Health & Nutrition Survey
in Earthquake Affected Areas of Pakistan

UNICEF/WFP/WHO Joint Survey in collaboration with MOH

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Abbreviations and Acronyms

AJK	Azad Jammu & Kashmir
ARI	Acute Respiratory Infection
BMI	Body Mass Index
CDC	Centers for Disease Control and Prevention
CI	Confidence Interval
CMR	Crude Mortality Rate
HAZ	Height for Age Z score
HH	Household
HQ	Headquarter
IDD	Iodine Deficiency Disorders
LFS	Labour Force Survey
MoA	Ministry of Agriculture
MoH	Ministry of Health
NGO	Non-governmental organization
NCHS	National Center for Health Statistics
NID	National Immunization Day
NIH	National Institute of Health
NNS	National Nutrition Survey
NWFP	North-West Frontier Province
ORS	Oral Rehydration Salt
PCO	Pakistan Country Office
PDS	Pakistan Demographic Survey
PPS	Probability Proportional to Sizes
SD	Standard Deviation
TFC	Therapeutic Centres
UN	United Nations
UNHCR	United Nation’s High Commission for Refugees
UNICEF	United Nation’s Children Fund
WAZ	Weight for Age Z score
WFP	World Food Programme
WHO	World Health Organization
WHZ	Weight for Height Z score

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This comprehensive health and nutrition survey took place in the earthquake affected areas of Pakistan within 6 – 12 weeks of the event- one of the strongest earthquake in this century in Pakistan. It was a joint survey conducted by several UN agencies (UNICEF, WFP & WHO), National Institute of Health (NIH) and Ministry of Health (Nutrition Wing) of Government of Pakistan. The survey consisted of a very large team of interviewers & measurers (around 50), editors and data analysts including qualified specialists and professionals from ministry, UN agencies and Emory University, Atlanta, USA.

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Study Team Members

Coordinator:	Dr. SM Moazzem Hossain (UNICEF NYHQ, Nutrition Section)
Technical Group:	Dr. Rafah Salam Aziz (UNICEF PCO), Mona Sheikh (WFP), Dr. Shadoul Ahmed (WHO), Dr. Zahid Larik (MoH, GoP), Dr. Rifat Ayesha Anis (NIH), Dr. Tehzeeb Zulfiqar and Dr. Fakhara Naheed (MoH, Nutrition Wing).
Advisors:	Omar Abdi (UNICEF PCO), Rainer Gross & Flora Sibanda Mulder, Claudia Hudspeth and Mary Mahy (UNICEF HQ), Leah Richardson (WFP HQ)
Consultants:	Dr. Kevin Sullivan (Emory University), Shafat Sharif (Eycon Solution), Dr. Riffat A Anis (NIH)
Data Collection:	Eycon Solution under the joint supervision of UNICEF, WFP & WHO
Field Monitors:	Riffat Aysha Anis (NIH), Rashid Zar & Bashir Rehman (UNICEF), Mona Sheikh, Fareeda Zahid and Salma Yakoob (WFP PCO), Hameed Hussain & Zafar Hayat (WHO), Shafiq ur Rehman & Bushra Rehman (Eycon Solution)
Survey Manager:	Tayyab Ikram Shah & Kamran Ahmad
Trainers:	Riffat Aysha Anis, Rashid Zar, Shafat Sharif & Tayyab Ikram Shah
Data Processing:	Aamir Qureshi, Khurrum Shahzad, Hasan Jadoon, Mehmood Khan, Nasir Mehmood, Waseem Ahmad, Farrukh Mahmood, Miqdad Parekh, Mustafa, Shahzad Iqbal, Shuja Azhar
Team Leaders:	Atif Zaheer, Khalida Parven, Khurram Shahzad, Mohammad Raizan, Mohammad Qadeer, Mohammad Qasim, Sajid Sultan, Zeeshan Mehmood
Interviewers:	Abida Shaheen, Afifa Saeed, Aisha Bibi, Anila Munawar, Bina Babar, Farah Naz, Farhat Rafique, Farkhanda Jabeen, Humera Ismail, Imrana Shaheen, Maleeha Mengal, Mehmona Nisar, Rabia Alvi, Rashida Rasheed, Rehana Arif, Rizwana Sarwer, Rubina Bashir, Sadia Rehman, Safia Roshan, Sobia Sabir, Tahira Rafique, Tahmina Zaheer
Measurers:	Arshad Hayat, Atif Zaheer Qureshi, Haadi Saeed, Hameed Ullah Khan, Khalid Rabbani, Mohammad Shoaib, Mohtisham Zahoor, Nasir Khan, Sajid Sultan, Sultan Mehmood, Tauseef Ahmed, Yasir Farooq
Report Writing:	SM Moazzem Hossain, Leah Richardson, Kevin Sullivan & Rifat Anis

1. EXECUTIVE SUMMARY

Acute malnutrition persists as a major health problem among children under five in both the displaced and resident populations in earthquake affected areas of Pakistan. The situation had been expected to deteriorate due to the physical damage and disruption caused by the earthquake. A Rapid Emergency Food Security and Nutrition Need Assessment (done within two weeks of the earthquake) by WFP & UNICEF showed that almost 70 percent of the families had a poor quality diet in the earthquake affected areas. Since that assessment, there has been a demand from various agencies to have an accurate figure of the prevalence of malnutrition and an understanding of the health, food, and other welfare conditions.

This survey aims to provide information for the UN missions, government and non-governmental organizations (NGO) in planning health and nutrition interventions for the earthquake affected populations in NWFP and AJK. Four separate cross sectional surveys have been conducted- two were representative of the community people of Mansehra and Muzaffarabad districts (excluding camps) and the other two were representative of all the camp populations of NWFP and AJK. Systematic random sampling using probability proportional to size was used to select the 30 clusters per survey. Data collection continued from 21st November until 26 December of 2005 in two phases- Mansehra district and NWFP camps in the 1st phase and Muzaffarabad district and AJK camps in the 2nd phase. A total 2175 households were interviewed in 4 survey areas with a total of 2442 children between 6-59 months and 1662 mothers.

Socio-demographics: The average household size in the community and camps are comparable at approximately 7 members per household. About 6-9% of the households in both the camps and communities reported that the earthquake resulted in additional individuals joining their households. Migration from the usual place of residence among the populations still living in communities was high with 70% migration among the population in Muzaffarabad district and 38% among the population in Mansehra district. However, only 13% of Mansehra and 7% of Muzaffarabad district household residents intended to migrate in the coming winter months.

Malnutrition: Global Acute Malnutrition (Wasting) was high (10.5%, 95% CI; 6.7 – 14.3) among the children (6-59 months) from Mansehra district while it was less than 6 percent in the other three areas. Chronic malnutrition or "stunting", indicating long term poor nutrition prior to the earthquake, was at high levels in all four areas- 44.5% (95% CI; 37.3 – 51.8), 38.1% (95% CI; 32.1 – 44.1), 54.8% (95% CI; 48.6 – 61.1) and 44.0% (95% CI; 39.7 – 48.3) in Mansehra, Muzaffarabad, NWFP and AJK camps respectively. The results however, can be used as a rough baseline reference in the earthquake affected areas. It can be seen that with reference to international standards and the NNS[1] figures the levels of acute malnutrition after the earthquake are not notably different. This stability despite the catastrophic conditions can be attributed to a large extent to the protective measures of the humanitarian response.

The estimation of Body Mass Index (BMI) of non-pregnant mothers of under-five children revealed that 15-17% of women were malnourished (<18.5) in each of the survey areas. This indicates a poor situation.

[1] National Nutrition Survey (NNS) completed in 2001-2 by the Government of Pakistan, in collaboration with UNICEF

Mortality: The loss of life on the day of the earthquake in Pakistan, October 8, 2005, was of a gigantic proportion. In Mansehra community the point estimate for the crude mortality rate (CMR) on the day of the earthquake was 168 (95% CI; 133 – 211) deaths per 10,000 population per day. This, however, was the lowest among the 4 survey areas. In Muzaffarabad community the CMR was 506/10,000/day (95% CI; 440 – 579), in the NWFP camps the CMR was 489/10,000/day (95%CI; 425 – 560) and in the AJK camps the CMR was 537/10,000/day (95% CI; 471 – 614).

It is estimated that in Mansehra district 1.7% of the population died while in all other three areas, around 5% of the population died and the proportion of deaths among under-five population was almost double than this figure.

The crude mortality rate was elevated on the day of the earthquake but immediately decreased in the time following. Across the survey samples, the CMR after the earthquake stabilized between 0.1 and 0.4 deaths per 10,000 population per day. In all four of the survey areas, the mortality rate was approximately twice as high in the time period after the earthquake compared to the time prior to the earthquake – and deserving particular attention are residents in the NWFP camps. Caution should be used in interpreting these mortality rates because even with a doubling of the baseline the crude mortality rate remains lower than the cut-off used to classify an emergency situation (1/10,000/day). A rapid multi-sectoral response from the Pakistan government and humanitarian community is most likely responsible for this limited increase in mortality.

Morbidity: The prevalence of morbidity in the survey samples was high. The *camp populations* in particular had a very high prevalence of diarrhoea with over half of the under 5 population experiencing diarrhoea in the previous two weeks. Among the *community population* the prevalence was also high with approximately one-third of the under 5 population being affected. Dysentery as a subset of overall prevalence of diarrhoea was also high. Prevalence of ARI in all survey populations was extremely elevated at around 60-75% with no important difference between camps and community populations.

Approximately half (55-59%) of the community populations surveyed sought treatment for children's illness outside of the home. In the NWFP camp 71% sought treatment outside of the home and in AJK this figure was 82%. The majority of people sought treatment for children in a hospital/clinic/health center; followed by mobile/outreach clinics and private physicians.

Infant Feeding: Breastfeeding practices are high with over 90% of infants breastfed at any point before 24 months of age. Insufficient milk and mother illness/pregnancy were the main reasons for stopping breastfeeding in the survey populations in the time after the earthquake.

Household Vulnerability: Almost all of the populations surveyed experienced some earthquake related damage to their houses. Among the populations living in camps almost 100% of the households were completely destroyed. However, level of complete destruction was much higher in Muzaffarabad community than in Manshera community (82% and 40% respectively).

The earthquake had a major impact on employment with substantial increase in unemployment, particularly among the populations living in the NWFP camps (from 9% prior to the earthquake to 60% afterward). The populations living in camps suffered a higher loss of all categories of livestock with approximately two thirds of the households without any livestock. Distress sales of assets and loan taking was not as high as might be expected with

only approximately 8% of the populations selling assets and a minor portion of the populations taking or extending loans (especially in the camps). This is a reflection of the uniform extent of shock felt among and within the populations surveyed. Most households now have a lack of collateral to offer for bank loans, private loans have been reduced since there is a decrease in persons able to spare additional money; similarly sale of assets have been low since the population has limited assets to sell and concurrently the buying market has been equally affected by the disaster. The major reasons for taking loan was to purchase additional food in most cases.

Access to Food: It is important to note that in the communities approximately 10% of the population only has access to a one day food stock and within the camps less than 50% have access to one week or more of stock (this may also be a function of prepared food receipt and the food aid distribution cycle). Nevertheless it is important to recognize the food vulnerability of these populations, no matter how the results are interpreted.

Household food diversity (as defined by seven day food frequency) is limited. The majority of the population consumes 3-6 food items, but caution should be applied when viewing these results because this analysis contains food items such as sugar, oil, and dairy (including milk in tea). A very small portion of the population (less than 3% in all sample areas) would be considered to be of great concern with only 1-2 food items in their diet.

The 24-hour recall data shows that households in all the survey areas eat a staple food every day. In all categories the populations in the camps have a more nutritional intake of foods. Fruits and vegetables are low in all of the consumption patterns. Low consumption of specific food groups - especially fruits and meat - across all the survey areas is of concern. This has implications for development of micronutrient deficiencies in the population dependent on food aid in winter. Of note however is that food consumption patterns are comparable to national norms.

Water and Sanitation: In Mansehra community, approximately two thirds of the population uses an improved source of drinking water. In Muzaffarabad, almost the entire population uses improved water, with three quarters using spring water. In the AJK camps, half of the population gets their drinking water supplied by NGOs/Gov't while 39% use spring water.

The amount of water used per day per family ranged from 68 to 74 liters per household (around 10 liters/person/day[2]) in the camps. Hand washing practices among the communities and camps surveyed were highest before eating and after defecation. Less than half of the people wash their hands before feeding a baby. Hand washing after disposing of children's feces and before preparation of food is also low. In all of the affected populations surveyed 60-70% always washed their hands with soap. However, about 40% – 50% people in the community and 15% - 35% of the people in the camps had been defecating in the open field.

Programme coverage: Food aid is reaching the affected populations. In the camps approximately 80% of the households had received the basic food basket commodities. Additionally, cooked meals were received by 53% of households in the NWFP camps and 30% in the AJK camps. In Muzaffarabad community, approximately 70% of the households had received some items of the basic food basket commodities during October 2006 while in Mansehra community, it was less than 40% only. It should be noted that in the Mansehra

[2] The United Nations High Commissioner for Refugees (UNHCR) recommends a minimum of 15 liters/person/day

community, among the households completely destroyed, 21% had not received any food aid while it was 15% in Muzaffarabad community.

Less than a quarter of respondents used iodized salt in the household (confirmed by rapid test kit) suggesting a high risk of developing further iodine deficiency disorders in a population that already has a high prevalence of IDD (37% severe IDD among women of reproductive age reported in NNS 2001-2).

The level of measles vaccination based on immunization card and mother's recall was in the range of 70-80% in the four survey areas, well above the national average of 57%. However, the coverage of the measles campaign after the earthquake was 54% among Muzaffarabad district and 70% in AJK camps. The figures in Mansehra and NWFP camps were much lower since the recall period was only 1 month prior to the date of interview while this was extended for Muzaffarabad and AJK camps to include any vaccination since earthquake because some teams reached the community about 5 weeks prior to the dates of interview in NWFP.

Although vitamin A supplementation was added to measles campaign, only 50% of the children (6-59 months) reported to have received a vitamin A capsule since earthquake (slightly lower in Muzaffarabad community). However, some confusion remained among the interviewers and respondents as to whether the response was for last 1 month or 6 months.

Access to education even in this time of post-crisis is high with approximately two thirds of the children in both camps and community attending schools. Of those not attending, one of the major reasons had been not to have a school nearby and not having teachers in the schools.

Recommendations:

Although the nutrition situation does not indicate a serious crisis, the results should be viewed in the context of existing poverty conditions and other multiple aggravating factors such as harsh winter, massive household destruction, high unemployment figures and high morbidity. Hence following recommendations are made:

- Targeted supplementary feeding in food unsecured areas and therapeutic feeding centres as a preparation to enhance the capacity of managing sever malnourished children.

- Improved coverage of measles immunization and vitamin A supplementation, multiple micronutrient supplements that includes iodine and better management of diarrhea and acute respiratory infections;

- Appropriate targeting and continued distribution of existing food aid;

- Better hygiene and sanitation practices/opportunities, and increased access to safe drinking water; and

- Establishing of nutrition surveillance and monitoring system and a follow-up survey after 6 months to assess the change in status of the populations.

2. BACKGROUND

On October 8, Saturday 2005, a strong earthquake, said to be the most powerful (7.6 on Richter scale) in the region in 500 years, killed more than 78,000 people and caused massive destruction, mostly in the northern parts of Pakistan, upper Northwest Frontier Province (NWFP) and Azad Jammu Kashmir (AJK). The earthquake mainly hit in areas close to the epicenter which was approximately 95 km northeast of Islamabad in AJK. The most affected districts were Mansehra, Batagram and Shangla in NWFP, districts of Muzaffarabad, Neelum Valley, Poonch and Bagh in AJK, and relatively less affected districts were Abbottabad and Kohistan in NWFP and Islamabad Capital Territory.

A Rapid Food Security and Nutrition Needs Assessment was performed by WFP and UNICEF (with support from Oxfam) during October 18-28, 2005. Secondary data (pre- and post-shock information) were collected from various sources, such as reports posted on the relief web and on the UN Pakistan website. Primary data were collected through a household survey covering 700 households in more than 200 villages/communities in seven of nine worst affected districts covering urban, semi-urban and rural areas. Seven teams comprising 7 team leaders and 22 enumerators were in the field for 3 days. One team with 6 enumerators went by helicopter to the inaccessible areas in Neelum and Jehlum valley (Muzaffarabad), Khagan valley (Mansehra) and Alai (Battagram) for data collection.

Among the total affected areas, 84% were rural. Nearly 2.5 million had lost their homes; the majority living in makeshift tents (86%) but mostly within their own household premises. Pre-quake households in rural areas depended primarily on small landholdings, wage/skill labor, government service, and petty trade/service sectors. Post-quake (two weeks after) 15% reported to be totally dependent upon charity/aid, 50% of those dependent upon wage/skill labor and trade reported being out of work, others reported decreased engagement in economic activities. More than half of the interviewed households (58%) reported loss of all grain stock and where stock remained half reported the current stock lasted them less than two weeks (including received from aid)

When the earthquake hit, the rice and maize harvest was underway. After the earthquake land could no longer be harvested and stocks of seeds were buried under collapsed buildings. An estimated one fourth of the animals had died and more were expected to die due to cold and non availability of shelter.

One fifth of the under-five children had one episode of diarrhea within one week prior to the rapid assessment. Half suffered from ARI (fever with cough), almost one fourth complained of fever with rash and between 2 and 3 percent developed night blindness during the same period.

Feeding practices of infants and young children were affected. About 20 percent of the mothers with children under 2 years had stopped breastfeeding mainly due to her sickness, inadequate breast milk or mother's absence (missing or dead). Among young children between 3-5 years, almost half changed their feeding practices in terms of reduction in quantity (frequency and amount) and quality (types) of food. Main reasons were shortage of food (55%), fear and shock leading to loss of appetite (11%) and sickness (11%).

3. RATIONALE FOR THE SURVEY

Acute malnutrition persists as a major health problem among children under five years of age in both the stable and displaced population in earthquake affected areas which is evident from the high prevalence of malnutrition even before earthquake. The situation had been expected to deteriorate due to the destruction brought about by the earthquake. A Rapid Emergency Food Security and Nutrition Need Assessment showed that almost 70 percent of the families were having poor quality diet in the earthquake affected areas[3]. However, there had been demand from various agencies to have an accurate figure of malnutrition prevalence with relevant health information that would help in designing appropriate intervention in the affected areas. Although, UNICEF's Core Commitment to Children includes conducting Rapid Nutrition Assessment within a week and a comprehensive Nutrition Survey with in 6 weeks of the disaster, this survey would rather serve a solid baseline situation and if a similar survey is done in another 6 months, outcome and impact of intervention during emergency responses could be measured.

A working group was formed consisting of representatives from UNICEF, WFP, WHO and Ministry of Health (Nutrition Wing). The group was supported by a local consultant from the National Institute of Health in Islamabad and one international consultant from Emory University in Atlanta. UNICEF coordinated the group which decided on the methods, sites and other logistics. The survey aims to provide urgently required information that will enable the UN mission and non-governmental organizations (NGO) as well as Ministries (Health-MoH, Food- MoF & Agriculture- MoA) in planning health and nutrition interventions for the earth-quake affected populations in NWFP and AJK.

4. OBJECTIVES OF THE SURVEY

The main purpose of the survey was to assess the nutrition situation of the earthquake affected population. The final outcome of the survey would be to make recommendations for interventions in the earthquake affected areas. The specific objectives were as follows:

- Nutritional status
  - To determine the prevalence of global and severe acute malnutrition among children aged 6-59 months
  - To determine the prevalence of stunting and underweight among children aged 6-59 months
  - To determine the nutritional status of the mothers of children (6-59 months age) using BMI.

