SFPL but others do not, it's meaningless. Flies can still breed. Therefore we need to spread the news of benefits of using SFPL to others. *(Female FGD, Myoma, Tiddim)*
>
> *Moderator:* If the use of SFPL is important, does every one use?
>
> *3:* I think everyone in this village use SFPL unlike 3-4 years back.
> *6, 2:* Flies come from latrines. If you eat fly contaminated food, you can get loose motion. If the latrine is fly proofed, there will be no flies breeding inside. *(Male FGD, Lamzang village, Tiddim)*

One key informant relayed his hearings at church:

> "Some village women said that they had not seen big flies after constructing SFPL ".

3.2.2 Malaria

Causation and symptoms

For malaria, ever respondent knew that the illness was due to bite of infected mosquitoes. Negligible proportions still reported that malaria was due to drinking spring water and eating banana. FGD discussants reported the same. Misperceptions and common beliefs of causes of malaria were no more mentioned during FGDs unlike base line assessment.

Table 12. Percentage distribution of knowledge of causation of malaria by study site by sex

Causation	Urban		Rural		Total	
	Male (n = 51)	**Female (n = 51)**	**Male (n = 155)**	**Female (n = 159)**	**Male (n = 206)**	**Female (n = 210)**
	%	**%**	**%**	**%**	**%**	**%**
• Bite of infected mosquito	100.0	100.0	100.0	100.0	100.0	100.0
• Drinking spring water	0.0	0.0	9.0	7.5	6.8	5.7
• Eating banana	2.0	0.0	2.6	0.6	2.4	0.5

Almost all respondents knew fever, chills and rigor, headache and fever, sweating followed by reduced temperature were common symptoms of malaria (Table 13). Those responses were much higher than in the base-line survey in both urban and rural study sites.

Table 13. Percentage distribution of symptoms of malaria by study site by sex

Symptoms of malaria	Urban		Rural		Total	
	Male (n = 51)	Female (n = 51)	Male (n = 155)	Female (n = 159)	Male (n = 206)	Female (n = 210)
	%	%	%	%	%	%
• Fever, chills, rigor	98.0	96.1	100.0	100.0	99.5	99.0
• Headache	100.0	98.0	100.0	99.4	100.0	99.0
• Fever, sweating, reduced fever	96.1	84.3	98.1	97.5	97.6	94.3

Concern for malaria

Concern for malaria was measured by three indicators: perceived severity, experience of blood test and perceived days needed for antimalarials during episodes of suspected malaria (Table 14). Everyone thought malaria was worrisome for them and 99% of males and 92.4% of females in the total sample reported experience of blood test for suspected malaria. Approximately five days for antimalarials was reported by both males and females in the total sample (range 2 - 14 days). This finding suggested that even though people paid attention to malaria illness, correct dosage of antimalarials were not widely known.

Table 14. Percentage distribution of concern for malaria by study site by sex

Concern	Urban		Rural		Total	
	Male (n = 51)	Female (n = 51)	Male (n = 155)	Female (n = 159)	Male (n = 206)	Female (n = 210)
	%	%	%	%	%	%
Perception						
• Worrisome	100.0	100.0	99.4	100.0	99.5	100.0
• Not worrisome	0.0	0.0	0.6	0.0	0.5	0.0
Blood test						
• Yes	100.0	82.4	98.7	95.6	99.0	92.4
Days needed for anti-malarials						
• Mean ± SD	6 ± 1.96	6.4 ± 2.2	4.8 ± 1.98	4.7 ± 1.8	5.1 ± 2.03	5.04 ± 2.02
• n*	43	36	126	128	169	164
• Range	3 - 12	3 - 12	2 - 14	2 - 12	2 - 14	2 - 14

Total does not add up to 416 due to missing values.

During FGDs, some mentioned about the necessity for checking blood for suspected malaria which was the desirable action by National Malaria Control Programme (NMCP) for early diagnosis and prompt treatment.

> *Moderator:* Once you have suspected malaria, what is
> your usual action?
>
> *7:* If we suffer from fever off and on with chills, we
> usually go to doctors to check blood.
>
> *4,1* It's true. We check blood first and take medicine
> according to doctor's instructions.
>
> *5:* If only you take medicine without confirming
> malaria, the illness won't go away. It will take a
> longer time to cure.
> *(Male FGD, Lamzang village, Tiddim)*

> *Moderator:* Would you like to check blood before taking
> medicine to cure malaria?
>
> *2:* Previously, we have bought medicine from the shop
> and treated ourselves for suspected malaria. This
> was not the correct action. Later, we felt weak and
> unable to work for a long time. At present, we know
> more. Once we have fever with chills, we check
> blood first and then treat accordingly.
>
> *5:* Some villagers were brought to the hospital by
> VHCWG member to check blood for malaria.
> *(Female FGD, Lamzang village, Tiddim)*

Treatment seeking practice

Self-treatment with western medicine was very much reduced among urban and rural respondents when compared to base-line survey. Although over half of urban respondents sought help from private clinics for suspected malaria, over 90% of their rural counterparts reported going to public health facilities for the same condition (Table 15). As public health facilities were equipped with microscopes and rapid diagnostic tests (RDT) made available by NMCP, villagers' choice was to go there for confirmation of malaria. Treatment seeking practices for malaria were changed obviously in study villages probably linked to BCI and PLA sessions carried out by BACHIP.

Table 15. Percentage distribution of treatment seeking behavior related to malaria

Treatment seeking	Urban		Rural		Total	
	Male (n = 51)	Female (n = 51)	Male (n = 155)	Female (n = 159)	Male (n = 206)	Female (n = 210)
	%	%	%	%	%	%
• Western medicine	31.4	19.6	12.3	13.8	17.0	15.2
• Private clinics	52.9	51.0	30.3	39.0	35.9	41.9
• Public health institutions	76.5	74.5	91.0	90.6	87.4	86.7
• Indigenous medicine	0.0	0.0	0.0	0.6	0.0	0.5

Preventive measures practiced

Every respondent slept under bed-nets to prevent malaria. Environmental measures were practiced widely as reported by both males and females in the total sample. Very few still used smokes to drive away mosquitoes. However, urban respondents were more likely than their rural counterparts to report the use of mosquito coils (45.1% of males *vs.* 39.2% of females in urban study sites; 9% of males *vs.* 10.1% of females in rural study sites; Table 16). Bed net use was increased when compared to base-line survey during which 46% of urban households and only 26% of rural households reported to sleep under bed-nets.

Table 16. Percentage distribution of preventive measures practiced by study site

Preventive measures practiced	Urban		Rural		Total	
	Male (n = 51)	Female (n = 51)	Male (n = 155)	Female (n = 159)	Male (n = 206)	Female (n = 210)
	%	%	%	%	%	%
• Sleep under mosquito net	100.0	100.0	100.0	100.0	100.0	100.0
• Cleaning the surroundings of houses	96.1	98.0	100.0	100.0	99.0	99.5
• Clear water drains	90.2	92.2	100.0	99.4	97.6	97.6
• Draining/filling water loggings	90.2	90.2	96.8	93.6	95.1	94.3
• Repellant	52.9	35.3	98.7	98.7	87.4	83.3
• Wear thick, long dresses	66.7	51.0	91.0	90.6	85.0	81.0
• Smokes	15.7	23.5	16.1	22.6	16.0	22.9
• Mosquito coils	45.1	39.2	9.0	10.1	18.0	17.1

Perceived benefits of sleeping under bed-nets as revealed during FGDs included: protection from disease, specifically malaria, protect from insects, rats, mosquito bite, to have a sound sleep etc. Promotion of use of insecticide treated bed nets in endemic areas is one of the activities of NMCP. As local people in Tiddim appreciated bed-nets, there may be less difficulty in introducing treated nets to reduce man-vector contact. Material support from CARE to prevent malaria as reported by FGD discussants included: treated bed-nets *('say sein chin htaung'),* super tab tablet, repellant, posters, and pamphlets. Those supplies were also mentioned by key informants during in-depth interviews explaining the high use of treated nets.

3.2.3 HIV/AIDS

Transmission

Of 416 respondents, only 2 had not heard of HIV/AIDS. During FGDs, some groups mentioned symptoms indicating HIV/AIDS: loose motion over one month, fever more than one month, herpes, weight loss etc. Knowledge of HIV transmission by sharing needles and syringes, sexual relations, spread from pregnant mother to fetus and by blood transfusion were almost universal. FGD discussants reported the same. However, HIV transmission through men sex with men (MSM) was not specifically reported. Over 95% of males and females from both urban and rural study sites knew that HIV transmission could occur through sex with CSW or those with multiple partners and narcotic injection. But transmission through breast milk and sharing blades with an infected person were known by 85.9% of males *vs.* 88.5% of females and 82.4% of males *vs.* 80.9% of females in the total sample respectively. Negligible proportions stated three incorrect modes (Table 17).

Table 17. Percentage distribution of knowledge of modes of transmission by study site by sex

Modes of transmission	Urban		Rural		Total	
	Male (n = 51)	Female (n = 51)	Male (n = 154)	Female (n = 158)	Male (n = 205)	Female (n = 209)
	%	%	%	%	%	%
• Sharing needles and syringes	100.0	100.0	100.0	100.0	100.0	100.0
• Sexual relations	100.0	100.0	98.7	100.0	99.0	100.0
• From pregnant mother to fetus	100.0	100.0	100.0	99.4	100.0	99.5
• Blood transfusion	98.0	98.0	99.4	99.4	99.0	99.0
• Sex with CSWs or those with multiple partners	94.1	96.1	98.7	95.6	97.6	95.7
• Narcotics injection	90.2	94.1	98.7	95.6	96.6	95.2
• Through breast milk	94.1	86.3	83.1	89.2	85.9	88.5
• Sharing blades with an infected person	84.3	88.2	81.8	78.5	82.4	80.9
• Bitten by mosquitoes / bed-bugs	2.0	0.0	4.5	5.1	3.9	3.8
• Hugging & kissing with an infected person	0.0	2.0	0.0	1.3	0.0	1.4
• By shaking hands with infected persons	0.0	0.0	0.0	0.6	0.0	0.5

Knowledge of prevention

Knowledge of practicing single marital partner system, systematic use of condoms to prevent HIV transmission and avoiding unnecessary injections were almost universal. Around 80% knew that HIV transmission can be prevented by avoiding sexual relations (Table 18). Respondents from rural study sites had known less than their urban counterparts that HIV transmission can be prevented by avoiding unnecessary blood transfusions (78.6% of males *vs*. 72.8% of females and 100% of males *vs*. 98% of females). FGD discussants highlighted the importance of sexual relations as the major mode to prevent HIV transmission:

> Moderator: How can you prevent transmission of HIV?
>
> *1:* If one can get HIV through sexual relations, we better avoid sex.
> *6:* Is it practical for you and your husband?
> *1:* I 'm saying that one should avoid sex with partners other than one's husband.

2:   Yes, I agree. We should practice single marital partner system.

3:   Previously, I was worried every time my husband was away from home. I was helpless. Now I know that condoms can prevent HIV. CARE distributes condoms and my husband bring along with him while traveling away.

