AKHS,P

AKPBS,P (BACIP)

health and housing

The Impact of BACIP Interventions on Health and Housing in the Northern Areas, Pakistan

A Joint Study With

Aga Khan Health Service, Pakistan (AKHS,P)

&

Aga Khan Planning and Building Service, Pakistan (AKPBS,P)

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ACKNOWLEDGMENTS

EXECUTIVE SUMMARY

Introduction to Study

To date, there has been little if any research conducted on the relationship between health and housing in the Northern Areas of Pakistan. For several decades, both Aga Khan Health Service, Pakistan and Aga Khan Planning and Building Service, Pakistan have been working in these sectors, actively seeking a better quality of life for the people in this region. The two organisations recently recognized this gap in the knowledge base and pursued this study to gain a better understanding of health and housing. This would also serve to enhance their respective programme activities.

A preliminary joint study was thereby proposed to collect data on the implications of selected housing improvements introduced by the Building and Construction Improvement Programme (BACIP), specifically in relation to health. The study was to determine whether there is a correlation between the two variables. Specifically, the study sought to find out if better lighting, ventilation, and warmth inside the house can contribute towards fewer illnesses and improved health in general.

The study was designed to collect data in two sets of houses – those with housing interventions introduced by BACIP and houses without. 50 study houses and 100 control houses were selected for the study. The study houses were selected on the basis that 1) they have installed at least one improvement that addresses the issues of ventilation and/or warmth, namely Roof Hatch Window, Wall Insulation, and Double Glass Window; and 2) households with improvements installed at least one year prior to the study. The control houses were carefully chosen on the basis of their similarity to BACIP houses in terms of the following socio-economic characteristics: age structure, education, income, and housing characteristics.

The Results

The study succeeded in achieving its objectives. First, it was able to enhance the working relationship between the two organizations, which is expected to intensify as a result of this collaboration. Second, the study proves that there is a direct relationship between better housing conditions and the disease burden in general. That is that there will be fewer illnesses when a house is warm, well ventilated, and well lit. Therefore, it can be concluded that there is a relationship between overall health status and housing, particularly during the winter season.

The results from April to June showed little significant difference between the houses with improvements and those without. However, the houses which had a BACIP intervention installed in their house last winter, experienced much fewer illnesses (4.3%) then the Non BACIP houses (9.0%). It can therefore be concluded that BACIP has been able to reduce the disease burden by more than 50%.

Further, it is evident that the people living in this region have an understanding that a relationship does exist between health and housing (more than 90%). They believed that cold, overcrowded, or lack of cleanliness in the home can lead to a higher incidence of disease. Even though some people had misperceptions about this relationship, such as which diseases/problems may develop from too much smoke or cold, in most cases, people were greatly concerned about the health status of their family. This is evident by the health spending trends in the area. The median spending per treatment for an illness was between Rs.100-150 while over the course of the year, the median spending was between Rs.1000-3000.

The study found that amongst the BACIP houses, people are overwhelmingly satisfied with the improvements, particularly in terms of in how they have made their living conditions more comfortable. Amongst the Non BACIP houses, it showed that the non users have little knowledge about the work that BACIP does. 40% of the non users stated that they did not have enough information or they did not know why their family has not purchased a product as yet.

The Recommendations

The main recommendations that stem from this study are first that BACIP should continue to work in this sector developing techniques and products that improve housing conditions. But it also needs to expand its activities to reach a much greater clientele than it has to date. The overall satisfaction levels of the users justify the widening of activities. A rapid replication and transfer of product technology is also anticipated.

Being the two main organizations working in the sectors of health and housing, AKHS,P and AKPBS,P should begin to work more closely and collaborate in terms of their field-level and research based activities. The focus should be to promote improved housing and living conditions in the region and raise awareness on how such improvements can improve household health.

CONTENTS

Abbreviations

AKDN	Aga Khan Development Network
AKHS,P	Aga Khan Health Service, Pakistan
AKPBS,P	Aga Khan Planning and Building Service, Pakistan
AKRSP	Aga Khan Rural Support Programme
ANC	Antenatal Care
BACIP	Building and Construction Improvement Programme
CI	Confidence Interval
HH	Household
KKH	Karakoram Highway
LHV	Lady Health Visitor
NA	Northern Areas
NGO	Non Governmental Organisation
NWFP	North West Frontier Province
PHC	Primary Health Care
TT	Tetanus Toxoid
WASEP	Water and Sanitation Extension Programme

GLOSSARY

Aludigi	A polluted environment.
Bukhari	Cooking stove.
Chapati	Flat bread cooked on a round, flat pan on the stove.
Katcha	Refers to houses built with mud/clay blocks.
Pucca	Strong, solid or firm. In this context, it refers to houses that are built with relatively durable materials such as stone or cement.
Feri-Feri	Optional hood for the pipe used with the cooking stove.

LIST OF TABLES AND FIGURES

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1.0 INTRODUCTION

1.1 Background

The Northern Areas population is approximately one million, with a majority of that population living in a rural area. In larger towns or in those communities located directly along the Karakoram Highway (KKH), exposure to new approaches has been gradually seeping into the lifestyle, conditions, and standards. However, many villages continue to live in such a way that is only partially affected by the advent of roads and communication. In such villages, the traditional house and a traditional way of living continue to be the norm.

The houses are usually constructed in such a way to minimize the surface exposure to the outside and the doors, windows, and other openings are made as small as possible to reduce heat loss. Often, they are built using a combination of mud and stone which compared to cement acts as a good insulator of warmth in the winter. There is also a serious problem with replication of construction techniques from southern cities that are unsuited to the climate which often leads to extremes in temperature between winter and summer inside the home. However, more and more people in the Northern Areas are copying construction techniques from down south (eg. Karachi and Rawalpindi) and being built with cement blocks because of their better quality finish and "modern look" compared to the traditional *katcha* houses of the region. This type of housing, however, has a high heat transmission co-efficient which means the rooms rapidly cool off in cold climates.

Figure 1.1   The Traditional House in Plan/Section View
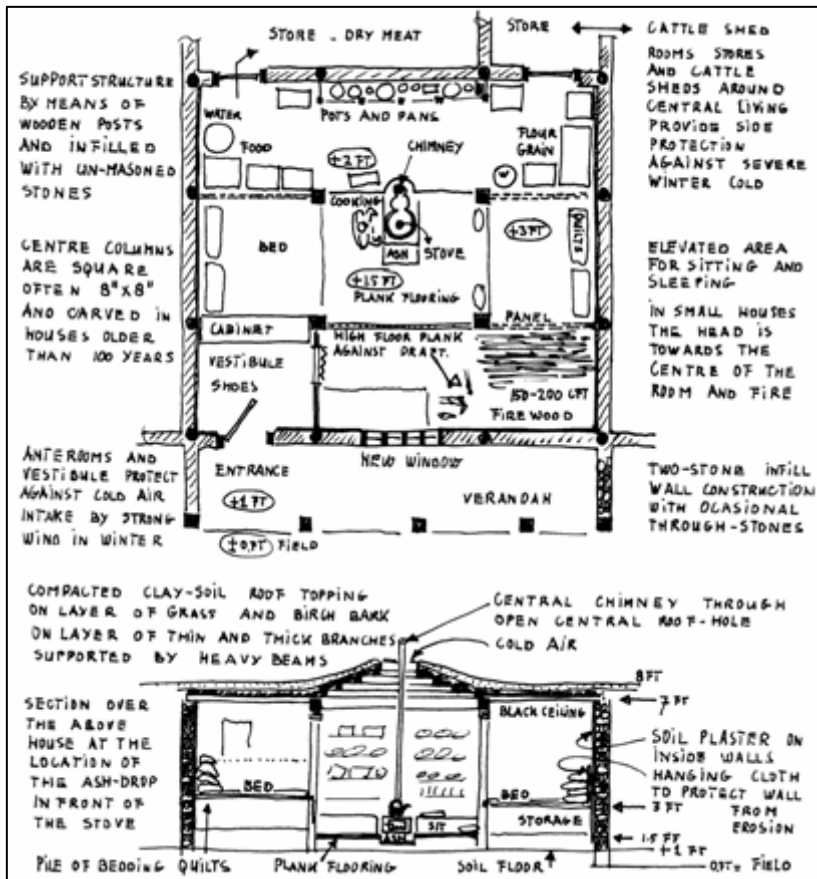
A typical traditional house in the Northern Areas comprises a central living area consisting of a square of 5.5 x 5.5 meters where the majority of domestic activities take place (Figure 1.1). In the middle section, the *bukhari* or cooking stove is placed. There are also a number of houses which do not even have a cooking stove and use open fire in the middle of their traditional houses. The *bukhari* also doubles as a heater and is normally wood burning.

Directly above the *bukhari* or the fireplace is a square opening in the roof that allows smoke to escape and "fresh air" to enter. The

permanent traditional open hole in the centre of the roof is often the only source of light and ventilation in the traditional house. Smoke from the fire of the cooking stove rises and some escapes from this opening; the rest is pushed by outside air back into the room filling the room with smoke. In addition, as the hole is at the highest position of the roof, all the warm air disappears through it.

Store rooms and cattle sheds are usually situated around the central living area. With an open hole in the roof that is opened for ventilation purposes and with limited heating facilities, the houses are cold during winter. Walls are made of mud and stone or simply with stabilised mud-blocks, and along with stabilised mud floors, are major pollutants of the internal atmosphere. The only source of natural light and ventilation is usually the roof hole, the inadequacy of which results in a smoke and dust filled and dark environment inside the house. Dampness from the walls and darkened roofs (from soot and fungus) can also lead to a deterioration of the living conditions.

Figure 1.2

A typical village cluster showing the traditional stone/mud construction and roof opening.

In newer constructions, the villagers have begun adding windows to the traditional house. These new windows often have bigger glass panes (single) that are indiscriminately oriented in any direction. Again, this southern idea of large windows is again unsuited to the cold climate of this region from which far too much heat escapes. In the cold and windy situation of the region, these larger window designs act as very poor insulators and cause the rooms to rapidly cool down

In addition, very few houses have proper water supply arrangements and even fewer have hygienic sanitation facilities. Specifically, only 50% of the houses have any toilet facilities and people normally use cattle-sheds and open fields for defecation.

Additional problems include drainage and a lack of water proofing at the foundation level. The surface water of small water channels passing alongside houses often filtrates into the ground and is absorbed by foundation walls. This is even more pronounced with cement block walls and cement masoned constructions.

With all these problems related to housing construction and existing living conditions, it is not surprising that the health conditions in the region are also lacking. Surveys have demonstrated that the largest health problems in the region include pneumonia, diarrhea, and eye disease. 48% of the total under-five deaths in the Northern Areas and Chitral are due to diarrhea and pneumonia.[1] In general, these health problems can probably be attributed in some way to conditions inside and around the house. In addition, expenditures on house repair and health account for 5.5% and 4.5% of the total disposable income respectively.[2]

For all these reasons, the Building and Construction Improvement Programme has developed a set of housing improvements that seek to better the existing living conditions for people in the Northern Areas. Similarly, Aga Khan Health Service, Pakistan has been working in the region addressing these and other health-related problems.

1.2   Partner Organisations

AKHS,P and AKPBS,P are a part of the Aga Khan Development Network (AKDN). Both organisations work in cooperation with other AKDN institutions in the Northern Areas and Chitral.

The **Aga Khan Health Service, Pakistan** is one of the largest Non Governmental Organisations (NGOs) in the health sector in the country. It began its operation in Karachi in 1924. Since 1974, AKHS,P has been striving to improve the health sector of people in the Northern Areas with special emphasis on maternal and child health care. AKHS,P is currently working in two districts in the Northern Areas, Gilgit and Ghizer, as well as Chitral district under the North West Frontier Province (NWFP). Ultimately, it seeks to improve the quality of life for people in these areas. Specifically, its mission is:

> *To improve quality of life through improving the health status of the community in general, the health of under privileged in particular, the health of population and all those who seek the assistance of the service.*

It operates health care programmes throughout Pakistan including primary and secondary health care services.

AKHS,P has been providing a community based primary health care programme (PHC) since 1987. The PHC programme is run through administrative districts or modules managed by field teams of doctors and lady health visitors (LHVs). The services are delivered through volunteers and professional staff. The field teams conduct outreach activities such as health education sessions, family planning services, research, recording and registration activities, deworming sessions, eye and dental care camps, and awareness raising amongst other related activities. PHC is broadly understood as a multi-sectoral approach to health care that targets the maximum number of factors affecting human health.

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1 Aga Khan Health Service, Pakistan. 2000. Annual Report 2000. Gilgit: AKHS,P.
2 Aga Khan Rural Support Programme. February 2000. *An Assessment of Socio-Economic Trends and Impact in the Northern Pakistan (1991-1997): Findings from AKRSP's Farm Household Income and Expenditure Surveys.* Gilgit: AKRSP.

In the Northern Areas and Chitral, AKHS,P provides basic PHC services including treatment of common illnesses, complete care of pregnant mothers, immunisation of children and women of childbearing age, provision of family planning services, periodical health education sessions, and attending community meetings to address special issues.

AKHS,P has also been providing secondary health care services since 1992. These include medical health centres and maternity homes. Two maternity homes, one medical centre and two extended family health centres form the secondary health care programme of AHS,P in the Northern Areas and Chitral. This provides a referral backup to the PHC and government facilities and serves to deal in a more effective and timely manner with emergencies. It also provides training and continuing education to health personnel from both AKHS,P and government health departments.

Aga Khan Planning and Building Service, Pakistan (AKPBS,P) is the only institution in the region working directly towards improving the built environment and overall living conditions of the people of the Northern Areas and Pakistan. AKPBS,P has been working in the NA and Ch since 1981. Over the last 20 years, AKPBS,P has been contracting services on a not-for-profit basis to NGOs wanting to construct institutional buildings in the region such as schools or health centre facilities. In addition, AKPBS,P has initiated various development activities during this period including the Living Conditions Improvement Programme (1985-1991), the Skills Enhancement Programme (SEP) (1988 to date) and the Water and Sanitation Extension Programme (WASEP) (1997 to date). The ongoing programmes of SEP which offers certified skills training in the building and construction sector and WASEP which has been providing water supply schemes to villages throughout the region.

The **Building and Construction Improvement Programme** (BACIP) has been implemented over the past four years by AKPBS,P.

BACIP's objectives have been to improve the living conditions in this region by developing improvements to housing. Its mission is:

> *To promote measures that will enable the communities in the*
> *northern region to make sustainable improvements in their living*
> *conditions by providing solutions to their housing related*
> *problems, allowing them to optimize their investment in built*
> *environment related aspects and hence improve the quality of*
> *the living environment, especially for women and children.*

In its first phase, BACIP served mainly as a research and development based body whose activities consisted of designing improvements to housing for the region. Model improvements were developed and new technology and skills introduced to local entrepreneurs. These home improvements focus on thermal issues including smoke control, ventilation, lighting, wall and roof insulation, leakage and dampness. Earthquake engineering solutions were also developed for traditional stone, soil block and cement block constructions. BACIP has also been involved in the distribution of new and improved building materials through regular market channels/trading networks.