- Morbidity
  - To determine the prevalence of diarrhea including dysentery, fever and acute respiratory infection (ARI) in the previous two weeks among children aged 6-59 months and prevalence of diarrhea among their mothers

- Mortality
  - To determine the crude mortality rate for the 3 months prior to the earthquake, on the day of earthquake, and in the time period subsequent to the earthquake.

[3] Pakistan Earthquake- Joint WFP/UNICEF Rapid Emergency Food Security and Nutrition Assessment. November, 2005

- Infant and Young Child Feeding
    - To gain a better understanding of infant and young child feeding practices including the average duration of breastfeeding for children 0-24 months.

- Water and Sanitation
    - To estimate access to safe water among households
    - To determine the hygiene and sanitary practices among households

- Food Consumption
    - To understand dietary patterns in the survey areas using food frequency
    - To estimate the availability of food to affected population.

- Programme Coverage
    - To estimate the coverage of food aid in the two months following the earthquake
    - To estimate the proportion of households using to iodized salt
    - To estimate the proportion of children aged 6-59 months vaccinated against measles at some point in their lives and the proportion vaccinated since the time of the earth quake
    - To estimate the proportion of children aged 6-59 months who have received vitamin A supplementation in the time period since the earth quake

5. MATERIALS AND METHODS

5.a Survey design

From the observation in the rapid assessment, it was understood that the migration rate would be very high and the population would be in transition between their own households and the camps while the construction of new camps was ongoing. It was agreed to assess the health and nutrition situation among two different population groups: ”Community” to represent the population residing in households, and ”Camps” that to represent the displaced population living in camps. Each of these categories were addressed in two different areas, the North-West Frontier Province (NWFP) and Azad Jammu & Kashmir (AJK). While the Camp Surveys included all the camps as sampling universe, for community assessment, the largest and most affected districts in each area (Manshera for NWFP and Muzaffarabad for AJK) were purposively chosen for use as sampling universe.

Hence there were four separate cross-sectional surveys conducted, two representative of the community populations of Mansehra and Muzaffarabad districts (excluding camps) and the other two representative of camp populations of NWFP and AJK. Systematic random sampling using probability proportional to size was used to select the clusters for each survey. Households were the sampling unit in the clusters, with household heads and mothers of children under 5 years as respondents.

5.b Sample Size

5.b.1 Sample Size for anthropometric data

The sample size calculation was performed with the assumption that the maximum

prevalence of acute malnutrition would be 15%, with 5% precision and a design effect of 2. Coverage for measles vaccination was considered to be 60% with 10% precision and design effect of 2. Estimating 10% non-response, a total of 434 children would be sufficient (see Table 1)

The number of children under five years of age per household has been based on conservative median figure between national average of 0.975 children per household and the NWFP figure of 1.25

5.b.2 Sample size for mortality data

The estimated CMR rural mortality rate from PDS 2003[4] was 7.4/1000/year, which was doubled and used as the estimate for calculating sample size. Design effect for CMR was estimated to be three because impact of the earthquake was, most likely, not uniform. The recall period used for CMR calculations was from 1st July 2005 (approximately 3 months), as well as enabling a calculation for a point estimate of mortality on the day of the earthquake which would be with 2 months from the date of interview. The sample size allowed for a three month 'baseline' CMR prior to the earthquake to be calculated and also an accurate estimate of the number of deaths on the day of event. The findings from this survey will then be comparable with any survey conducted few months after the humanitarian and other responses to measure their impact on nutrition. The required sample size was calculated to be 534 households. However, using a 3 month recall period, it comes down to 356.

Table 1: Assumptions for calculating the Sample Size

Target group and indicator	Estimated prevalence or rate	Design effect	Desired Precision	Sample size	Increase to account for a 10% non-response	Households child/HH
Children 6–59 months						
Acute Malnutrition (< -2 SD)	15%	2	±5%	390	434	434
Measles	60%	2	±10%	184	205	205
Population-wide						**Households 6 people/HH**
Crude* Mortality Rate	0.4/10,000 per day	3	±1%	2881	3201	534
Crude Mortality Rate**	0.4/10,000 per day	3	±1%	1921	2134	356

* Using 2 months recall period
** Using 3 months recall period

The final sample size was rounded off to 600 households per survey resulting in four surveys of 30 clusters with 20 households per cluster (30x20).

[4] Pakistan Demographic Survey, 2003, Government of Pakistan, Statistics Division, Federal Bureau of Statistics, May 2005.

5.c Sampling procedure

5.c.1 Sampling Universe for Community Surveys

The universe that the samples were drawn was based on the best available population estimates of Manshera and Muzaffarabad districts obtained from the population census report of 1998[5].

5.c.2 Sampling Universe for the Camp population

The universe for camps consisted of the most recent list of camps provided by UNHCR and checked with Military officials for their exact location at the time of the cluster selection. Since there were numerous camps being formed every week, many were not listed by any formal authority, and it was difficult to get an authentic list, it was agreed that any camp hosting less than 60 tents would not be considered for sampling. The added advantage would be that the sampling within the cluster would allow at least a sampling interval of 3 in each cluster.

5.c.3 Selection of clusters

Clusters were selected using the probability proportional to population size (PPS) methodology. After obtaining the complete list of all sites and their respective populations, clusters were selected using systematic random procedure by calculating the sample interval (using the cumulative total population), a random number was drawn between one and the sampling interval for the assignment of the first cluster, and using the sampling interval for assignment of all other clusters, finally 30 clusters were drawn.

5.c.4 Selection of households

The survey teams visited the selected cluster location and met village leaders. The team leader explained the purpose of the survey and survey procedures. After obtaining the initial permission of village leaders, participation from each household was requested.

After the cluster location was identified, the team leader walked the boundary of the cluster with the community leader. The total numbers of households were divided by the number of households required for providing the sampling interval. The team leader then identified each selected household and after obtaining initial consent from a household member marked the household with a board marker.

Teams attempted to collect data from 20 households per cluster. A household was defined as persons routinely sharing food from the same cooking pot and living in the same compound or physical location. Members of a household may not necessarily be relatives by blood or marriage. A polygamous family living and eating together was considered to be one household. However, separate interviews were conducted for families who migrated due to the earthquake and were staying with another family irrespective of their dependence on the host family.

All chosen households were selected to answer the household and mortality questions, whether or not they contained a child 6–59 months of age. If household members were not present during the survey, the team revisited the household at least three times in an effort to interview and measure eligible household members, unless security or logistical constraints prohibited the amount of time spent in a cluster. In situations where the members of a household had departed permanently or were not expected to return before the survey team had to leave the

[5] District Census Reports, Fifth Population and Housing Census of Pakistan, 1998

cluster, that particular household was skipped and not replaced. The minimum age of respondents for interview was 15 years old. When respondents could not provide accurate information, households were revisited and if accurate information could not be obtained, those questions were marked as missing in the questionnaire.

The selection of households in the different settings is described in the following sections.

5.c.5 Community scenario

Attempts were made to obtain an accurate updated household list in each community. If a listing was available, households were chosen randomly using a random number table from the list. If a list was not available, a village map was drawn with the help of the community members and the village divided into segments of 60 households (when the village was larger than 100 households). One segment was chosen using either a random number or through lottery. A detailed map of the segment (with location of each household) was then drawn. As 20 households were required to be interviewed, 1 household among the first three were randomly chosen and then every 3rd household systematically selected. In case, if 60 households were not found while mapping in real situation, the team leader would continue to mark upto 20 households and stretch the boundary since it is arbitrarily defined while drawing.

5.c.6 Camp Scenario

Detailed lists of tents in the camp were used to systematically sample 20 tents (households). If there were more than 1 cluster placed in one camp (as in the case with very large camps), the camp was divided into two equal sections and a cluster was placed into each section. If the camps were very well organized simple random sampling was used; otherwise the systematic method described above was use.

5.d Data collection

The training of team members (enumerators, measurers, team leaders and monitors) by master trainers was conducted at Abbottabad for 4 days by technical staff from UNICEF, WFP and NIH (MoH), Islamabad. More than half of the training sessions focused on anthropometric measurement and each participants had to practice both in the classroom and in the community before qualifying to join the team. Adequate attention was given in training on standardizing the instrument and keep record of the procedure and variation or error (if any). There were three additional days of training before starting the surveys in the AJK areas. The team was trained on interview techniques, the format of questionnaires as well as on data recording and reviewing techniques. The team supervisors were trained for editing the questionnaires in the field and in quality assurance techniques. The training also covered basic introduction to nutrition, explanation on the survey and its methodology, and practical training on measuring techniques. Pre-testing of the questionnaire was done in the field initially by the technical staff but also during the training by each of the interviewers. Data collection took place during November 21 to December 2 for the Manshera district and NWFP camps and during December 14 to 26, 2005 for Muzaffarabad and AJK camps.

5.d.1 Composition of data collection team

Six teams were trained for the survey and each team consisted of 5 members - two male and two female measurers and interviewers and one team leader. Females collected information from the mothers and conducted weight and height measurements of the children and women.

Male members carried the instruments, arranged and helped in anthropometric measurements and conducted the market key informant's interviews.

5.d.2 Field supervision and quality assurance

Constant supervision and monitoring of all field activities, editing, was emphasized. Concurrent crosschecks of the data collected by interviewers was to be performed by team supervisors in a random sample of households. Team supervisors were reviewed all questionnaires everyday so that any mistakes could be checked on the spot and necessary correction be made. Data cleaning and editing of the completed questionnaires was done by professional data editors before data entry. Random check of the data entry of questionnaire (10%) was done by separate operators using the Microsoft Access programme, and consistency checks were run to detect and correct data entry errors.

Each weight scale was numbered and calibrated daily prior to data collection. For scales where adjustment could not be done at the beginning, the difference from 'zero' (deviation) was counted using a standard weight of 10 Kg and adjusted later while data was processed using a formula to calculate the proportion of error with escalation in weight of the mothers. This happened only in case of mothers in Manshera district. For remaining areas, a UNISCALE was used and no adjustment factors were required.

5.d.3 Key informant interview / community interview

Key informant interview or community interview was done by the team leader or supervisor in each cluster. This interview has covered the information which has not been covered adequately in household questionnaire. A verbal consent was taken from participants prior to discussion. The survey team had full understanding of Urdu and local languages. Notes were taken in Urdu, transcription was done by the research team at the earliest and report has been written and translated into English.

5.e Major Study Variables

The following information was collected for the children between 6-59 months of age:

Age in months, gender (M/F), weight in Kgs to nearest 100 gms, height in cm to the nearest 10 mm, bilateral oedema by examination, diarrhea over the previous 2 weeks (defined as three or more loose or watery stools per day), dysentery (three or more loose or watery stools with blood per day), ARI over the last 2 week period (difficulty in breathing with fever), measles vaccination ever received, measles vaccination received in last month, feeding practices (mode of feeding the infants and young children), exclusive breast feeding (nothing other than breast milk given to the child not even water in last 24 hours), and age of introduction / times given weaning foods (weaning food is the semi-solid food given to the child at the age of six months other than breast milk).

The following information was collected for mothers of the children 6-59 months:

Age in years [collected on the HH listing form], weight in kg to the nearest 100 gm, height in cm to the nearest cm and breastfeeding status.

The following information was collected for households:

Livestock, kitchen garden, loan, financial assistance, household commodities, jewelry, and distress asset sales (land, livestock, etc.)

5.f Definition of variables

*Acute malnutrition (or wasting) in children: growth failure as a result of recent rapid weight loss or failure to gain weight***:** defined as a weight-for-height less than -2 z -scores based on the 1978 WHO/CDC reference and/or oedema. This is also sometimes knows as global acute malnutrition.

ARI: difficulty in breathing with fever

Chronic malnutrition (stunting): growth failure in a child that occurs over a slow cumulative process as a result of inadequate nutrition and/or repeated infections; defined as height-for-age less than -2 Z-scores by NCHS standards.

Cluster sampling: a sampling technique that organizes a population into smaller geographical areas which are then sampled. Clusters can be selected from these geographical units according to their proportional population size. Households are then selected with in each cluster and information collected on eligible individuals within the household.

Complementary feeding: foods given to young children in addition to breast milk or formula milk.

Confidence interval: an interval that has a specified probability of covering the true population value of a variable or condition.

Cross-sectional nutrition survey: a one-off assessment of the nutritional situation of a population, a snapshot in time.

Diarrhea: three or more loose or watery stools per day.

Distress assets sale: selling of valuable belongings to meet the daily necessities

Dysentery: three or more loose or watery stools with blood in them per day

Epi Info Software: a series of microcomputer programs produced by the CDC and WHO, for handling epidemiological data in questionnaire format, and for organizing study designs and results into text and tables that may form part of written reports.

Feeding practices: mode of feeding infants and young children

Household: a group of people who routinely eat out of same pot and live on the same compound (or physical location). It is possible that they may live in different structures.

*Loan***:** money borrowed to meet the expenditure, which has to be returned in due course of time.

Local events calendar: a calendar that reflects important events and seasons **t**hat might help a parent pinpoint the birth date of their child.

Malnutrition: adequate nutrition is the means, by which people thrive, maintain growth, resist and recover from diseases, and perform their daily tasks. When nutrition is inadequate, people become malnourished.

Morbidity: a condition resulting from or pertaining to disease; illness.

Mortality rate: death rate; frequency of numbers of death in proportion to a population in a given period of time.

WHO/CDC reference (1978): growth curves developed by the National Center for Health Statistics in the USA, that provide references for weight-for-age, weight-for-height, and height-for-age

Oedema: Retention of water in the body due to severe protein deficiency

Severe acute malnutrition: the most drastic form of acute malnutrition; a child who has weight-for-height <-3 z-scores weight-for-height median and/or oedema is acutely malnourished.

*Standard deviation***:** a measure of variability, whose size indicates the dispersion of a distribution; same as the Z-score.

Underweight: a condition measured by weight-for-age; a condition that can also act as a composite measure of stunting and wasting.

Weight-for-age: a composite index of weight in relation to age.

Weight-for-height: an index of current nutrition status also referred to as wasting

Z-scores: a statistical measure of the distance, in units of standard deviations, of a value from the mean.

5.g Measuring instruments

UNISCALES were used for measuring the weight of the children and the mothers in all surveys except Manshera community where bathroom scales (digital) were used to measure the weight of mothers in kg and Salter scale for weighing the children[6].to the nearest 100 grams. Height was measured in cm to the nearest cm. **Shorr** portable infant/child height measuring board was used for measuring the length / height of the child. For mothers, an additional piece was attached to the Shorr board. Oedema was determined by applying firm thumb pressure to the lower anterior surface of both legs for three seconds. If an indentation remained after the pressure was removed, oedema was considered positive.

[6] UNISCALES arrived late due to cancellation of flights, hence the 1st survey at Mansehra was done with digital bathroom scales. However, calibration and standardization was done in reference to UNISCALES.

5.h Data processing and analysis

Prior to data entry, all forms were checked for completeness and consistency as well as coding of open ended responses and area codes, etc. In case of inconsistency or missing responses, the editors flagged the errors/omissions and consulted the interviewers for possible explanations.

For data entry, databases and entry screens were developed using Microsoft Access. The entry screens employed range and consistency checks and skips to minimize entry of erroneous data. Special arrangements were made to enforce referential integrity of the database so that all data tables related to each other without problem.

After completion of the entries the data entry operators cross-checked each others entry for quality assurance. Data cleaning was carried out in MS Access by sorting records to filter out extreme values and SQL queries to check logical errors.

For data analysis, the data tables were converted to SPSS version 11, and to Epi Info version 6 for nutritional data analysis. Frequency distributions and other tables were programmed and produced in SPSS Syntax and use of Epi Info (Windows version) 3.3.2.

5.h.1 Anthropometry of Children

Anthropometric indicators of length/height-for-age, weight-for-age, weight-for-length/height were determined for the children using Epi Info (Epi Info 6.04d). The following extreme values in anthropometry were converted to missing values (WHO, 1995[7]):

- Weight-for-Height (WHZ) <-4.0 or >5.0
- Weight-for-Age (WAZ) <-5.0 or >5.0
- Height-for-age (HAZ) <-5.0 or >3.0

The interpretation of the prevalence of low anthropometry (<-2 SD) is presented in Table 2. The prevalence of low anthropometry is provided based on z-scores (<-2 and <-3 SD), and by percent of median.

Table 2. Relative Prevalence of Low Anthropometric Values*

Index	*Low*	*Medium*	*High*	*Very High*
Low WH	<5.0%	5.0-9.9%	10.0-14.9%	≥15.0%
Low HA	<20.0%	20.0-29.9%	30.0-39.9%	≥40.0%
Low WA	<10.0%	10.0-19.9%	20.0-29.9%	≥30.0%

* WHO 1995. <-2 SD

For calculation of the prevalence of acute malnutrition, children with bilateral oedema were considered as wasted regardless of their weight-for-height Z-value. In the calculation of low weight-for-age, children with oedema were excluded.

5.h.2 Anthropometry of Women

Weights and heights were measured in women. BMI was calculated as weight (kg) divided by height (m) squared (Wt kg/[Ht m]^2). The following values were considered extreme and changed to missing values:

Weight:	<12.9 kg	>140 kg
Height:	<110 cm	>200 cm
BMI:	<3.2	>55

[7] WHO Field Guide for Rapid Nutrition Assessment. WHO, Geneva, 1995

BMI was used only in non-pregnant women with acceptable weight and height values. The interpretation of BMI is presented in Table 3.

Table 3. Interpretation of body mass index for adult non-pregnant women

BMI	*Interpretation*
<16	Severe Malnutrition
<= 16 to <17	Moderate Malnutrition
17<= to <18.5	Mild malnutrition
18.5+	Normal/Adequate

*WHO, 1995

The interpretation of the public health significance of the prevalence of low BMI (<18.5) is presented in Table 4.

Table 4. Proportion of population with low BMI (<18.5) that defines a public health problem*

Normal	*Low Prevalence (warning sign, monitoring required)*	*Medium Prevalence (poor situation)*	*High Prevalence (serious situation)*	*Very High Prevalence (critical situation)*
3-5%	5-9%	10-19%	20-39%	≥40%

* WHO, 1995

5.h.3 Mortality

The SMART methodology was used to estimate mortality. Information was collected on all household members alive on the date of the interview, alive on the first day of the recall period (1 July 2005), and individuals who were considered household members sometime between the first day of the recall and the interview. The current status was requested for each individual (alive, dead, or unknown).

For calculating mortality, the numerator was the number of individuals reported to have died during the period of observation. The denominator was the average of the following: total number of household members at time of interview and total number at beginning of recall period. Relatively few individuals had an unknown status and were excluded from the calculation. The number of individuals who were part of the household at some point between the first day of the recall period and day of survey was small and their person time is not taken into account – including them had very little effect on the mortality rates. The number of days was calculated from the beginning of the observation period to the midpoint of data collection, which varied between the surveys.

5.i Survey Limitation

- *Accessibility*: Not all selected clusters were accessible which resulted in the loss in one per 30 clusters in three of the survey areas. This is unlikely to bias the estimates in any significant manner and the precision of the estimates still acceptable given the rounding up of the number of households to assess in each cluster.
- *Limited information at planning stages*: When compiling the sampling universe for the camp population, camps containing less than 60 tents were excluded due to sampling methodology restrictions. This could possibly introduce a bias if these smaller camps had a different status than larger camp communities.

TRAINING AND DATA COLLECTION

6. RESULTS

Data were collected in the four survey areas during November and December, 2005. Mansehra community data collection was completed in 5 days between 21-25 November, the NWFP camps completed in 6 days between November 27-December 2, Muzaffarabad community completed in 5 days between 14-18 December, and the AJK camps completed in 6 days between 20-25 December.