7:   It's good to be loyal. If one can't control, better use a condom for sex with partners outside marriage.

(Female FGD, Suangzang village, Tiddim)

Table 18. Percentage distribution of knowledge of preventive measures by study site

Known preventive measures	Urban		Rural		Total	
	Male (n= 51)	Female (n = 51)	Male (n = 154)	Female (n = 158)	Male (n = 205)	Female (n = 209)
	%	%	%	%	%	%
• Single marital partner system	100.0	100.0	99.4	100.0	99.5	100.0
• By using condoms systematically	100.0	98.0	98.7	98.7	99.0	98.6
• Avoiding unnecessary injections	100.0	100.0	98.1	96.8	98.5	97.6
• Avoiding sex	76.5	74.5	79.9	84.8	79.0	82.3
• Avoiding unnecessary blood transfusion	100.0	98.0	78.6	72.8	83.9	78.9
• Double layer of condom during sex	3.9	5.9	7.1	9.5	6.3	8.6
• Cleaning the private parts after sex	0.0	0.0	2.6	4.4	2.0	3.3
• Western/indigenous medicine either by local application or by mouth or injection before/after sex	2.0	0.0	3.2	1.9	2.9	1.4

Preventive measures ever practiced

According to Table 19, 99.5 % of males and all females stated that they had practiced single marital partner system to prevent HIV transmission. Only 69.4% of female respondents from rural study sites admitted that they avoided unnecessary injections to protect themselves from acquiring HIV. Being a male dependent method, male respondents from both urban and rural study sites were more likely to report condom use than their female counterparts to prevent HIV transmission (70.6% of males *vs.* 52.9% of females in urban study sites and 54.5% of males *vs.* 42.4% of females in rural study sites). During FGDs, male discussants mentioned that they have received condoms from CARE. They usually brought condoms along with them when traveling away from home. Findings suggested that although condoms were popular and fully aware as effective method of prevention of HIV transmission in the study population,

percentage of condom use still needed to be boosted up in line with guidelines from National AIDS Control Programme.

Table 19. Percentage distribution of preventive measures ever practiced by study site by sex

Preventive measures ever practiced	Urban		Rural		Total	
	Male (n = 51)	Female (n=51)	Male (n=154)	Female (n = 158)	Male (n = 205)	Female (n = 209)
	%	%	%	%	%	%
• By practicing single marital partner system	98.0	100.0	100.0	100.0	99.5	100.0
• By avoiding unnecessary injections	98.0	94.1	90.9	69.4	92.7	75.5
• By using condoms systematically	70.6	52.9	54.5	42.4	58.5	45.0
• By avoiding sexual relations	5.9	3.9	37.0	20.3	29.3	16.3

Safer sex practices as defined during FGDs included:

> *M:* What do you understand by safer sex?
> *4:* Protective sex to prevent transmission of germs.
> *5:* If both partners are loyal to each other.
>   *(Male FGD, Myo ma ward, Tiddim)*

> "If you have unsafe sex, you can have unwanted pregnancy"
> *(36 years old rural woman, Lamzang village).*

According to Figures 1 - 4, there were gaps between knowledge and practice of four preventive actions. Gaps were narrow or none in stating 'single marital partner system' (Figure 1). For avoiding unnecessary injections, wide gaps were found among female rural respondents (known by 96.8% and practiced by 69.4%; Figure 2). Wide gaps were also found for systematic condom use particularly among rural males (known by 98.7% and practiced by 54.5%; Figure 3). Avoiding sexual relations was not possible for most of the participants reflected by considerable large gaps between their knowledge and practice (Figure 4). The result indicated the necessity to strengthen safer sex measures especially condom use.
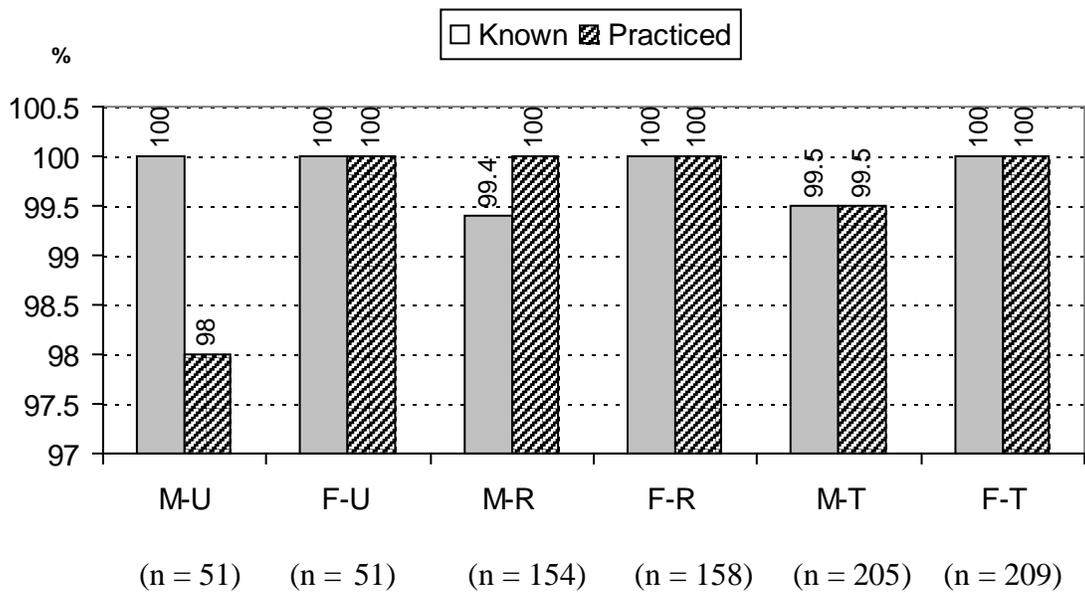
Figure (1): **Percentage distribution of practicing single marital partner system to prevent HIV transmission (Known and practiced)**
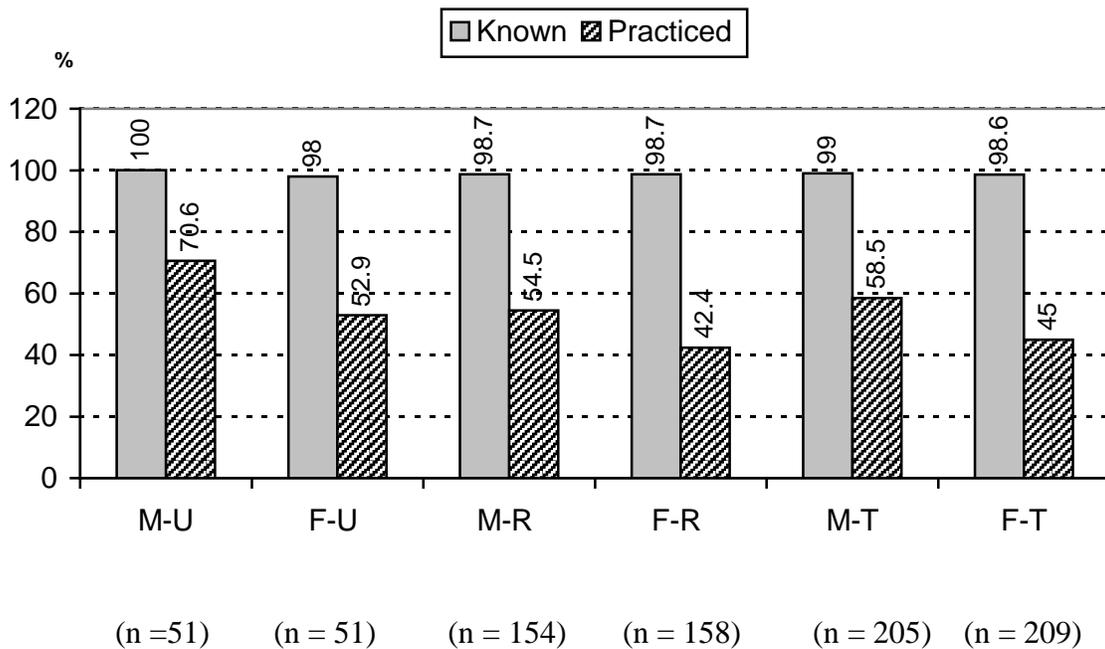
Figure (2): **Percentage distribution of avoiding unnecessary injections to prevent HIV transmission (Known and practiced)**
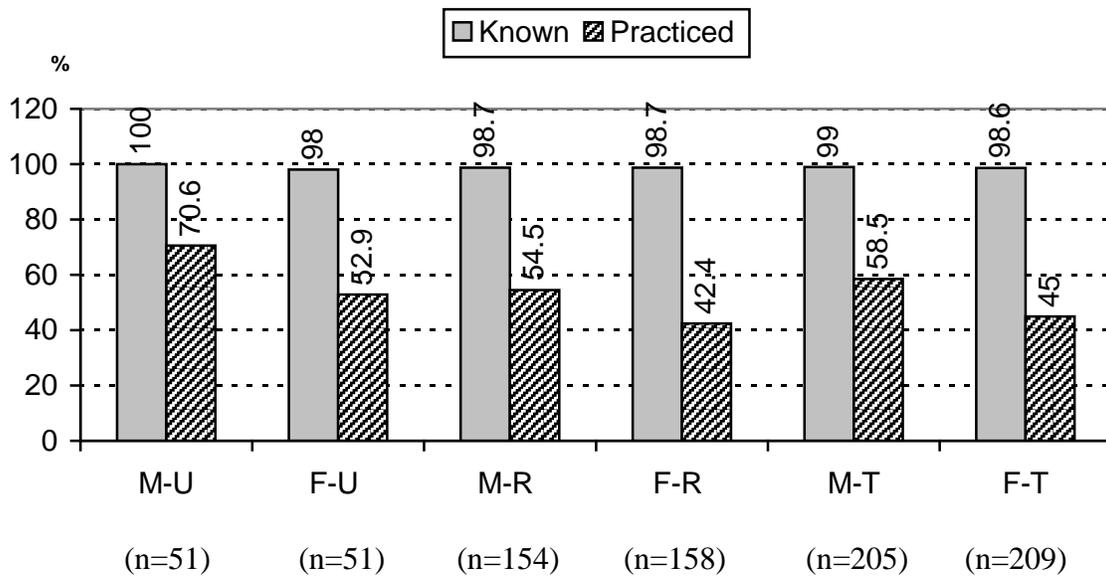
Figure (3): **Percentage distribution of systematic condom use to prevent HIV transmission (Known and practiced)**
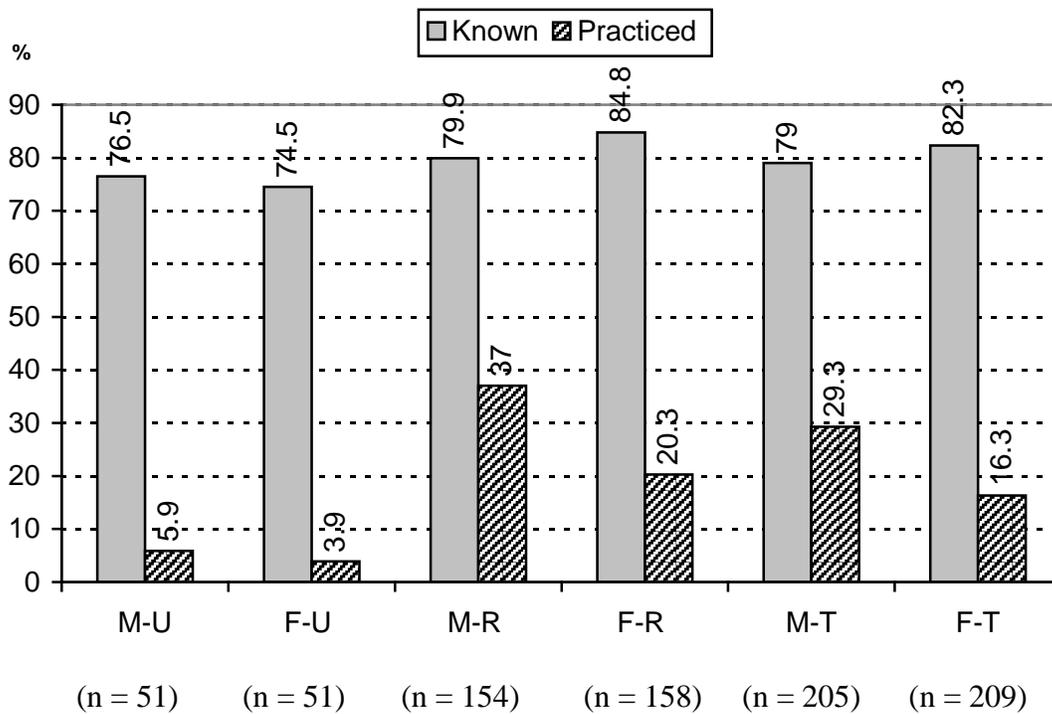
Figure (4): **Percentage distribution of avoiding sexual relations to prevent HIV transmission (Known and practiced)**