BACIP gives high priority to the involvement of women as house improvements particularly affect the living and working conditions of women and children. BACIP works in project villages with the help of village coordinators and resource people.

To date, the participant feedback has suggested that improving rural domestic conditions can lead to improved health. Similarly, the introduction of certain BACIP improvements was expected to lead to reduction in particular diseases.

1.4   BACIP Housing Improvements

BACIP developed house improvements that address the existing housing conditions in a way that is practical, suitable, and affordable.

In its research and development phase, BACIP identified and tested over 40 products that address the major living condition issues. These products directly improve the conditions inside and surrounding a typical house in the region. Wall, roof and floor insulation products as well as roof hatch-windows control leakage of **warmth**. Better smoke-free stoves, stabilised mud floors and wall construction techniques address the problems of **dust** and **smoke. Lighting** is addressed by the construction of windows, promoting energy efficient tube-lights and creating awareness about painting while improved wall and roof construction and water proofing techniques reduce **dampness**. BACIP's culturally sensitive and cost-effective toilets and bathing facilities provide **convenience** to the house-dwellers while the **shortage of space** is addressed by in-house items such as bedding racks, kitchen cabinets, washing/cutting tables and better grain storage techniques. On a broader scale, the wall and roof construction techniques provide greater resistance to seismic shocks and create awareness about housing construction outside historical landslide and flood regions which reduce the **danger to life**.

Figure 1.2   BACIP Window

VIEW FROM OUTSIDE
FIXED CENTRAL GLASSES   SHUTTER IN SIDES ONLY

SHUTTERS OVER TWO GLASS FRAMES

CLEANING GLASS
TO ALLOW SUN INTAKE IN WINTER
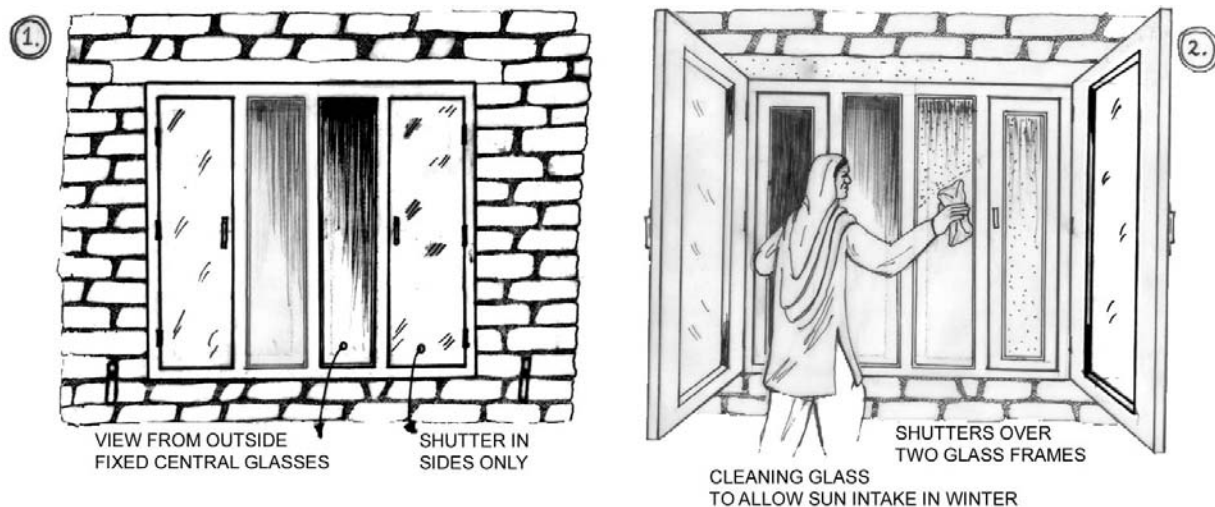
The main BACIP improvements that address these issues include roof hatch windows, wall and roof insulation, double glass windows, and stoves with water warming facility. They seek to make houses more comfortable in terms of thermal insulation, lighting, dampness, and ventilation.

Feedback from the community indicates that the BACIP techniques and products are also affecting other aspects of village life. The insulation techniques have resulted in decreasing the wood consumption of a typical family by as much as 50%, thus reducing

the cost and time spent on collecting and buying firewood.[3]

BACIP developed products that address the main conditions that are most likely to affect a family's health: ventilation, lighting, insulation, and cleanliness. Reduced levels of smoke, along with better ventilation and temperature inside the house is considered to have made a contribution to the reduction of illnesses and money spent on health care.

Double-Glazed Windows are an improved design for double glass windows – they allow increase sun intake and heat conservation, thus reducing the need for firewood. Such window improvements can allow optimum sunlight to enter the house and to enhance the level of thermal comfort compared to that achieved by single pane windows (Figure 1.2).

Figure 1.3

Demonstration of a BACIP Roof Hatch Window

The **Roof Hatch Windows** are placed above the central opening in the traditional room. They increase the level of light inside the house and have excellent heat conservation properties (Figures 1.3 and 1.4).

There are three standard sizes of roof hatch window none of which disturb the overall traditional layout of the house. For optimal illumination, the roof hatch window is placed facing the south and the glass kept clean. In the vertical rear side of the roof hatch there is a pivoting shutter for ventilation. The traditional 3-inch chimney pipe is repositioned and fitted with a pivoting hood (*feri-feri*) to avoid backdraft. An optional galvanised flat sheet shutter can be closed over the top of the roof hatch providing additional insulation and protection at night.

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[3] WWF and BACIP. July 2001. *Home Conservation: Integrating Environment and Development at the Household Level in the Northern Areas.* Gilgit.

Figure 1.4   BACIP Roof Hatch Window Sketch

GLASS WINDOW
5mm thick, 2 × 18 × 18

Optional Protective G.I
Shutter

PIVOTING VENT

Base Plank

Top Window Frame
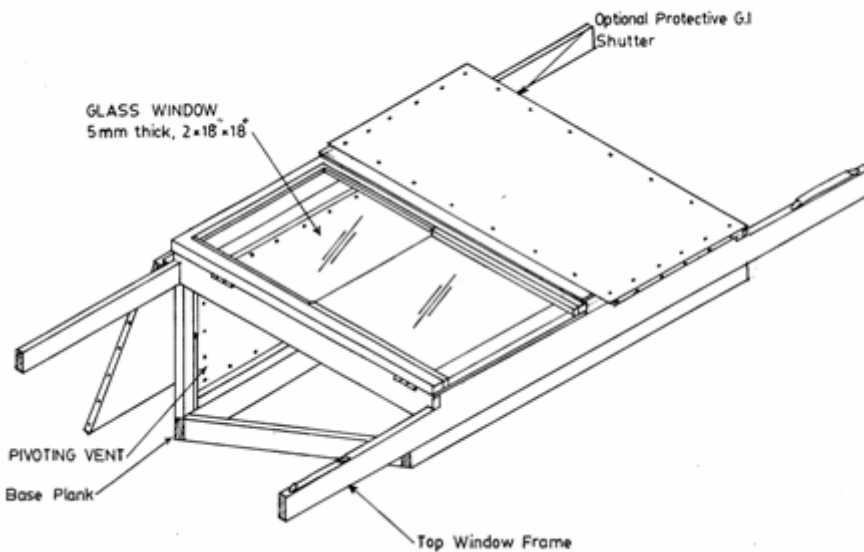
BACIP also developed **Wall Insulation** with high thermal insulation properties. There are several different types of insulation. One such type consists of a plastic foil and expanded metal mesh fixed onto wooden pegs and covered with plaster.
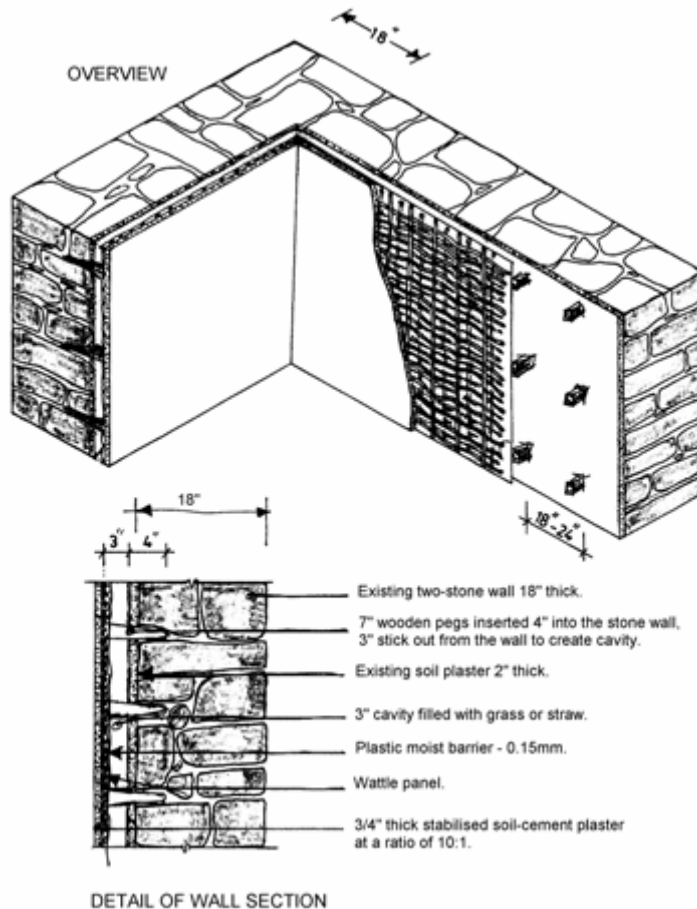
Figure 1.5   BACIP Wall Insulation Sketch

In the 2-3 inch space created between the wall and plastic, a filling of reeds or wood shavings can be applied. Wall insulation with grass filled cavity and plywood has the largest thermal resistance, effectively preventing the formation of condensation on the inner surface of the exterior wall.

BACIP designed a few types of highly effective, low-cost wall insulation methods that can be applied to both existing and new houses. Thermal insulation – placed on the inside of the exterior walls and be as light as possible to keep heat storage capacity low but also to keep the earthquake risk low.

OVERVIEW

18"

18"-24"

18"

3" 4"

Existing two-stone wall 18" thick.

7" wooden pegs inserted 4" into the stone wall, 3" stick out from the wall to create cavity.

Existing soil plaster 2" thick.

3" cavity filled with grass or straw.

Plastic moist barrier - 0.15mm.

Wattle panel.

3/4" thick stabilised soil-cement plaster at a ratio of 10:1.

DETAIL OF WALL SECTION

A thermal improvement can be realised to this technique by introducing an additional set of glass frames. Changing the position of the fly screens and cleaning the glass can also help to obtain benefit from solar heat in the winter. Introducing outside shutters and inside curtains will substantially increase insulation.

Figure 1.6   Wall Insulation Types

To reduce heat loss in existing houses, BACIP developed insulation techniques for the roof, walls, and floors and roof hatch windows and double glass windows to allow and control ventilation.
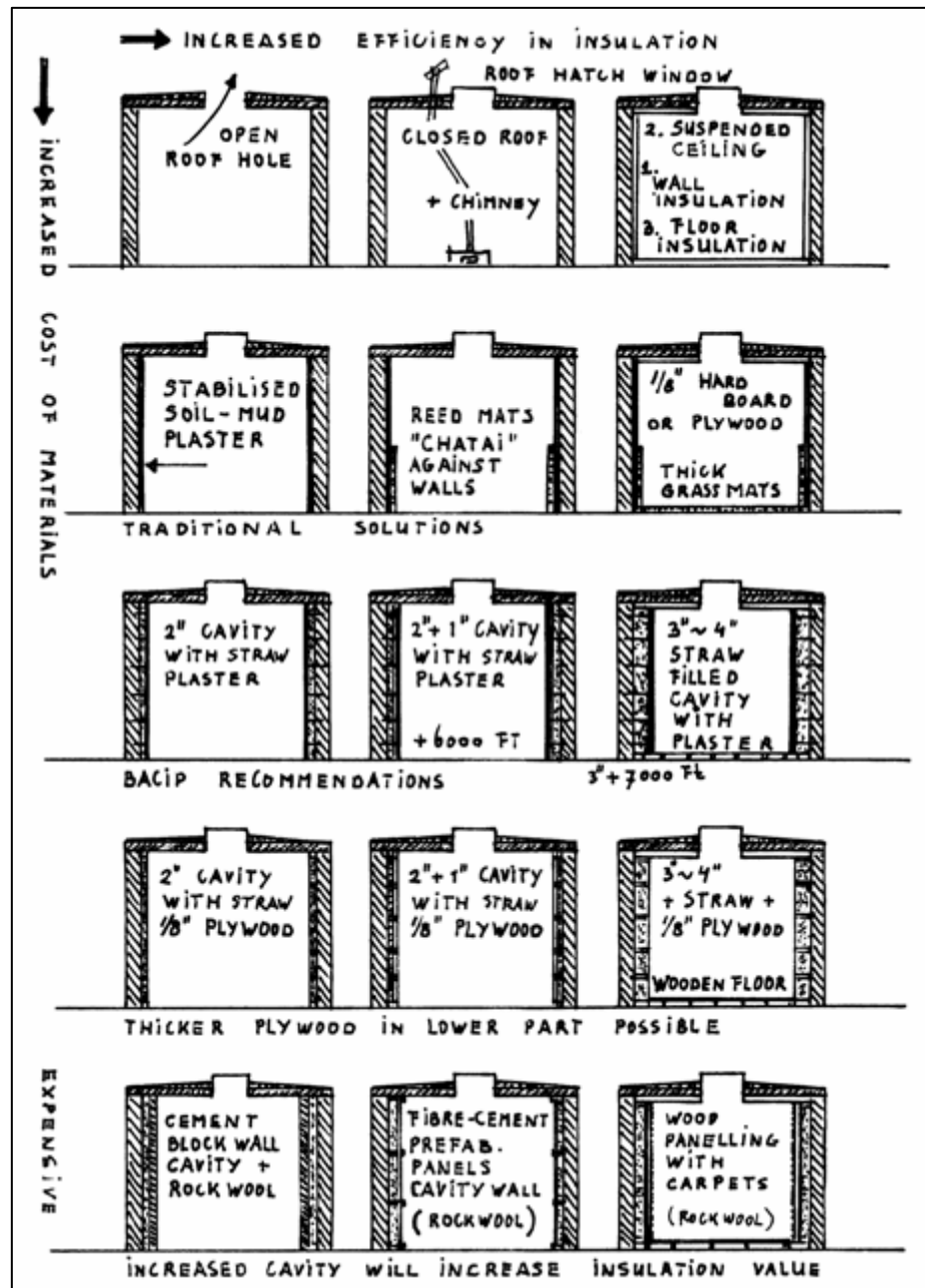
Additional products address these health related issues, but these three have been considered the most effective to date. They are also core products that have been in the market for a sufficiently long enough period of time for such an assessment. Figure 1.7 illustrates how these three main products are working to improve living conditions inside the home.