Table 5: Sample Details for Survey Areas

	Community		Camps	
	Mansehra	Muzaffarabad	NWFP	AJK
Clusters in sample	29	29	30	29
Households sampled	570	572	597	580
Response rate	93%	95%	94%	93%
Number of Households	530	544	561	540
Number of Children (6-59 months)	619	537	605	681
Number of Women	451	378	403	430

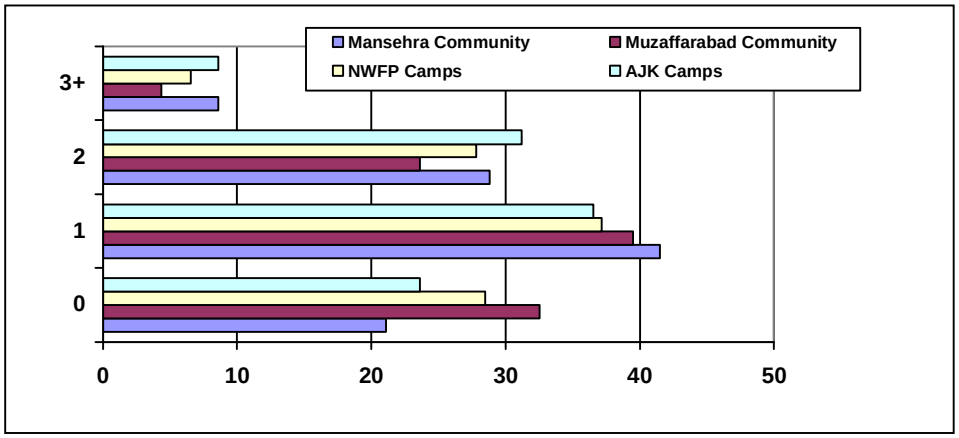
6.a Demographics

Household size:
The average household size in the community and camps are comparable at approximately 7 members per household. Mansehra community had an average of 7.6 people per household, Muzaffarabad community had an average of 7.0, NWFP camps had an average of 6.7, and the AJK camps had an average of 6.9. The Population Census of 1998 reported an average of 7.6 people per household.

Crisis related increase in household size:
Approximately 6-9% of the households in both the camps and communities reported that after the earthquake additional members had been added to the household. In Mansehra community the average addition per household was 3.6 people and similarly in Muzaffarabad communities 3.8 people per household were added. In the NWFP camps 4.3 people per household were added while in the AJK camps a smaller number of 3.0 people were added. These additional members were more dependent on the households for food in Mansehra community (79% totally dependent) than in Muzaffarabad community (55% totally dependent). In the camps, the level of complete dependence for food by the additional family members was around 70% for both survey areas.

Migration:
In Muzaffarabad community more than two thirds (70%) of the community had migrated from their usual place of residence. Among them, 91% were living in tents (even within their household premises). In the Mansehra community, 38% of the population had migrated from their usual place of residence. Among those who have been displaced, 87% lived in tents and 11% lived with a relative. Many of the populations living in tents in these communities had not moved away from their destroyed houses and lived on the debris in a make-shift arrangement to safeguard their property and household assets still buried under the rubble. Only 13% of the Mansehra community intended to migrate from their usual place of living in the winter months and 7% of the Muzaffarabad community.

Figure 1: Average Number of Children under five per Household



Number of children under 5 yrs:
Muzaffarabad community had the most number of children per household of the four surveys, including highest percentage of households with more than 3 children. This may be partially a result of the high burden of earthquake related mortality among children under 5 years in the Muzaffarabad community (see mortality results). The NWFP camps had a much higher number of children per household (in all the categories) than the AJK camps.

Reproductive Status:
More than half of the mothers of under-five children in all of the survey samples were currently breastfeeding and between 11-17% were currently pregnant.

Table 6: Prevalence of pregnancy and breastfeeding in survey areas.

	Community		Camps	
	Mansehra (%)	Muzaffarabad (%)	NWFP (%)	AJK (%)
Currently pregnant	11.3	17.4	15.1	14.9
Currently breastfeeding	55.2	74.4	61.2	84.0

Education level of mothers of children 6-59 months: The overall education level of mothers was low in all survey locations. In Mansehra Community, 63% of the mothers had no education while in Muzaffarabad Community it was 56%. In the NWFP camps 86% of the mothers had no education and which was 72% in the AJK camps.

6.b Anthropometry

The prevalence of malnutrition is given in z-scores which are internationally recognized to be the preferred method of reporting survey data. In order to address programmatic needs, Annex 8 reports the major nutrition finding in percentage of the median as well. Results for age and sex breakdown of the prevalence data is can be found in Annex 7; there were no important trends by age or sex in the survey samples.

The ratio of boys to girls was close to 1 to 1 for all four surveys. The age distribution of children within the survey samples was fairly well distributed with a slight skewing towards older children.

Acute Malnutrition[8]:
The prevalence of acute malnutrition in the survey areas is presented in Table 7. The prevalence of global acute malnutrition was 10.5% in Mansehra community, 5.7% in Muzaffarabad community, 6.0% in NWFP camps, and 4.2% in the AJK camps.

Table 7: Prevalence of Acute Malnutrition/Wasting (6-59 months) by survey area after earthquake with 95% confidence intervals.

	Community		Camps	
	Mansehra (%) (n=580)	Muzaffarabad (%) (n=511)	NWFP (%) (n=554)	AJK (%) (n=660)
Global Acute Malnutrition (W/H <-2 SD and/or oedema)	10.5 (6.7-14.3)	5.7 (3.8-7.5)	6.0 (3.9-8.0)	4.2 (1.9-6.5)
Severe Acute Malnutrition (W/H <-3 SD and/or oedema)	4.7 (2.5-6.8)	2.5 (1.1-4.0)	3.2 (1.5-5.0)	1.2 (0.0-2.3)

There were 16 (2.7%) children with oedema in Mansehra community and 13 (2.5%) children with oedema in Muzaffarabad community. There were 10 (1.7%) children with oedema in NWFP camps and 7 (1.0%) in AJK camps. There were no important differences in prevalence by sex among any of the survey populations. In the NWFP camps there appeared to be a trend of younger children having a higher prevalence of oedema.

Chronic Malnutrition[9]*:*
The prevalence of global chronic malnutrition was 44.5% in Mansehra community and 38.1% in Muzaffarabad community, 54.8% in NWFP camps, and 44% in the AJK camps. These prevalences would be considered to be "very high."

Table 8: Prevalence of Chronic Malnutrition/Stunting (6-59 months) by survey area after earthquake with 95% confidence intervals

	Community		Camps	
	Mansehra (%) (n=568)	Muzaffarabad (%) (n=509)	NWFP (%) (n=540)	AJK (%) (n=655)
Global Chronic Malnutrition (H/A <-2 SD)	44.5 (37.3-51.8)	38.1 (32.1-44.1)	54.8 (48.6-61.1)	44.0 (39.7-48.3)
Severe Chronic Malnutrition (H/A<-3 SD)	19.2 (13.2-25.2)	11.0 (7.6-14.4)	29.1 (23.7-34.4)	15.6 (12.4-18.7)

[8] Global Acute malnutrition was defined as having oedema ***or*** a low weight-for-height Z-score (WHZ) i.e., <-2 SD that includes <-3SD which means that the prevalence of global acute malnutrition includes both moderate and severe categories of wasting.
[9] Global Chronic malnutrition was defined as having a low height-for-age Z-score (HAZ) i.e., <-2 SD that includes <-3 SD meaning that both severe and moderate stunting is included in the quoted figures.

Underweight[10]*:*

The prevalence of a weight-for-age (WAZ) <-2 SD was 38.1% in Mansehra community, 26.9% in Muzaffarabad community, 40.3% in NWFP camps, and 30.8% in AJK camps. Note that these prevalence estimates were calculated excluding children with oedema.

Table 9: Prevalence of Underweight (6-59 months) by survey area after earthquake with 95% confidence intervals

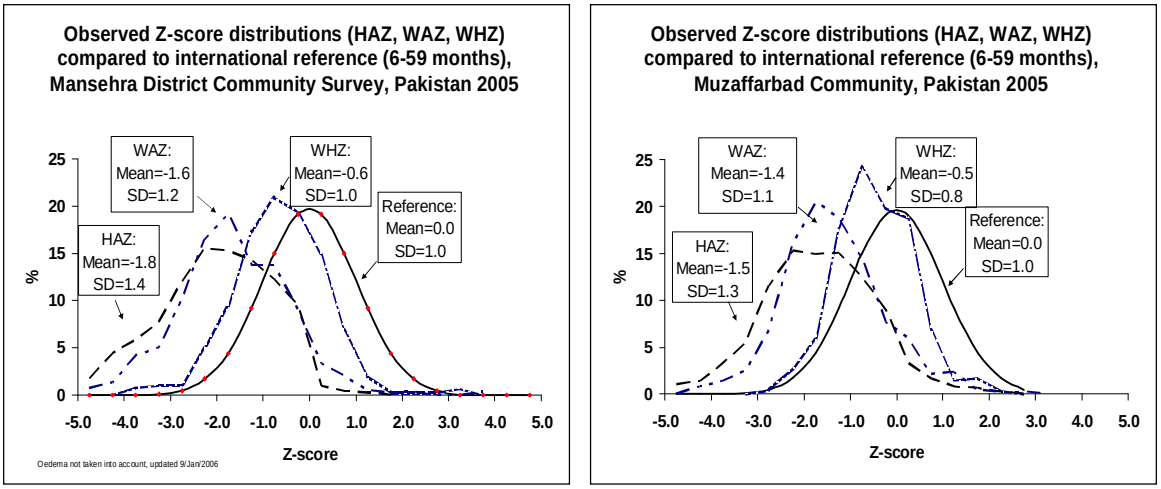
	Community		Camps	
	Mansehra (%) (n=565)	Muzaffarabad (%) (n=498)	NWFP (%) (n=551)	AJK (%) (n=656)
Underweight (W/A <-2 SD)	38.1 (32.1-44.0)	26.9 (21.2-32.6)	40.3 (35.2-45.4)	30.8 (25.6-36.0)
Severe Underweight (W/A<-3 SD)	11.2 (8.6-13.7)	4.8 (2.6-7.1)	12.9 (9.8-16.0)	6.6 (4.0-9.2)

Note: excludes children with oedema

Distribution of anthropometry results compared to international reference

The distribution of malnutrition within the community populations sampled is very similar to one another. With reference to acute malnutrition, in Mansehra community the sample population is skewed to the left by -0.6 z-scores with a fairly even distribution. This indicates that the sample population is more malnourished than the norm. The results are similar for Muzaffarabad community population with a skewing to the left of -0.5 z-scores. With reference chronic malnutrition, the population distributions for Mansehra and Muzaffarabad are skewed to the left by -1.6 and -1.4 z-scores respectively. This indicates that both communities' populations are very stunted when compared with the norm.

Figure 2: Distribution of malnutrition in community populations.

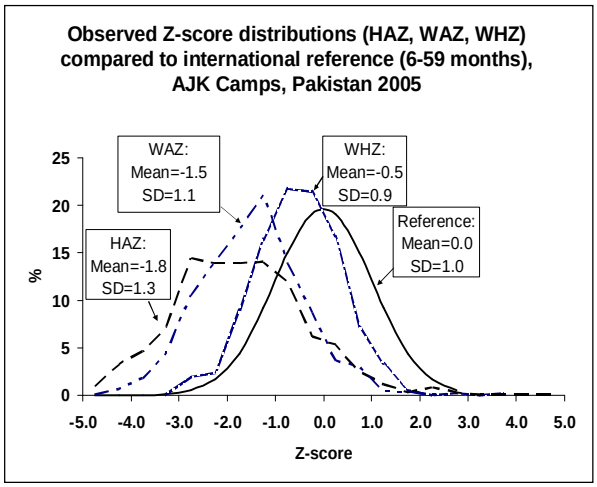


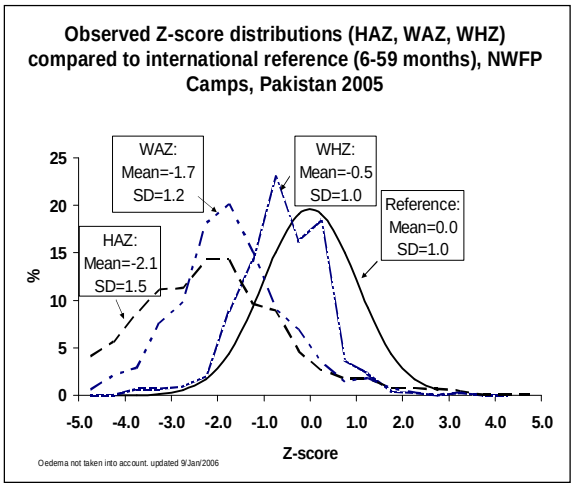
The distribution of malnutrition within the camp populations sampled is also very similar to one another. With reference to acute malnutrition, the in NWFP camps the sample population is skewed to the left by -0.5 z-scores with a fairly even distribution. This indicates that the sample population is more malnourished than the norm. The results are identical for the AJK camp population with a skewing to the left of -0.5 z-scores. With reference chronic

[10] The prevalence of underweight (a low weight-for-age z-score value) was calculated excluding children with oedema.

malnutrition, the population distributions for NWFP camps and AJK camps are skewed to the left by -1.7 and -1.5 z-scores respectively. This indicates that both communities' populations are very stunted when compared with the norm.

Figure 3: Distribution of malnutrition in the camp populations.





Nutritional Status of Women (non-pregnant)

The estimation of Body Mass Index (BMI), a composite indicator using weight and height in order to ascertain adult nutritional status, revealed that approximately 20% of women were malnourished (BMI<18.5) in all four survey areas. This indicates a "poor" nutrition situation.

Table 10: Prevalence of malnutrition (BMI) in non-pregnant women

	Community		Camps	
	Mansehra (%)	Muzaffarabad (%)	NWFP (%)	AJK (%)
Severe Malnutrition (<16)	2.7	1.0	1.5	2.3
Moderate Malnutrition (16 - 16.99)	2.2	3.7	3.5	3.1
Mild malnutrition (17 - 18.49)	11.2	12.7	10.5	9.4
Adequate (>18.5)	83.6	82.7	84.3	85.2

6.c Mortality[11]

Table 11: Crude Mortality Rates on the Day of Earthquake- overall and risk of mortality by age and sex groups

	Community		Camps	
	Mansehra	Muzaffarabad	NWFP	AJK
CMR Oct 8 per 10,000/day (95% CI)	168 (133, 211)	506 (440, 579)	489 (425, 560)	539 (471, 614)
Age Group in years (risk of mortality)				
<5	1.2%	10.7%	7.6%	6.9%
5-14	1.2%	5.3%	4.0%	5.2%
15-49	1.8%	3.0%	4.2%	4.1%
50+	3.2%	5.4%	8.4%	10.0%
Overall risk	**1.7%**	**5.1%**	**5.2%**	**5.5%**
Sex (risk of mortality)				
Male	1.4%	4.1%	5.2%	4.8%
Female	1.8%	6.0%	5.2%	5.9%

Mortality rate & risk of mortality on the day of the earthquake by survey sample

- In Mansehra community the point estimate of the mortality rate for the day of the earthquake (October 8, 2005) was 168 deaths per 10,000 per day. Overall, it is estimated that 1.7% of the population died on the day of the earthquake. Older individuals were more likely to die with 3.2% of the population 50 years of age or older dieing on the day of the earthquake.

- In Muzaffarabad community the point-estimate of the mortality rate for the day of the earthquake (Oct 8, 2005) was 506 per 10,000 per day. Overall, it is estimated that 5.1% of the population died on the day of the earthquake. Younger individuals were more likely to die with 10.7% the population under 5 years of age dying on the day of the earthquake. The age groups between 15-49 years were the least affected.

[11] Mansehra excludes individuals with an unknown status (n=56); the person-days excludes persons who were not part of the household on the days above but were part of the household between the two days (n=21); date of death was not known for 5 individuals. Muzaffarabad excludes individuals with an unknown status (n=3); the person-days excludes persons who were not part of the household on the days above but were part of the household between the two days (n=13); date of death was not known for 13 individuals. NWFP camps excludes individuals with an unknown status (n=71); the person-days excludes persons who were not part of the household on the days above but were part of the household between the two days (n=19); date of death missing for 8 individuals. AJK camps excludes individuals with an unknown status (n=4); excludes the person-days excludes persons who were not part of the household on the days above but were part of the household between the two days (n=31); date of death missing for 11 individuals.

- In the NWFP camps the point estimate of the mortality rate for the day of the earthquake (Oct 8, 2005) was 489 per 10,000 per day. Overall, it is estimated that 5.2% of the population died on the day of the earthquake. Older and younger individuals had the highest mortality risks with with 8.4% of the population over 50 years of age dieing on the day of the earthquake, and 7.6% of children under 5 years..

- In the AJK camps the point estimate of the mortality rate for the day of the earthquake (Oct 8, 2005) was 537 per 10,000 per day. Overall, it is estimated that 5.5% of the population died on the day of the earthquake. Older individuals were more likely to die with 10% the population over 50 years of age dying on the day of the earthquake..

Mortality rates before & after the earthquake by survey sample

- In Mansehra community the CMR was 0.12 per 10,000 per day in the three month recall period (July 1- October 7, 2005) prior to the earthquake and 0.20 per 10,000 per day during the recall period after the earthquake (October 9-November 25). The average CMR for the total recall period of approximately four months was 1.29 deaths per 10,000 per day.

- In Muzaffarabad community the CMR was 0.0 per 10,000 per day in the three month recall period (July 1- October 7, 2005) prior to the earthquake and 0.2 per 10,000 per day during the recall period after the earthquake (October 9- December 17). The average CMR for the total recall period of approximately four months was 3.1 deaths per 10,000 per day.

- In the NWFP camps the CMR was 0.05 per 10,000 per day in the three month recall period (July 1- October 7, 2005) prior to the earthquake and 0.42 per 10,000 per day during the recall period after the earthquake (October 9-November 25).The average CMR for the total recall period of approximately four months was 3.5 deaths per 10,000 per day.

- The CMR was 0.0 per 10,000 per day in the three month recall period (July 1- October 7, 2005) prior to the earthquake and 0.10 per 10,000 per day during the recall period after the earthquake (October 9- December 22). The average crude mortality rate for the total recall period of approximately four months was 3.4 deaths per 10,000 per day.

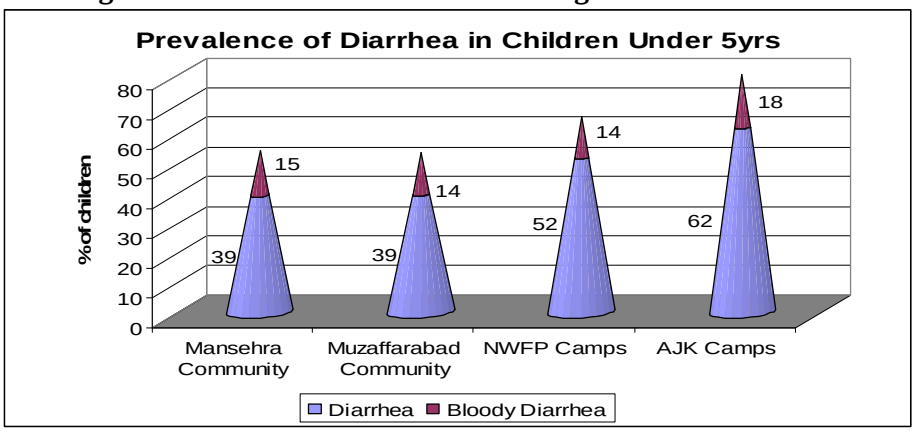
Table 12: Crude Mortality Rates before and after the Earthquake

	Community		Camps	
	Mansehra	Muzaffarabad	NWFP	AJK
CMR before earthquake per 10,000/day (95% CI)	0.12 (0.4, 0.26)	0.0 (0.0, 0.0)	0.05 (0.01, 1.6)	0.0 (0.0, 0.0)
Recall period applied (days)	99 days	99 days	99 days	99 days
CMR after earthquake per 10,000/day (95% CI)	0.2 (0.06, 0.47)	0.2 (0.0, 0.4)	0.44 (0.21,0.80)	0.1 (0.0, 0.3)
Recall period applied (days)	48 days	70 days	53 days	75 days

6.d Child Morbidity

The prevalence of diarrhea was higher among the camp populations than the community populations. More than half of children in camps had experienced diarrhea in the two weeks prior to the survey, while in the communities it was approximately one third. Blood in the stool (dysentery) was prevalent among those children experiencing diarrhea between 13-18% of the time. For dysentery there was no important difference among the survey areas.