Perceptions and awareness

As shown in Table 20, very high proportion of rural respondents (over 90%) perceived that 'Nowadays, young people start sex early'. Urban respondents were less likely than rural respondents to support the same statement (76.5% of males and 82.4% of females). Negligible proportions thought that they can not say someone has HIV by looking at external appearance and through someone's job. Over 90% of total sample perceived that there was no medicine to cure AIDS. Almost 100% of urban respondents and around 90% of rural respondents mentioned that they had heard of someone suffering from AIDS in their surroundings. But over 30% of urban respondents and 40% of rural respondents admitted that they had noticed someone suffering from that illness. Their main source of information was from religious networks (41.7%) or from their friends (40.5%). Home-based care and counseling can be arranged through such available net-works to reduce stigma of HIV infected person.

Table 20. Percentage distribution of perceptions towards HIV/AIDS & awareness

Characteristic	Urban		Rural		Total	
	Male (n=51)	**Female (n=51)**	**Male (n=154)**	**Female (n=158)**	**Male (n=205)**	**Female (n=209)**
	%	**%**	**%**	**%**	**%**	**%**
Nowadays, young people start sex early.						
Yes	76.5	82.4	91.6	91.1	87.8	89.0
Can you say someone has HIV by looking at external appearance?						
Yes	2.0	0.0	4.5	1.9	3.9	1.4
Can you say someone has HIV through his/her job?						
Yes	2.0	0.0	3.2	0.6	2.9	0.5
There is no medicine to cure AIDS.						
Yes	92.2	96.1	96.8	96.8	95.6	96.7
Have you heard of someone suffering from AIDS in your surroundings?						
Yes	98.0	98.0	89.0	88.0	91.2	90.4
Are you aware of someone suffering from AIDS in your surroundings?						
Yes	33.3	35.3	41.6	41.8	39.5	40.2
If you are aware, can you tell me the source?						
	(n=17)	**(n =18)**	**(n=64)**	**(n = 66)**	**(n = 81)**	**(n = 84)**
Family	5.9	11.1	0.0	1.5	1.2	3.6
Religion	29.4	33.3	17.2	43.9	19.8	41.7
Friends	35.3	16.7	62.5	47.0	56.8	40.5
Others*	29.4	38.9	20.3	7.6	22.2	14.3

* *Neighbors, relatives, VHCWG, school teacher*

Knowledge of symptoms of STIs other than HIV/AIDS

Commonly known symptoms in both urban and rural samples were ulcers in the genitals and burning and painful urine. Over 85% of total sample knew white/yellowish discharge and foul smelling discharge from genitals as STI symptoms. Urban respondents were less likely to cite those two symptoms than their rural counterparts. Genital warts were not widely known particularly among female urban respondents (58.8%). High knowledge of STI symptoms other than AIDS could bring about correct treatment seeking practices.

Table 21.   Percentage distribution of symptoms of STIs other than HIV/AIDS by study site by sex

Symptoms known	Urban		Rural		Total	
	Male (n=51)	Female (n=51)	Male (n=155)	Female (n=159)	Male (n=206)	Female (n=210)
	%	%	%	%	%	%
• Ulcers in the genitals	94.1	80.4	96.1	91.8	95.6	89.0
• Burning and painful urine	86.3	84.3	93.5	88.7	91.7	87.6
• White / yellowish discharge from genitals	76.5	62.7	94.2	93.1	89.8	85.7
• Foul smelling discharge from genitals	64.7	60.8	94.2	93.1	86.9	85.2
• Pain in lower part of tummy	82.4	80.4	79.4	85.5	80.1	84.3
• Swollen around the genitals	90.2	64.7	93.5	87.4	92.7	81.9
• Difficulty to get pregnant and giving birth	64.7	72.5	83.9	84.9	79.1	81.9
• Warts in genitals	68.6	58.8	87.7	80.5	83.0	75.2
• Blood in urine	60.8	56.9	89.7	75.5	82.5	71.0
• Weight loss	60.8	62.7	69.0	62.9	67.0	62.9
• Reduced sexual urge	39.2	47.1	57.4	59.7	52.9	56.7

3.2.4 Tuberculosis

Modes of transmission

Spread by droplets as the major mode of transmission of TB was widely known in the study population. Knowledge of risk of contracting TB from household contacts was also high (Table 22). During the base-line survey, such modes of transmission were mentioned less by both urban and rural respondents. FGD discussants reported more or less the same patterns of transmission. One 30 years old urban man provided his opinion: "TB is contracted from infected persons while coughing. Therefore, family members should check for TB if someone in the household has TB". Improved knowledge in this aspect could enhance household contact examination and appropriate treatment to cut off the chain of infection.

Table 22. Percentage distribution of modes of transmission known by study site

Modes of transmission	Urban		Rural		Total	
	Male (n =51)	**Female (n =51)**	**Male (n =155)**	**Female (n =159)**	**Male (n= 206)**	**Female (n = 210)**
	%	**%**	**%**	**%**	**%**	**%**
• Spread of droplets from coughing	98.0	98.0	98.7	99.4	98.5	99.0
• Staying in same house with infected person	90.2	94.1	94.8	96.2	93.7	95.7
• Drinking together with an infected person	78.4	84.3	80.6	88.1	80.1	87.1
• Eating together with an infected person	76.5	78.4	83.2	84.9	81.6	83.3
• Working together with an infected person	78.4	82.4	80.0	77.4	79.6	78.6
• Contact with an infected person	64.7	70.6	36.8	40.3	43.7	47.6

Symptoms

Five common symptoms of TB were known by the majority except for 'low grade fever' being cited only by 66.7% of urban males and 56.9% of urban females (Table 23). According to the base-line survey report, around 60% of rural respondents and nearly 35% of urban respondents were unable to mention the symptoms of TB. Thus, compared to baseline survey, many improvements were found in knowledge of symptoms by both urban and rural study population. FGD discussants noted enlarged neck glands as one of the symptoms indicating TB in children.

> *Moderator:* Do you think TB is common here?
>
> *1*: There were some cases.
> *3:* We can differentiate between TB in children and adults.
> *2:* In children, there were enlarged neck glands.
> *3:* The sick child eats less.
> *5:* If the adult has TB, he/she might have cough over one week.
> *7:* Some have weight loss.
> **(Female FGD, Teeklui village,Tiddim)**

Table 23. Percentage distribution of symptoms of TB known by study site by sex

Known symptoms	Urban		Rural		Total	
	Male (n = 51)	**Female (n = 51)**	**Male (n = 155)**	**Female (n = 159)**	**Male (n = 206)**	**Female (n = 210)**
	%	**%**	**%**	**%**	**%**	**%**
• Cough > 3 weeks	100.0	100.0	98.7	97.5	99.0	98.1
• Weight loss & getting thin	94.1	90.2	99.4	98.1	98.1	96.2
• Easily tired	78.4	78.4	97.4	99.4	92.7	94.3
• Blood in sputum	80.4	84.3	95.5	95.0	91.7	92.4
• Low grade fever	66.7	56.9	90.3	93.7	84.5	84.8

Perceptions

Almost every respondent perceived that getting TB was worrisome (Table 24). This response was more or less similar to base line survey. As TB was the chronic disease, most of the respondents accepted the fact that they had to face with difficulties if they had the disease. However, almost everyone perceived that TB can be cured unlike during base-line survey, where over 25% of urban and rural respondents did not accept that TB can be cured.

Table 24. Percentage distribution of perceptions towards TB by study site by sex

Perceptions	Urban		Rural		Total	
	Male (n = 51)	**Female (n = 51)**	**Male (n= 155)**	**Female (n = 159)**	**Male (n = 206)**	**Female (n = 210)**
	%	**%**	**%**	**%**	**%**	**%**
• Is getting TB worrisome?	100.0	100.0	98.7	100.0	99.0	100.0
• Can you cure TB?	100.0	100.0	98.7	99.4	99.0	99.5

During FGDs, issues of diagnosis and treatment of TB were ascertained linking to positive image of public hospitals.

Moderator: Do you think TB can be cured completely?

All: Yes, of course.

5: One should go to the clinic/hospital to treat TB. Sputum should be checked. If he or she has TB, full course of treatment is necessary otherwise there will be resistance to drugs (*say yin par*).

8: Treating TB at the hospital takes 8 months. You can get anti TB drugs free from the hospital.

4: While undergoing TB treatment, you should not forget
even for a day. It's important to have a full dose.
(Male FGD, Teeklui village, Tiddim)

One 32 years old urban woman commented: "Some only know that they need to take treatment for 8 months. That's why they do not have a complete cure. If there is no relief, one should better check again".

Treatment seeking practice

Majority relied on western medicine to get cured of TB. Male respondents from urban study sites were more likely than females to seek help from private clinics (45.1% *vs.* 29.4%). Mean duration of DOTS known was higher in urban than in the rural samples (9.1 ± 2.9 months by males *vs.* 8.8 ± 3.0 months by females from urban study sites and 6.8 ± 2.2 months by males *vs.* 7.1 ± 3.9 months by females; Table 25). Improved knowledge of DOTS was essential so as to improve early diagnosis and treatment.

