Implementing Partners

NATIONAL NUTRITION SURVEY, TAJIKISTAN

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ACRONYMS

95% CI  95% Confidence Interval
AAH    Action Against Hunger
ADB    Asian Development Bank
CSI    Community Surveillance Indicators
GBAO   Gorno Badakhshan Autonomous Oblast
IMF    International Monetary Fund
KAP    Knowledge Attitudes and Practices
KT     Kurgan Tyube Oblast
KY     Kulyab Oblast
MICS   Multiple Indicator Cluster Survey
MoH    Ministry of Health, Republic of Tajikistan
MSF    Médecins Sans Frontiers (Doctors Without Borders)
NCHS   National Center for Health Statistics
NGO    Non-Governmental Organization
NNS    National Nutrition Survey
NNWS   National Nutrition and Water Survey
RNCI   Republican Centre for Nutrition Issues
RRS    Region of Republic Subordination
SCF    Save the Children
SD     Standard Deviation
SFP    Supplementary Feeding Program
TFC    Therapeutic Feeding Center
UNDP   United Nations Development Program
UNICEF United Nations Children’s Fund
USAID  US Agency for International Development
VAM    Vulnerability Assessment and Mapping
WFP    World Food Program
WHO    World Health Organization
EXECUTIVE SUMMARY

The National Nutritional Survey 2004 (2004 NNS) was conducted between 16th October and 17th December 2004. The nutritional status of children 6-59 months was assessed in all four Oblasts in Tajikistan; Sughd Oblast, Gorno Badakhshan Autonomous Oblast (GBAO), Region of Republic Subordination (RRS) and Khatlon Oblast. For the purposes of the 2004 NNS two surveys were conducted in Khatlon Oblast, Kurgan Tyube (KT) Zone and Kulyab (KY) Zone for the purposes of monitoring more precisely the population in the Oblast that has seen the highest levels of malnutrition. The total sample size was 4861.

In the interests of increased collaboration with the Ministry of Health (Republic of Tajikistan), the 2004 NNS was conducted by staff from the MoH. Technical support was provided by AAH and administrative and logistical support was offered by Action Against Hunger (AAH), National Society of the Red Crescent in Tajikistan, Pharmaciens sans Frontières (PSF), Aga Khan Foundation (AKF) and ACTED.

Rates of Acute Malnutrition had been in slow decline since the initial survey in 1999, except for 2001 which saw a dramatic rise in the rates of acute malnutrition because of the severe drought that was experienced that year. The GAM for 2001 was 17.4%, which is 2.2 times higher than the rates identified in 2004.

Interestingly, the results of the NNS 2004 showed an increase in the rates of GAM and SAM since October 2003. The results of the survey found that 7.6% (CI 95%:6.8-8.4) of the sample population suffer from Global Acute Malnutrition (GAM) and 1.5% (CI 95%:1.2-1.8) suffers from Severe Acute Malnutrition (SAM). The national average of the NNWSS 2003 survey showed the GAM of 4.7% (no CI 95% given) and the rate of severe acute malnutrition of 0.6%(no CI 95% given). This is an increase of 1.6 times and 2.3 times in the GAM and SAM respectively since last year. Kulyab zone and Kurgan Teppe zone recorded the highest rates of GAM being 9.9% (CI 95%:8.2-12.0) and 11.1% (CI 95%:9.1-13.3) respectively with Sugd Oblast recording the lowest rate of GAM with 2.4% (CI 95%: 1.5-3.6).

Data collected in the NNS 2004 showed that there has been no significant rise in the rates of the Global Chronic Malnutrition (stunting) from the National Nutrition Survey conducted in 2002, the results being 31.4% (CI 95%:30.0-32.8) and 30.9%(no CI 95% given) respectively. Kulyab zone and Kurgan Teppe zone as with the GAM recorded the highest levels of GCM being 37.6% (CI 95%:34.5-40.7) and 32.6% (CI 95%:29.5-35.8) respectively, with RRS recording the lowest with 27.5% (CI 95%: 24.7-30.5).

Morbidity data showed that 22.9% of the children surveyed had suffered from an illness 2 weeks prior to the survey. It can be assumed with the low rates of morbidity recorded that illnesses had no significant effect on the nutritional status of the children within the survey.

A national campaign for measles vaccination conducted by the Ministry of Health and UNICEF occurred in the months leading up to NNS 2004. The figures recorded are a combination of positive answers with and without confirmation of a visible vaccination record. The overall positive response to vaccination in Tajikistan for children more than 12 months was 95.7%.