Figure 4: Prevalence of Diarrhea among under-five children



The prevalence of ARI was very high in all survey areas with over two thirds of the children under 5 suffering in the two weeks prior to the survey. The camp populations had a higher prevalence than communities. The prevalence of fever was also high at between 65-75%.

Table 13: Child (6-59 m) Morbidity among earthquake affected populations

	Community		Camps	
	Mansehra (%)	Muzaffarabad (%)	NWFP (%)	AJK (%)
Experienced diarrhea during last 2 weeks	39.3	39.3	51.6	61.9
Blood in diarrhea (dysentery)	14.8	14.2	13.8	17.7
Experienced cough with difficultly breathing during last 2 weeks (ARI)	61.7	60.3	69.4	75.0
Any fever during last 2 weeks	65.2	64.9	70.6	76.0

6.e Health care

Approximately half (55-59%) of the community populations surveyed seek treatment for children's illness outside of the home. In the NWFP camp 71% sought treatment outside of the home, while in AJK it was higher at 82%. In Mansehra community the majority (49%) of people sought treatment for children in a hospital/clinic/health center; in addition treatment in mobile/outreach clinics (19%) and private physicians (21%) were common. In Muzaffarabad community the majority of people sought treatment for children from a mobile/outreach clinic (48%); in addition treatment in hospital/clinic/health center (31%) and private physicians (25%) were common. In NWFP camps the majority of people sought treatment for children from a mobile/outreach clinic (53%); in addition treatment in hospital/clinic/health center (32%) and self-medication (11%) were common. In AJK camps the majority of people sought treatment for children from a mobile/outreach clinic (72%); in addition treatment in hospital/clinic/health center (20%) and camp hospitals (6%) were common.

Table 14: Health seeking behaviour related to child morbidity

	Community		Camps	
	Mansehra (%)	Muzaffarabad (%)	NWFP (%)	AJK (%)
Sought advice or treatment for illness of child outside the home	59.0	55.8	71.3	82.1
Treatment sought:				
Hospital/clinic/health center	49.2	31.5	31.7	20.4
Mobile/outreach clinic	19.0	48.4	53.2	72.1
Village health care worker	1.4	0	0.5	0.4
Private physician	21.4	15.2	3.0	1.0
Others	1.7		10.8	5.7

6.f Infant Feeding Practices

Over 90% of infants in the communities and camps were breastfeed at some point between 0-24 months and around 75% - 85% children under 2 years were still breastfeeding on the day of interview. However, there was gradual decline in continuation of breastfeeding with age and more than 60% children over 18 months were still continuing breastfeeding. Of those who stopped breastfeeding, one of the main reason in Mansehra Community were not having enough milk; moreover, it was the only survey area that cited absence of a suitable environment as a cause for ceasing breastfeeding. In Muzaffarabad community, AJK and NWFP camps, the lack of enough breast milk and mother pregnancy/illness were the main causes of ceasing breastfeeding. While asked about if semi-solid or other liquids were given at the age of 6 months, about 30% - 60% mothers responded positively. Semisolids were the most common items followed by fresh or formula milk.

Table 15: Infant Feeding Practices

	Community		**Camps**	
	Mansehra (%)	**Muzaffarabad (%)**	**NWFP (%)**	**AJK (%)**
Ever breastfed (0-24mths)	*96.76*	*93.78*	*94.7*	*94.82*
Children currently breastfed	*85.8*	*74.4*	*78.0*	*84.0*
Continued breastfeeding at 0-5 months	95.0	100.0	92.3	100.0
Continued breastfeeding at 6 – 11 months	90.5	93.6	83.8	94.0
Continued breastfeeding at 12 – 17 months	82.1	66.7	70.3	88.7
Continued breastfeeding at 18+ months	73.3	57.8	67.9	65.2
Reasons for stopping breastfeeding (among those who stopped breastfeeding)				
Milk not enough	58.6	26.3	26.7	28.6
Absence of suitable environment	10.3	0.0	0.00	0.0
Mother pregnant / mother ill	2.0	22.8	32.6	35.7
Foods other than BF given at 6 months	*51.0*	*57.1*	*66.7*	*30.0*
Water/tea/ghutti	15.1	5.9	10.0	9.1
Fresh milk/formula milk	18.9	11.8	10.0	27.3
Semi-solid food	66.0	82.4	80.0	63.6

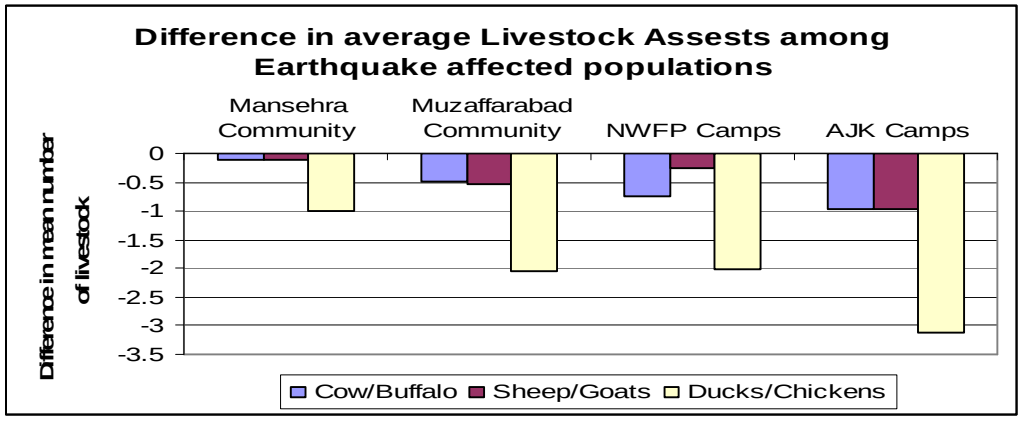
6.g Household Vulnerability Assessment

Level of damage to housing:
In Mansehra community 92% reported some damages to their houses that included 40% who suffered complete destruction. In Muzaffarabad community 99% of the residents had their houses damaged which also included 83% with complete destruction. Among the populations living in camps 99% had their homes damaged; 99% of the population in the NWFP camps reported complete destruction of their homes and 92% in the AJK camps.

Occupation of the head of the household:
The earthquake had major impact on the occupations of the residents in the affected areas. There was a substantial increase in unemployment in the time period after the earthquake among populations in all four survey areas. The increase in unemployment was comparable across all locations, although the populations in the NWFP camps were marginally worse off (changed from 9% to 60%). Labour was the most common form of work before the earthquake in all of the survey areas and this occupation decreased significantly after the earthquake. In NWFP camps, the labourers were particularly affected by the earthquake with a change from 61% employed as a labourer to 25%. Refer to Annex VI for more detailed breakdown in change of household head occupation after the earthquake.

Household assets and coping strategies
The earthquake did not cause a considerable decrease in livestock assets among the populations still living in the communities, although Muzaffarabad did suffer a particularly high loss among the bovine category of livestock. Among the populations living in camps there was a greater loss. This may be due to the fact that the displacement of these populations rendered the households less capable of housing and tending to the animals, and/or the livestock may have been destroyed or consumed.

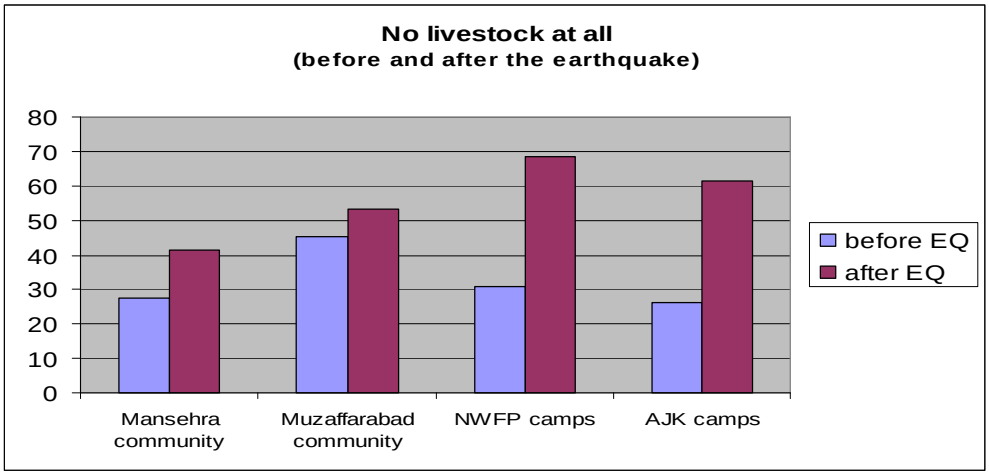
Figure 5: Difference in livestock assets at households before and after earthquake



Ducks and Chickens were the livestock most depleted from a household's assets in the time since the earthquake. Household possession of cow/buffalos saw on an average the loss of one per household. It is important to consider the economic value and food values of the bovine category is the highest; therefore, the loss of bovine assets to households would be more considerable than the loss of ducks and chickens. Additionally those households that only had one cow and lost it would be considered more vulnerable than those households that had many cows and only lost one.

Although the number of livestock lost since the earthquake was not of extreme concern, it should be noted that the number of households without any livestock of any type increased after the earthquake. This vulnerability is considerable among the populations living in camps. In NWFP camps 69% of the population has no livestock and in the AJK camps 62% have no livestock. In correlation, consumption of animal products is low in the populations sampled; only 20-25%[12] of the populations consume animal products (based on 24hour recall data).

Figure 6: Proportion of households without any livestock (before and after EQ)



Household stress or coping mechanisms were measured through the burden of loans and sale of household assets. The pattern of selling valuable assets (distress sales) after the earthquake is very similar between communities and camp populations. Between 7% and 8% of households in the survey areas reported selling assets approximately two weeks after the disaster.

Almost half of the population both in Mansehra community and NWFP camps had a loan before the earthquake. Against the usual expectation, this proportion decreased to 26% among Mansehra community and 12% among the camp population. This difference was mainly due to lack of access to new/renewed loans since almost all people were affected. It was worse in Muzaffarabad and AJK camps where the access declined from 53% to 14% and 46% to 7% respectively.

Table 16: Household coping mechanisms after earthquake

	Mansehra Community (%)	Muzaffarabad Community (%)	NWFP Camps (%)	AJK Camps (%)
Sells				
Sale of assets	7.9	7.10	7.9	8.10
Asset sold:				
Livestock	45.0	70.0	78.7	58.7
Jewelry	35.0	20.0	14.9	28.3
Land	12.5	2.5	4.3	2.2
Loans				
Taken/extended loan- pre EQ	48.0	37.7	53.2	46.5
Taken/extended loan- post EQ	26.7	5.4	13.9	5.9
Loan reasons-post EQ				
Purchase food	52.9	51.7	66.2	83.9
Medical Costs	18.6	13.8	12.2	9.7
Repair of damaged house	15.0	13.8	4.1	3.2

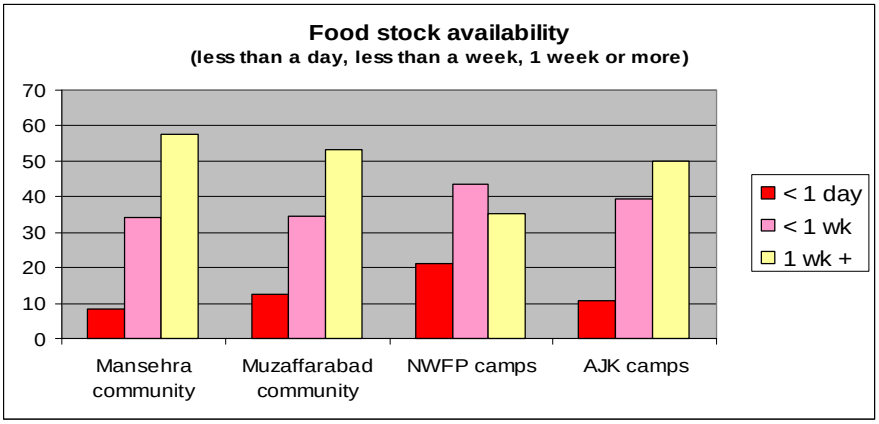
[12] Refer to the food consumption data for more information

The major reason for taking loan in Mansehra community and the Muzaffarabad community was to purchase food (53% and 52% respectively) which was very similar in NWFP camps and the AJK camps as well (66% and 89% respectively). It should be noted that there was no significant relationship between not receiving food aid and taking a loan for all areas except for the AJK camps. Among the AJK camps survey results, 30% of those households not receiving food aid took out a new loan, or renewed an existing loan (number is only 10 out of sample size of 568).

6.h Household Food Access, Consumption, and Diversity

The NWFP camps were the most vulnerable as defined by access to food; 21% of the population had less than one day food stock, 44% had access to less than one week of food stock, and only 35% have access to more than one week of food. The Mansehra district community was the least vulnerable with 58% of the survey sample having access to more than one week food stock and only 8% had less than one day food stock. It is possible that differences in food stock availability across the samples may have been affected by the relationship between the date of data collection and the related food aid distribution cycle.

Figure 7: Household Access to Food measured by food stock



The 24-hour recall food frequency data shows that households in all the survey areas eat a staple[13] every day. Mansehra and Muzaffarabad communities consume around one source of protein[14] per day; the NWFP and AJK camps consume more than one source of protein sources per day with the NWFP camps. On average the Mansehra community consumes fresh vegetables or fruits less than once a day and in Muzaffarabad it is less. The NWFP and AJK camps consume fruits or vegetables less than once per day. In all categories the populations in the camps have a more nutritional intake of foods.

Low consumption of specific food groups, especially fruits and meat, across all the survey areas is of concern. This has implications for development of micronutrient deficiencies in populations dependent on food aid during the winter. Milk and milk products consumption was reported as quite high but this result should be taken with caution as milk in tea was also considered dairy consumption and culturally tea is drunk frequently. There does not appear to be a discernible difference between camps and communities for most commodities.

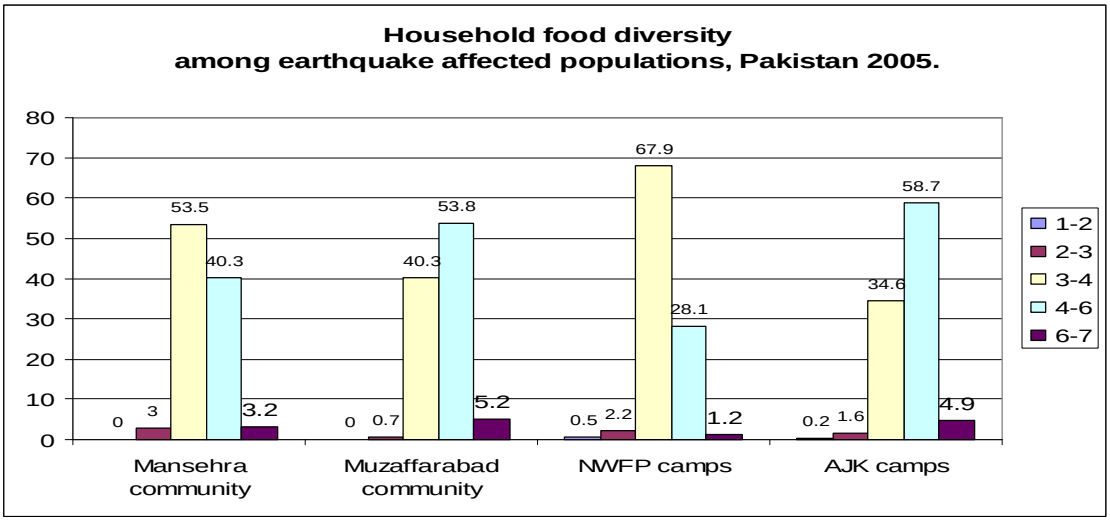
[13] Staple defined as rice or wheat (total score=1)
[14] Protein source defined as meat/chicken/fish, legumes, eggs (total score=3)

Table 17 : Household food consumption (24 hour recall)

	Communities		Camps	
	Mansehra (%)	Muzaffarabad (%)	NWFP (%)	AJK (%)
Cereals (wheat, Maize, rice)	99	99	95	99
Legumes, dhal, beans	54	72	63	65
Meat/chicken, fish	25	25	20	27
Egg	29	30	8	22
Cooking oil/fats	97	99	91	98
Vegetables	51	54	36	56
Fruits	22	24	13	27
Milk and milk products	83	92	93	89
Sugar	98	98	88	94
Wild foods (including leaves)	29	17	13	21

Household food diversity of the earthquake affected populations was estimated using seven day food consumption recall data. The majority of households fell within the range of consuming 2-4 food items. Considering that commodities such as sugar and cooking oil were considered items this diversity could indicate a troublesome situation. In the Mansehra communities 40% of the population surveyed consumes 4 -6 food items with an additional 54% of the population only consuming 3 -4 food items. In Muzaffarabad communities it is the reverse. In the NWFP camps, 28% consume approximately 4 -6 items and 68% eat 3 – 4 items. In the AJK camps 59% of the population consume 4 -6 categories while 35% consume only 3 - 4. The relationship between the camps of AJK and Muzaffarabad district is quite similar indicating that the residents in that area (regardless of camp or community status) are better off than the other survey areas. This may be a result of better access to markets and food aid.

Figure 8: Household food diversity measured by type and frequency of food consumed



6.i Water and Sanitation

In Mansehra community approximately two thirds of the population used a safe or improved source of drinking water. In Muzaffarabad almost the entire population uses safe water, with three quarters using spring water[15]. In Mansehra community taps in the house (21%) and open

[15] In the context of these regions of Pakistan spring water is considered to be a 'safe water source'.

wells (22%) were the most common source of drinking water. In the AJK camps half of the population received their drinking water supplied by NGOs/Gov't while 39% use spring water.

Table 18: Water & sanitation among earthquake affected populations, Pakistan 2005.