Figure 1.7   A Traditional House With Roof Hatch Window, Wall Insulation, and Double Glass Window

BACIP Hatch window

BACIP Double glass window

BACIP Wall Insulation

Heat is conserved by hatch window

Heat is conserved by wall & roof Insulation

Smoke goes out from Stove chimney

Heat is conserved by Double glass window

Heat is conserved by floor Insulation

Fuel Efficient Stove
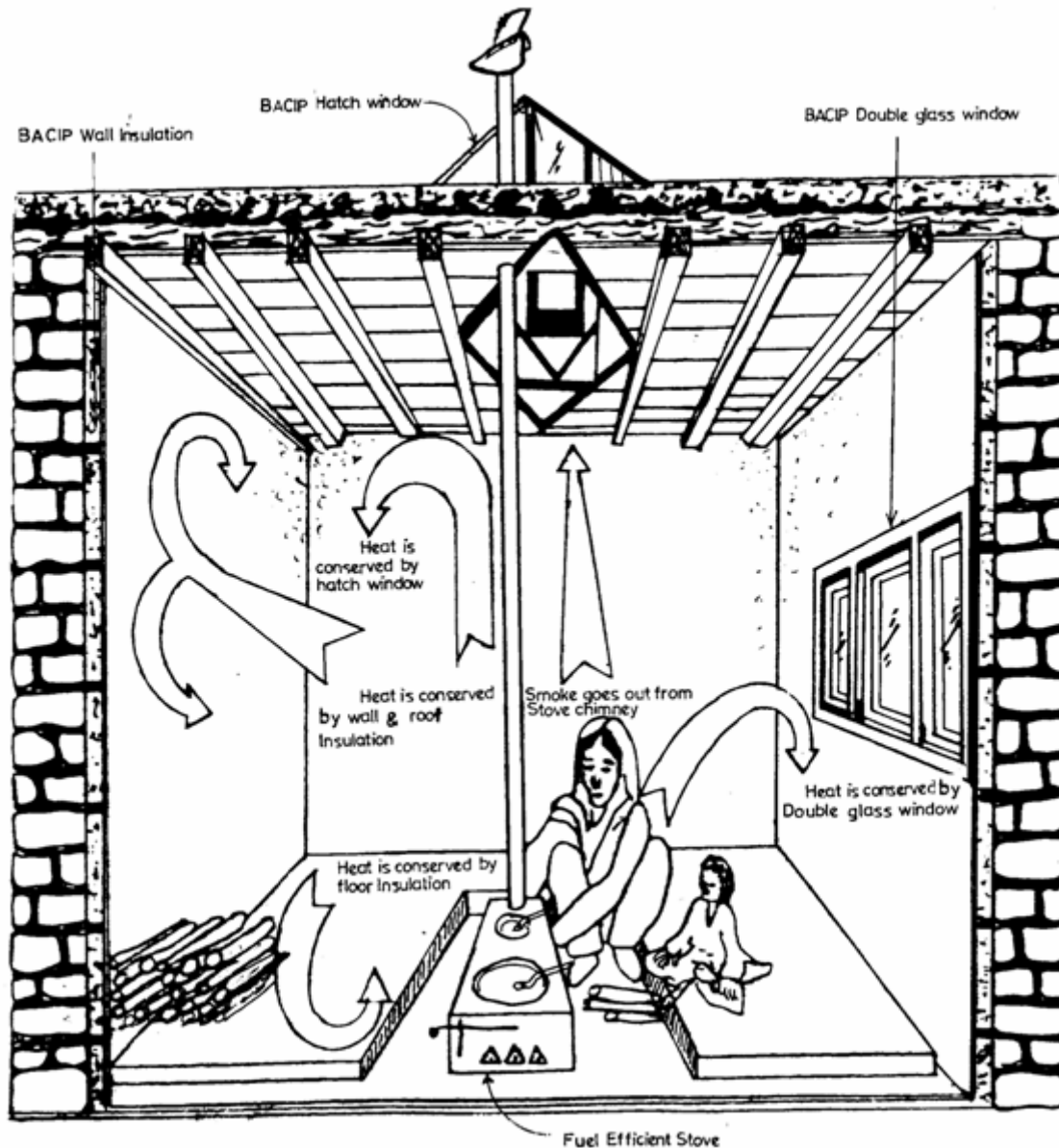
Additional improvements can directly impact the health of women and children. These may include roof and floor insulation, storage racks and cabinets for kitchen utensils and bedding, wall reinforcement, smoke-efficient stoves, and water warming facility.

2.0 THE STUDY

2.1 Why This Study?

Since its establishment, BACIP has been designing and developing housing improvements that seek to improve the housing situation in the Northern Areas. One of the major considerations and incentives for this type of research and development work has been the assumption that a direct relationship exists between health and housing conditions. While a correlation between health and housing is to be expected, no study has been conducted to date in the Northern Areas to determine the extent of this relationship.

AKHS,P has been working to provide better health care services in the Northern Areas for the past 27 years. An important part of its programme is the ongoing health-related research and preventive health care outreach activities. In this regard, studies such as this one continue to inform the organisation on how to enhance their programme, raise awareness, and ultimately improve the quality of life of the people in the region.

For these reasons, a preliminary joint study was proposed to collect data on the implications of housing improvements on health and thereby enhance the existing understanding of the relationship between housing conditions and health status.

This joint study will assess if there is any correlation between these improvements and better household health. Specifically, the study will seek to find out if better lighting, ventilation, and warmth inside the house can contribute towards fewer illnesses and improved health in general.

In conjunction with the emerging priorities for both organisations, this study was also designed to conduct field based research that is anticipated to increase collaboration between organisations and to improve the quality of existing programmes.

2.2 Goal and Objectives

2.2.1 Goal

To determine the implications of BACIP housing improvements on health, particularly the health of women and children.

2.2.2 Objectives

- To enhance the organisational links between AKHS,P and BACIP.

- To seek an initial understanding of the relationship between housing and health, for example, eye and respiratory problems.

- To consider the local perceptions of health in relation to domestic conditions.

- To determine the implications of housing improvements on health-related expenditures.

- To explore the connection between overall wellbeing and improved domestic conditions.

2.3   Methodology

As a community intervention study, this research is both retrospective and comparative. The intervention being considered is the BACIP housing improvements that were introduced in villages in the Northern Areas over the past two years.

The study was held in select villages in both Ghizer and Gilgit districts. They were chosen because of the number of improvements installed in BACIP houses during the research and development phase of the programme.

Four villages selected in Gilgit include Murtazabad, Gulmit, Gulkin, and Passu.[4] In Ghizer District, the villages are Sherqilla, Hassis Bala and Paeen, Gindai, Phunder, and Dirbarkulti.

2.3.1   Household Selection

A group of 50 study houses and 100 control houses were selected for the study. The study houses were selected on the basis of two main criteria:

1. Households with at least one of the core improvements that address the issues of ventilation and warmth, specifically roof hatch window, wall insulation, and double glass window.

2. Households with improvements installed at least one year prior to the study. The one year duration was considered important in determining how the intervention has affected the health and wellbeing of a family during the cold winter conditions of the region.

A control group of 100 households was taken for comparison from houses that do not have BACIP interventions. That is, two houses without BACIP interventions were selected for each BACIP house. The AKHS,P and BACIP field staff working at the local village level assisted the team in selecting the control houses. The control houses were selected on the basis of their similarity to the BACIP houses in terms of the age structure, educational levels, household income, and housing characteristics.

In order for this comparative study to be statistically sound, these confounding factors were controlled both during the study through careful selection of the control houses, but also after the data collection is complete through stratification and deliberate analysis.

2.3.2   Field Work and Data Collection

A questionnaire made up of both closed and open questions was used to gather the data. (Annex 1). It was designed to gather quantitative data about the existing health and housing conditions and the relationship between these two variables. It also sought qualitative feedback from the people regarding their perceptions about health and their knowledge and appreciation of BACIP housing products.

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[4] The Northern Areas is administratively divided into five districts: Ghizer, Gilgit, Diamer, Skardu and Ghanche. Though administratively they lie within the Gilgit Disitrict, the four villages visited in this study are actually in Hunza valley and not the Gilgit valley.

The questionnaire was field tested in Jutial in Gilgit town prior to commencing the fieldwork and minor adjustments were made accordingly. The interviews were conducted only with mothers and their assent was acquired prior to conducting the interview.

An ethical code of conduct in terms of confidentiality, transparency, and impartiality of the data collected was always maintained by both organisations.

Figure 2.1   Data Collection in Hassis Bala

Table 2.1   The Field Team

	Team Members										
	BACIP			AKHS,P							
Villages	Nahida	Noha	Samina	Abid	Gulaftab	Najiba	Noor Jahan	Sunbul	Sultana	Yaman	Yasmin
Murtazabad		√	√	√	√						
Gulkin			√	√			√				
Passu			√	√		√					
Gulmit			√	√		√	√				
Sherqilla	√		√	√							
Hassis Bala		√	√					√			
Hassis Paeen			√	√					√		
Gindai		√	√							√	
Phunder		√	√								√
Dirbarkolti		√	√								√

The field team comprised of three to four individuals with representatives from both organisations present at any one time. Samina Bilqees (BACIP) acted as the main interviewer and was present in each of the villages. Additional interviewers were

seconded from the nearest AKHS,P field offices to assist the team with the data collection and were usually briefed/ trained in the field (Table 2.1). The constant presence of one main interviewer was therefore essential for both the accuracy and consistency of the data collection process.

At the village level, the village coordinator and village resource persons (BACIP volunteers) assisted the team in house selection and accompanied the team in their house-to-house visits.

Table 2.2   The Volunteers

Village	Name	Volunteer Position
Murtazabad	Ghulam Shafi Zahida Shafi Amin	Resource Person Resource Person Resource Person
Gulkin	Aziz Khan	Resource Person
Passu		
Gulmit	Ghulam Baig	Resource Person
Sherqilla	Kimiya	Village Coordinator
Hassis Bala	Majid Khan	Village Coordinator
Hassis Paeen	Shukrat Wali Umar Yar	Resource Person Resource Person
Gindai	Saba Perveen Mohammad Faqir	Resource Person Village Coordinator
Phunder	Mohammad Azam	Village Coordinator
Dirbarkolti	Mohammad Akbar	Village Coordinator

One of the two lead team members (co-authors) was always present during the field work component of the study. They represented the partner organisations, assisted in training the LHVs, and supervised the data collection procedures.

The study was conducted in approximately eight weeks time. The field level data collection was carried out in portions of three to four days amounting in total to approximately 15 days. Relevant field expenses of the staff involved were shared by both organisations and relevant BACIP and AKHS,P data was made available to the research team. In general, both sets of offices and other staff members also served as resources for this study.

2.3.3   Limitations

- The data collection took place during the months of May and June when most households spend a much greater time outdoors and are less affected by the improved conditions inside the house (Figure 2.1).

- To date, BACIP has essentially been a research and development project and the full extent of implementation has not been realised. For this reason, one year was set as the minimum duration required since the installation of the BACIP improvement. However, one year is still not sufficient enough a duration for a household to have experienced a long lasting impact on people's health.

- On certain occasions, due to inadequate information on behalf of BACIP or misuse

on behalf of the user, the BACIP intervention's maximum potential had not been affected. For example, the vent in the roof hatch window was not being used or the window panes had been left dirty. In these scenarios, the health benefits would have also been minimized.

- A combination of two to three housing improvements is expected to have a much greater impact on a family's health, but the number of houses where more than one product has been installed is limited.

- Though the sample size of 50 houses with BACIP interventions is statistically sound, it is still rather small. The results are likely to show greater statistical accuracy and significance if the numbers were increased.

- The results are based on what the respondents could recall as opposed to clinical examinations or direct observations. In terms of the disease morbidity, the results may be less accurate although it also presents what is most pressing in terms of people's own perceptions about health, housing, and wellbeing.

2.3.4 Data Analysis

The results have been divided into two sections: Quantitative Data (3.0) and Qualitative Data (4.0). The quantitative data analysis was conducted using the statistical software Epi Info 6.02. The qualitative data (feedback on BACIP interventions by users and non users) was examined and summarised in terms of the most common responses and the relevant supporting information highlighted in that section also.

3.0 THE QUANTITATIVE RESULTS

In order to analyse the quantitative data, there are essentially two main questions to answer:

1. Are the two samples (study and control) the same in all respects other than the BACIP intervention.

2. Is there any statistically significant difference between the two populations related to the health of the individuals. For instance, less morbidity and less health care expenditure.

In seeking answers to these two questions, additional relevant or insightful information related to the demographics, lifestyle practices, and trends were included in the discussion.

3.1 Comparison of Sample Groups

For the robustness of the results, it is important, if not essential, that the two sets of sampled households (HH) – the study group being those households with BACIP interventions and the control group those without BACIP interventions – be identical in all respects other than the intervention itself. In the study group sample, the intervention introduced is one or more of the three BACIP products under review: Roof Hatch Window (RHW), Wall Insulation (WI), and Double Glass Window (DGW).

The following variables were considered confounding factors that can potentially distort the results:

1. age structure

2. education levels

3. economic status

4. housing characteristics

The comparison of the two sample groups, that is each set of calculations, is discussed in the upcoming sections on population groups, economic status, education levels, and housing characteristics. Additional relevant findings which highlight the conditions in the region are also discussed.

3.1.1 Household Data

The first part of the questionnaire was dedicated to collecting detailed household information about each family member including sex, age, education, and occupation (Annex 1). This was necessary for the comparison of the two sample groups, but it also serves to enhance our understanding of the existing conditions. The next section will briefly describe these demographics.

The households were distributed across the regions with 54% in Ghizer and 46% in Gilgit district.

Table 3.1   Household Size and Location

Variable	BACIP Houses		Non-BACIP Houses		Total	
	#	%	#	%	#	%
Households interviewed	50	100%	99*	100%	149	100%
Gilgit District	23	46%	45	45%	68	46%
Ghizer District	27	54%	54	55%	81	54%
Household Distribution by Size						
1-4 members	2	4%	-	-	2	1%
5-8 members	27	54%	52	53%	79	53%
9-12 members	15	30%	31	31%	46	31%
> 12 members	6	12%	16	16%	22	15%
Average Household Size	8.7 (± 3.5)		9.3 (± 3.1)		9.1 (± 3.2)	

* It was discovered that several of the houses selected turned out to be households that had independently installed a BACIP products in their home or they had received one of the non-core BACIP products as a model. In these cases, the select houses were dropped.