Table 25. Percentage distribution of treatment seeking and duration of treatment

Characteristic	Urban		Rural		Total	
	Male (n=51)	**Female (n=51)**	**Male (n=155)**	**Female (n=159)**	**Male (n=206)**	**Female (n=210)**
	%	**%**	**%**	**%**	**%**	**%**
Treatment seeking						
• Public health institutions	0.0	0.0	9.7	6.9	7.3	5.2
• Western medicine	94.1	96.1	95.5	96.9	95.1	96.7
• Private clinics	45.1	29.4	12.9	30.2	20.9	30.0
• Indigenous medicine	0.0	0.0	1.3	0.0	1.0	0.0
Known duration of treatment of DOTS (months)						
• Mean ± SD	9.1 ± 2.9	8.8 ± 3.0	6.8 ± 2.2	7.1 ± 3.9	7.4 ± 2.6	7.5 ± 3.8
• n*	48	47	133	138	181	185
• Range	6-12	6-12	1-12	1-36	1-12	1-36

* Total does not add up to 416 due to missing values.

3.2.5 Acute respiratory infections

Symptoms and home-based care

Four out of five common symptoms of ARI were well known by both urban and rural respondents. Chest in-drawing while breathing was known only by 56.9% of males and 58.8% of females from urban study sites. But higher proportions were noted in rural study sites (78.1% of males *vs.* 83.6% of females; Table 26). Those percentages were much lower during the base-line survey.

Table 26. Percentage distribution of symptoms of ARI by study site by sex

Symptoms of ARI	Urban		Rural		Total	
	Male (n=51)	**Female (n=51)**	**Male (n=155)**	**Female (n=159)**	**Male (n=206)**	**Female (n=210)**
	%	**%**	**%**	**%**	**%**	**%**
• Difficulty in breathing	90.2	98.0	98.7	98.7	96.6	98.6
• Wheezing sound while breathing	94.1	100.0	94.8	95.6	94.7	96.7
• Fever with cold extremities	82.4	84.3	93.5	98.7	90.8	95.2
• Refusing food	94.1	92.2	91.6	91.2	92.2	91.4
• Chest in-drawing while breathing	56.9	58.8	78.1	83.6	72.8	77.6

The perceived importance of ARI was underscored during FGDs: "Children when suffering from ARI, there may be a progression to severe pneumonia. Here in this cool hilly region, I've heard that many children died due to ARI" *(26 years old urban male, Tiddim).* Female FGDs also revealed their opinions towards severity of ARI. Some discussants noted fits and high fever as important consequences.

Usually home-based care was provided first to children with ARI. Nearly all respondents cited the necessity to keep warm and give less food to the sick child as measures for home-based care. Less than half of both urban and rural respondents during the base-line survey stated that they kept their children warm when suffering from ARI. Traditional application of some form of oil and balms were also underscored during FGDs. Smaller proportions of over 60% and around 50% of urban respondents would like to give more breast milk and more liquid to the child suffering from ARI. Less than 15% of the total sample gave regular feeding (Table 27). There is a necessity to improve feeding practices of children suffering from ARI.

Table 27. Percentage distribution of home-based care of ARI by study site by sex

Home-based care	Urban		Rural		Total	
	Male (n=51)	Female (n=51)	Male (n=155)	Female (n=159)	Male (n=206)	Female (n=210)
	%	%	%	%	%	%
• Keep warm	90.2	96.1	99.4	100.0	97.1	99.0
• Give less food	94.1	86.3	96.8	98.1	96.1	95.2
• More breast milk	62.7	64.7	73.5	91.8	70.9	85.2
• Give more liquid	51.0	52.9	80.6	83.5	73.3	76.1
• Give regular food	17.6	19.6	12.9	11.9	14.1	13.8

Treatment seeking practices

Urban respondents were less likely than their rural counterparts to provide western medicine by themselves to the child sick with ARI (64.75 of males *vs.* 62.7% of females from urban study sites and 81.9% of males *vs.* 86.8% of females from rural study sites; Table 28). Public health facilities were the second most popular choice of both urban and rural respondents (around 60% in urban study sites and around 40% in rural study sites). When progressed to severity, ARI of under-five children can bring about complications with fatal outcome. Self-treatment should be provided with caution especially in rural areas. Thus, early recognition of symptoms indicating severity and immediate contact with health personnel was desirable to reduce deaths.

Table 28. Percentage distribution of treatment seeking for ARI by study site by sex

Treatment seeking	Urban		Rural		Total	
	Male (n=51)	Female (n=51)	Male (n=155)	Female (n=159)	Male (n=206)	Female (n=210)
	%	%	%	%	%	%
• Private clinic	25.5	31.4	16.8	13.8	18.9	18.1
• Western medicine	64.7	62.7	81.9	86.8	77.7	81.0
• Public health facilities	58.8	58.8	38.1	41.5	43.2	45.7
• Indigenous medicine	0.0	0.0	2.6	3.1	1.9	2.4

3.2.6 Malnutrition

Child care

Rural respondents were less likely than their urban counterparts to weigh their under five children (16.1% of males *vs.* 28.9% of females from rural study sites and 58.8% of males *vs.* 60.8% of females from urban study sites; Table 29). FGD discussants also reported the same. One 35 years old rural woman commented: "After giving birth at the hospital, they weigh the baby. Later, we usually do not weigh the child unless health staff visits our village". One 31 years old urban man shared his observation: "Usually children are weighed at the time of immunization. Otherwise, we have no access to weighing them". However, they realized the benefits of regular weighing: to know whether the child grows in a normal rate, for good health, to detect any nutritional requirement etc. Urban FGDs revealed the same information.

Those from urban study sites were more likely than rural respondents to give breast feeding on demand. Early weaning practices before the child reach one year of age were not uncommon especially among those with problem of breast milk flow, those who got next pregnancy quickly or mother's ill health as noted during FGDs. One 28 years old rural woman further commented: "I have weaned my baby early in 4 months of age. We have to go to farms and work hard. There is no choice".

Mean duration of breast feeding was over one and a half year in both urban and rural respondents. But urban respondents were more likely than their rural counterparts to start mixed feeding early around 5 months. During FGDs, pros and cons of prolonged duration of breast feeding was viewed as follows:

> *Moderator:* What will happen if you breast feed your child more than two years of age?
> *6:* I don't think it will affect growth of the child.
> *3:* More endure to catch infections.
> *5:* Mother's milk can enhance child's intelligence.
> *1:* Usually mothers breast-feed until they have another pregnancy.
> *3:* Anyway breast milk alone is not so nutritious over two years of age. You need to give mixed feeding.
> *(Female FGD, Teeklui village, Tiddim)*

Mixed feeding

Different types of food were stated as constituents of mixed feeding in infants (Table 30). Milk (goat's milk, cow's milk) was the most frequent item mentioned by both urban and rural respondents. Males and females responded alike. Egg, meat and fish were not popular choices of mixed feeding in the study population when compared to rice, corn, fruits and vegetables. Rice in different forms was provided (boiled rice, cooked rice, rice water, rice gruel etc.). Provision of boiled rice was more common among rural respondents while rice water was preferred more by urban respondents. Promotion of balanced diet for infants particularly protein component apart from starch is a necessity for regular growth and to prevent protein energy malnutrition.

Table 29. Weighing of under five children and feeding practices by study site

Characteristic	Urban		Rural		Total	
	Male (n=51)	Female (n=51)	Male (n=155)	Female (n=159)	Male (n=206)	Female (n=210)
	%	%	%	%	%	%
Weighing						
• Yes	58.8	60.8	16.1	28.9	26.7	36.7
Feeding						
• Breast-feeding on demand	84.3	88.2	71.6	63.5	74.8	69.5
• Mean duration of breast feeding	19.9 ± 5.3	20.0 ± 5.3	19.9 ± 5.3	20.0 ± 5.3	22.3 ± 6.7	22.9 ± 7.4
• Mean age of start giving mixed feeding	5.0 ± 1.0	5.0 ± 1.0	5.7 ± 2.4	5.7 ± 2.2	5.6 ± 2.2	5.5 ± 2.0

Table 30. Percentage distribution of type of food in mixed feeding by study site

Types of food	Urban		Rural		Total	
	Male (n=51)	Female (n=51)	Male (n=155)	Female (n=159)	Male (n=206)	Female (n=210)
• Milk	92.2	96.1	91.6	88.7	91.7	90.5
• Salt	82.4	86.3	81.9	89.9	82.0	89.0
• Boiled rice	62.7	64.7	85.2	81.1	79.6	77.1
• Cooked rice	66.7	66.7	69.0	74.8	68.4	72.9
• Fruits	51.0	49.0	62.6	76.7	59.7	70.0
• Oil	62.7	64.7	67.7	70.4	66.5	69.0
• Corn	43.1	52.9	58.7	73.6	54.9	68.6
• Vegetables	47.1	49.0	63.2	72.3	59.2	66.7
• Lentils	45.1	49.0	60.0	71.1	56.3	65.7
• Rice water	76.5	78.4	56.1	60.4	61.2	64.8
• Egg	60.8	60.8	64.5	62.9	63.6	62.4
• Soft rice (gruel)	66.7	64.7	56.1	57.9	58.7	59.5
• Meat	9.8	7.8	58.7	56.0	46.6	44.3
• Fish	7.8	2.0	48.4	45.3	38.3	34.8

Symptoms of malnutrition

Around and over 90% of the total sample knew that retarded growth, frequent illness, failure to gain weight and loose motion as symptoms of malnutrition in children. Four symptoms: pot belly and thin, loss of/sparse hair, appearance of ulcers in angles of the mouth and swollen face and feet were less known by urban respondents compared to their rural counterparts (Table 31). FGD discussants reported the same symptoms of malnutrition as in structured interviews. Care of children with malnutrition mostly included: provision of chicken soup, vitamins, eggs, chicken essence etc. Urban and rural FGDs reported alike.

Table 31. Percentage distribution of symptoms of malnutrition by study site by sex

Symptoms	Urban		Rural		Total	
	Male (n=51)	**Female (n=51)**	**Male (n=155)**	**Female (n=159)**	**Male (n=206)**	**Female (n=210)**
	%	**%**	**%**	**%**	**%**	**%**
• Retarded growth	86.3	96.1	100.0	98.1	96.6	97.6
• Frequent illness	96.1	98.0	91.0	94.3	92.2	95.2
• No weight gain	86.3	96.1	92.3	91.8	90.8	92.9
• Loose motion	88.2	94.1	87.7	88.1	87.9	89.5
• Pot belly & thin	47.1	51.0	99.4	98.7	86.4	87.1
• Loss/sparse of hair	58.8	58.8	95.5	93.7	86.4	85.2
• Ulcers in angles of the mouth	66.7	47.1	79.4	84.9	76.2	75.7
• Swollen face & feet	35.3	21.6	79.4	80.5	68.4	66.2

Treatment seeking practice

Seeking help from public health facilities for malnutrition in their children was the first choice of both urban and rural respondents. Their second choice was private clinic. Negligible proportions would like to try indigenous medicine to get rid of malnutrition (Table 32).