	Communities		Camps	
	Mansehra (%)	Muzaffarabad (%)	NWFP (%)	AJK (%)
Use of safe or improved source of drinking water*	65	97.6	NA	93.7
Self-treatment of water at home	13.4	13.7	NA	15.2
Mean quantity of water consumed (liters/family)	-	-	68	74.1
Respondents consider water supply adequate	-	-	81.8	69.5
Hand washing with soap (always)	66.2	65.1	59.3	69.3
Use of toilet facility				
Pour flush and pit latrines	47.1	37.9	63.4	85.3
Open fields	53.0	62.0	36.5	14.1
Sanitary** disposal of excreta	49.7	39.4	66.9	85.4

** hand pump, tap stand, tap in house, spring, supplied by govt./NGO, water point- hence these are mentioned as improved source of drinking water in some places of the report.*

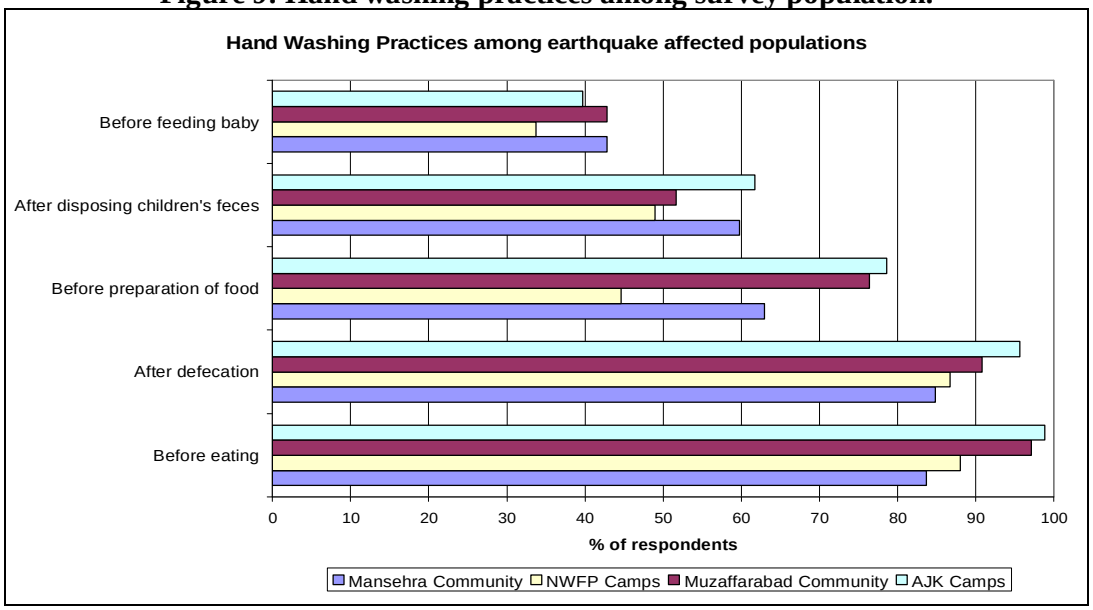
*** buried, sewer, pit latrine*

Questions on the sources of water were initially excluded from data collection in the NWFP camps. The situation in the camps is a controlled situation since the camp management provides water; therefore, the responses might not be reflective of the natural practices of the displaced. Likewise, questions on quantity of water used was limited to camp settings because water use is more measurable in controlled settings like these. However, after implementing the first round of interviews in the NWFP camps it was recognized that the situation was not as controlled as expected therefore the questions were implemented in the AJK camps.

The amount of water used per day per family ranged from 68 to 74liters per household in the camps. In the NWFP camp population, 82% of the same respondents felt that the water supply was adequate and in AJK 70% felt it was adequate.

Hand washing practices among the communities and camps surveyed were highest before eating and after defecation. Less than half of the people wash their hands before feeding a baby. Hand washing after disposing of children's feces and before preparation of food is also low. In all of the affected populations surveyed 60-70% always washed their hands with soap. No relationship between poor hand washing practices and poor malnutrition rates were found.

Figure 9: Hand washing practices among survey population.



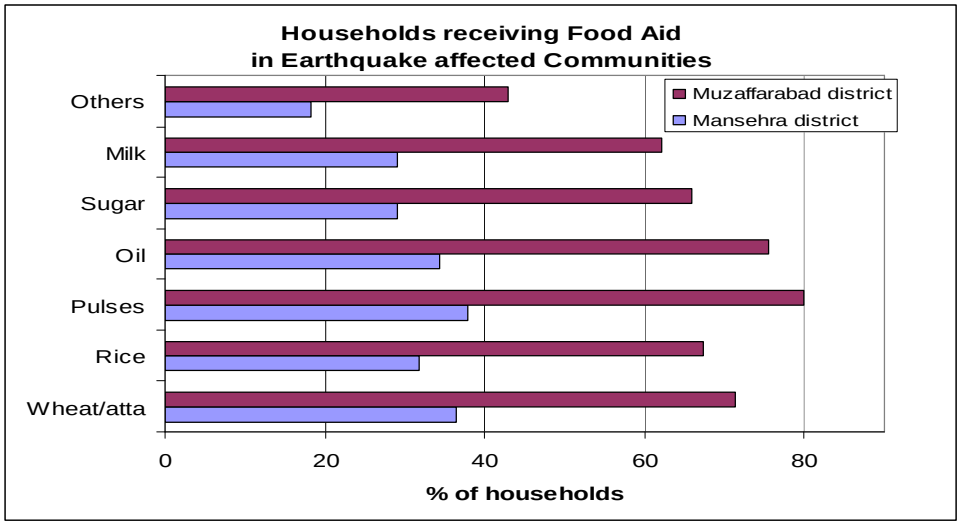
6.j Programme Coverage

Food Aid:
In Muzaffarabad community approximately 70% of the communities received some of the basic food basket[16] commodities but in Mansehra community it was less than 40%. However, when all three major commodities were combined (wheat, pulses & oil), only 26% households in Mansehra community and 50% households in Muzaffarabad community received during October 2006. The figures were higher in NWFP and AJK camps (61.8% and 55.6% respectively). It should be noted that the communities of Mansehra and Muzaffarabad were not equally affected by the earthquake. The level of destruction in Muzaffarabad was much higher and this was one of the targeting principles of food aid; therefore, to an extent it is logical that more households in Muzaffarabad received food aid. In communities the food aid was in the form of dry rations while in camps dry rations and/or prepared foods were given. In the case of cooked meals, 53% of households in NWFP camps were recipients while in AJK camps 30% were recipients. As for dry rations, approximately 80% of the camp populations surveyed received some items of the standard food basket of rations.

It was important to note that in the Mansehra community, among the household that were completely destroyed (n= 202), 21% had not received food aid and in Muzaffarabad community the prevalence was 15% of households totally destroyed (n= 462). Among the camp populations surveyed there was no relationship between complete household destruction and receipt of food aid.

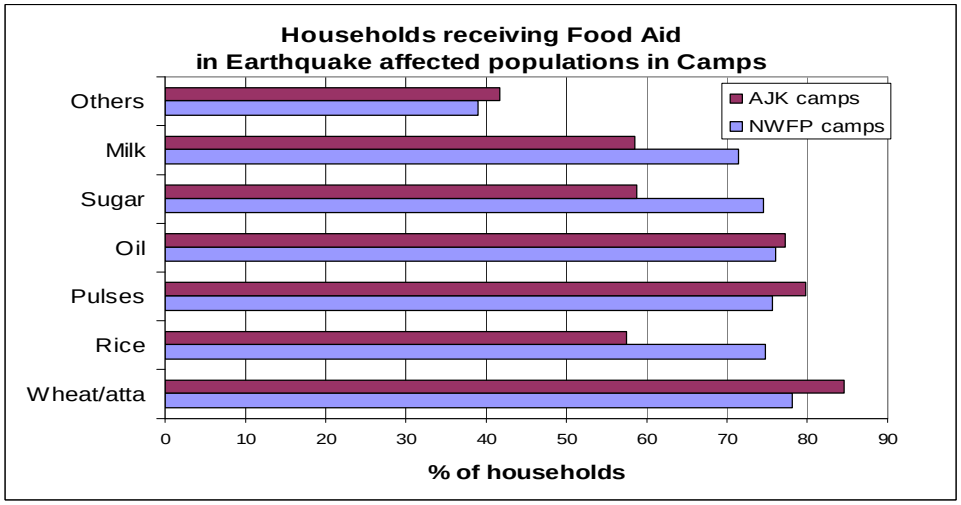
[16] WFP recommended basic food basket includes a daily ration of wheat- 450 gms, pulses- 55gms, vegetable oil 30 gm and salt- 5 gms per person per day.

Figure 10: Food Aid* received by Households in Community survey areas



** food aid from any source*

Figure 11: Food Aid* received by Households in Camp survey areas (excluding prepared meals)



** food aid from any source*

Use of Iodized Salt:

Less than a quarter of respondents in the 4 surveys used iodized salt.

Measles Immunization Coverage:

The measles immunization coverage is better documented in Mansehra Community and the NWFP camps than in the other two areas surveys. If measles vaccination (ever) by both mother's recall and by documentation is considered the level of immunization among all four survey areas is comparable (approximately 70-80%). This is well above the national average of 57%. However, the coverage during the recent campaign varied between Manshehra community or NWFP camps and Muzaffarabad community and AJK camps. The reasons why the rates are lower in Mansehra community and NWFP camps are that the recall period was shorter in these areas (1 month prior to interview compared to since earthquake in other areas.

Table 19: Measles Vaccination Coverage in earthquake affected populations

	Communities		Camps	
	Mansehra (%)	Muzaffarabad (%)	NWFP (%)	AJK (%)
Child Immunized				
Yes, by card	77.0	46.5	64.3	37.4
Yes, by recall	5.4	32.2	4.2	40.5
No	16.1	21.5	28.5	18.6
Child Immunized in recent campaign				
Yes, by card	16.7*	8.9**	14.1*	14.6**
Yes, by recall	11.2*	39.8**	19.8 *	47.3**
No	66.0*	46.0**	63.2*	30.2**

* *in the last one month*
** *since the day of the earthquake*

Vitamin A Supplementation:
Vitamin A supplementation coverage in the Muzaffarabad community and the AJK camps is lower than in the other survey areas. Approximately 50% population in Mansehra community and 60% in the camps stated to have had vitamin A capsule recently. In general the camp populations had a marginally better coverage compared to the community. However, these coverage figures are different than the coverage of recent measles campaign[17] raising the question about other sources of the supplementation. Out of those who received vitamin A capsule, over 90% of both community and camps quoted to have received it through the NIDs/vaccination. On further investigation, it was discovered that some of the respondents confused with the recall period of 1 last month with 6 months when the last NID round took place in these areas.

Table 20: Child Vitamin A supplementation in earthquake affected populations

	Communities		Camps	
	Mansehra (%)	Muzaffarabad (%)	NWFP (%)	AJK (%)
Received Vitamin A	52.1*	36.0**	59.8*	45.5**
Source of Vitamin A:				
From health facility during treatment of illness	5.8*	6.8**	3.9*	3.6**
During vaccination campaign	91.7*	79.2**	95.3*	85.3**
Other	2.6*	2.1**	0.8*	2.0**

* *in the last one month*
** *since the day of the earthquake*

Access to Education
In Muzaffarabad community 68% of the children have access to schools. The access in the camps is similar with 65% of the children in NWFP camps going to school and 77% in the AJK camps.

[17] Ideally, vitamin A supplementation in earthquake affected areas was supposed to take place along with measles campaign.

7. DISCUSSION & CONCLUSIONS

7.a Anthropometry

The prevalence of acute nutrition in Mansehra community would be classified as serious, in Muzaffarabad and NWFP camps as poor, and in the AJK camps as acceptable. Oedema and low weight-for-height (wasting) are conditions that can increase in prevalence relatively fast under adverse conditions, such as a catastrophic natural disaster. Since the national prevalence of acute malnutrition in Pakistan is estimated to be 13.1% (NNS 2001-2) it is difficult to know whether the above results deviate much from the usual prevalences of acute malnutrition and wasting in these populations or if there may have been an increase since the earthquake.

The prevalence of severe acute malnutrition in the survey samples should be viewed with caution since the burden of oedema factored heavily into pushing the prevalences to a higher level. Programmatic responses to acute malnutrition as classified by -3 z-scores and to acute malnutrition as classified by oedema can vary.

The prevalence of chronic malnutrition (i.e., stunting) in Mansehra community and both camp surveys would be considered to be critical and in the Muzaffarabad community it would be considered serious. Because stunting is a condition that develops over a long period, these high prevalences of stunting indicate that these populations have had long-term nutritional problems.

The prevalence of underweight in Mansehra community, NWFP camps, and AJK camps is very high and in Muzaffarabad it would be considered to be a high prevalence. Weight-for-age is primarily a composite of height-for-age and weight-for-height, and these very high prevalence estimates likely indicate that these populations have had long-term nutrition problems and that these prevalences are unlikely due, to any great extent, to the recent earthquake.

Acute malnutrition is higher in the NWFP camps and within the encompassed Mansehra district than in the other survey areas; likewise, chronic malnutrition is higher in these areas too. This is comparable to the provincial trends reported in 2001. The lower prevalence of malnutrition in AJK province and the Muzaffarabad district may also reflect the efforts of the humanitarian community in responding rapidly to the October 8th disaster. Since the AJK province and Muzaffarabad district were the areas that suffered the most damage, and since they were the areas more easily accessible, the humanitarian intervention reached these areas faster and in more strength; thereby possibly keeping the acute malnutrition levels down.

The prevalence of malnutrition among women in all four of the survey areas indicates a poor situation.

- The nutritional status of children under 5 years of age (as measured by global acute malnutrition) is poor.
- Children under 5 years of age in the earthquake affected areas have been suffering from low-term nutritional problems and chronic malnutrition levels are critical.
- The nutritional status of women is poor and a proportion of this population of this population is a cause for concern with 1-2.7% of the women severely malnourished.

7.b Mortality

The loss of life in the day of the earthquake in Pakistan, October 8 2005, was of a gigantic proportion. The AJK province, including Muzaffarabad district, experience the most deaths – approximately 500 deaths per 10,000 population on the day of the earthquake. In Muzaffarabad community children less than 5 years suffered disproportionately with an 11% mortality risk. In AJK the elderly and children less than 5 years were the most as risk of death. Mansehra district, in relation to the other survey samples, had the lowest crude mortality rate. It is of note however that the mortality rate of the camps in NWFP was more than double that of Mansehra (and approximately equal to that of AJK and Muzaffarabad). This may be a reflection of the vulnerability of the populations living in the NWFP camps; it is probable that these households suffered more deaths and the correspondingly higher vulnerability affected their decisions to migrate into camps. This hypothesis can be validated by the high level of house destruction (99% reported complete destruction of homes) and higher level of livestock loss.

The crude mortality rate was elevated on the day of the earthquake but mortality rates did not remain elevated. Across the survey samples the CMR after the earthquake stabilized between 0.1 and 0.4 deaths per 10,000 per day. These post-earthquake mortality rates are so low as to not even register on internationally recognized scales defining an emergency. This being said, it is important to compare the post earthquake mortality rates with the 'baseline' mortality prior to the earthquake in order to determine the magnitude of effect the disaster has had on population based mortality rates. In all four of the survey areas this method indicates that the mortality rate has doubled in the time period after the earthquake – and deserving particular attention are the populations residing in the NWFP camps. Caution should be used in interpreting these mortality rates because even with a doubling of the baseline the crude mortality rate remains low. A rapid multi-sectoral response from the humanitarian community and the government is most probably the reasoning behind this limited increase in mortality.

- Mortality on the day of the earthquake was extremely high.
- The populations living at that time within Muzaffarabad district and at this present time within the AJK camps suffered a very high loss of life around 500 deaths per 10,000 population (per day of earthquake). The populations that moved into the NWFP camps suffered a similar loss.
- In Mansehra district the elderly had a higher burden of mortality while in Muzaffarabad district children under 5 years of age had a higher burden of mortality. The burden of mortality was carried more equally by all age groups within the populations now living in camps, although young children and the elderly suffered more deaths.

7.c Morbidity

The prevalence of morbidity in the survey samples was high. The camp population in particular had a very high prevalence of diarrhoea with over half of the under 5 population experiencing diarrhoea in the previous two weeks and among the community population the prevalence was also high with a prevalence of approximately one third of the under 5 population. The community diarrhoea morbidity is close to the national prevalence of 25% (NNS 2001-02); however, the camp population prevalence is seriously elevated. Dysentery as a subset of overall prevalence of diarrhoea is also high.

Prevalence of ARI in all survey populations was extremely elevated at around 60-75% with no important difference between camps and community populations. A comparison with the national average of 2.1% (NNS 2001-02) raises the question about difference in definition used in these two surveys.

Likewise the prevalence of fever was high at between 65-75% with no important difference between camps and community populations. This is approximately double the national prevalence of 36% (NNS 2001-02).

Treatment outside of the homes was high, in particular among the populations living in camps. This may be because the majority of the camp populations received treatment through a mobile/outreach clinic hence the supposition can be made that these populations had greater access to health care than the community populations.

- The prevalence of morbidity among the earthquake affected populations is high, especially when compared to national prevalences.
- The prevalence of diarrhoea in camps is seriously elevated, with a high subset of dysentery.
- Levels of ARI and fever are high and very elevated compared to national averages.

7.d Infant Feeding Practices

Breastfeeding practices are high with over 90% of children breastfed at some point before 24 months of age. Continuation of the breastfeeding gradually declined with age and it corresponds with the trend found in the National Nutrition Survey 2001-2. Insufficient milk and mother illness/pregnancy were the main reasons for stopping breastfeeding in the survey populations in the time after the earthquake. This is in sharp contrast with the national averages of 7.6% due to insufficient milk and 15.1% due to mother illness.

- Main reasons for stopping breastfeeding are of cause for concern.

7.e Food and Vulnerability Assessment

Almost 100% of all the populations surveyed experienced earthquake related damage to their houses. Among the populations living in camps, almost 100% of the households were completely destroyed. In the Muzaffarabad community the level of complete destruction was about twice of that in Mansehra community.

The earthquake had a major impact on employment with substantial increase in unemployment, particularly among the populations living in the NWFP camps even when compared with national unemployment rates[18]. Loss of livestock was not considerable in mean numbers, however the loss in terms of economic and nutrient value of even a small number of livestock could have an impact of the vulnerability of populations. The populations living in camps suffered a higher loss of all categories of livestock. Of special note is the increase in the numbers of households since the earthquake who reported owning no livestock of any kind. Once again the populations living in the camps suffered the biggest loss with approximately two thirds of the households without any livestock.

[18] Labour Force Survey 2003-2004, Twenty Fourth Issue, Government of Pakistan, Statistics Division, Federal Bureau of Statistics, October 2004.

Distress sales of assets and loan taking was not as high as might be expected with only approximately 8% of the populations selling assets and a minor portion of the populations taking or extending loans (especially in the camps). This is a reflection of the uniform extent of shock felt among and within the populations surveyed. Most households now have a lack of collateral to offer for bank loans, private loans have been reduced since there is a decrease in persons able to spare additional money; similarly sale of assets have been low since the buying market has been equally affected by the disaster.

- Almost 100% of the surveyed populations had earthquake related damage to their houses; with the populations living in camps 99% had their homes completely destroyed.
- The occupational status of affected populations has been greatly altered with a substantial increase in unemployment.
- All populations surveyed experienced livestock loss and the proportion of households with no livestock assets at all increased dramatically among the populations living in camps.
- Distress sales and loan taking are not very high.

7.f Household Food Access, Consumption, and Diversity

Food stocks are limited. This may be a function of food aid dependency and the cycle of food aid distributions. Regardless it is important to note that in the communities approximately 10% of the population only has access to a one day food stock and within the camps less than 50% have access to one week or more of stock (this may also be a function of prepared food receipt). Nevertheless it is important to recognize the vulnerability of these populations no matter how ways the results are interpreted.

Household food diversity (as defined by seven day food frequency) is limited. The majority of the population consumes 3-6 food items, but caution should be applied when viewing these results because food this analysis contains items such as sugar, oil, and dairy (including milk in tea). A very small portion of the population (less than 3% in all sample areas) would be considered to be of great concern with only 1-2 food items in their diet.

Household food consumption patterns are tolerable, especially when compared to national norms. On average a staple is eaten every day with some source of protein. The camps have better consumption patterns than the populations living in the community. Fruits and vegetables are low in all of the consumption patterns.

- Food stocks are limited and the majority of households are considered vulnerable
- Food consumption patterns are comparable to national norms.

7.g Water and Sanitation

Water and sanitation levels are high among both the communities and camps sampled. Utilization of safe drinking water, as well as access to sufficient quantities of water, is high especially among the AJK camps and the Muzaffarabad community. Sanitation practices are also high with approximately 60% of respondents always using soap when washing hands with a correspondingly high practice of washing hands before eating and after defecation. There was no correlation between poor hand washing practices and poor malnutrition rates found in the analysis. However, in contrast, the proportion of households defecating in the open field was also high, specially in Mansehra camps suggesting the need for active campaign for behavioral change communication.