Table 3.1 and Figure 3.1 show that a majority of the families interviewed have 5 to 8 people currently living in the house (53%). This figure is followed by larger families with 9 to 12 members (31%) . Only two houses from the entire sample had families with less than five members and the remaining 15% had more than 12 people living in the their home.

Figure 3.1   Household Size
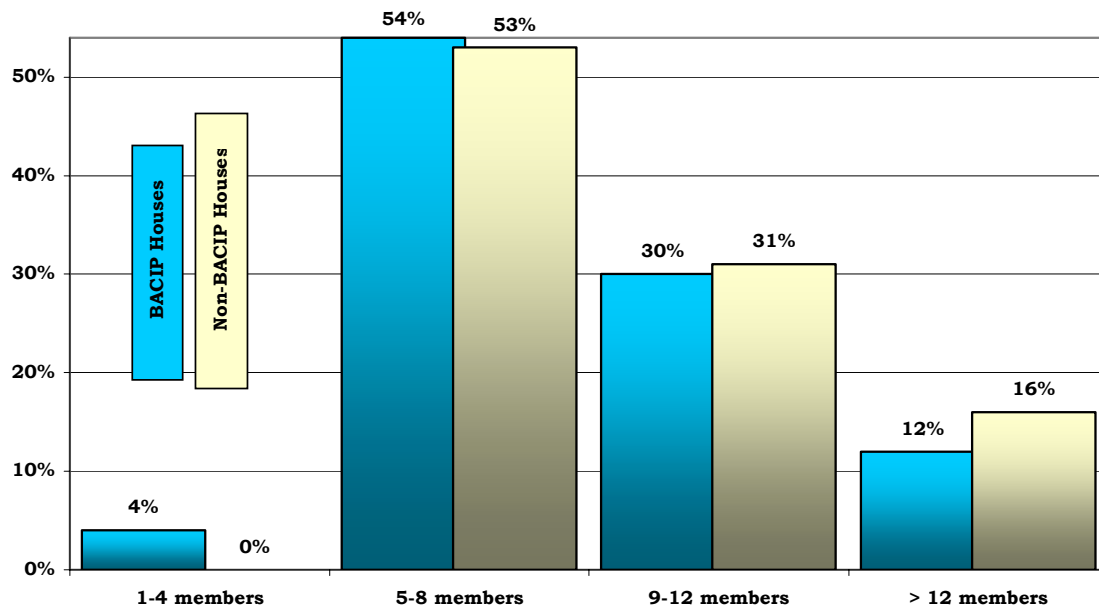
The pattern of distribution is similar across BACIP and Non BACIP houses. The average HH (household) size is slightly different amongst the sample groups with an 8.7 average

amongst BACIP houses and 9.3 average amongst Non BACIP houses.

3.1.2   The Age and Sex Profile

The population considered as part of the sample included only those members of the family currently living in the house. If additional family members were working/ studying in another part of the region or country, then they were not included in the sample. For this reason, the sex ratio here is noteworthy. It would be expected that given the particular traditions in the region and the proportion of the female population in cash earning jobs or pursuing further studies is such that more men would be living outside the home. However, the proportion of men to women in the sample is much larger than the conditions would dictate. For every 110 men there are only 100 women. This ratio is significantly disproportionate and should be considered for future research.

Table 3.2   The Sample Population: Sex Ratio & Age Structure

Variable	BACIP Houses		Non-BACIP Houses		Total	
	#	%	#	%	#	%
Total Population in the Sample	438		921		1,359	
Male	228	52%	484	53%	712	52%
Female	210	48%	437	47%	647	48%
Male: Female Ratio	109:100		111:100		110:100	
Age Structure						
0-4 years	51	12%	93	10%	144	11%
5-14 years	135	31%	287	31%	422	31%
15-45 years	183	42%	426	46%	609	45%
46-60 years	45	10%	70	8%	115	9%
60+ years	24	6%	45	5%	69	5%

Figure 3.2   Population Age Structure
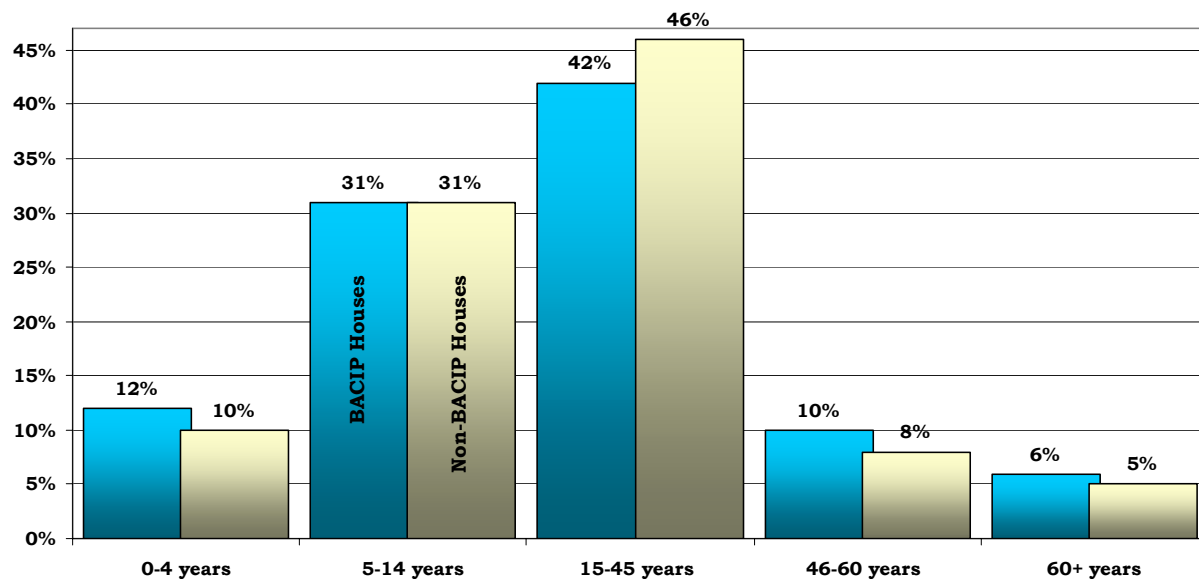
The age structure of the sample (Figure 3.2) shows that 54% of the population is within the 15-60 working age population. 42% of the population is less than 14 years of age and only 5% are over 60 years of age.

> The first potentially confounding factor on which the two groups are being compared is **age structure**. For this, the *proportion of children under five years of age* is being considered. In the study households (BACIP), 14.8% (95% CI 11.71% - 18.61%) of the population was found to be in this age bracket whereas in the control houses (Non BACIP), this proportion was 13.03% (95% CI 10.96% - 15.42%). When these two proportions were compared using the Chi Square test, the value of Chi square came to 0.83 with a *p value of 0.362931* ($\propto$ = 0.05).
>
> Statistically, for the two proportions to be different (with 1 degree of freedom), the chi square value should be 3.841 or more. In the two populations, a comparison of the proportion of children under five produces a chi square value of 0.83 (*p value 0.3629*) from which we can infer that the two population samples are not statistically different.

3.1.3   The Education Profile

The population's education profile has been disaggregated into four major levels: No Formal Education, Primary, Middle/Matriculation, and Higher Education. The population five years of age or under was considered to be too young to attend school and was excluded from the analysis. The population was also divided across male and female populations.

Table 3.3   Education Profile

Variable		BACIP Houses		Non-BACIP Houses		Total	
		#	%	#	%	#	%
No Formal Education	Male	41	21%	75	18%	116	19%
	Female	69	37%	147	38%	214	37%
Primary	Male	55	28%	130	31%	185	30%
	Female	51	28%	100	26%	151	26%
Middle / Matriculation	Male	69	35%	137	33%	206	33%
	Female	54	29%	105	27%	159	28%
Higher Education	Male	35	18%	77	18%	112	18%
	Female	11	6%	39	10%	50	9%
Total Adult Population		385		810		1193	

The education figures are dramatically different for men and women in the population (Table 3.3, Figure 3.3). 37% (214) of all women of schooling age received no formal education while the men in this category were only 19% (116). Thus, it could be stated that 18% (100) more women were illiterate compared to men.

The trend that fewer women than men have attended school is the same across all levels of education. 63% (391) of the men attended primary or secondary level education (30% primary and 33% middle/matriculation) whereas 54% (310) of the women had attended

the same (26% primary and 28% middle/matriculation). As for higher education, the difference jumps to half with only 50 women (9%) compared to 112 men (18%).

28% (330) of the adult population (over 15 years) has had no formal education training, 28% has had primary school level, 31% middle/matriculation, and 14% higher education.

Figure 3.3   Education Profile by Sex
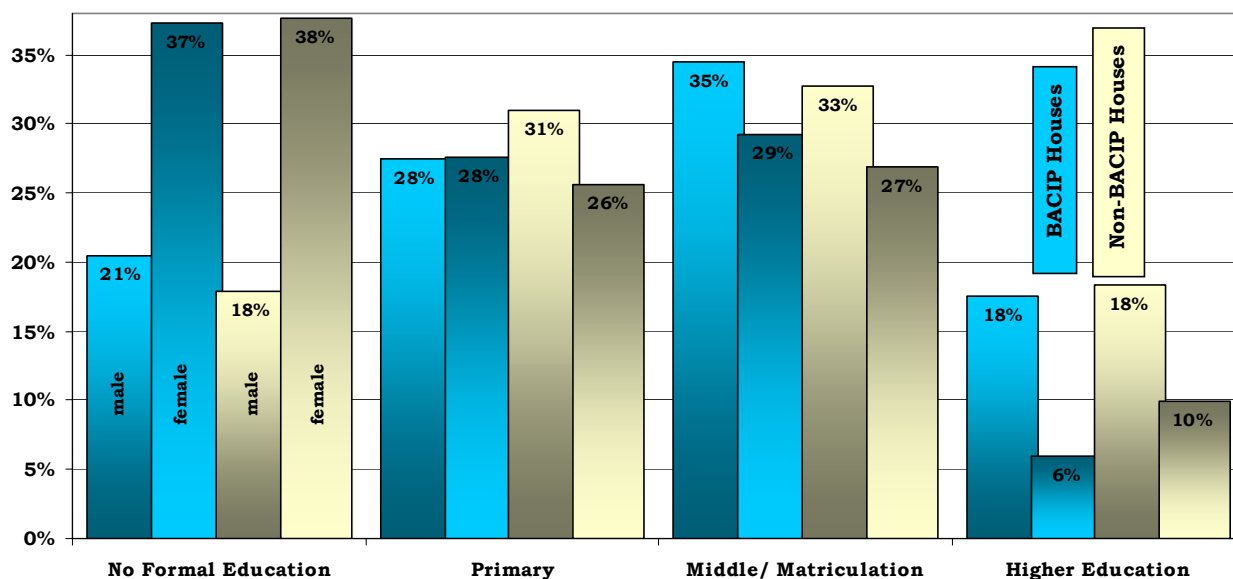
Table 3.4   Adult Population With Minimum Primary Education

Population	BACIP Houses		Non-BACIP Houses		Total	
	#	%	#	%	#	%
Male	75	61%	164	64%	239	63%
Female	41	37%	101	40%	142	39%
Total	116	49%	265	52%	381	51%

The adult population with basic level education was also compared across the two sample groups. Here, 24% less women were found to be literate as compared to men in the region. Given that women tend to be the primary users or beneficiaries of the house improvements, this factor is one that may affect how products are being used in the household.

Figure 3.4   Adult Population With Minimum Primary Education
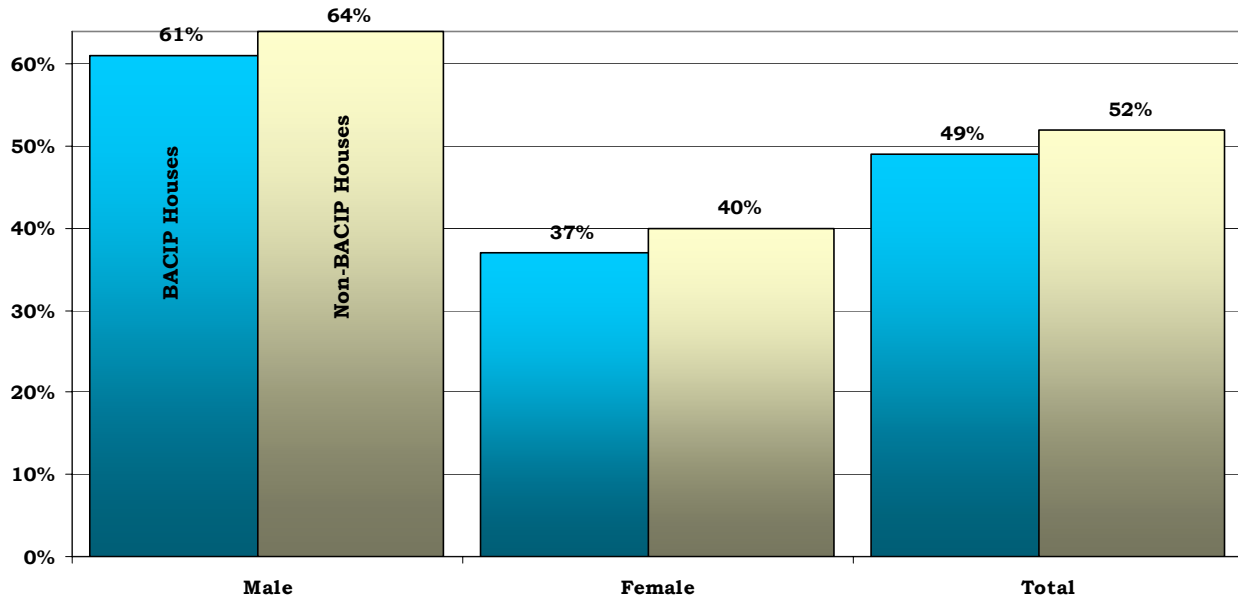
In order to compare the two sample groups, the *proportion of the population aged 15 years and older* with a **minimum of primary level of education** were considered. This particular variable was selected because it shows a basic level of education/literacy attained by the adult population. The study households (BACIP) had a 49.2% proportion (116 people) educated at this level while the compare houses (Non BACIP) had 52.2% (265 people) who had received the same basic level of education.

The Chi^2 test value was 1.17 with a *p value of 0.279* which is less than the minimum 3.841 value for statistical difference. Hence, it can be concluded that the two groups are not statistically different according to the education variable.

3.1.4   The Occupation Profile

The occupation-related data was divided into both male and female populations (Table 3.4) and also analysed in terms of cash earning employment (Table 3.5).