Table 32. Percentage distribution of treatment seeking for malnutrition by study site

Treatment seeking	Urban		Rural		Total	
	Male (n=51)	Female (n=51)	Male (n=155)	Female (n=159)	Male (n=206)	Female (n=210)
	%	%	%	%	%	%
• Western medicine	29.4	25.5	13.5	10.1	17.5	13.8
• Private clinic	52.9	35.3	25.2	34.6	32.0	34.8
• Public facilities	60.8	68.6	80.6	84.3	75.7	80.5
• Indigenous medicine	0.0	0.0	16.8	19.5	12.6	14.8

3.2.7 Reproductive health

Profile

Among 1496 householders in 208 households, 238 (15.9%) were married women of reproductive age (15 - 49 years) that is 52 (21.8%) from urban study sites and 186 (78.2%) from rural study sites. They reported their mean age at marriage, number of pregnancies and age at last pregnancy in Table 33. Mean age at marriage (in years) was slightly higher among urban respondents, compared to their rural counterparts (21.8 ± 3.0 *vs.* 20.6 ± 3.6). Mean number of pregnancies were one and a half times higher among rural respondents compared to that of urban women (5.3 ± 3.2 *vs.* 2.9 ± 1.8). Most of the rural respondents had reported their last pregnancy between 30-39 years (47.8%) while urban respondents reported at younger age between 20-29 years (73.1%). Grand multi-parity linked to big families was common in study villages.

Table 33. Reproductive profile by study site

Characteristic	Urban (n = 52)		Rural (n = 186)		Total (n = 238)	
	No.	**%**	**No.**	**%**	**No.**	**%**
Age at first marriage						
< 18 years	3	5.8	30	16.1	33	13.9
19 - 24 years	40	76.9	124	66.7	164	68.9
> 25 years	9	17.3	32	17.2	41	17.2
Mean ± SD	21.8 ± 3.0		20.6 ± 3.6		20.8 ± 3.5	
Range	17 - 32		14 - 33		14 - 33	
Pregnancies						
One	7	13.5	23	12.4	30	12.6
2-3 pregnancies	33	63.5	41	22.0	74	31.1
4 & above	12	23.1	122	65.6	134	56.3
Mean ± SD	2.9 ± 1.8		5.3 ± 3.2		4.8 ± 3.1	
Range	1 - 9		1-15		1 - 15	
Age at last pregnancy						
< 20 years	0	0.0	6	3.2	6	2.5
20 - 29 years	38	73.1	72	38.7	110	46.2
30 - 39 years	13	25.0	89	47.8	102	42.9
40 years & above	1	1.9	19	10.2	20	8.4
Mean ± SD	27.5 ± 4.9		30.9 ± 6.4		30.1 ± 6.3	
Range	20 - 43		17 - 45		17 - 45	

Views on family building

Motivations and attitudes towards family building process are linked to contraceptive practices. During FGDs, views on number of children desired and sex preference were revealed. Reasons for sex preferences were ascertained.

> *Moderator:* How many children do you want? Why?
> *3*: If possible, I want five children. If more than that, we can't give education to them.
> *6:* We want 3 sons and 3 daughters. If more than that, I'm afraid mother's health will be affected.
> *7:* We want 2 sons and 2 daughters. More children can affect mother's health.
> *2:* I want five children according to God's will. No specific choice for sex of the baby.
> *(Female FGD, Urban ward, Tiddim)*

5: If there are few children, we might have no one to look after us in old age.

7: According to our culture, we want sons. People will look down on us if there is no son in the family.
(Female FGD, Lamzang village, Tiddim)

2: I want 2 sons and 2 daughters. Not more than that. It's good for mother's health. Besides, number is enough to name after parents and parents in-laws.

3: It's God's will.

4: Two sons and 2 daughters are good enough. According to our culture only sons are eligible for legacy. If there is two sons, one may remain if something happens.

6: I want a boy. From him, there will be more descendants for our lineage.
(Male FGD, Mualbeem village, Tiddim)

One rural woman provided her opinion for preference of a daughter: "I want girls more than boys. They can look after us when we get sick". Further discussions revealed views on desired birth intervals.

M: What will be the appropriate interval between pregnancies?

2: If only we can space pregnancies two years apart, both mother and child will be healthy. Besides, we need to weigh family income to rear a child.

3: If two years apart, mother can have enough time to work and seek for good income.
(Male FGD, Teeklui village, Tiddim)

M: Can you tell me the appropriate intervals between pregnancies?

7: Probably 2 years apart otherwise the child can't get sufficient breast milk because of next pregnancy early.

2: Only after 2 years, uterus is back to normal.

3: Between each pregnancy, better use any method of contraception for improvement of both mother and child's health.
(Female FGD, urban ward, Tiddim)

Contraceptive practice

The use of six methods of temporary contraception was assessed (Table 34). In the total sample, 25% of men and 28.6% of women reported condom use to space births. Rural respondents were more likely than urban respondents to report condom use (27.7% of males *vs.* 32.1% of females in rural study sites and 17.6% each of urban males and females). The use of oral contraceptive pills was not high that is around

10% in the total sample. Users of female sterilization as permanent method in the study population were very few. Contraceptive practices were not high as most of the respondents during FGDs had positive attitudes towards big families. Besides, some were religious and they relied on God's will or some preferred big families because they had few siblings. Side effects of contraception were also noted as some of the reasons for not using any method. However, dual purpose of condom use was acknowledged.

Table 34. Contraceptive practices by study site by sex

Type of contraception	Urban		Rural		Total	
	Male (n=51)	Female (n=51)	Male (n=155)	Female (n=159)	Male (n=206)	Female (n=210)
	%	%	%	%	%	%
• Condom	17.6	17.6	27.7	32.1	25.2	28.6
• Daily OC pills	2.0	2.0	13.5	14.5	10.7	11.4
• Rhythm method	21.6	23.6	5.2	2.5	9.2	7.6
• Depot	15.7	13.7	5.2	4.4	7.8	6.7
• IUD	0.0	0.0	6.5	6.9	4.9	5.2
• Once a month pill	0.0	0.0	1.3	0.6	1.0	0.5
• Female sterilization	0.0	0.0	1.3	0.6	1.0	0.5

3.2 Viewpoints of project staff and village health committee working group members

Relevant findings from qualitative evaluation of BACHIP project staff and VHCWG members (stakeholders) at the end of the project were analyzed. Their knowledge, experiences, perceptions, opinions, and attitudes were discussed to achieve the second objective of end-program evaluation.

3.3.1 Specific program objectives

Key informants were fully aware of specific program objectives of BACHIP focusing promotion of health through IEC related to seven health problems. In the beginning, they have determined to reduce those health problems so as to reduce current death rates probably half. They showed their satisfaction upon achievements of BACHIP in their villages. One VHCWG patron positively commented: *"To my opinion, BACHIP aims for rural development especially through improvement in education, health, visions etc"*. However, one key informant admitted that: *"We have done as much as we can but I think there were still some gaps to fulfill the objectives"*. To achieve the program objectives, specific activities were performed. Most of the project staff and VHCWG members felt that more easier task was to

ask villagers to build sanitary fly proofed latrines when compared to reducing the problem of malnutrition by asking them to feed their children with balanced diet.

3.3.2 Capacity building process and project management

According to the logical framework, staff recruitment and training were done. Project Manager decided and arranged the training following approval from CARE Head Quarters. Junior Project Officer and 20 community facilitators attended the training program on gastro enteritis and reproductive health launched by UNDP known as MOTIVE. Health educators from Department of Health provided training on ARI, diarrhoea, malnutrition, birth spacing, and breast feeding etc. It was apparent that available human resources from other sectors were well utilized for capacity building. For community facilitators, further discussions were done led by the Project Manager for clarification. Through community facilitators, the capacity of community members was improved through BCI and PLA sessions.

The activity schedule and cost-ed work plan were developed as an effort of the responsible Assistant Health Program Coordinator. In the middle of the project, new Project Manager was appointed and after checking the time-table, he had to boost up those activities behind time: by continuing BCI interventions rapidly through formation of five small groups of community facilitators (3 - 4 per group) going around the assigned villages concurrently (5 villages in the same time). Thus, the target of 52 BCIs as planned (4 times per village x 13 villages) was achieved. Project Manager retold his experience during in-depth interview: "It's a real challenge for me to organize my staff to keep up everything in a short time". The strategy addressed by bottom-up decision was useful to solve the problem of delayed implementation.

Prior to field operations, one workshop for community facilitators in relation to BCI was held in Tiddim taking an example from UNFPA guidelines. Topics were selected depending upon the results from base-line survey. Monthly reports and returns were channeled through Assistant Health Program Co-ordinator and Health Program Co-ordinator to Country Director from whom the Project Manager received feed-backs for implementation. For instance, one feed-back was to give health education of men and women in separate groups. Project staff visited the villages every 15 days for supervision and to check cash books and ledger. Some managerial problems were solved: for example one female community facilitator (CF) was reluctant to go to her assigned village. When enquiry was made, she had difficulty to organize the chair person of VHCWG. Another CF was sent there who

made a threat that there will be no more project supplies if he continued to do that way and then that person was under control.

3.3.3 Opportunities and challenges

Opportunities

- By implementing BACHIP, an opportunity arose for the active villagers to form a village health committee working group (VHCWG). Through advocacies, village administrative authorities became in picture with prevailing health problems and available solutions.

- Election of VHCWG members was done and villagers voted their choice. Women had a chance to be elected as VHCWG. Locally specific work plans were developed by VHCWG in each project village. Series of meetings were held monthly in each village to develop those work plans jointly with trained community facilitators and implemented accordingly. Such participatory approaches improved in-sights and visions of villagers to solve their own health problems through collaborative efforts of INGO and basic health services.

- Through VHCWG members, supplies were distributed such as iodized salt, oral rehydration salt packets, nail clippers, bed-nets, drinking water bottles etc. Financial secretary kept the list of supplies and put receipts in ledger and noted the batches of distribution. Each VHCWG had revolving fund and those cash were from sales of bed-nets, ORS packets, drinking water bottles etc. They had separate bank account.

- Villagers gained opportunity to read current information materials in Chin language at the village library supported by BACHIP.

- Project manager had an opportunity to do 'cross-project learning' by studying the activities of livelihood project sponsored by CARE in Maungdaw Township in Rakhine State prior to establishment of revolving loan fund mechanism in project villages.

Challenges

- Challenges in organizing local people to change their traditional practices related to food handling, other hygienic practices, excreta disposal etc. were noted. Some felt shy to ask for condoms at VHCWG member's house.

- In some villages, VHCWG members found difficult to ask young people to join BCI sessions as defined in village work plan. Major reason was that most of the young people were migratory workers and they had no free time to join group discussions.

- There were shortage of IEC supplies and developing IEC materials in local language was time consuming. Supplies of bed-nets were not sufficient for every household member.

- Key informants realized that one of the biggest challenges for them was the nature of their land where food production was low despite they worked hard. According to one key informant, time constraint was also revealed: *"VHCWG members had their own business for their livelihood. Some had to travel away frequently and unable to give sufficient time for community activities"*. One Chairman of VHCWG recounted that: *"My family was disappointed with me. I had to give more time for our village work plan rather than my business. Earnings for some days were lost"*.

3.3.4 Perceived benefits

During three years, community facilitators and VHCWG became competent in keeping records (meeting minutes, ledger for commodities and supplies and cash book) reporting and other accounting and management procedures. One financial secretary expressed his feelings: *"I have satisfied with my own progress in keeping records over these years"*.