- Utilization of safe drinking water and access to adequate quantities of water is high.
- Sanitation practices like washing hands with soap or washing before and after are high, particularly among populations living in camps but in contrast, rate of defecating in open space is also high in Mansehra camps and both communities.

7.h Programme Coverage

Food aid is reaching the affected populations. In the camps approximately 75% of the households receive the basic food basket commodities. Food aid coverage of Muzaffarabad district is high, and about twice that of Mansehra district. The comparison should be made with caution however since Muzaffarabad suffered a higher level of destruction and a greater proportional increase in unemployment, hence it could have a higher level of need.

Measles immunization is good (above 70%) but still behind the target of achieving 90% coverage, hence attention should be placed on achieving a very high level of immunization within the communities living in camps (as per SPHERE recommendations). Vitamin A supplementation among children since the earthquake has been around 50% suggesting that more emphasis needs to be given during subsequent vitamin A supplementation campaign or routine distribution.

Access to education even in this time of post-crisis is high with approximately two thirds of the children in both camps and community attending school.

- Food aid coverage is good.
- Measles immunization is above the national norm but needs further improvement.
- Vitamin A supplementation coverage needs more focus and emphasis during subsequent campaigns
- Access to education is good.

7.i Cross Cutting Issues (Gender)

Gender disparity has been looked into in case of almost all major variable and some of them are displayed in Annex VII. There were no particular trend in gender distribution of various results but it is important to note that in contrary to many other countries, male children were more affected by malnutrition while it is they who were more benefited from breastfeeding and vitamin A supplementation. Of course, none of these differences were statistically significant.

8. RECOMMENDATIONS

1. The prevalence of malnutrition with the context of multiple aggravating factors warrants targeted supplementary feeding for children and pregnant and lactating women.

2. Improve the infant feeding practices with focus on early initiation preventing early cessation of breastfeeding, continuation of breastfeeding, re-lactation (for those ceased) and proper complementary feeding.

3. Multiple Micronutrient supplementation both for under-five children and pregnant women and lactating mothers. Until multiple micro-nutrient supplements are available, iodine capsules should be administered along with vitamin A capsules for children and for pregnant women during the first opportunity during Ante-natal check-up.

4. As a preparedness measure, enhance capacity to manage severe acute malnutrition by establishing TFCs in locations with high need.

5. Establish a nutrition surveillance system to monitor the situation to act as an early warning system and as a referral mechanism for malnourished children.

6. Continue the existing general food distribution with ration design adjustments for the extra energy needed in cold winter temperatures.

7. Promote fortification of flours, salt, and other foods

8. Re-assess measles vaccination coverage within camps and implement SPHERE standards with special focus to vitamin A supplementation as well.

9. Improve management of ARI and Diarrhea in camps and communities with focus on preventive measures and possible curative responses (ORS with zinc).

10. Improve already 'satisfactory' sanitation facilities and practices through health education and disciplined camp management.

11. Implement programmes that will promote self-sufficiency and household food security. Food-for-training activities, food-for-work programmes, and agricultural rehabilitation are recommended as means of increasing employment opportunities and providing a mechanism by which households can increase their immediate access to food.

12. A follow-up survey should be done after 6 months to assess the change in status of the populations and effect of health and nutrition interventions on malnutrition prevalence, morbidity and mortality

Annexes

Annex-1

UNICEF/WFP/WHO Joint Nutrition Survey of Earthquake Affected Areas
List of Clusters with X, Y Coordinates

S. No.	Cluster Name	Tehsil	Y	X
Mansehra District				
1	Balakot	Balakot	34.8539	73.0232
2	Garlat	Balakot	34.5472	73.3555
3	Doga	Balakot	34.23104	73.2067
4	Jabri Kaleesh	Balakot	34.28156	73.22481
5	Ghanool	Balakot	34.6134	73.4233
6	Phagal	Balakot	34.7333	73.5500
7	Chitigati	Mansehra	34.39802	73.21841
8	Darrayal	Mansehra	34.5166	73.2666
9	Nokot	Mansehra	34.42525	73.18055
10	Bheer Kund Utla	Mansehra	34.39488	73.1605
11	Khawaj Gan	Mansehra	34.42967	73.13809
12	Chalundari Saldhar	Mansehra	34.57286	73.1583
13	Lachi Mang	Mansehra	34.60568	73.14037
14	Hilkot	Mansehra	34.61223	73.16567
15	Banda Gaisach	Mansehra	34.61817	73.26784
16	Circle No 01	Mansehra	34.19359	73.11218
17	Circle No 04	Mansehra	34.19329	73.11328
18	Garhala	Mansehra	34.23684	73.18293
19	Baidra	Mansehra	34.33476	73.12243
20	Khowari	Mansehra	34.26057	73.11863
21	Maira Amjad Ali	Mansehra	34.3500	73.3000
22	Jhokan	Mansehra	34.23782	72.99814
23	Camli	Mansehra	34.31758	73.028
24	Belian	Oghi	34.5288	72.7961
25	Jaskot	Oghi	34.54167	72.98531
26	Oghi	Oghi	34.49803	73.00759
27	Choyan	Oghi	34.37194	72.8687
28	Danda Kholian	Oghi	34.43024	72.95172
29	Kajla	Oghi	34.41462	72.85643

NWFP Camps

S.No.	Cluster Name	District	Y	X
1	Havelian I	Abbottabad	34.0550	73.157
2	Havelian II	Abbottabad	34.0550	73.157
3	Maria	Shangla	34.8177	72.9926
4	Shumlai Banser	Batgram	34.7055	73.1166
5	Basian I	Mansehra	34.4600	73.3431
6	Basian II	Mansehra	34.4600	73.3431
7	Kashtra	Mansehra	34.5799	73.3641
8	Batgram	Batgram	34.6793	73.0123
9	Hassa	Mansehra	34.5133	73.3511
10	Hootal	Batgram	34.7232	72.956
11	Jaba (Farm)	Mansehra	34.4362	73.41388
12	Debrai	Batgram	34.7292	72.9858
13	Mundhar	Mansehra	34.3906	73.2995

S. No.	Cluster Name	Tehsil	Y	X
14	Banian	Batgram	34.6084	73.0541
15	Dadar Sayidiyan	Mansehra	34.4583	73.1083
16	Kalas Rachri	Mansehra		
17	Shohal Najaf Khan	Mansehra	34.4748	73.3466
18	Mohallah Madni	Mansehra		
19	Dharyal	Mansehra	34.5135	73.2639
20	Ghanool	Mansehra	34.6134	73.4233
21	Shawal Mazool	Mansehra	34.4805	73.3592
22	Kashmir Colony	Mansehra	34.721	72.959
23	Ayub Camp	Abbottabad	34.7497	73.1811
24	Al Rashid Trust	Mansehra	34.4613	73.3435
25	Ghazikot Township	Mansehra	34.3215	73.1962
26	Markazi Jamat	Mansehra	34.8499	73.0332
27	Al Hadees	Mansehra	34.8896	73.0429
28	UAE	Mansehra	34.6667	73.25
29	Minhaj Tent Vi	Mansehra	34.551	73.3557
30	SRSP Camp	Mansehra	34.6806	73.4986

Muzaffarabad District

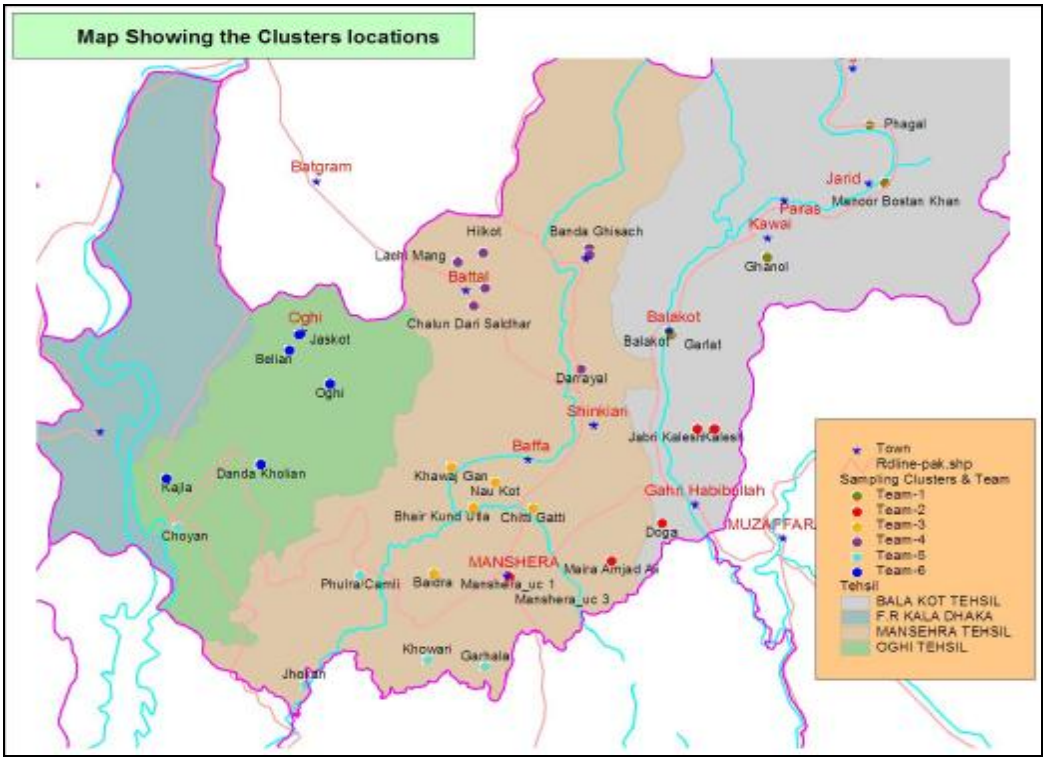
S.No.	Cluster Name	Tehsil	Y	X
1	Andra Sari	Hattian	34.15055	73.81333
2	Hariala	Hattian	34.12225	73.72378
3	Kucha Dulari	Hattian	34.17036	73.7883
4	Kurthama	Hattian	34.16245	73.83516
5	Nardajian	Hattian	34.19214	73.88095
6	Langa	Hattian	34.19551	73.705556
7	Gohri	Muzaffarabad	34.44728	73.50359
8	Khalian Kalan	Hattian	34.07144	73.88533
9	Hatian	Hattian	34.17682	73.72106
10	Pala	Muzaffarabad	34.45865	73.65987
11	Narhotar	Muzaffarabad	34.45053	73.451119
12	Sarnian	Muzaffarabad	34.48611	73.47726
13	Seri bheri	Muzaffarabad	34.53309	73.567
14	Chaunthia	Muzaffarabad	34.22859	73.5885
15	Kathili	Muzaffarabad	34.2855	73.509993
16	Bagna	Muzaffarabad	34.17817	73.50917
17	Saria	Hattian	34.1822	73.78554
18	Kanian	Hattian	34.2079	73.63561
19	Dung	Muzaffarabad	34.39794	73.42439
20	Noshera	Muzaffarabad	34.20301	73.66721
21	Bat Kanala	Muzaffarabad	34.22475	73.65901
22	Paprusa	Muzaffarabad	34.3149	73.5394
23	Manak Payian	Muzaffarabad	34.35205	73.4838
24	Subri	Muzaffarabad	34.31508	73.52789
25	Panjkot	Muzaffarabad	34.3564	73.71735
26	Muzafarabad City 1	Muzaffarabad	34.36655	73.45712
27	Muzafarabad City 2	Muzaffarabad	34.36655	73.45712
28	Muzafarabad City 3	Muzaffarabad	34.36655	73.45712
29	Muzafarabad City 4	Muzaffarabad	34.36655	73.45712

AJK Camps

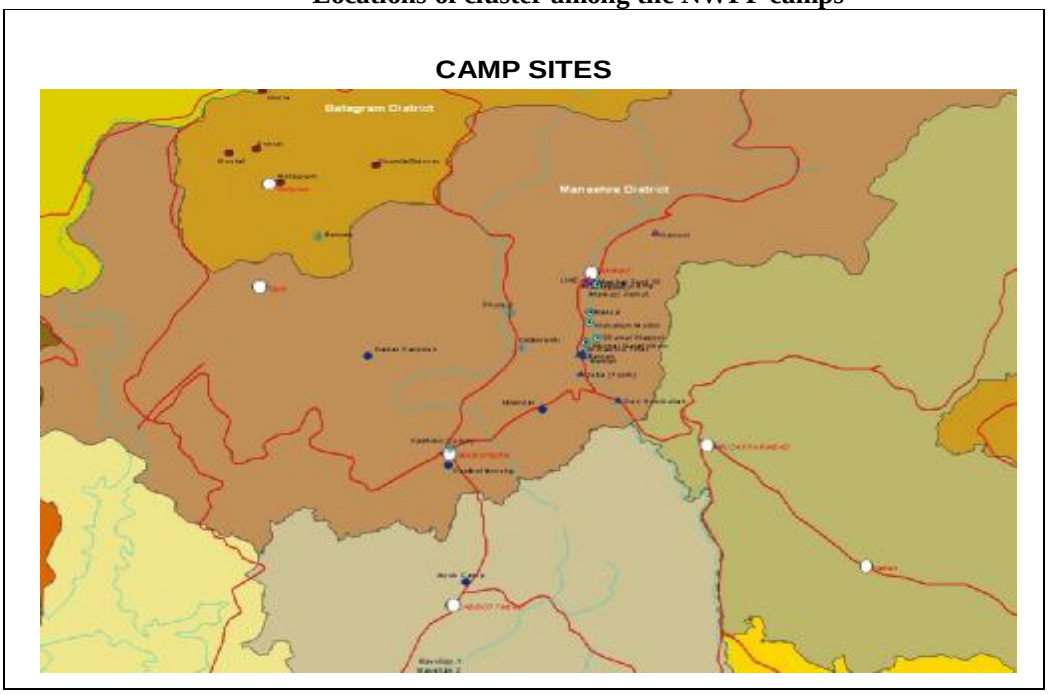
Clus No	Cluster Name	Managed by	Y	X
1	Bagh by passroad	Al Mehdi	33.97574167	73.78132778
2	Huda Bari, Kashmiri refugees	no one	33.924455	73.76778123
3	Bandi Mir Samadani ward # 21	Khabrain Daily Newspaper	34.39514167	73.47202778
4,5	Bela Nur Shah/Nelum Park	Al Khidmat Foundation	34.37214444	73.46325833
6	Chala Bandi Benazir Camp	PPP	34.39118611	73.469075
7,8	Challa Bandi	Muslim Hands International	34.38949722	73.46910556
9	Chatter Kallas	Dewan Mushtaq	34.20333611	73.49718056
10	Chatter Kallas	Jamath Ud Dawa	34.20369167	73.50208889
11	Danna Gan Chatter camp	Al Mustafa welfare society	34.342759	73.534423
12	Challa Bandi	Khubaib		
13	Eid-Ghah	VeerJee Manir Singh	34.37630556	73.47177778
14	Jalalabad Park Camp	None	34.36035	73.47705
15	Lower Plate	PPP	34.38052778	73.46386111
16,17	Mehra Tanolia (1)	Al Mustafa Trust	34.35952778	73.48812778
18	Mehra Tanolia (2)	Minhaj Welfare Foundation	34.36344444	73.48947222
19	Mehra Tanolia (3)	Ehsaas	34.36444722	73.48773333
20,21	Narrol Stadium	Dewan Mushtaq	34.35446944	73.47566111
22,23,24	New University campus	None	34.38394444	73.4685
25	Piran Ka Bagh	Al Khidmat Foundation	34.3812	73.48
26	Tariq Abad	Muslim Hands	34.36605556	73.47825
27	Thori Park Camp	Al Mustafa Trust	34.33736111	73.45438889
28	Upper Chala Mera	Al Suffa Foundation	34.3989	73.470675
29	Sarran	Al- Khidmat	34.18762778	73.67396944
30	Langla	Al- Mustafa	34.19311944	73.70735833

Annex-II

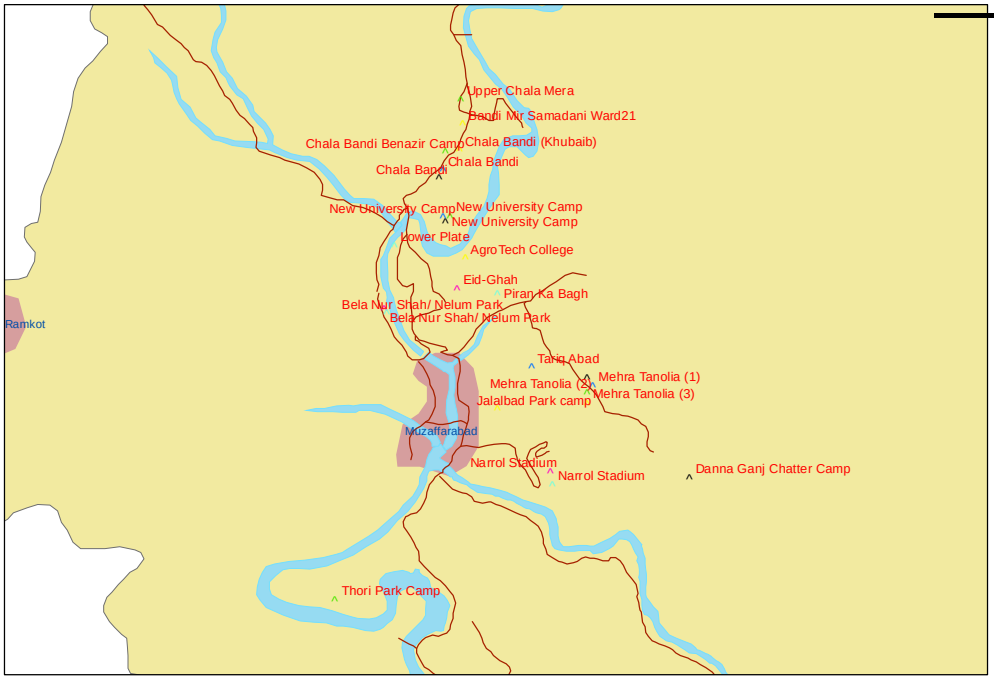
Location of Clusters in Mansehra Community Map



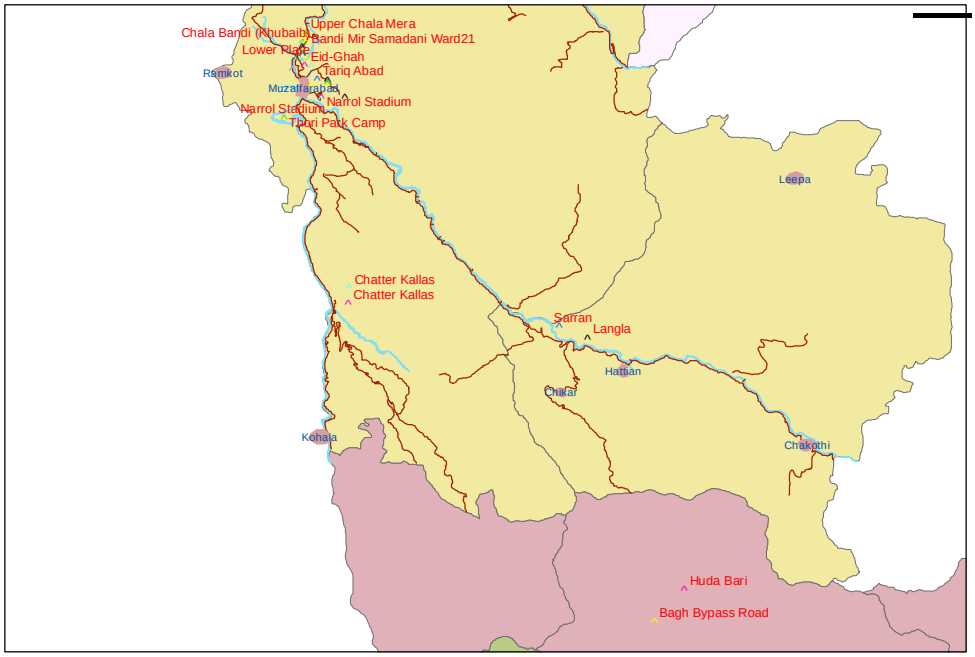
Locations of cluster among the NWFP camps