The labour population in the sample is less than half that of the entire male population (712). In fact, there are more students (42%) than there are employed men in the region (41%). Amongst the male working population, the No.1 occupation was farming with 26% of the population involved in this sector. The next major employers are the army (16%), government (12%), and small business (11%) (Table 3.5, Figure 3.5). Additional jobs include manual labour, teaching, and NGO work. Amongst the labour popoulation, 8% were reported to be unemployed.

Table 3.5   Occupation Profile for Male Population

Occupation		BACIP Houses		Non-BACIP Houses		Total	
		#	%	#	%	#	%
	Farmers	31	32%	45	23%	76	26%
Cash Earning Employment	Army Personnel	12	13%	35	18%	47	16%
	Govt. Servants	11	11%	25	13%	36	12%
	Business	8	8%	23	12%	31	11%
	Labour	8	8%	14	7%	22	8%
	Teachers	11	11%	13	3%	24	8%
	NGO Employees	4	4%	13	7%	17	6%
	Other Employment	4	4%	12	6%	16	5%
	Unemployed	7	7%	15	8%	22	8%
	Sub Total (Labour Pop)	96	100%	195	100%	291	100%
	Students	94	41%	203	42%	297	42%
	Children (<15 years)	38	17%	86	18%	124	17%
	Total Population	228	100%	484	100%	712	100%

Figure 3.5   Occupation Profile for Male Population
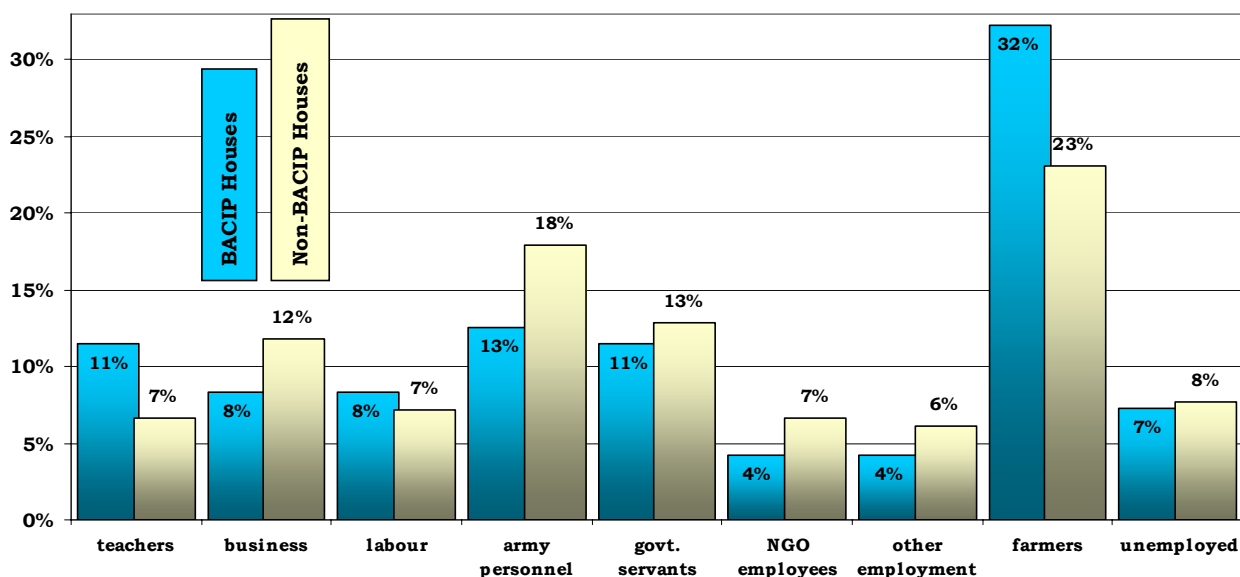
Amongst the female population, 79% of the women said that being a housewife was their main occupation (Table 3.6). A very small number of the population are otherwise employed and those are occupied in teaching jobs or the NGO sector. While in general there are much fewer adult women educated then men (Section 3.1.3), the proportion of women currently studying is similar to that of the men (40%).

Table 3.6   Occupation Profile for Female Population

Occupation		BACIP Houses		Non-BACIP Houses		Total	
		#	%	#	%	#	%
	Housewives	74	81%	159	78%	233	79%
Cash Earning Employment	Teachers	5	5%	12	6%	17	6%
	NGO Employees	4	4%	3	1%	7	2%
	Business	-	0%	2	1%	2	1%
	Labour	-	0%	4	2%	4	1%
	Government Servants	1	1%	2	1%	3	1%
	Cottage Industries	1	1%	1	1%	2	1%
	Other Employment	1	1%	7	3%	8	3%
	Farmers	1	1%	1	1%	2	1%
	Unemployed	4	4%	13	6%	17	6%
	Sub Total (Labour Pop)	91	100%	204	100%	295	100%
	Students	84	40%	168	40%	252	40%
	Children (<15 years)	35	17%	65	15%	100	16%
	Total Population	210	100%	437	100%	647	100%

The fact that no more than 17% of the entire sample is currently working in cash earning jobs means that the purchasing power of the population is limited and that there is heavy reliance on subsistence. In addition, the difference between the sexes is rather significant (19%) for amongst the men, 26% were wage earners, while no more than 7% of the women were. Similar to the education factor, this point needs to be considered in the marketing and community education approach for BACIP because the women continue to be the main users although they are less likely to be the main decision makers in terms of product purchase.

As shown in Table 3.7, the proportion of the sample in a cash earning job is small enough to suggest that most of the villages in the sample must be heavily based on agriculture for both subsistence and cash crop earnings. This may also affect the potential demand for BACIP products in the future where rural households such as the ones in this sample may not have the regular flow of income available to purchase the improvements.

Table 3.7   Cash Earning Employment*

Population	BACIP Houses		Non-BACIP Houses		Total	
	#	%	#	%	#	%
Male	56	25%	131	27%	187	26%
Female	12	6%	31	7%	43	7%
Total	68	16%	162	18%	230	17%

*Farming was not included as a type of cash earning employment since this would depend on landholdings data currently unavailable from the study.

Figure 3.6   Cash Earning Population by Sex
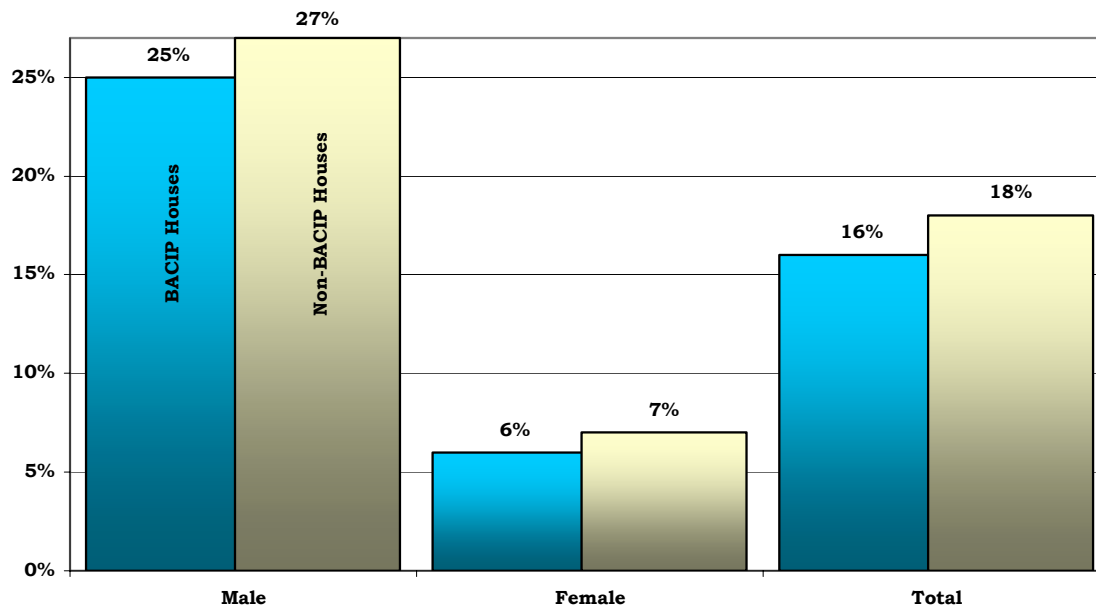
In terms of the **economically active population**, the *proportion of the population engaged in cash earning employment* was compared across the two sample groups. 15.5% of the study households (BACIP) were wage earners whereas 17.7% of the compare houses (Non BACIP) were.

In this case, the Chi^2 was 0.99 (with a *p value of 0.318889*) which remains below the minimum value. Economically speaking, the two groups can be considered statistically similar.

3.1.5   Housing Characteristics

As shown in Table 3.8, an average home's lifespan is around 20 years. Most houses have a combined kitchen and living room area which is a tradition well suited to the climate of the region because the stove can serve the dual purpose of cooking and heating during the winter. However, without adequate ventilation, the stove produces smoke and ash and dust in the house which has a large impact on health and hygiene. Also, the presence of food in the house can lead to insects and uncleanness that could be unhygienic for sleeping.

The average density of 3.8 persons per room calculated from the sample appears to be quite reasonable for a traditional room of 5.5 metres^2. The average household size in this region is 9.2 persons living in a house with 2.4 rooms. Traditionally, however, the second room is usually kept as a guest room and is not used by the family on a regular basis. Keeping this in mind would significantly increase the density of sleeping/living arrangements.

An additional characteristic examined in this survey is the extent that households are using *bukharis* for cooking. In the past, open fires were in common use, but in our

sample, no more than 5% have been cooking on an open fire inside the house, but now mostly use *bukharis* with a pipe to channel the smoke outside.[5]

Table 3.8   Housing Characteristics

Variable (sample average)	BACIP Houses	Non-BACIP Houses	Total
Household Size	8.7	9.3	9.1
No. of Years Living in the House	19.6	20.5	20.2
No. of Rooms Per Household	2.6	2.3	2.4
No. of Residents Per Room	3.4	4.1	3.8
Kitchen & Living Area Separate	18 (36%)	26 (26%)	44 (30%)
Bukhari w/ Pipe as Smoke Outlet	48 (96%)	94 (95%)	142 (95%)

While the majority of homes in the region (60%) are still being built with stone and mud (*katcha*), more and more houses have been using stone/cement (21%) or cement blocks (6%) for their better durability and finish (Table 3.9 and Figure 3.7). In Gilgit and Ghizer, clay-based blocks (adobe) are not commonly used (3%) although they tend to be much better insulators. The introduction of cement into housing construction in this region has been a problem particularly in urban areas because cement houses are thermally inefficient – they are very cold in winter and very warm in summer. Generally, most new houses built in this way without any additional insulation are too cold in the winter and too warm in the summer.

Table 3.9   Type of Housing Construction

Type of Construction	BACIP		Non-BACIP		Total	
	#	% *	#	%	#	%
Stone/Mud	31	62%	59	60%	90	60%
Stone/Cement	9	19%	22	22%	31	21%
Cement Blocks	4	8%	5	5%	9	6%
Adobe/Clay Blocks	1	2%	4	4%	5	3%
Multiple Types	3	6%	9	9%	12	8%
No response	2	4%	2	2%	4	3%

* These figures represent the percentage of the sample who live in this type of housing.

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[5] BACIP has also developed smoke efficient *bukharis* that minimize the amount of smoke that escapes from the stove and into the home.

Figure 3.7   Type of Housing Construction, BACIP and Non-BACIP Houses
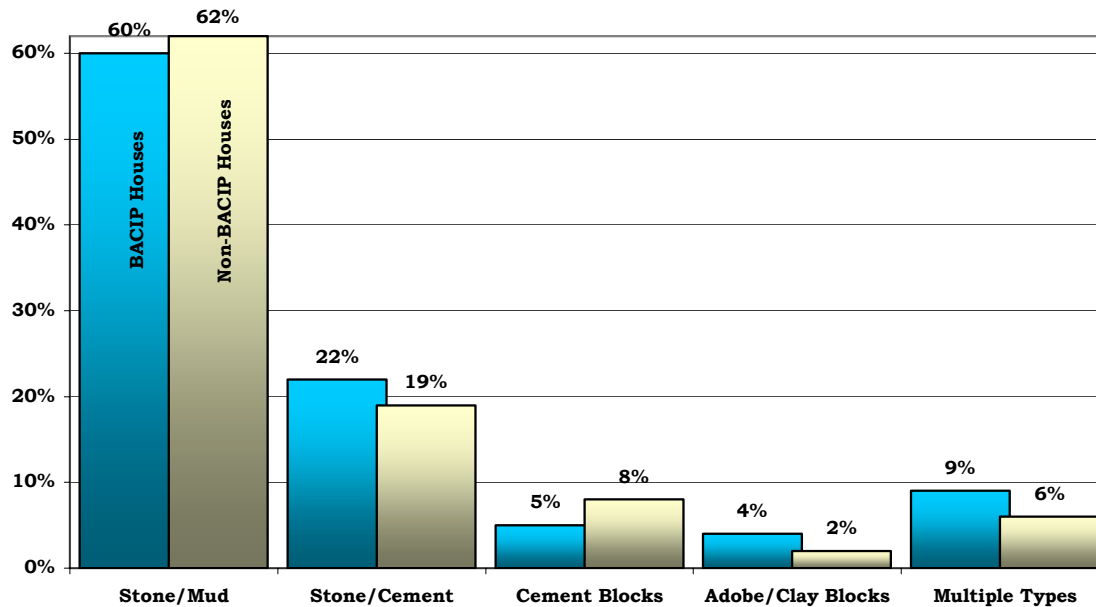
The last variable in the statistical comparison of the two groups is **housing characteristics**. Here, three aspects were considered: the **type of construction** used, the **main source of drinking water**, and the **sanitation system** in use by the household.

For the construction type, the *proportion of pucca houses* in the two sample groups was compared, that is those houses built with stone/cement or cement blocks. 26.0% of the BACIP houses were *pucca* whereas 27.3% of the Non BACIP houses were. The Chi^2 value was found to be 0.04 with a *p value of 0.834674* which is not statistically significant.

In terms of access to water and sanitation, the *percent of households using tap water* as the main source of drinking water and the *percent of households using flush latrines as toilet facility* were the variables considered for this comparison. 72.0% of BACIP houses and 70.7% of Non BACIP houses use tap water for drinking purposes. According to the Chi^2 (0.04 with a *p value of 0.834674*), these two groups are sufficiently similar. The proportion of households using flush latrines for sanitation is also similar with 74.0% amongst BACIP houses and 70.7% amongst Non BACIP houses (Chi^2 =0.23 and *p value = 0.632811*).

Across the four potentially confounding factors, the calculations have shown that there is no statistically significant difference between the two sets of households chosen as study houses. Therefore, it can be concluded that any differences in terms of household health can be attributed to **BACIP interventions**.