Enthusiasm of one project officer was revealed: *"I am always interested in community development activities. By joining BACHIP, I have many contacts with public and I am happy to do such things in an effective way. Besides, my health knowledge was improved. There are some social benefits too. I am getting closer to people from CARE headquarters"*.

One female VHCWG member evaluated her changes: *"At first I do not know much about health problems. Because of BACHIP, I know more than before and become interested in how to educate villagers. I do not feel shy anymore to talk in front of*

others. Even though I can't have special privileges for being a working group member, I feel satisfied".

3.3.5 Ideas for future programs

Key informants generated their ideas and opinions on future programs like BACHIP as follows:

"Better focus area development in combination with food security schemes, agricultural methods (substitution for corns), live stock breeding and community forestry".

"Some form of financial support for VHCWG members is a necessity so as to gain respect from family members and other villagers".

"Petty cash for VHCWG members should be allocated from the revolving fund".

"Establishment of village drug shop should be organized and attempted".

"Those who want to join the programme should have some background knowledge in community development projects. Besides they should have good communication and negotiation skills to organize villagers".

"Regular and adequate supplies such as ORS, repellants, super tab, re-treated bed nets should be arranged by existing VHCWG members in subsidized prices".

"UNDP supported villagers to develop fish breeding sites. It will be good enough if health promotion projects like BACHIP can work hand in hand with such projects targeting food availability".

"Strengthening net-works and collaborative mechanisms should be the priority for sustainable actions".

Ideas collated as above were mostly linked to their good will, sense of ownership, commitment and positive attitudes towards sustainable preventive actions already developed among the villagers. Such attitudes were also noted in Turkey where evaluators concluded that: "*Local ownership is fundamental to increased utilization and sustainability" and "Leadership continuation and commitment is requisite"* (Mathis *et al.,* 2001).

3.4 Comparison of selected KAP indicators between base-line and evaluation surveys

KAP on diarrhoea, malaria and HIV/AIDS can be made comparisons between base-line (2003), evaluation (1) in 2004 (as mid-term assessment) and evaluation (2) in 2006 (as final assessment). But for tuberculosis, ARI, malnutrition, and birth–spacing, the results of base-line and evaluation (2) surveys can be compared to look at improvements.

3.4.1 Diarrhoea

Eight causes of diarrhoea were widely known in end evaluation survey (over 90%). The percentage of each and every knowledge item was increased when compared to base line survey and mid term assessment (P≤0.05).

Table 35. Knowledge on causation of diarrhoea

Causes of diarrhea (correct responses)	Base line (n = 146)		Evaluation (1) (n = 245)		Evaluation (2) (n = 416)	
	No.	%	No.	%	No.	%
• Eating food contaminated by flies	30	20.5	232	94.7	416	100.0
• Not drinking boiled water	25	17.1	197	80.4	413	99.3
• Not washing hands with soap before meals	8	5.5	147	60.0	413	99.3
• Not using fly proof latrines	9	6.2	193	78.8	410	98.6
• Not washing hands with soap before handling food	7	4.8	111	45.3	408	98.1
• Not washing hands with soap after going to latrine	4	2.7	174	71.0	408	98.1
• Unclean food containers and spoons	36	24.7	142	58.0	398	95.7
• Without proper cleansing of raw fruits & vegetables before ingestion	29	19.9	123	50.2	381	91.6

Seven preventive measures related to diarrhoea were widely known (over 90%) in end evaluation survey, except for the necessity to clean raw fruits and vegetables to prevent diarrhoea (85.3%). The percentage of each and every knowledge item was markedly increased when compared to base line survey and mid term assessment ($P \leq 0.05$; Table 36). Results indicated the adequacy of performance of community facilitators and VHCWG members in operating BCI and PLA.

Table 36.   Knowledge of preventive measures in diarrhoea

Knowledge of preventive measures in diarrhoea (correct responses)	Base line (n = 146)		Evaluation (1) (n = 245)		Evaluation (2) (n = 416)	
	No.	%	No.	%	No.	%
• By drinking boiled water	70	47.9	221	90.2	416	100.0
• By washing hands with soap before meals	11	7.5	160	65.3	408	98.1
• By covering food from preventing access to flies and other insects	12	8.2	141	57.6	405	97.4
• By keeping food containers and spoons clean	22	15.1	175	71.4	397	95.4
• By throwing away food remains and garbage systematically	13	8.9	136	55.5	384	92.3
• By washing hands with soap before handling food	10	6.8	110	44.9	379	91.1
• Raw fruits and vegetables are to be eaten only after thorough cleansing	15	10.3	142	58.0	355	85.3

The percentage of provision of ORS at home was much improved in end-evaluation compared to base-line and mid term surveys. Going to public facilities for seeking treatment was also reported higher than base-line and mid-term surveys ($P \leq 0.05$; Table 37 and Figure 5). Those two utilization practices (use of ORS and use of public facilities) in response to diarrhoea were the most desirable household performances as a result of community capacity building by BACHIP within three years that may have an impact on reduction of under-five mortality in the area. The behaviors of using western medicine at home and going to private clinics were considerably declined ($P \leq 0.05$; see Figure 5).

Table 37. **Household treatment seeking practices in diarrhoea**

| Household treatment seeking practices in diarrhoea (correct responses)	Base line (n = 146)		Evaluation (1) (n = 245)		Evaluation (2) (n = 416)	
	No.	%	No.	%	No.	%
• Providing ORS	42	28.8	225	91.8	415	99.8
• Go to health centre/hospital	33	22.6	94	38.4	314	75.5
• Go to private clinic	32	21.9	94	38.4	118	28.5
• Purchasing western medicine	95	65.1	87	35.5	87	20.9
• Stop giving food	46	31.5	4	1.6	23	5.5
• Provision of indigenous medicine	23	15.8	45	18.4	11	4.9
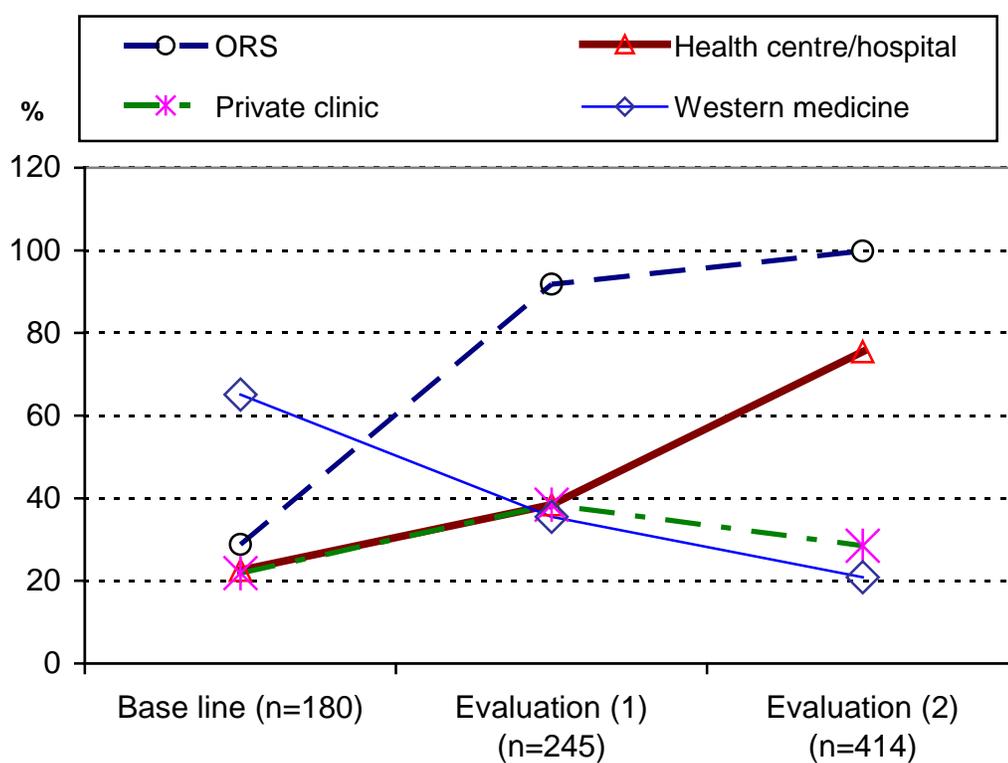
Figure (5) Household treatment seeking practices in diarrhoea

3.4.2 Malaria

During end evaluation, every respondent knew that malaria was due to mosquito bite. Percentages were remarkably increased than during base-line survey (65% to 100.0%; $P \leq 0.05$). Negligible percentages reported eating banana and drinking spring water as causes of malaria (Table 38). Perceived symptoms were also increased: fever, sweating and then back to normal (17% and 56.7% to 95.9%; $P \leq 0.05$) and headache (47.3% and 81.6% to 99.5%; $P \leq 0.05$).

Table 38. Causes of malaria and perceived symptoms

Causes of malaria and perceived symptoms	Base line (n = 146)		Evaluation (1) (n = 245)		Evaluation (2) (n = 416)	
	No.	%	No.	%	No.	%
Causes (correct response)						
• Due to mosquito bite	95	65.1	244	99.6	416	100.0
• Drinking spring water	8	5.5	3	1.2	26	6.3
• Eating banana	0	0.0	1	0.4	6	1.4
Perceived symptoms						
• Fever followed by sweating and then back to normal	25	17.1	139	56.7	399	95.9
• Headache	69	47.3	200	81.6	414	99.5
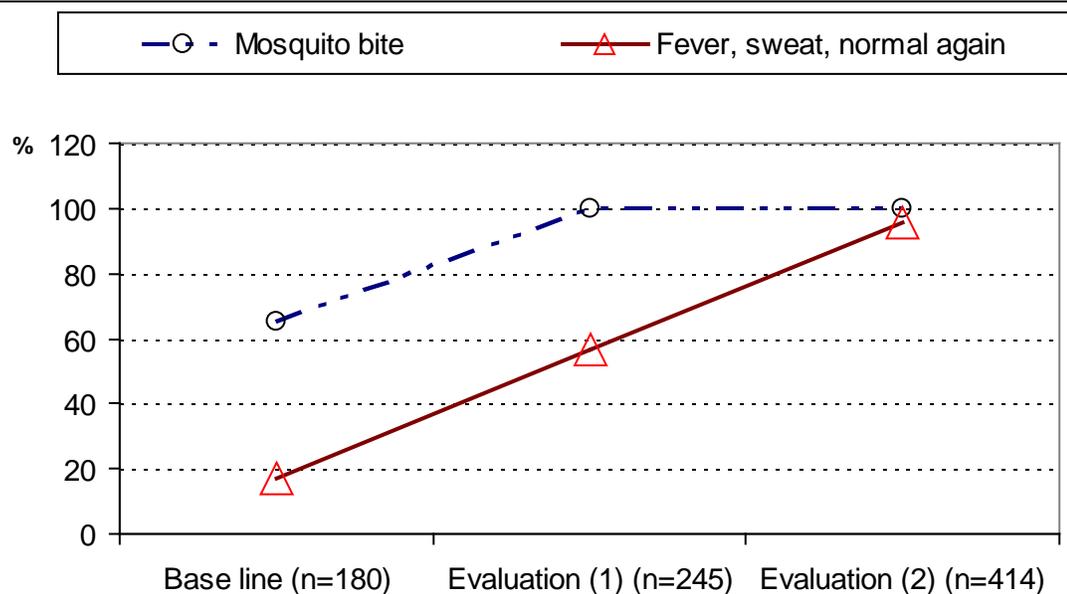
Figure (6) Knowledge of causes of malaria and perceived symptoms

Almost every respondent reported that they had slept under bed-nets to prevent malaria much increased than in base-line survey (49.3% to 100%; $P \leq 0.05$). Carrying out environmental measures (draining/filling water loggings, clear water drains, cleaning the surroundings of houses) to prevent malaria was reported by over 90% of respondents. Over 80% reported that they had used personal protective measures (wearing thick, long dresses and applying repellants). Those percentages were much higher than in base-line and mid term surveys ($P \leq 0.05$). Smokes and burning mosquito coils were least used preventive measures in all three surveys (Table 39).