Location of clusters in Muzaffarabad community



Location of clusters among the AJK Camps



Annex-III

Earthquake in Pakistan- Health and Nutrition Survey in Affected Areas
Cluster Control Sheet

Date: ---------- Cluster No: ----------
Cluster Name/ Location: ----------
Time: Arrival at Time: ---------- Departure Time: ----------
Name of Supervisor: ---------- Signature: ----------

Weighing Scale Calibration: Standardizing with 10 kg weight (before leaving the cluster)

		Scale No.	Reading 1	Reading 2	Reading 3	Mean
Electronic Scale	1					
	2					
	3					
Salter Scale	1					
	2					
	3					
Uni-Scale	1					
	2					
	3					

HH No.	Outcome			No of Children Under 5 yrs	- 2 SD	-3 SD	Total Mothers	Comments	Scale No
01	Complete	In complete	Refusal / Not Present						
02									
03									
04									
05									
06									
07									
08									
09									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
Total									

Observations/comments if any: ----------

Annex IV

LOCAL EVENTS CALENDAR

Name of Month	*Description of Events*
January	Starting of new year Sudden change of season / Heavy snowfall Most important holidays (winter vacations in govt. and private schools from 25th Dec. to 3rd March) Eid-Ud Adha
February	Ashora-e-Moharram Migration of people from Kaghan Hills Growing of new leaves
March	Start of schools after winter vacation Migration back to Kaghan Hills Seasonal migration of birds Exams in schools located in warm region
April	12th Rabi-ul-Awal Start of spring, in very cold areas. Weather comes back to moderate temperature.
May	Weather is really pleasant and at the end of May Harvesting starts and weather is a bit hot. But in upper areas of NWFP, it is not that hot. Sowing of rice
July	Start of monsoon Tourist season
August	Crop harvesting Independence day of 14th August
September	Harvesting of corn crop Cutting of grass Migration back to Balakot
October	Sowing of wheat in the start of the month
November	Eid-ul Fiter Sowing of wheat
December	Last month of the year Waiting of winter vacations Arrangements for migration Start of winter Sudden change of weather in mountain areas

Annex-V

QUESTIONNAIRE

PAKISTAN EARTHQUAKE

Nutrition Survey in Affected Areas

UNICEF/WFP/WHO Joint Survey in collaboration with MOH

COMPLETE BEFORE THE INTERVIEW

Date : |__|__| / |__|__| / **2005**
Day *Month*

Interviewer Name :

Supervisor Name:

Name of Respondent :
Complete Address

Area /Location ID :
(write original name)

A. Province _NWFP_____
B. District _Mansehra_____
C. Tehsil _____
D. Union council _____
E. Village _____
F. Mohallah / Bandi _____
G. Camp _____
H. Household /Tent No.

COMPLETE AFTER THE INTERVIEW
Status of Interview:
1= Complete |___| **2=Partially complete** |___|
3= Refused |___| **4= Not available** |___|
5= Other (specify)

COMPLETE UPON DATA ENTRY

1				
Province	Cluster		Household	

Province code
1 = NWFP **2** = AJK

|__|__| / |__|__| / **2005**
Day *Month*

Camp Reg. No.

Date:

Consent: We are conducting a survey on the nutrition and food security of your family. I would like to ask you some questions about your family and we will also weigh and measure your children who are younger than 5 years of age. The survey usually takes about one hour to complete. Any information that you provide will be kept strictly confidential and will not be shown to other people. This is voluntary and you can choose not to answer any or all of the questions if you want; however we hope that you will participate since your views are important. Do you have any questions? May I begin now?

YES_____ NO_____

A household is defined as a group of people who routinely eat out of same pot and live on the same compound (or physical location It is possible that they may live in different structures. ***(Use pre-coded numbers to fill in the boxes, or else write fully under option 'Others')***

1. Please list the members of the household who are currently present, and those who were living during recall period (1st July 2005) and not present in the household now.

							Dead members		Education for mothers of Under 5 children only	Occupation for household head only	
I D #	Name of the household head / family members	Sex	Age (yrs) (in month / days for children /newborns	Present Now (1=Yes, 2=No)	Present at beginning of recall period (1=Yes, 2=No)	Current status (1=alive, 2=dead, 3=unknown)	Cause of death	Date of Death (exact date/ month)		Past	Current
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10a	1.10b
1.											
2.											

3.											
4.											
5.											
6.											
7.											
8.											

1.11 Presently how many people are living in the household? |__|__| Members

1.2 Sex:

1. Male
2. Female

1.7 Cause of Death

1. Measles
2. Diarrhoea
3. Malnutrition
4. Injury
5. Injury due to EQ
6. Not known
7. Other specify ___

1.9 Education of under 5 children only:

00 No education
If educated write exact years of education --------

91. Can sign only

92. Non formal education

93 Don't know

94 Other specify_____

1.10 Main Occupation of Household Head only

1.0a. before Earthquake
1.0b. after Earthquake

01 Agriculture (Only own land)
02 Farmer (Only leased land)
03 Farmer (Own & Leased land)
04 Agri-labour /Day labour/Unskilled labour
05 Horse/Donkey/Cow cart driver Mechanical transport driver
06 Potter/Blacksmith/Cobbler/Tailor/ Construction worker/Fisher etc.
07 Petty or middle class business
08 Big business man (Whole seller)
09 Govt. or non-govt. official
10 Professional (Teacher/Lawyer/Doctor)
11 Beggar
12 House work/ House wife
13 Retired officer / staff
14 Unemployed
15 Other specify _____

SECTION 2 – HOUSEHOLD CIRCUMSTANCES

2.1	Is this your usual place of residence?	1	Yes (resident)	**If yes, skip to 2.3**
		2	No	
2.2	Where your family is living now?	1	Tents	
		2	Relative	
		3	Camp	
		4	Other (specify):	
2.3	Has your house been damaged by the earthquake?	1	Yes (damaged)	
		2	No	**If no, skip to 2.5**
2.4	The level of house destruction (ask/observe)	1	Partial destruction	
		2	Complete destruction	
		3	Don't Know	
2.5	What type of housing are they living in? (Major portion)	1	Mud/mud brick	
		2	Stone/concrete/brink	
		3	Thatch	
		4	Plastic shelter	
		5	Other (specify):	
2.6	Is it your own house or rented?	1	Yes (Own)	
		2	No	
		3	Other	
2.7	Has there been any added member/s to your family after the earthquake?	1	Yes (added)	
		2	No	**If no, skip to 2.9 a**
2.8	How many added members?		|__|__| members	

2.9	Does added members arranging food themselves or dependent on your family?	1	Totally dependent
		2	Partially dependent
		3	Totally independent
		4	Other (specify)
2.9 a	Has the household taken any child after the earthquake?	1	Yes
		2	No **If No, skip to section 3**
2.9 b	If Yes, where are the parents of this child?	1	Died in the earthquake
		2	Living in other locality
		3	Don't know
2.9 c	What is the relation between the child and his / her care provider?	1	None
		2	Relative / friend
		3	Other (specify)

SECTION 3 – HOUSEHOLD ASSETS

3.1 How many of the following animals do your family own before and after the earthquake? (If 'None', write '0')

Cow/ Buffalo		**Goat/Sheep**		**Duck/Chicken**	
Past	Present	Past	Present	Past	Present

		Before	After
3.2	Do you have vegetable garden for home use before and after the earthquake?	Before	After
	Yes= 1 No= 2		

SECTION 4 – HOUSEHOLD STRESSES

4.1	Has your household taken any loan or extended a previous loan due to the earthquake?		Before	After
		1	Yes, new loan	
		2	No **If no, skip to 4.3**	
		3	Previous loan extended	
		4	Don't know	
		5	Other (specify)	
4.2	What was the **main** purpose of borrowing the money	1	Purchase food	
		2	Medical costs	
		3	Repair of damaged house	
		4	Transport/travel costs	
		5	Repay previous loan	
		6	Support additional members to the household	
		7	Marriage of any member	
		8	Other (specify)	
4.3	Have your family sold any valuable assets after the earthquake?	1	Yes	
		2	No **If no, skip to 4.6**	
4.4	Which valuable assets have been sold?	1	Jewelry	
		2	Land	
		3	Livestock	
		4	Other (specify)	
4.5	After how many days of earthquake did you start selling the valuable assets?		__|__| days	
4.6	Did your family receive any financial assistance after the earthquake? (Donation, Zakat etc)	1	Yes	
		2	No	
		3	Private loan	
		4	Govt. Assistance	
4.7	Will your family migrate from current place of residence in this winter season?	1	Yes, migrate	
		2	No	

SECTION 5 – WATER AND SANITATION FACILITIES

(Question 5.1 and 5.2 for HH/Camp survey)

5.1	What is the **main** source of **drinking** water for your household?	01	Hand pump
		02	Tap stand
		03	Tap in the house
		04	Open well
		05	River
		06	Spring
		07	Buy water / vendor
		08	Supplied by NGO / Govt.
		09	Get water from water point
		10	Other (specify)
5.2	Do you treat water at home?	1	Yes
		2	No

Questions 5.3 to 5.5 are only for Camp Survey)

5.3	How much water do you use a day (on average) in liters		__|__| liters
5.4	Is this water enough for you?	1	Yes
		2	No
5.5	What kind of water storage facility do you have?	0	None
		1	Buckets
		2	Jerry Cans
		3	Other (specify)
5.6	What kind of toilet facility does your HH use?	1	Pour flush toilet
		2	Open field
		3	Pit Latrine
		4	Other (specify)
5.7	How are the excreta disposed?	1	Left open
		2	Buried
		3	Sewer connected
		4	Pit Latrine
		5	Other (specify)
5.8	When do you wash your hands? (More than one answer possible)	1	Before eating
		2	After deification
		3	Before feeding baby /children
		4	After disposing off children feces
		5	Before preparation of food
		6	Other (specify)
5.9	Do you use soap for washing your hands?	1	Always
		2	Sometimes with soap
		3	Never

		Before		**After**	
5.10	How often do you take bath before and after the earthquake?	1	Daily	1	Daily
		2	Twice a week	2	Twice a week
		3	Once a week	3	Once a week
		4	Fortnightly	4	Fortnightly
		5	Once a month	5	Once a month

5.11	Is any child going to school? (For camps only)	1	Yes
		2	No child is sick
		3	No child is frightened
		4	No there is no school
		5	Other (specify)
		6	No respond

SECTION 6 – FOOD SOURCES AND CONSUMPTION

Could you please tell me how many days in the **Past ONE WEEK and LAST 24 HOURS** your household has eaten the following foods
(write 0 for items not eaten over the last 7 days and tick the items eaten during the last 24 hrs)

	Food Item	*a. - Days - 0 to 7*	*Last 24 hrs*			*Food Item*	*a. - Days - 0 to 7*	*Last 24 hrs*	
6.1	Cereals *(wheat, Maize, rice)*	__|			**6.6**	Vegetables	__|		
6.2	Legumes, dhal, beans, groundnut	__|			**6.7**	Fruits	__|		
6.3	Meat/chicken, fish	__|			**6.8**	Milk, yoghurt, cheese, etc	__|		
6.4	Egg	__|			**6.9**	Sugar	__|		
6.5	Cooking oil/fats	__|			**6.10**	Wild foods (including leaves)	__|		

6.11 In which month did your family received the Food Aid: If Yes tick the months you received it. **If No skip to 6.13**

6.11a	**Food Aid Commodity**	**Oct 2005**	**Nov 2005**	Dec 2005	Jan 2006	Feb 2006	March 2006
6.11b	Wheat / Atta	__|	__|	__|	__|	__|	__|
6.11c	Rice	__|	__|	__|	__|	__|	__|
6.11d	Pulses	__|	__|	__|	__|	__|	__|
6.11e	Oil	__|	__|	__|	__|	__|	__|
6.11f	Sugar	__|	__|	__|	__|	__|	__|
6.11g	Milk	__|	__|	__|	__|	__|	__|
6.11h	Other Specify	__|	__|	__|	__|	__|	__|

6.12 For your family how long current stock of food will last? < one day <1 week =1 1-2 weeks=2 2-4 weeks=3 1 month =4

6.13 Do you get cooked food every day? (For camp survey only) Yes= 1 No= 2

6.13a If Yes, is this food sufficient for your family? Yes= 1 No= 2

6.14 We would like to check whether the salt used in your household is iodized. May I see a sample of the salt used to cook the main meal eaten by members of your household last night.Test the salt using the iodized salt testing kit and classify according to colour.

1= No change in Colour
2= Colour changed
. 3= No salt in home
4= Other specify -----

SECTION 7 – NUTRITION OF MOTHERS (WITH A CHILD 6-59 MONTHS)

This section is to be filled only for mothers having children 6 to 59 months of age.

7.0	**Name of Mother:** **a. Line No:** __|__| **b. Age (Yrs):** __|__| **c. Education Level:** __|__|		
7.1 –	Are you currently pregnant?	1	Yes
		2	No
		3	Don't Know
7.1 a	Number of pregnancies?	__|__|	

7.2-	Are you currently breastfeeding?	1	Yes	2	No		
7.3-	Have you had diarrhoea in the last 2 weeks? (Diarrhoea is three or more loose or watery stools per day)	1	Yes				
		2	No				
		3	Don't Know				
7.4-	Are you (the mother currently pregnant or lactating) receiving any food or tablet from any organization?	1	Yes				
		2	No				
		3	Don't Know				
7.5	Height		|__|__|__|. __|		cms		
7.6	Weight		|__|__|.__|		kg		

SECTION 8 – CHILD NUTRITION

Qs. for mother/adult caretaker of child. Include Up to 3 Children in The Family		**CHILD 1 Name ----------**		**CHILD 2 Name ----------**	
8.1-	Relationship of respondent to child	1	Mother	1	Mother
		2	Father	2	Father
		3	Other Caretaker	3	Other Caretaker
8.2-	Sex of child	1	Male	1	Male
		2	Female	2	Female
8.3-	Date of Birth	|__|__|__|		|__|__|__|	
8.4	Age **If Child is more than 24months of age SKIP to 8.12**	|__|__| months		|__|__| months	

	(Qs. 8.5-8.11are for children 0- 24 months of age)				
8.5	Has this child ever been breastfed at any time in his/her life?	1	Yes	1	Yes
		2	No	2	No
		3	Don't Know	3	Don't Know
8.6	Is this child still being breastfed now?	1	Yes	1	Yes
	If yes skip to 8.9	2	No	2	No
		3	Don't Know	3	Don't Know
8.7	In which month did you stopped breastfeeding the child?	|__|__| months		|__|__| months	
8.8	Why did you stop breastfeeding?	1	Milk not enough	1	Milk not enough
		2	Child away	2	Child away
		3	Grief/sorrow/ disturbance	3	Grief/sorrow/ disturbance
		4	Absence of suitable environment	4	Absence of suitable environment
		5	Child grown up	5	Child grown up
		6	Other specify-----	6	Other specify-----
8.9	Since this time yesterday, was this child given any semi-solid food or fluids other than breast milk. (only for children up to 6 months of age). If No skip to 8.12	1	Yes	1	Yes
		2	No	2	No
8.10	If yes what was given?	1	Water/tea/ghutti	1	Water/tea/ghutti
		2	Fresh milk/ formula milk	2	Fresh milk/ formula milk
		3	Semi solid food	3	Semi solid food
8.11	Since this time yesterday, how many times was this child given any thick mashed / solid food or liquid?	1	None	1	None
		2	Once	2	Once
		3	Two to three	3	Two to three
		4	Four to five	4	Four to five

Questions 8.12 to 8.22 are for children 6-59 months old					
8.12	Has this child received a Vitamin A capsule after the earthquake? Show capsules for different doses: *Blue for children 6-11 months old* *Red for children 12-59 months old*	1	Yes	1	Yes
		2	No	2	No
		3	Don't Know	3	Don't Know
8.12a-	Where did the Vitamin A capsule come from?	1	From health facility during treatment of illness	1	From health facility during treatment of illness
		2	During NID / vaccination	2	During NID / vaccination
		3	Other	3	Other
		4	Don't know	4	Don't know
8.13	Since 2 weeks ago has this child had diarrhoea? If yes what was given *(Diarrhoea is three or more loose or watery stools per day.)*	1	Yes	1	Yes
		2	No	2	No
		3	Don't Know	3	Don't Know
8.14	If this child had diarrhoea, was there blood in it? *(dysentery is three or more loose or watery stools with blood in them per day)*	1	Yes	1	Yes
		2	No	2	No
		3	Don't Know	3	Don't Know
		4	Doesn't Apply	4	Doesn't Apply
8.14 a	During this episode of diarrhoea did the child drink any of the following:	1	Breast milk	1	Breast milk
		2	Gruel from cereal or soup	2	Gruel from cereal or soup
		3	Salt solution or yogurt drink	3	Salt solution or yogurt drink
		4	ORS packet solution	4	ORS packet solution
		5	Other milk / infant formula	5	Other milk / infant formula
		6	Water or other liquid	6	Water or other liquid
		7	Nothing	7	Nothing
8.15	Since two weeks ago has this child had a cough during which he/she had difficulty breathing?	1	Yes	1	Yes
		2	No	2	No
		3	Don't Know	3	Don't Know
8.16	Since two weeks ago has this child had a fever?	1	Yes	1	Yes
		2	No	2	No
		3	Don't Know	3	Don't Know
If respondent answered yes to 8.13 or 8.14 or 8.15 or 8.16 proceed to Qs 8.17 and 8.18 otherwise skip to 8.19					
8.17	Did you seek advice or treatment for the illness outside of the home?	1	Yes	1	Yes
		2	No	2	No
		3	Don't Know	3	Don't Know
8.18	From where did you seek care? Circle all mentioned- but do not prompt respondent	1	Hospital /clinic /health center	1	Hospital /clinic/health center
		2	Mobile/outreach clinic	2	Mobile/outreach clinic
		3	Village health care worker	3	Village health care worker
		4	Traditional practitioner	4	Traditional practitioner
		5	Pharmacy	5	Pharmacy
		6	Private physician	6	Private physician
		7	Other- specify	7	Other- specify
8.19	Has this child ever received a measles vaccination?	1	Yes, by card	1	Yes, by card
		2	Yes, by recall	2	Yes, by recall
		3	No	3	No
		4	Unknown	4	Unknown
		5	No response	5	No response

8.20	Has this child received a measles vaccination after the earthquake?	1	Yes, by card	1	Yes, by card
		2	Yes, by recall	2	Yes, by recall
		3	No	3	No
		4	Unknown	4	Unknown
		5	No response	5	No response

8.21	Is this child currently enrolled in supplementary feeding program (does he receive a ration of corn soy blend, oil and sugar)? If NO Skip to 8.23	1	Yes	1	Yes
		2	No **à 8.23**	2	No **à 8.23**
		3	Don't Know	3	Don't Know
8.22	How long does it take you to walk to the supplementary feeding center/distribution point where your child is?	__|__| __|minutes		__|__| __|minutes	
Anthropometry for children 6-59 months					
8.23	Does this child have bilateral Oedema?	1	Yes	1	Yes
		2	No	2	No
8.24	Does this child have a physical deformity making it difficult to obtain an accurate height?	1	Yes	1	Yes
		2	No	2	No
8.25	Weight	__|__|.__| kgs		__|__|.__| kgs	
8.26	Length/Height	__|__|__|.__| cms		__|__|__|.__| cms	