Generally, it is the women who fetch the water from the river, water channel, spring, or other water source (20%-23%). For those houses, not having easy access to clean water for drinking, regular bathing, cleaning and washing is likely to be one of the biggest determinants of ill health amongst households in the region. According to WASEP, 50% of all deaths in the Northern Areas and Chitral are caused by water and sanitation related diseases. However, more and more villages have now received water supply

schemes provided by government programs, the Water and Sanitation Extension Programme (WASEP), or by the Aga Khan Rural Support Programme (AKRSP). In this study sample, 70% of the households were using tap water as their main water source. This improved access to water supply has had a tremendous impact on household health. For example, statistics by WASEP have shown an average reduction of 52% in the number of cases of diarrhea in villages in the Gilgit region where a WASEP water supply was introduced.[6] Thus, it is important to compare the study households across this factor because it is one of the variables most directly linked to overall health conditions.

Similarly, the type of toilet facility in use is another important health consideration. Although 5% of the households in the sample continue to use the open field as a toilet, the majority (72%) have a flush latrine system. The dry pit or closed pit latrine system is another method currently under promotion by BACIP. It is preferred because the waste can be used for manure in the field and the toilet itself functions as a shower as well.

Table 3.10   Water and Sanitation

Source of Drinking Water	BACIP		Non-BACIP		Total	
	#	%	#	%	#	%
Tap Water	36	72%	70	71%	113	76%
River/ Nallah	4	8%	11	11%	15	10%
Water Channel	2	4%	7	7%	9	6%
Spring Water	3	6%	3	3%	6	4%
Other / Multiple Sources	4	8%	1	1%	5	3%
Toilet Facilities						
Flush Latrine	37	77%	70	71%	107	72%
Traditional Pit	11	22%	19	20%	30	21%
Closed Pit Latrine	-	-	1	1%	1	1%
Open Field	-	-	7	7%	7	5%
Multiple Types Used	2	4%	2	2%	4	3%

A final variable to consider in terms of housing characteristics is the presence and location of animals. This variable was not considered as one of the main confounding factors, but the pattern is similar between BACIP and Non BACIP houses. Results in Table 3.11 show that most houses keep cattle (98%), but the majority of houses (79%) keep their cattlesheds outside the compound and 15% continue to keep their animals in a shed that is attached to the traditional house.

Unlike cattle, a large proportion of houses (26%) do not that keep poultry. Yet, amongst those that do, a majority keep the poultry outside the compound (48%). The remaining 24% keep the poultry either inside the house or within the compound. This variable may not be directly related to aspects of ventilation, lighting or warmth, it may still affect aspects of household health as living in congested quarters with poultry or cattle can lead to numerous diseases.

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[6] WASEP. 2000. *Water and Sanitation Extension Programme: A Project of the Aga Khan Planning and Building Service, Pakistan: A Programme Cycle 1997 to 2001.* Gilgit: WASEP & AKPBS,P.

Table 3.11   Animal Yards

Cattlesheds	BACIP		Non-BACIP		Total	
	#	%	#	%	#	%
Attached to traditional house	6	12%	16	16%	22	15%
Within Compound	2	4%	4	4%	6	4%
Outside Compound	41	82%	77	78%	118	79%
No Animal Yard	1	2%	2	2%	3	2%
Poultry						
Within traditional house	4	8%	10	10%	14	9%
Within Compound	10	20%	14	14%	24	16%
Outside Compound	24	48%	48	47%	72	48%
No Animal Yard	12	24%	27	27%	39	26%

3.2   Has BACIP Made A Difference?

Having confirmed that the two groups are sufficiently similar in terms of the major confounding factors, the comparison of health statistics can be looked at with more confidence. The first major health issue is the disease burden or morbidity level, looking at acute illnesses in general and then more specifically at chronic illnesses, eye problems, and the incidence of cough/bronchitis. All the results are based on what the respondents reported and are thus also based on what people recall rather than upon clinical examinations.

3.2.1   Acute Illnesses

Table 3.11   Acute Illnesses

Households with Illnesses	BACIP		Non-BACIP		Total	
	#	%	#	%	#	%
Last week	10	20.0%	28	28.6%	38	25.7%
Last month	12	24.0%	18	18.4%	30	20%
Last winter	15	30.6%	15	45.9%	60	40%
Population with Illnesses						
Last week	12	2.7%	39	4.2%	51	3.8%
Last month	19	4.3%	55	6.0%	74	5.5%
Last winter	19	4.3%	83	9.0%	102	7.5%
Chronic Health Problem	25	5.7%	46	5.0%	71	5.2%
Eye Problems	23	5.3%	47	5.1%	70	5.2%
Cough/Bronchitis	11	2.5%	25	2.7%	36	2.6%

Households were asked if any members of their household had fallen ill during the past week, the past month (which would include last week), and during the last winter. The results on acute illnesses from "last week" and from "last month" which would actually be from late May to early June when the data was collected was compared across BACIP and Non BACIP houses.

During the "last week," 2.7% of BACIP houses (95%CI 1.5% – 4.9%) had illnesses while

4.2% of Non BACIP houses did (95%CI 3.1% - 5.8%). Although the Chi^2 of 1.84 (*p value 0.175386*) shows no statistical difference, it can still be stated that fewer individuals living in BACIP houses were ill than those in Non BACIP houses.

From "last month's" results, 4.3% of BACIP households reported illnesses (95%CI 2.7%-6.8%) while a higher proportion 6.0% (95%CI 4.6% - 7.8%) was found amongst Non BACIP HHs. Here also, the Chi^2 value was 1.54 (*p value 0.21476*) which is also not significant statistically.

The two sets of results reflect the disease burden experienced during the months of May and June when people spend most of their time outdoors. Since BACIP interviews are addressing the domestic environment, particularly ventilation, warmth, and lighting, the results from "last winter" were expected to be much more informative. As expected, there were fewer incidents of illnesses in houses with BACIP interventions than those without.

In BACIP HHs, 19 people (4.3% of the total sample population) reported to be ill. In the control HHs, 83 people (9.0% of the total sample population) experienced an episode of illness. The value of Chi square in comparing the two proportions (4.3% and 9.0%) comes to be 9.34 (*p value 0.002241*). From this, it can be concluded that there is a strong and statistically significant association between the BACIP interventions and reduction in morbidity during the winter season. The members of the HH with any of the BACIP products, for example, roof hatch window, wall insulation, or double glass window, experienced 50% less disease burden in winter as compared to Non BACIP HH members.

Across the more specific problems of **chronic diseases**, **eye problems**, and **cough/bronchitis**, there was little if any differences were noted between the BACIP and Non BACIP houses.

Amongst the population living in houses with BACIP interventions, 5.7% of the sample reported having *chronic health problems* (95%CI 3.8% - 8.4%) compared to 5.0% (95%CI 3.7% – 6.7%) of those living in houses without interventions. The Chi^2 here was 0.30 (*p value 0.580812*) which is not significant statistically.

For *eye problems*, the difference was also not significant statistically. 5.3% of the study population (BACIP) (95%CI 3.4% - 7.9%) was very similar to the control population (Non BACIP) at 5.1% (95%CI 3.8% - 6.8%). The Chi^2 was 0.01 (*p value 0.908163*).

Lastly, the proportions for *cough/bronchitis* are generally lower than those of eye or chronic problems, although once again the difference between the two groups is not significant. 2.5% of the residents in BACIP houses reported having cough or bronchitis over the last winter (95%CI 1.3% – 4.6%) and 2.7% of Non BACIP houses did (95%CI 1.8% - 4.0%). The Chi^2 was 0.05 (*p value 0.827570*).

Better insulation can be attributed to better health but given the short lifespan of most of these interventions, it cannot yet be attributed to chronic health conditions, eye diseases, or even respiratory-related illnesses. These areas deserve further examination once BACIP improvements have been installed in houses for a longer period of time.

3.2.2   Lifestyle and Awareness

The main respondents in the survey were one of the mothers currently living in the house. It was found that many female householders are unaware of the amount spent on health in their house (12%). The majority of households spent between Rs.1,000 to 3,000 (23%). It is interesting to note that the proportion of households that spent nothing on health care (15%) during the last year is the same as the proportion that spent over Rs.10,000 (15%).

Table 3.12   Overall Spending on Health Care Per Year

Rs. Spent	BACIP		Non-BACIP		Total	
	#	%	#	%	#	%
No spending	7	14%	16	16%	23	15%
1-499	8	16%	13	13%	21	14%
500-999	1	2%	5	5%	6	4%
1000-2,999	10	20%	24	24%	34	23%
3,000-5,999	3	6%	15	15%	18	12%
6,000-9,999	3	6%	3	3%	6	4%
>10,000	10	20%	13	13%	23	15%
Don't Know	8	16%	10	10%	18	12%
Total	50	100%	99	100%	149	100%

Figure 3.8 shows the pattern of spending across BACIP and Non BACIP houses. It appears that a large proportion of BACIP households have been spending more then Rs.10,000 on healthcare compared to Non BACIP houses. This may be due to a higher incidence in chronic illnesses (5.7%:5.0%) or other outlying factors.

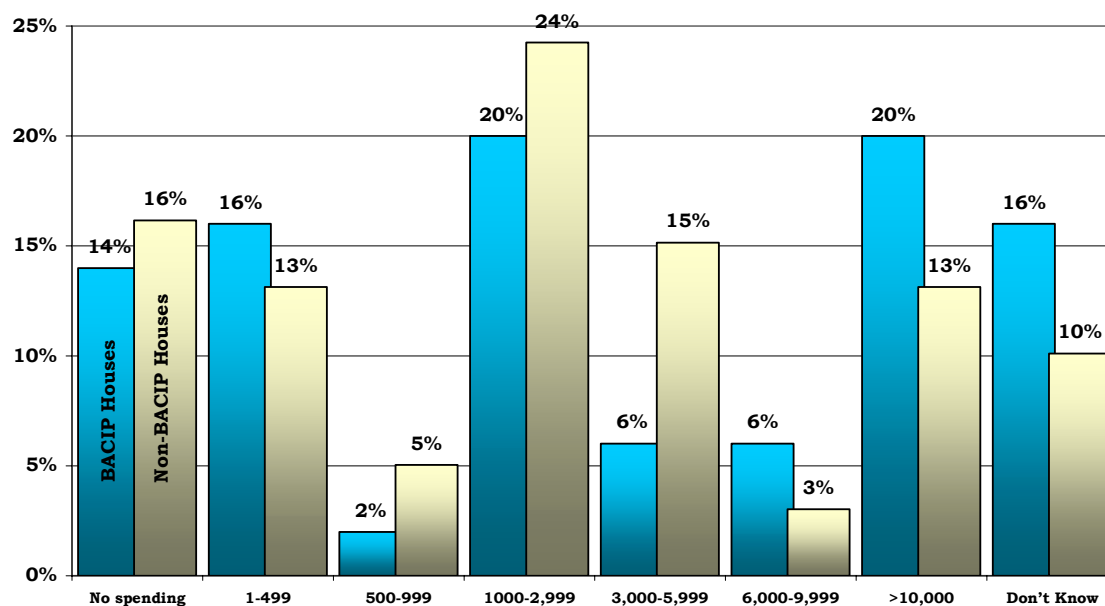**Figure 3.8   Overall Spending on Health Care Per Year**

Table 3.13 refers to the total spending on acute illnesses reported on a per case/person basis. These figures are only based on the number of HHs (149) where the respondent knew the amount or the male head of the household was available to respond to the question (Table 3.13).

Table 3.13   Cost to Treat Acute Illnesses

	BACIP	Non-BACIP	Total
Persons reported illnesses	37 (8%)	143 (16%)	180 (13%)
At no cost	4 (10.8%)	33 (23.1%)	37 (20.5%)
Min. spent in Rs.	2	1	1
Max. spent in Rs.	30,000	65,000	65,000
Mode	2 (12.1%)	2 (12.6%)	2 (12.5%)
Median spending in Rs.	100	150	300
Average HH spending (Standard Deviation)	2,133 (± 6,539)	2,370 (± 8,523)	2,322 (± 8,095)

Many households received treatment at government health centers which demand a token amount of Rs.1 - Rs.2 (Min. Spent). The Maximum spent (Rs.30-65,000) likely reflects spending that involved excessive travel to cities down south for severe problems or surgery. The average amount spent on treatment per person is Rs.2,322. This figure is rather high because many cases required relatively higher treatment costs (over Rs. 10,000) as shown in Table 3.12. This excessive spending has upwardly skewed the average amount of spending. The standard deviation of the mean spending shows that there is high level of variation across the data (± 8,095). For this reason, the mode (Rs.2) and median (Rs.300) amounts better reflect what people commonly spend on treating an illness.

Table 3.14   Health Care Seeking Behaviour

During Last Pregnancy	BACIP		Non-BACIP		Total	
	#	%	#	%	#	%
Respondents received ANC[1]	34	68%	76	77%	110	74%
Average No. of Times	4		4		4	
Delivery conducted by health professional	33	66%	73	74%	106	71%
Delivery in a health facility	12	24%	38	38%	50	34%
Immunisation						
Received TT Immunisation[2]	34	68%	72	73%	106	71%
No. Respondents with child under 2 years	13	26%	32	32%	45	30%
Have vaccine card of child[3]	9	69%	21	66%	30	67%
Children appropriately immunized[4]	10	77%	29	91%	39	87%

[1] Antenatal Care
[2] Calculations are based on information from TT vaccine card as well as history given by respondent.
[3] The denominator is the number of children under two years of age.
[4] The data is based on the history given by the mother and information from vaccine card.

Antenatal Care (ANC) is the care received by mothers during pregnancy. This practice has been actively promoted by AKHS,P over the past twelve years and has subsequently become more and more common. AKHS,P data results have shown that 94% of the total pregnancies recorded in 2000 (10,756) received ANC and 88% of the deliveries were

attended by a trained professional such as a traditional birth attendant, lady health visitor, community health nurse, or doctor.[7] These figures are much higher than those noted in this survey where only 74% of the respondents received ANC and 71% delivered by a health professional (Table 3.14). In contrast to the AKHS,P data which was compiled from last year's pregnancies, the respondents in the survey were asked about their last pregnancy irrespective of when it was. For this reason, the percentages are much lower which shows the increase of ANC coverage in recent years.

In terms of immunisation, AKHS,P figures show 78% of children under one year of age were fully immunized. In this survey, 87% of the mothers with children under two years of age had appropriately immunized their children.

For both ANC and immunisation levels in the survey, there are large differences between the BACIP and Non BACIP houses. The discrepancy in the results cannot be explained and requires further research.