Table 39. Preventive measures practiced in malaria

Preventive measures practiced in malaria (correct responses)	Base line (n = 146)		Evaluation (1) (n = 245)		Evaluation (2) (n = 416)	
	No.	%	No.	%	No.	%
• Sleep under mosquito net	72	49.3	238	97.1	416	100.0
• Cleaning the surroundings of houses	30	20.5	180	73.5	413	99.3
• Clear water drains	5	3.4	133	54.3	406	97.6
• Draining/filling water loggings	7	4.8	111	45.3	394	94.7
• Apply insecticide repellant	0	0.0	16	6.5	355	85.3
• Wear thick, long dresses	6	4.1	71	29.0	345	82.9
• Smokes	4	2.7	25	10.2	81	19.5
• Mosquito coils	2	1.4	4	1.6	73	17.5

As for household treatment seeking practices for suspected malaria, the percentage of self-purchase of western medicine was much declined in end evaluation (16.1%) compared to base-line (56.8%) and mid-term surveys (56.7%) ($P \leq 0.05$; Table 40). Going to public health facilities to seek confirmation and treatment for malaria was much higher in end-evaluation (87%) compared to base line (37%) and mid term surveys (58.8%) ($P \leq 0.05$; Table 40 and Figure 7).

Table 40. Household treatment seeking practices in malaria

Household treatment seeking practices in malaria (correct responses)	Base line (n = 146)		Evaluation (1) (n = 245)		Evaluation (2) (n = 416)	
	No.	%	No.	%	No.	%
• Public health facilities	54	37.0	144	58.8	362	87.0
• Private clinics	43	29.5	128	52.2	162	39.2
• Western medicine	83	56.8	139	56.7	67	16.1
• Indigenous medicine	5	3.4	7	2.9	1	0.4
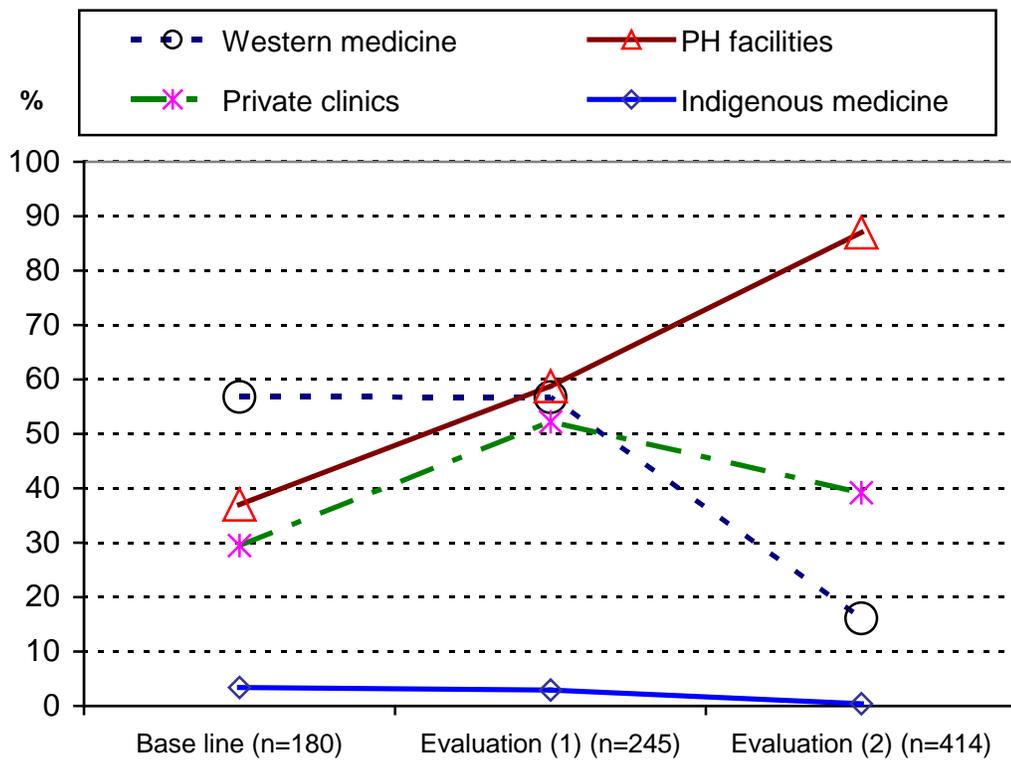
Figure (7) Household treatment seeking practices in malaria

3.4.3 HIV/AIDS

Knowledge of six modes of transmission (sharing needles and syringes, from mother to fetus, sexual relations, blood transfusion, sexual relations with CSWs or those with multiple partners and narcotics injection) were very high in all three surveys. Transmission of HIV through breast milk was known by 86.8% of respondents in end-evaluation, higher than in base line (66.1%) and in mid term surveys (70.2%) ($P \leq 0.05$). The reported incorrect modes of transmission (bitten by mosquitoes/bed-bugs, hugging and kissing with an infected person and shaking hands with an infected person) were significantly declined especially compared to base-line survey ($P \leq 0.05$).

Table 41.   Modes of transmission known

Modes of transmission known	Base line (n = 180)*		Evaluation (1) (n = 245)		Evaluation (2) (n = 414)	
	No.	%	No.	%	No.	%
• Sharing needles and syringes	170	94.4	220	97.8	414	99.5
• From pregnant mother to fetus	154	85.6	222	98.7	413	99.3
• Sexual relations	174	96.7	218	96.9	412	99.0
• Blood transfusion	175	97.2	225	100.0	410	98.6
• Sexual relations with CSWs or those with multiple partners	163	90.6	221	98.2	400	96.2
• Narcotics injection	153	85.0	216	96.0	397	95.4
• Through breast milk	119	66.1	158	70.2	361	86.8
• Sharing blades (shaving hair, moustache) with an infected person	145	80.6	198	88.0	338	81.3
• Bitten by mosquitoes/bed-bugs	63	35.0	30	4.4	16	3.8
• Hugging & kissing with an infected person	34	18.9	24	1.8	3	0.7
• By shaking hands with infected persons	26	14.4	24	1.8	1	0.2

Migrant young people only

Tables 42 and 43 illustrated preventive measures known and practiced. Knowledge of three preventive measures: practicing single marital partner system, systematic condom use and avoiding unnecessary infections were very high compared to base-line and mid-term surveys. Prevention of HIV transmission by using double layer of condoms was mentioned by very few respondents (31/414; 7.5%) much lower than responses during base line (82/180; 45.6%) and mid term surveys (94/245; 32.9%).

Table 42. Preventive measures known related to HIV/AIDS

| Preventive measures known related to HIV/AIDS	Base line (n = 180)*		Evaluation (1) (n = 245)		Evaluation (2) (n = 414)	
	No.	%	No.	%	No.	%
• Single marital partner system	163	90.6	214	95.1	413	99.3
• Using condoms systematically	147	81.7	224	99.6	409	98.3
• Avoiding unnecessary injections	128	71.1	186	82.7	406	97.6
• Avoiding sexual relations	146	81.1	210	93.3	334	80.3
• Avoiding unnecessary blood transfusion	142	78.9	193	85.8	337	81.0
• Using double layer of condom during sex	82	45.6	94	32.9	31	7.5
• By cleaning private parts after sex	24	13.3	30	4.4	11	2.6
• By trying western/indigenous medicine either by local application or by mouth or injection before/after sex	19	10.6	38	8.0	9	2.2

Migrant young people only

Four preventive measures ever practiced were compared (Table 43 and Figure 8). During end evaluation, three preventive measures practiced were reported very much higher than in base-line and mid-term evaluation surveys: keeping single marital partner, avoiding unnecessary injections and systematic condom use ($P \leq 0.05$). However, 'by avoiding sexual relations' was mentioned by lesser percentage of respondents than mid-term survey but higher than in base-line survey.

Table 43. Preventive measures ever practiced

Preventive measures ever practiced	Base line (n = 180)*		Evaluation (1) (n = 245)		Evaluation (2) (n = 414)	
	No.	%	No.	%	No.	%
• By practicing single marital partner system	30	16.7	32	16.2	413	99.3
• By avoiding unnecessary injections	22	12.2	51	25.9	347	83.4
• By using condoms systematically	12	6.7	37	16.4	214	51.4
• By avoiding sexual relations	13	7.2	93	41.3	94	22.6

Migrant young people only
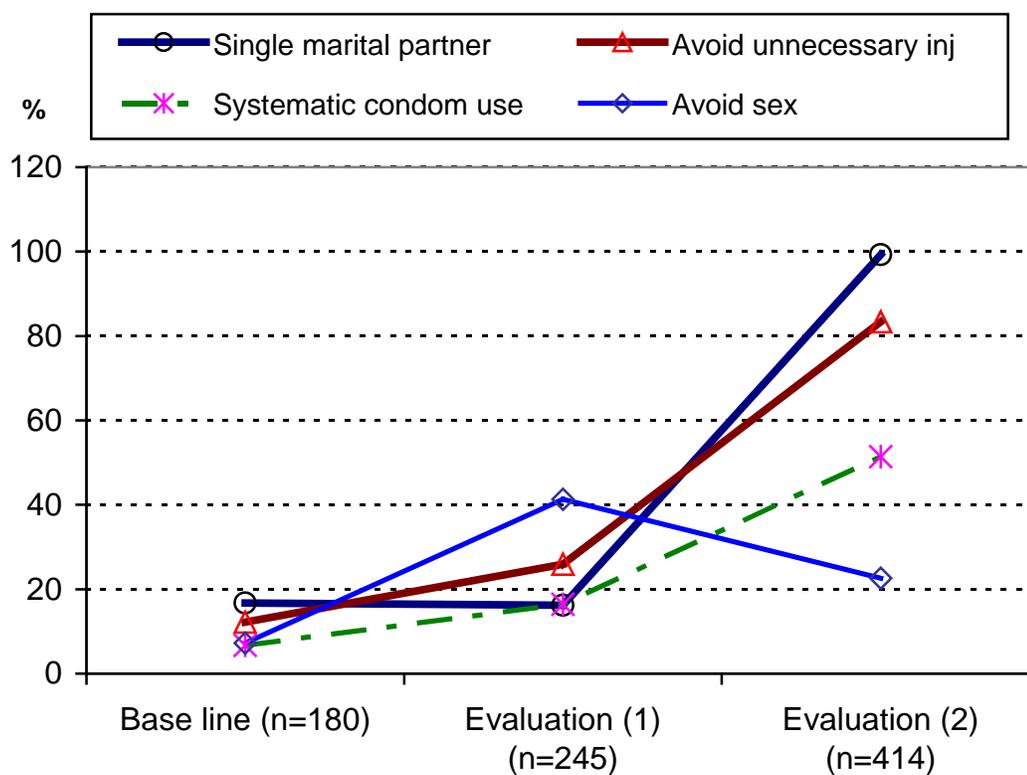
Figure (8) Preventive measures for HIV transmission ever practiced

3.4.4 Tuberculosis

Knowledge of four symptoms indicating tuberculosis was very much improved during end-program evaluation when compared to base-line survey (P ≤ 0.05; Table 44). Early recognition of symptoms of TB was highly supportive of early treatment seeking for DOTS which was widely publicized by Department of Health.