Interview starting time ----------

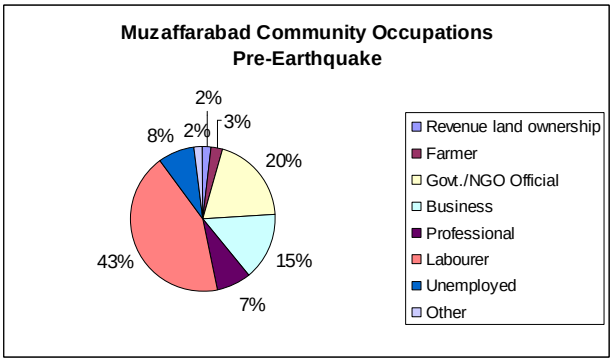
Interview completion time ----------

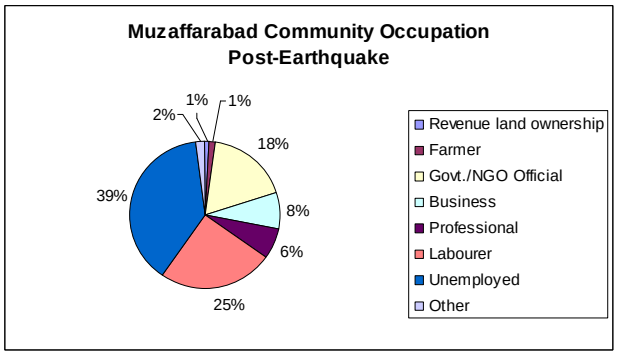
Signature of Interviewer ----------

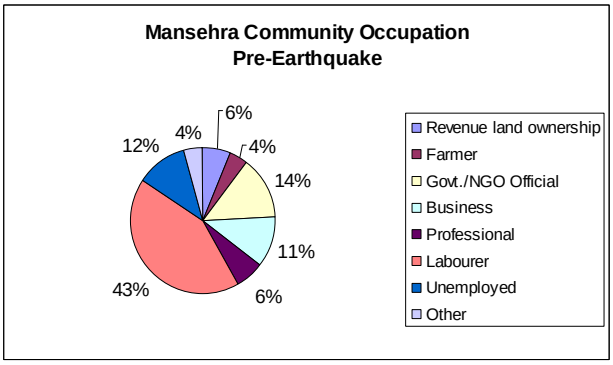
Signature of Supervisor ----------

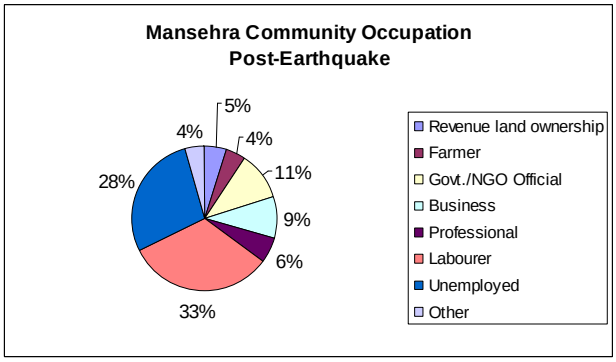
Annex VI

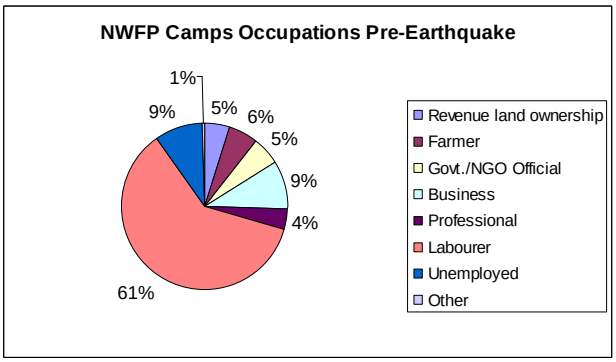
Household Head Occupation Before & after earthquake

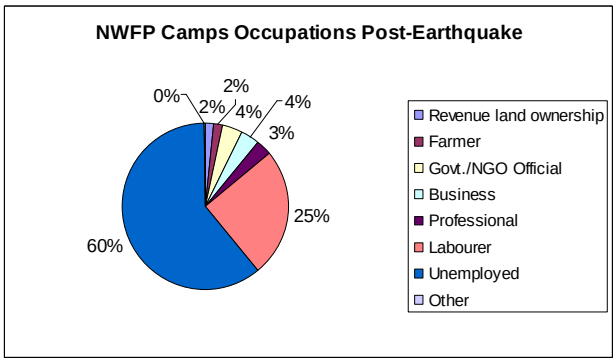


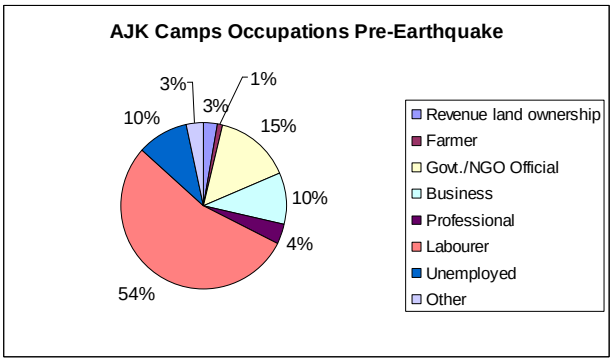


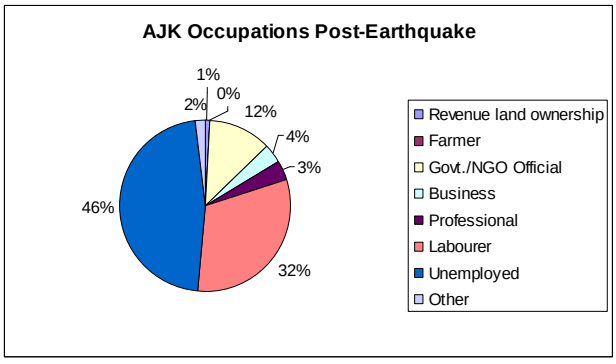












Annex VII

Age-specific breakdown of malnutrition rates

Prevalence of acute malnutrition (6-59mths) by age groups & sex in survey areas, 2005.

	Mansehra District (n=580)		Muzaffarabad District (n=511)		NWFP Camps (n=554)		AJK Camps (n=660)	
Age	Global Acute Malnutrition %	Severe Acute Malnutrition %	Global Acute Malnutrition %	Severe Acute Malnutrition %	Global Acute Malnutrition %	Severe Acute Malnutrition %	Global Acute Malnutrition %	Severe Acute Malnutrition %
6-11.9	7.9	3.2	6.8	6.8	8.5	6.8	3.1	0.0
12-23.9	13.3	6.3	7.4	2.5	8.3	4.1	9.1	2.5
24-35.9	8.8	4.4	6.1	1.8	7.1	3.5	4.3	0.7
36-47.9	7.2	3.2	5.6	2.8	5.1	2.5	3.9	1.3
48-59.9	13.3	5.3	3.3	1.6	2.8	1.4	1.6	0.5
Sex								
Male	11.2	5.8	7.1	2.0	6.2	3.1	5.6	0.6
Female	9.9	3.6	4.3	3.1	5.7	3.4	2.8	1.5

Global acute malnutrition defined as <-2 SD or oedema; severe acute malnutrition defined as <-3 SD or oedema

Prevalence of chronic malnutrition (6-59mths) by age groups & sex in survey areas, 2005.

	Mansehra District (n=568)		Muzaffarabad District (n=509)		NWFP Camps (n=540)		AJK Camps (n=655)	
Age	<-2 SD %	<-3 SD %	<-2 SD %	<-3 SD %	<-2 SD %	<-3 SD %	<-2 SD %	<-3 SD %
6-11.9	22.0	8.5	15.9	6.8	33.9	15.3	22.4	6.0
12-23.9	46.7	15.6	38.0	79.1	60.2	32.2	53.3	19.2
24-35.9	36.8	14.9	38.3	14.8	56.9	28.4	40.7	15.0
36-47.9	51.2	26.0	42.6	10.2	49.1	29.8	50.3	18.8
48-59.9	50.7	24.0	42.1	11.6	62.1	32.1	43.0	14.5
Sex								
Male	44.6	21.2	40.9	11.5	52.5	29.8	46.4	14.8
Female	44.5	17.2	34.5	10.5	57.4	28.3	41.5	16.4

Prevalence of underweight (6-59mths) by age groups & sex in survey areas, 2005.

	Mansehra District (n=565)		Muzaffarabad District (n=498)		NWFP Camps (n=551)		AJK Camps (n=656)	
Age	<-2 SD %	<-3 SD %	<-2 SD %	<-3 SD %	<-2 SD %	<-3 SD %	<-2 SD %	<-3 SD %
6-11.9	25.8	3.2	9.8	0.0	29.6	8.9	18.2	3.0
12-23.9	39.6	14.2	24.4	5.0	44.5	13.4	36.2	11.9
24-35.9	38.7	14.4	31.3	8.0	47.4	18.4	35.7	12.1
36-47.9	36.4	9.9	29.5	3.8	42.0	12.6	33.1	3.3
48-59.9	43.8	10.4	28.9	4.1	34.3	9.8	26.0	2.8
Sex								
Male	39.0	8.2	31.0	5.6	40.6	13.9	31.0	6.0
Female	37.2	13.9	22.8	4.0	39.9	11.8	30.5	7.2

Excludes children with oedema

Age-specific and gender breakdown of Infant Feeding Practices

Ever breastfed (0-24m), 2005.

	Mansehra District (n= 247)	Muzaffarabad District (n=225)	NWFP Camps (n= 251)	AJK Camps (n= 264)
	%	%	%	%
Sex				
Male *95% CI*	94.7% *(89.8 – 99.6)*	92.1% *(88.0 – 96.1)*	93.5% *(89.6 – 97.4)*	95.3% *(91.4 – 99.2)*
Female *95% CI*	98.5% *(97.1 – 100)*	95.5% *(91.9 – 99.1)*	96.5% *(94.0 – 99.0)*	94.9% *(90.1 – 99.8)*
Overall *95% CI*	96.8% *(94.0 – 99.7)*	93.8% *(90.4 – 97.2)*	94.8% *(92.1 – 97.5)*	95.1% *(91.6 – 98.6)*

Continued breastfeeding <2 yrs, 2005.

	Mansehra District (n= 246)	Muzaffarabad District (n=223)	NWFP Camps (n= 251)	AJK Camps (n= 262)
Age	%	%	%	%
12-14.9	81.1%	60.7%	74.4%	87.8%
15-18.9	75.0%	68.6%	74.5%	81.0%
18+	83.3%	55.7%	53.1%	57.7%
Sex				
Male *95% CI*	80.4% *(71.7 – 89.1)*	75.9% *(66.8 – 85.0)*	78.4% *(70.2 – 86.6)*	82.7% *(76.6 – 88.9)*
Female *95% CI*	90.3% *(82.7 – 97.9)*	73.0% *(63.6 – 82.4)*	77.5% *(69.6 – 85.4)*	85.2% *(78.8 – 91.6)*
Overall *95% CI*	85.8% *(81.1 – 90.5)*	74.4% *(67.6 – 81.2)*	78% *(71.8 – 84.2)*	84.0% *(79.8 – 88.2)*

Age-specific and gender breakdown of diarrhea, ARI and fever (6-59m)

Prevalence of diarrhea in children (6-59m) in survey areas, 2005.

	Mansehra District (n= 593)	Muzaffarabad District (n=530)	NWFP Camps (n= 593)	AJK Camps (n= 677)
Age	%	%	%	%
6-11.9	57.8%	60%	56.1%	70.6%
12-23.9	58.5%	48.4%	63.1%	80.5%
24-35.9	28.9%	37%	53.3%	69.7%
36-47.9	34.6%	35.7%	50.8%	55.1%
48-59.9	27%	28.1%	38.9%	45.9%
Sex				
Male *95% CI*	39.1% *(30.3 – 47.9)*	39.2% *(30.7 – 47.7)*	53.1% *(46.9 – 59.3)*	63.5% *(56.4 – 70.6)*
Female *95% CI*	39.5% *(31.4 – 47.6)*	39.3% *(32.6 – 46.0)*	49.8% *(44.1 – 55.5)*	60.3% *(54.4 – 66.2)*
Overall *95% CI*	39.3% *(32.3 – 46.3)*	39.2% *(33.23 – 45.2)*	51.6% *(47.2 – 56.0)*	61.9% *(56.5 – 67.3)*

Prevalence of ARI in children (6-59m) in survey areas, 2005.

	Mansehra District (n= 590)	Muzaffarabad District (n= 531)	NWFP Camps (n= 594)	AJK Camps (n= 677)
Age	%	%	%	%
6-11.9	73.4%	68.9%	86.4%	88.2%
12-23.9	70.0%	69.0%	71.5%	79.7%
24-35.9	55.9%	58.0%	65.3%	77.9%
36-47.9	56.3%	54.5%	65.6%	69.9%
48-59.9	58.9%	55.8%	66.4%	69.2%
Sex				
Male *95% CI*	62.9% *(54.5 – 71.3)*	62.2% *(52.9 – 71.5)*	70.4% *(64.3 – 76.5)*	74.3% *(66.4 – 82.2)*
Female *95% CI*	60.6% *(53.3 – 68.0)*	58.5% *(50.0 – 67.0)*	68.5% *(63.8 – 73.2)*	75.8% *(67.9 – 83.8)*
Overall *95% CI*	61.7% *(54.8 – 68.6)*	60.3% *(52.8 – 67.8)*	69.4% *(65.4 – 73.4)*	75.0% *(68.0 – 82.0)*

Prevalence of Any Fever in children (6-59m) in survey areas, 2005.

	Mansehra District (n= 590)	Muzaffarabad District (n= 530)	NWFP Camps (n= 592)	AJK Camps (n= 671)
Age	%	%	%	%
6-11.9	71.4%	73.3%	86.2%	83.6%
12-23.9	76.2%	72.2%	73.8%	89.3%
24-35.9	65.6%	65.5%	70.2%	79.2%
36-47.9	56.9%	57.1%	67.7%	70.1%
48-59.9	59.6%	60.9%	63.8%	66.8%
Sex				
Male *95% CI*	66.7% *(59.0 – 74.4)*	62.2% *(54.6 – 69.8)*	72.5% *(66.6 – 78.4)*	77.9% *(70.4 –85.4)*
Female *95% CI*	63.9% *(55.6 – 72.2)*	67.5% *(59.1 – 75.9)*	68.8% *(61.0 – 76.7)*	74.1% *(67.8 – 80.4)*
Overall *95% CI*	65.2% *(58.48 – 71.9)*	64.9% *(58.5 – 71.3)*	70.6% *(65.2 – 76.0)*	76.0% *(81.9 – 70.1)*

Age-specific and gender breakdown of Vitamin A and Measles Vaccination

Received Vit.A (6-59m), 2005.

	Mansehra District (n= 593)	Muzaffarabad District (n=530)	NWFP Camps (n= 594)	AJK Camps (n= 677)
Age	%	%	%	%
6-11.9	47.7%	31.1%	53%	44.1%
12-23.9	52.3%	36.8%	66.2%	36.6%
24-35.9	52.7%	40.0%	57.9%	53.8%
36-47.9	50.0%	38.4%	56.3%	44.2%
48-59.9	55.3%	31.3%	62%	46.5%
Sex				
Male *95% CI*	52.1% *(41.9 – 62.3)*	37.6% *(26.0 – 49.2)*	62.5% *(51.1 – 73.9)*	48.2% *(38.2 – 58.2)*
Female *95% CI*	52.1% *(41.5 – 62.8)*	34.6% *(23.7 – 45.6)*	57.1% *(46.8 – 67.4)*	42.7% *(31.8 – 53.6)*
Overall *95% CI*	52.1% *(42.5 – 61.7)*	36.0% *(25.6 – 46.4)*	59.9% *(49.5 – 70.3)*	45.5% *(36.1 – 55.4)*

Ever received Measles children (6-59m) in survey areas, 2005.

	Mansehra District (n= 592)			Muzaffarabad District (n= 533)			NWFP Camps (n= 593)			AJK Camps (n= 676)		
Age	(by card %)	(by recall %)	(by card+ recall %)	(by card %)	(by recall %)	(by card+ recall %)	(by card %)	(by recall %)	(by card+ recall %)	(by card %)	(by recall %)	(by card+ recall %)
6-11.9	65.6%	4.7%	70.3%	22.2%	15.6 %	37.8%	54.5%	4.5%	59.0%	25.4%	19.4%	44.8%
12-23.9	79.2%	3.8%	83.0%	48.4%	34.9 %	83.3%	65.4%	4.6%	70.0%	39.0%	34.1%	73.1%
24-35.9	78.9%	7.8%	86.7%	50.0%	30.0 %	80.0%	68.6%	4.1%	72.7%	38.6%	49.7%	88.3%
36-47.9	73.6%	5.4%	79.0%	53.6%	29.5 %	83.1%	64.6%	3.1%	67.7%	32.7%	44.9%	77.6%
48-59.9	81.6%	5.0%	86.6%	43.0%	32.0 %	75.0%	64.0%	4.7%	68.7%	45.4%	41.6%	87.0%
Sex												
Male *95% CI*	76.0% *(68.0 – 84.0)*	5.3% *(2.1 – 8.5)*	81.3 *(73.3 – 89.3)*	49.2%, *(37.0 – 61.4)*	30.4 % *(20.8 – 40.0)*	79.6% *(69.1 – 90.1)*	67.6% *(59.45 – 75.8)*	3.9% *(-0.2 – 7.98)*	71.5% *(64.02 – 78.9)*	41.5% *(32.4 – 50.7)*	38.6% *(30.4 – 46.8)*	80.1% *(74.1 – 86.1)*
Female *95% CI*	78.0% *(69.2 – 86.9)*	5.5% *(1.5 – 9.5)*	83.5 *(75.6 – 91.4)*	43.5% *(31.7 – 55.3)*	30.3 % *(19.9 – 40.7)*	73.8% *(64.8 – 82.8)*	61.0% *(51.3 – 70.7)*	4.5% *(-0.1 – 9.1)*	65.5% *(58.1 – 72.9)*	34.1% *(25.8 – 42.4)*	42.5% *(35.4 – 49.5)*	76.6% *(69.8 – 83.5)*
Overall *95% CI*	77.0% *(68.3 – 85.7)*	5.4% *(2.0 – 8.8)*	82.4% *(74.7 – 90.1)*	46.3% *(34.7 – 57.9)*	30.3 % *(20.4 – 39.9)*	76.6% *68.1 – 85.1)*	64.4% *(56.3 – 72.5)*	4.2% *(0.03 – 8.4)*	68.6% *(61.9 – 75.3)*	37.9% *(30.6 – 45.2)*	40.5% *(33.7 – 47.3)*	78.4% *(73.2 – 83.6)*

Annex VIII

Prevalence of Malnutrition in % of Median by survey area

	Mansehra District (%)	Muzaffarabad Community (%)	NWFP Camps (%)	AJK Camps (%)
Acute malnutrition				
WH<90% median or oedema	30.2	23.3	24.7	23.3
WH<80% median or oedema	8.4	3.5	5.2	2.6
WH<70% median or oedema	3.8	2.5	2.9	1.1
Chronic malnutrition				
HA<95% median	64.8	59.1	73.7	64.6
HA<90% median	29.4	21.8	40.0	28.1
HA<85% median	8.5	3.7	12.8	5.6
Underweight				
WA<80%	42.5	30.9	45.9	35.7
WA<60%	3.4	1.2	3.3	0.8