Table 3.15   Hours Spent Indoors

Hours spent in house (Average)	BACIP	Non-BACIP	Total
In Summer			
By men	12.7	12.8	12.8
By women	14.9	14.6	14.7
By children	13.1	12.6	12.7
In Winter			
By men	17.6	18.6	18.2
By women	20.9	21.2	21.1
By children	16.8	17.5	17.3

This question on the number of hours spent inside the house was asked mainly to verify the fact that women and children are more directly affected by conditions inside the house (Table 3.15). The differences were found to be relatively small in summertime when the women are spending no more than two additional hours inside the house as compared to the men (15:13). In winters, however, the entire households spends on average 5 to 7 hours more indoors than they would in the summer and the difference between the men and women is somewhat more significant. The women spend three more hours inside the house than the men do (18:21). The children actually spend as much time, if not less, inside the house than the men do (13 hours in summer and 17 hours in winter).

The average number of hours spent inside does not change much between BACIP and non BACIP houses which is important in that the results related to health and housing are more likely to be attributable to the domestic situation. But they also reflect that BACIP products have not changed how much time the family members spend inside.

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[7] Aga Khan Health Service, Pakistan. 2000. *Annual Report 2000.* Gilgit: AKHS,P. 6-7. This data represents the actual figures for the areas covered by the AKHS,P primary health care programme which includes two districts in the Northern Areas (Gilgit and Ghizer) and Chitral.

Figure 3.8 Many Interviews Were Held Outside, Phunder, May 2001

Another important aspect of this study was to determine the level of awareness and perceptions about health amongst mothers living in the study area. The results presented in Table 3.16 are the quantitative summary of qualitative answers.

For many mothers/respondents, the question, "Is there a relationship between health and housing conditions?" presented a very difficult concept for them to understand and 15 respondents were unable to give a direct answer. From the remaining 135 interviewees, 91% agreed that a relationship does exist between health and housing (Table 3.16).

Generally, they gave such reasons as a cold house or an unclean house will lead to higher incidence of diseases:

> "If the house is clean and comfortable, there are less diseases."

> "If utensils are dirty, we may get diseases by eating food from them."

> "If the house is not warm in winter, it causes pneumonia and if the house is dirty in summer, it can cause diarrhea."

> "If cattle sheds are near the house and the house is dirty we get sick."

> "Cold inside the house can cause flu, fever and cough."

Additional comments mentioned density and overcrowding inside the house as a problem that can lead to ill health:

> "If the family is large and the house is small, one can get ill."

> "If the number of family is large and the house congested, there are higher chances of disease."

Table 3.16 Perceptions on Health

General (No. of Respondents)	BACIP		Non-BACIP		Total	
	#	%	#	%	#	%
Is there a relationship between health and housing conditions?	45	90%	90	91%	135	91%
Windows						
Are windows useful?	49	98%	94	94%	143	96%
In what ways? — Better lighting*	43	88%	81	86%	125	87%
In what ways? — Air/Ventilation	37	76%	76	81%	112	78%
In what ways? — Warmth	1	2%	5	5%	6	4%
In what ways? — Wellbeing	0	0%	4	4%	4	3%
In what ways? — Other Benefits	8	16%	11	12%	19	13%
Smoke						
Is smoke good for your health?**	48	96%	96	97%	144	97%
In what ways? — Eye problems/tearing	42	88%	71	75%	114	80%
In what ways? — Cough	13	27%	31	33%	44	31%
In what ways? — Asthma/ respiratory problem	11	23%	27	28%	38	27%
In what ways? — Utensils /clothes dirty	9	19%	16	17%	25	18%
In what ways? — Dark walls/ dirty environment	9	19%	8	8%	17	12%
In what ways? — General ill health	5	10%	10	11%	15	11%
In what ways? — Cancer/lung infection	5	10%	5	5%	10	7%
In what ways? — Headaches/ dizziness	3	6%	5	5%	8	6%
In what ways? — Heart /kidney /liver/ TB	2	4%	3	3%	5	4%
In what ways? — Don't know	0	0%	3	3%	3	2%
Diseases Caused by Cold						
Cough/throat	34	68%	69	74%	106	74%
ARI/Pneumonia	37	74%	66	71%	105	73%
Cold/Flu	27	54%	43	46%	73	51%
Fever	4	8%	21	23%	25	17%
Joint Pain	4	8%	5	5%	9	6%
Typhoid	2	4%	4	4%	6	4%
Asthma	2	4%	3	3%	5	3%
Other	3	6%	5	5%	8	6%
Don't Know	1	0%	1	1%	1	1%

* The denominator is the percentage of respondents who found windows useful in that category.
** The denominator is the percentage who said smoke is **NOT** good for the health.

For the question, "Are windows useful?" 96% said yes (Table 3.16). The reasons given include better lighting (87%), ventilation (78%), as well as warmth (4%), and wellbeing (3%).

The general feeling towards smoke is such that the majority feel that smoke has a negative impact on both health and housing conditions (97%) (Table 3.16). Smoke was cited as being the cause of a large range of diseases and problems. The top answers include eye problems/tearing (80%), cough (31%), and asthma or respiratory problems (27%) which directly affect a person's health. According to the respondents, smoke can also cause additional problems such as dirty utensils and clothes (18%) and dark walls and dirty living environment (*aludugi*) (12%) which can also indirectly affect one's health.

Some of the less expected responses include such symptoms as headaches, lung cancer/infection, heart trouble, kidney/liver failure amongst others.

When asked, "Which diseases are caused by cold?" the majority of the mothers responded with cough/throat infection (74%) and ARI/pneumonia (73%) (Table 3.16). Cold/flu was next in line (51%) followed by fevers (17%).

4.0 RESULTS – QUALIITATIVE DATA ANALYSIS

For the qualitative feedback presented in this section, two sets of data have been computed: one for respondents from BACIP houses and one from Non BACIP houses. Summaries of the most common answers are noted and discussed from the interviews and some of the anecdotes and comments are quoted directly.

The questions posed were directly related to the impact/perceptions about BACIP improvements and were ordered from the general to the specific.

4.1 BACIP Houses

Question #1: "How do you feel about the [BACIP intervention in your house]?"

In general, 90% of the women interviewed felt they were satisfied with the BACIP interventions and were pleased with the change it created in their house. 42% (21) of the respondents mentioned the improvement in warmth as the main reason for satisfaction.

> "The warmth in the house is better than last year and there is no longer a dampness problem. We sit comfortably anywhere in the house." *(Wall Insulation, Murtazabad)*

Others mentioned additional problems such as dust, dampness, and lighting.

> "It's good and beautiful. People from far flung areas come to see it." *(Wall Insulation, Phunder)*

> "Due to the BACIP window, the house is warmer and there is more light." *(Hassis Bala)*

As discussed in Section 2.3.2, BACIP did not always install products with complete usage instructions or awareness provided to the entire household. Hence, a good deal of misuse has taken place. In this case, the household was likely unfamiliar with how to use the hatch/vent which would explain the feeling of suffocation inside the house.

> "BACIP roof hatch window is very good, but it also creates a little bit of suffocation in the house." *(Roof Hatch Window, Gulmit)*

Question #2: "Do you think BACIP products have improved your family's health?"

96% (48) of respondents living in BACIP houses agree that the interventions have helped to improve their family's health. 63% (30) cited warmth as the way that BACIP has managed to improve HH health and 36% (17) mentioned a reduction in dust as one of the ways. Additional responses include better lighting (12%), less dampness (5%), and fresh air (2%).

> "We slept better during the winter and we used less fuel and bedding." *(Wall Insulation, Gulkin)*

> "The diseases in our family have decreased since the installation." *(Wall Insulation, Gindai)*

> "It has been good for the eyes, the bedding also stays cleaner and there are fewer diseases." *(ID.106, Phunder)*

> "The house is warm, so the kids don't get sick." *(Wall Insulation, Dirbarkulti)*

Question #3: "Have BACIP improvements been able to [improve the conditions inside your house?"

96% (48) of householders interviewed agreed that BACIP has improved the conditions inside their house.

The same question was asked with a specific focus on **smoke**, **dampness**, **lighting**, **fresh air**, and **warmth**. In these questions, only those houses with relevant interventions were asked. For example, a household with BACIP wall insulation was not asked about improved smoke levels inside the house. Altogether, there were 24 houses with Roof Hatch Windows (RHW), 20 houses with Wall Insulation (WI), and 6 houses with Double Glass Window (DGW).

16 (89%) households with either RHW or DGW as an intervention said that yes BACIP helped to reduce the amount of *smoke* inside the house. Only 2 HH said it did not improve smoke conditions.

> "With BACIP products, the house is better insulated, it is more clean, and the smoke does not enter the house because of the hatch opening." Hassis

> "If there is smoke, the vent of the roof hatch window helps acts as an exhaust." *(Murtazabad)*

28 (56%) respondents living in houses with any of the three interventions stated that *dampness* was reduced as a result of the improvement. 6 HH felt it had not improved the level of dampness.

> "Our house had a severe dampness problem which has ended since the insulation was installed." *(Wall Insulation, Murtazabad)*

> "Due to light and proper ventilation system, there has been no dampness problems." *(Roof Hatch Window, Hassis Bala)*

40 (80%) of the houses noted an increase in *light* inside the house since the RHW or DGW was installed. Only 1 household did not feel that lighting was enhanced by BACIP.

> "There is more light then before because of the roof hatch window." *(Dirbarkolti)*

> "I never used to stitch before but now I have started and it's easy to do it in the house. My children also feel that its easy to read in the house because there is more light." *(Roof Hatch Window, Sherqilla)*

28 (32%) of the BACIP respondents with a RHW or DGW felt that there is more *fresh air* in their house due to the intervention. One of the households disagreed.

> "There is less joint pains and the house is warm and

comfortable." *(Wall Insulation, Murtazabad)*

"We can open the vent whenever we want." *(Roof Hatch Window, Hassis Paeen)*

Lastly, 48 (96%) of the houses noted improved levels of *warmth* inside the house irrespective of the intervention that was introduced.

"The double pane windows make the house much warmer." *(Window, Murtazabad)*

"In winter, we close the vent and the inside temperature remains warm. It also helped in stopping rain water from the roof opening." *(Roof Hatch Window, Murtazabad)*

"Since the installation of the plyboard insulation in the wall, the house stays warm when we heat it." *(Wall Insulation, Gulkin)*

"The house is warmer than before and there is no rain water leakage." *(Roof Hatch Window, Gindai)*

"We don't need to make a fire in the house after the installation of the RHW and my family spends most of their time in this house." *(Roof Hatch Window, Sherqilla)*

"The house is warm due to the insulation. We now use less bedding and fuelwood during winter." *(Wall Insulation. Gulkin)*

4.2   Non-BACIP Houses

For the sake of comparison, similar questions to those asked of households with BACIP interventions were asked to households without the intervention.

Question #1: "Do you know anything about BACIP?"

Approximately one third of respondents had no information or knew very little about BACIP products and activities. Precisely, 30 of the households (32%) had not heard anything about BACIP. The remaining 65 householders (68%) mentioned that they knew something. Amongst the latter group, they tended to mention the products that they knew about or were interested in. Thus, an indirect result of this question was to find out how much people are familiar with particular products which could help to promote BACIP interventions in the future.

The roof hatch window was, by far, the most well-known product with 25 respondents mentioning it (38% of those familiar with BACIP). This was followed by stoves and/or water warming facilities with 13 mentions (20%), wall/roof insulation with 12 mentions (19%), double glass windows with 11 mentions (17%), and bedding racks with 3 mentions (5%). Additional interventions were mentioned less than 3 times such as the kitchen worktop, tubelight, ventilator, plaster, and house planning tool.

Question #2: "Do you think BACIP products can improve your family's health?"

Only 3 households felt that BACIP would not be able to better their family's health.

However, 60 respondents (77%) agreed that BACIP can contribute towards improving household health. This was verified with the range of answers explaining how BACIP can improve health by reducing the levels of smoke, cold and dust in the house or increasing light and ventilation.

40 households (51%) mentioned that BACIP would be able to make their house warmer.

> "Due to warmth inside the house, joint pains are reduced."
> (*Gulkin)*

> "In winter, the house is warmer which helps in staying healthy." (*Dirbarkolti)*

15 households (20%) believed that BACIP would be able to contribute to a reduction in smoke levels in their house:

> "If there is no smoke, the house will remain clean."
> *(Dirbarkulti)*

14 households (18%) felt that they would be able to reduce the amount of dust in the hosue which would lead to better health and 9 households (11%) felt it would help them maintain a standard of cleanliness inside the house:

> "I have allergies from dust and BACIP helps reduce dust in the house." *(Gulkin)*

> "The houses are warm and there are no dust problems in BACIP houses." *(Gulmit)*

> "BACIP products help in maintaining cleanliness in the house."
> (*Passu)*

Three houses (4%) even mentioned that BACIP would help a family save on fuelwood:

> "If less fuelwood is used, then the workload will be less of a burden and that will lead to good health." *(Murtazabad)*

Question #3: "Why don't you have any BACIP products?"

Many different responses were given that show a range of reasons for lack of replicability and demand. In one case, a family explained that they were waiting for BACIP assistance. In two other cases, particular products had been replicated and set up in that household. The remaining results have been summarized in Table 4.1.

Table 4.1   Why Control Houses Do Not Have BACIP interventions?

Reason	Too Costly/ Financial	Lack of Info	Wants/ Plans to Install	Men Make The decisions	Don't Need It	Don't Know	Total
#	24	13	10	3	3	11	64
% Pop	40%	22%	17%	5%	5%	18%	
Rank	38%	20%	16%	5%	5%	17%	100%

The majority felt that the products were too expensive (40%) or that they were unable to purchase them for a financial reason. The rest of the respondents said that they did not have sufficient information (22%), would like to and/or were planning on installing a product (17%) or that they were not the decision maker in the household (5%).

Question #4: Are you satisfied with the conditions inside your house?

In general, when householders without BACIP interventions were asked about the living conditions inside the house, a majority (67%) said they were satisfied (Table 4.2). However, when asked to explain, many respondents were found to be clearly dissatisfied with particular aspects of their living conditions. They mentioned the extreme temperatures of cold in the winter and/or warmth in the summer as a factor (26% of 79 houses) and the lack of adequate light/ventilation (16%).

> "We are satisfied, but its cold in the winter time and we have to use a lot of fuelwood." *(Hassis)*

> "My house is made of cement plaster and is very cold in the winter." *(Hassis)*

> "It is of mud and stone and is very warm in winter." *(Gulkin)*

> "It is warm enough in the winter when we close the roof opening and doors." *(Gulmit)*

Additional reasons mentioned include excessive dust, lack of space/crowding, the lack of separate kitchen or toilet, and even the overall appearance or lack of modernity in the house.

> "There is no dust because the roof opening is covered by glass." (*Murtazabad*)

> "But from the roof opening a lot of dust comes into the house." *(Gulmit)*

> "My house is of cement blocks, so it is clean." *(Hassis)*

> "It's good but it isn't up to modern standards." *(Passu)*

The interviewers probed more specifically in terms of those aspects that they felt were being addressed by BACIP interventions and the results are included in Table 4.2.