Table 44. Knowledge on symptoms of TB

Knowledge on symptoms of TB	Base line (n = 146)		Evaluation (2) (n = 416)	
	No.	%	No.	%
• Cough more than 3 weeks	46	31.5	410	98.6
• Loss of weight	37	25.3	404	97.1
• Easily tired / fatigue	19	13.0	389	93.5
• Blood in sputum	24	16.4	383	92.1
• Low grade fever	23	15.8	352	84.6

Common modes of transmission were widely known during end evaluation compared to base-line survey (Table 45). Their understanding was much improved in transmission through direct contact with infected person or utensils used by an infected person.

Table 45. Knowledge on transmission of TB

Knowledge on transmission of TB	Base line (n = 146)		Evaluation (2) (n = 416)	
	No.	%	No.	%
• Coughing	28	19.2	411	99.0
• Staying together with an infected person	16	11.0	394	94.7
• Drinking together with an infected person	5	3.4	348	83.7
• Eating together with an infected person	9	6.2	343	82.5
• Working together with an infected person	1	0.7	329	79.1
• Contact with an infected person	14	9.6	190	45.7

During these years, DOTS delivery was brought to homes either by health staff or volunteers in the particular area rather than at the health facilities. During the base-line survey, respondents cited public facilities as their resort (41.1%) while in end-evaluation, 95.9% relied on western medicine probably anti TB drugs (DOTS) at home (Table 46).

Table 46. Treatment seeking behavior in TB

Treatment seeking behavior in TB	Base line (n = 146)		Evaluation (2) (n = 416)	
	No.	%	No.	%
• Western medicine	31	21.2	399	95.9
• Private clinics	17	11.6	106	25.7
• Public health institutions	60	41.1	26	6.3
• Indigenous medicine	2	1.4	2	0.9

3.4.5 Acute respiratory infections

Knowledge of five common symptoms of ARI in under-five children was greatly improved in surveyed households in end-evaluation when compared to base-line survey ($P \leq 0.05$; Table 47). Such level of good knowledge could bring about early recognition of illness progress into severity, seeking help from well equipped facilities thus saving lives of children in time.

Table 47. Knowledge on symptoms of ARI

Knowledge on symptoms of ARI	Base line (n = 146)		Evaluation (2) (n = 416)	
	No.	%	No.	%
• Difficulty in	79	54.1	406	97.6
• Wheezing	21	14.4	398	95.7
• Fever with cold extremities	56	38.4	387	93.0
• Refusing food	20	13.7	382	91.8
• Chest in-drawing	2	1.4	313	75.2

According to Table 48, when suffering from ARI in under-five children, parents/care-takers provided western medicine by themselves and much higher responses were obtained during end-evaluation than in base-line survey (79.3% *vs*. 50.7; P ≤ 0.05)**.**

Table 48. Knowledge on treatment seeking behavior for under 5 with ARI

Treatment seeking behavior	Base line (n = 146)		Evaluation (2) (n = 416)	
	No.	**%**	**No.**	**%**
• Western medicine	74	50.7	330	79.3
• Health institutions	35	24.0	185	44.5
• Private clinic	70	47.9	77	18.5
• Indigenous medicine	2	1.4	9	4.0

Improvements were found markedly in home-based care of children with ARI except for regular feeding during end-evaluation rather than during the base-line survey (P ≤ 0.05; Table 49). This may deter progress to severity at home.

Table 49. Home-based care practices for ARI

Home-based care practices for ARI	Base line (n = 146)		Evaluation (2) (n = 416)	
	No.	**%**	**No.**	**%**
• Keep warm	98	67.1	408	98.1
• Give less food	4	2.7	398	95.7
• More breast milk	30	20.5	325	78.1
• More liquid	17	11.6	310	74.7
• Give regular food	7	4.8	58	13.9

3.4.6 Malnutrition

Household knowledge of seven symptoms indicating malnutrition in under-five children was markedly increased in end evaluation compared to base-line survey (P ≤ 0.05; Table 50). Early management of protein energy malnutrition can lead to reduction in under-five mortality in the area.

Table 50. Knowledge on symptoms of malnutrition

Knowledge on symptoms	Base line (n = 146)		Evaluation (2) (n = 416)	
	No.	%	No.	%
• Retarded growth	25	17.1	404	97.1
• Frequent illness	32	21.9	390	94.0
• Failure to gain weight	40	27.4	381	91.6
• Diarrhoea	12	8.2	369	88.7
• Pot belly and thin	26	17.8	361	86.8
• Loss/sparse hair	9	6.2	357	86.2
• Oedema of face and feet	5	3.4	280	67.3

The reported treatment seeking practices for malnourished children was improved during end-evaluation indicated by highest rank attained by public health facilities (78%) compared to ranking three during base-line survey (14.4%) (P ≤ 0.05). However, changes in breast-feeding practices were not much distinctive (Table 51).

Table 51. Treatment seeking behavior for malnourished children & feeding practices

Characteristic	Base line (n = 146)		Evaluation (2) (n = 416)	
	No.	%	No.	%
Treatment seeking				
• Public health institutions	21	14.4	325	78.1
• Private clinics	22	15.1	139	33.5
• Indigenous medicine	2	1.4	57	25.0
• Western medicine	69	47.3	65	15.7
Feeding practices				
• Breast-feeding on demand	104	71.2	300	72.1
• Mean duration of breast feeding	19.23 ± 7.96		22.63 ± 7.06	
• Mean age of start mixed feeding	5.12 ± 3.92		5.54 ± 2.08	

3.4.7 Birth spacing

Use of male condoms reported during end evaluation survey was far greater than during the base-line survey (3.4% to 26.9%; P ≤ 0.05) but the use of daily oral contraceptive pills was not changed. During end-evaluation, the use of injection Depot Provera and IUD were slightly increased than in base line survey (Table 52).

Table 52. Contraceptive practices

Contraceptive practices	Base line (n = 146)		Evaluation (2) (n = 416)	
	No.	**%**	**No.**	**%**
• Male condom	5	3.4	112	26.9
• Daily OC pills	15	10.3	46	11.2
• 3 monthly injection	2	1.4	30	7.2
• IUD	2	1.4	21	5.0
• Once a month tablet	6	4.1	3	0.7

4. Conclusions and Recommendations

4.1 Conclusions

- Present evaluation design attempted to provide an answer to whether resources used were producing expected benefits by linking individual level knowledge and individual/household behaviors (including home-based care, treatment seeking and utilization) to information on program activities.

- It was concluded that the effect of BACHIP in project villages and selected urban wards was optimal and satisfactory. The necessary information was reached to target audience. As an impact, knowledge level was increased in relation to symptoms, causation, modes of transmission of diarrhoea, malaria, HIV/AIDS, ARI and TB. Knowledge on malnutrition was also improved. According to FGDs and key informant interviews, positive attitudes and opinions were revealed. Misperceptions were minimal.

- Desirable practices in targeted audience were much improved such as hygienic practices, use of sanitary fly proofed latrine, use of oral rehydration solution, checking for suspected malaria, use of bed nets, systematic condom use, and home-based care for ARI except for regular weighing of under five children and

contraceptive practices for which perceived barriers related to food scarcity, household economy and positive attitudes towards big families were underscored.

- ECHO Project implemented by CARE in selected villages prior to BACHIP had synergistic and complementary effect by sustaining the use of sanitary fly proofed latrines and insecticide treated nets. This will explain high knowledge and practice levels in project villages apart from BCI and PLA intervention strategies.

- PLA sessions were highly appreciated although introduced later than BCI in project villages. Moreover, community facilitators and VHCWG members in study sites were become competent in BCI and PLA technologies transferred by BACHIP and their performances were adequate and accepted by inhabitants in project sites.

4.2 Recommendations

- Clear specification of key indicators in the corresponding logical framework from the beginning of the project is a necessity. This may enhance to draw inferences on distinctive output, effect and impact of planned interventions.

- Development of monitoring and surveillance system of key health problems and deaths of infants and children in rural households lead by VHCWG members should pay attention. This action may enable to obtain reliable impact indicators linking to corresponding behaviors.

- Priority options for future programs should be directed towards economic and food security of rural households and reproductive health services combined with PLA so as to bring about much improvement than at present for feeding as well as birth spacing practices.

- Partnership networks and sustainability issues should be taken into account by arrangements of regular multi-sectoral co-ordination meetings at township and village levels concerning with health, livelihood and development projects

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Table 1. Profile of Study Sites of Border Area Chin Health Improvement Project

SN	Identification	Total number of households	Total Population		
			Male	**Female**	**Total**
1.	4 urban wards	1,033	3,458	3,801	7,259
2.	13 villages				
2.1	Dimlo	89	310	297	607
2.2	Heilei	259	820	813	1,633
2.3	Lailo	184	696	685	1,381
2.4	Lailui	125	383	418	801
2.5	Lamzang	195	579	630	1,209
2.6	Mualbeem	265	804	832	1,636
2.7	Muizawi	99	354	345	699
2.8	Ngennung	159	494	502	996
2.9	Phunom	176	521	569	1,090
2.10	Sezang	165	561	537	1,098
2.11	Suangzang	187	585	629	1,214
2.12	Teeklui	145	406	489	895
2.13	Tuilangh	169	550	566	1,116
	Sub-total	2,217	7,063	7,312	14,375
	ALL TOTAL	3,250	10,521	11,113	21,634

Table 2. Reliability coefficients (standardized item alpha) of knowledge responses for specific health problems during end evaluation survey (2006)

Health problem	Knowledge items	Alpha	Standardized item alpha	Remarks
Diarrhoea	15 items	0.6865	0.6797	Good internal consistency
ARI	6 items	0.4754	0.5635	Satisfactory
Malaria	6 items	0.2082	0.2059	Poor internal consistency
Malnutrition	8 items	0.5943	0.5965	Satisfactory
TB	11 items	0.6288	0.6085	Satisfactory
HIV/AIDS & STI	32 items	0.7680	0.6786	Good internal consistency