Table 4.2 "Satisfaction Level of Housing Conditions Amongst Non-BACIP Houses"

Conditions	Overall		Smoke Levels		Dampness		Lighting		Fresh Air		Warmth	
	#	%	#	%	#	%	#	%	#	%	#	%
Satisfied	64	67%	68	72%	72	78%	80	84%	80	84%	63	66%
Not Satisfied	32	33%	27	28%	20	22%	15	16%	15	16%	32	34%
Missing	4	/	5	5%	8	/	5	/	5	/	5	/
Valid Responses	96	/	95	/	92	/	95	/	95	/	95	/

Generally, most people stated that they are satisfied with the smoke conditions (72%) and this was mostly due to the fact that they use a stove (*bukhari*). This means they have much less smoke-related problems compared to the situation in the past (prior to the introduction of the *bukhari*). Some of the reasons given amongst those who were not satisfied with the smoke levels inside the house (28%) are cited below:

> "The smoke goes outside through the pipe and then comes into the house through the roof opening." *(Phunder)*

> "There is no stove, so the smoke stays in the house." *(Phunder)*

> "The house becomes dirty and eye problems develop from the

smoke." *(Murtazabad)*

"A new house gets dirty/ blackened because of the stove."
(Murtazabad)

"While cooking we have to open the door." *(Gulkin)*

In terms of dampness, 78% of the respondents were satisfied. However, the remaining 22% were dissatisfied because of problems related to leakage from the roofs or windows and/or seepage from the walls during the winter or rainy period. For others, it was an issue of moisture seeping into the house due to poor drainage and proximity to a water source.

For lighting, more and more houses have been introducing windows which has begun to address the problem of lighting inside the home. However, many traditional houses continue to have low ceilings and have few if any openings other than the one in the roof. For that reason, there were many households that mentioned problems related to lighting in their home (16%).

As for fresh air, 84% of the houses were satisfied with the current conditions in their house. They mostly cited the presence of an opening in the roof or from a window as the reason that it is not considered a serious problem.

Lastly, 66% of the houses without interventions were satisfied with the level of warmth inside the home. In general, those houses that were satisfied tended to mention the fact that they continue to live in a mud house which keeps their house warm during the winter season. Those householders that were dissatisfied tended to be living in the new cement housing.

5.0   RECOMMENDATIONS

From this study, it can be concluded that a distinct relationship exists between health and housing. Especially during winters, a house that is warm, well-ventilated, and well-lit is likely to have fewer illnesses than one that is cold, musty, and dark. Thus, improved domestic living conditions can be said to also improve the typical family's health.

Amongst the users of BACIP products, it was found that they are overwhelmingly satisfied with these interventions, particularly in how they have made their living conditions more comfortable. Inversely, many of the non BACIP households were not satisfied with the conditions inside their home. They described problems related to inadequate lighting and ventilation, crowding and lack of space, excessive dust and dirt, as well as extreme cold in winter and heat in summer.

Since BACIP has been able to adequately address many of these problems related to housing and since there is a clear relationship between health and housing conditions, it can also be said that BACIP has contributed to the betterment of household health in the region.

On the basis of these results and the general findings of the study, a set of recommendations can be made:

- Most importantly, BACIP's interventions are an important improvement to the existing domestic conditions, but as of yet, it has only been able to reach a small segment of the population. *BACIP should therefore continue its research and development work and upgrade its implementation activities and efforts on as wide a scale as possible.*

- Being the two main organizations working in the sectors of health and housing in the region, *AKHS,P and AKPBS,P should increase the level of synergy between them. In fact, they should coordinate their field-level and research based activities to promote better housing conditions.* For example, the AKHS,P community-based workers can play a role in raising awareness about the benefits of improved living conditions, especially through BACIP interventions. Likewise, the BACIP field teams can incorporate health education as part of their awareness/marketing activities.

- Given that one third of the non users have little knowledge about BACIP products and techniques, *BACIP should concentrate its efforts on more enhanced marketing and awareness raising.*

- In addition, many non users expressed that they are interested in the products but are unable to acquire them due to financial reasons. *Further research should be conducted to determine what the financial burden is, and accordingly, a payment mechanism can be adopted to better suit the lack of regular cash flow and seasonal work environment prominent in the region.*

- Similarly, those houses with BACIP interventions were not always fully informed about proper usage or benefits of the improvement. Therefore, a clear set of instructions/guidelines as well as a community awareness programme would serve to

improve the efficiency and effectiveness of the product. This would also enhance the level of impact on health. *A thorough education and awareness component should be developed to complement the process of product installation and programme implementation.*

- It is evident that the benefits of having two or three housing improvements are likely to be much greater than having just one. *Therefore, as part of the marketing plan for BACIP, combinations of two or more housing improvements should be encouraged.* Once there is a sufficient number of houses with such combinations in the market then further data could also be collected to compare the difference in health impacts between the houses with no interventions, with one intervention, as well as with two or three interventions.

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Health and Housing Study Questionnaire

Village: _____	District: _____
Name of Household Head: _____	Household size: _____
Name of Respondent: _____	
Education: θ no formal education θ primary θ matriculation θ higher education	
Name of Interviewer: _____	Date of Interview: _____
Reviewed/ Checked By: _____	Remarks: _____
Form: θ complete θ revisited and complete θ incomplete θ refused	
House Study No: _____ θ BACIP House θ Non-BACIP House	BACIP Products: _____ _____

1.0   Household Data

1.1   Number of families in the household _____

1.2   Number of people currently living in the household _____

1.3   Please provide the following information on each household member living in the house.

#	Name	Relation with head of HH	Sex	Age*	Education	Occupation	Income (per month) **
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							

* Please specify the number of months or days if child is less than 1 year
** If an exact amount is difficult to ascertain, then merely say yes or no

Coding System:

Education

1. *No formal education*
2. *Primary*
3. *Middle/Matriculation*
4. *Higher Education*

Occupation

1. *Teacher*
2. *Housewife*
3. *Farmer*
4. *Business*
5. *Labour*
6. *Unemployed*
7. *Student*
8. *Army Personnel*
9. *Other govt. servant*
10. *NGO employment*
11. *Other _____*

NA . Not Applicable for young children

Cash Income Earner

1. *Yes*
2. *No*

2.0   Housing Characteristics

2.1	Type of Housing Construction	1. Stone/mud 2. Stone/cement 3. Adobe/ clay blocks 4. Cement blocks 5. Other _____	
2.2	How many years have you lived in this house?		
2.3	Number of rooms (for living and sleeping only)		
2.4	Kitchen and living room separate	1. Separate 2. Combined	
2.5	Smoke outlet	1. Bukhari with pipe 2. Opening in Roof 3. None 4. Other _____	
2.6	Main source of drinking water	1. Tap water 2. River/nalla 3. Water channel 4. Spring water 5. Well 6. Other _____	
2.7	Type of toilet facility used by household members	1. Flush latrine 2. Traditional Pits 3. Dry pit latrine 4. Open field 5. Other _____	
2.8	Cattleshed	1. Attached to traditional house 2. Within the compound 3. Outside the compound 4. No cattle shed	
2.9	Poultry/animals	1. Inside the house 2. Within the compound 3. Outside the compound 4. No poultry/ animals	

3.0   Illnesses

3.1   Did you or anyone in your household experience any type of illness during the:

	Time Period	Yes	No	If yes, no. of people
3.1.1	Last week?			
3.1.2	Last month?			
3.1.3	Last winter?			

3.1.4 If yes, please provide the following information:

#	Name	Age	Disease	Treatment	Cost (Rs.)	Comments

Coding System:

Disease

1. *Diarrhea/ dysentery*
2. *ARI/ pneumonia*
3. *Skin diseases*
4. *Eye infection*
5. *Ear infection*
6. *Worms*
7. *EPI disease*
8. *Fever*
9. *Stomach / Digestive*
10. *Other _____*

Treatment

1. *No treatment*
2. *Self medication*
3. *Govt. facility*
4. *AKHS Facility*
5. *Private Clinic*
6. *Traditional Healer*
7. *Community Health Worker/ Traditional Birth Attendant*
8. *Lady Health Worker*
9. *Drug store*
10. *Other _____*

3.2   At present, are there any members of your household suffering from a chronic illness? θ yes   θ no

#	Name	Disease	Duration	Treatment	Cost (Rs.)	Comments

3.3   How many episodes of common cold/flu did each of your children have last winter?

#	Name	# of Times	Treatment	Rs.

In your opinion, why do your children get colds/flus?

_____

_____

3.4   Has anyone in your house suffered from any eye problems in the past six months? θ yes   θ no

#	Name	Problem	# of Times	Treatment	Rs.

In your opinion, what is the main cause of this problem in your household?

_____

_____

3.5   Has anyone in your house suffered from cough/bronchitis last winter? θ yes   θ no

#	Name	Problem	# of Times	Treatment	Rs.

In your opinion, what is the main cause of this problem in your household?

_____

_____

4.0   Lifestyle & Awareness

4.1   Is it useful to have a window in your house? θ yes   θ no
In what ways is it useful? _____

_____

4.2   Is smoke good for your health? θ yes   θ no
In what ways? _____

_____

4.3   Which diseases can be caused by cold?

_____

4.4   How many hours do members of your family spend inside the house?

	Summer	Winter
Men		
Women		
Children		

4.5   In your opinion, is there a relationship between your family's health and the
conditions inside the house?   θ yes   θ no
Explain _____
_____

4.6   How much did your family spend on health care last year? _____

5.0   Health Seeking Behaviour
(To assess the health care seeking behaviour and the level of concern for one's health amongst BACIP and control houses.)

5.1   Did you receive Antenatal Care (ANC) during your last pregnancy? θ yes   θ no
If yes, how many times did you receive ANC _____

5.2	Who conducted your last delivery?		1. Relative 2. Self 3. Trained Birth Attendant (TBA) 4. LHV in the home 5. LHV in the health centre 6. Doctor 7. Other _____
5.3	Where did you deliver your last baby?		1. Hospital 2. Maternity Hoome 3. Health Centre 4. Home 5. Other

5.4   Can you show us your last TT vaccine card?

	Card produced	
	No Card	If no card present, TT by history _____

5.5   Is your youngest child less than two years old? θ yes   θ no
If yes, then can you show us his/her vaccine card?

	Card produced		Appropriately immunized		Inappropriately immunized
	No Card			

6.0   BACIP Interventions

Do you have a BACIP intervention in your house?

6.1 If Yes,	6.2 If No,
6.1.1 How do you feel about it?	6.2.1 Do you know anything about BACIP?

6.1.2 Do you think BACIP products have improved your health and/or the health of your family? θ yes θ no θ n/a Explain _____ _____ _____	6.2.2 Do you think BACIP products can help improve your family's health? θ yes θ no θ n/a Explain _____ _____ _____
6.1.1 In what ways?	6.2.3 Why don't you have any BACIP products?

6.1.4 Have BACIP improvements been able to:
 	
a) reduce the amount of **smoke** in the house
  θ yes   θ no   θ n/a
  Explain _____
  _____
  _____
 	
b) reduce **dampness** inside the house
  θ yes   θ no   θ n/a
  Explain _____
  _____
  _____
 	
c) increase the amount of **light**
  θ yes   θ no   θ n/a
  Explain _____
  _____
  _____
 	
d) increase the amount of **fresh air**
  θ yes   θ no   θ n/a
  Explain _____
  _____
  _____
 	
e) make your house **warmer**
  θ yes   θ no   θ n/a
  Explain _____
  _____
  _____
	6.2.4 Are you satisfied with the conditions inside the house:
	
	a) θ yes θ no
	  Explain _____
	  _____
	  _____
	
	Specifically in terms of:
	
	b) smoke levels θ yes θ no
	  Explain _____
	  _____
	  _____
	
	c) dampness θ yes θ no
	  Explain _____
	  _____
	  _____
	
	d) lighting θ yes θ no
	  Explain _____
	  _____
	  _____
	
	e) fresh air θ yes θ no
	  Explain _____
	  _____
	  _____
	
	f) warmth θ yes θ no
	  Explain _____
	  _____
	  _____

Health Survey Coding System

Village Name

1   Murtazabad
2   Gulkin
3   Passu
4   Gulmit
5   Sherqilla
6   Hassis Bala
7   Hassis Paeen
8   Gindai
9   Phunder
10   Dirbarkolti

District

1   Gilgit
2   Ghizer

Interviewer

1   Samina – BACIP
2   Gulaftab–Aiabad
3   Dr. Abid–AKHS,P
4   Noor Jahan–Gulmit
5   Najiba–Gulmit
6   Sunbul–Singal
7   Yaman–Gupis
8   Sultana–Singal
9   Yasmin–Phunder
10   Nahida–BACIP

Type

1   BACIP house
2   Non BACIP house

Intervention

1   Male
2   Wall Insulation
3   Double Glass Window
\   Not Applicable

Sex

1   Male
2   Female

Education

1   No Formal Education
2   Primary
3   Middle/Matriculation
4   Higher Education

Occupation

1   Teacher
2   Housewife
3   Farmer
4   Business
5   Labour
6   Unemployed
7   Student
8   Army Personnel
9   Other Govt. Servant
10   NGO Employee
11   Other
12   Cottage industry (crafts)
\   NA for children

Income

1   Yes
2   None
3   < Rs.2,000
4   < Rs.2 to 3,999
5   4 to 5,999
6   6 to 7,999
7   8 to 9,999
8   > 10,000
\   NA for children

Disease/Problem

1   Diarrhea/dysentery
2   ARI/ pneumonia
3   Skin Diseases
4   Eye Infection
5   ear infection
6   worms
7   EPI disease
8   fever
9   stomach/digestive
10   cough/throat
11   cold/ flu
12   asthma
13   gynaecological
14   joint pain
15   blood pressure
16   tonsilitis
17   lung infection
18   typhoid
19   other

Treatment

1   No Treatment
2   Self Medication
3   govt. facility
4   AKHS facility
5   private clinic
6   traditional healer
7   CHW / TBA
8   lady health worker
9   Dispensary
10 Other

How Often/ Frequency?

1   Continuous
2   Off and On

Health Spending

0   0
1   1 - 499
2   500 - 999
3   1000-2999
4   3000-5999
5   6000- 9999
6   10000 or more
7   don't know

Is a window useful?

1   Yes
2   No

How is it useful?

1   lighting
2   air/ventilation
3   wellbeing
4   warmth

Is smoke good for your health?

1   No
0   Yes

In what ways?

1   Eye problems/tearing
2   Cough
3   Asthma/ respiratory problem
4   Utensils /clothes dirty
5   Dark walls/ dirty environment
6   General ill health
7   Cancer/lung infection
8   Headaches/ dizziness
9   Heart /kidney /liver/ TB
10 Don't know