Possible explanations for the deterioration in the rates of acute malnutrition come from several differing sources, although, interestingly, there has been no reported deterioration in the macro-economic conditions of the country. In fact, recovery at the macro-economic level appears to be improving1. Despite this Tajikistan remains the poorest in the CIS region and ranks 116th in the world according to the UNDP’s HDI. FAO reported there was a 17% aggregated drop in harvest yield between 2003 and 2004. The drop in the production was not significantly due to climatic conditions but is more likely due to the systematic deterioration of the cereals production, particularly in the quantity and quality of most inputs2. Another report by the World Food Program

2 FAO Crop Assessment Report 2004 (Unpublished data)
indicates that 27% of rural households are food insecure. There is a lack of access to adequate food stuff for a varied diet, this is compounded by insufficient household land for food production and insufficient purchasing power to buy food. Moreover, there remain very high rates of unemployment and many professionals under-employed. Reports suggest that 40% of the population is unemployed, and only 34% of families surveyed in 2001 said they have a salaried worker. Current issues in land reform and agriculture policies result in land use that is often not profitable to the food security of individual households, or for agricultural production and Tajikistan’s economy as a whole. Oxfam considers these trends with their Community Situation Indicators (CSI) but focus on only a few districts in the Khatlon Region. Their reports would suggest there is indeed a decline in household food security during the middle part of this year. The results from these other surveys may help to explain the increase in the rates of acute malnutrition and the situation remains fragile and any small shock in the current situation has far reaching effects on the nutritional status of children.

Some of the main recommendations of this report include:

- Surveillance data is required in order to more closely monitor the nutritional situation. This will help to monitor changes in the nutritional situation and provide warning of sudden increases, helping to direct nutritional interventions.

- Further surveys are required during the main peaks of acute malnutrition in order to establish the full extent of the acute malnutrition situation in the regions that are presenting high rates.

- Targeted Nutrition Interventions are still required and justified in Khatlon Oblast and GBAO according to internationally recognised criteria.

- There is a need to identify the underlying causes of the observed increase in acute malnutrition between 2003 and 2004. This analysis should consider what important changes have occurred at the household level during this period that may lead to such high increases in acute malnutrition.

- A more widespread monitoring of household food security indicators would help to improve the understanding of changing circumstances over time, contributing to knowledge of the underlying causes of acute malnutrition.

- The large difference in the rates of acute malnutrition in children less than 30 months should be considered in future nutritional interventions.

- Measles vaccination campaigns should be continued at a national level to ensure that there is adequate measles vaccination coverage among children.

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3 WFP VAM Survey (Unpublished data)
5 AAH National Nutrition Survey (2001)
6 AAH Report; Land Reform in Tajikistan: From the Capital to the Cotton Fields (2003)
7 Oxfam CSI Bulletin May-June 2004
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1. INTRODUCTION

The National Nutritional Survey 2004 (2004 NNS) was conducted between 16th October and 17th December 2004. The nutritional status of children 6-59 months was assessed in all four Oblasts in Tajikistan; Sughd Oblast, Gorno Badakhshan Autonomous Oblast (GBAO), Region of Republic Subordination (RRS) and Khatlon Oblast. For the purposes of the 2004 NNS two surveys were conducted in Khatlon Oblast, Kurgan Tyube (KT) Zone and Kulyab (KY) Zone with the intent of monitoring more precisely the population in the Oblast that has seen the highest levels of malnutrition. In the interests of increased collaboration with the Ministry of Health (Republic of Tajikistan), the 2004 NNS was conducted by staff from the MoH. Technical support was provided by AAH and administrative and logistical support was offered by Action Against Hunger (AAH), National Society of the Red Crescent in Tajikistan, Pharmaciens sans Frontières (PSF), Aga Khan Foundation (AKF) and ACTED.

Over the course of five years, malnutrition in Tajikistan has been influenced by the after effects of civil conflict, by drought, and by socio-economic factors. There is no definitive answer as to what causes, and in some cases, protracts, malnutrition. Notwithstanding, the annual exercise has provided a portrait over time that has helped stakeholders to better monitor and understand the phenomenon of malnutrition in Tajikistan. A stated organizational goal of AAH was to capacitate the Republican Centre for Nutrition Issues (RCNI) to be able to conduct future surveys under its own auspices. Future assessment and monitoring of the nutritional situation on a national scale among children under five will depend on the ability of the RCNI to undertake this task.

1.1. Research Parameters

The NNS 2004 was consistent with the research parameters used in the comparative survey from 2003. The 2003 survey was chosen for comparison because it was conducted at the same time of year, and allowed comparisons for analysis to be made.

Nutritional Survey Research Goal

Assess the nutritional status of the population in Tajikistan in the post-harvest season peak of acute malnutrition, in order to compare with the results in 2003.

General Objectives

- Conduct a countrywide Nutritional Anthropometric survey in Tajikistan.

Specific Objectives

- Assess the nutritional status of children aged 6-59 months
- Assess the mortality rates of the population
- Assess the coverage of measles vaccination
- Produce a comparative analysis between five different areas of Tajikistan
- Recommend future practices, promotion and/or training related to the results of the survey in the different regions
2. BACKGROUND

Tajikistan is a land locked mountainous country of 143,100 sq/km. Only 7% of the land is arable. The current population is stated as 6.195 million (UNICEF, 2002). Tajikistan gained independence in 1991 and is one of the poorest republics of the former Soviet Union. Prior to independence from the Soviet Union, the economy was heavily dependent on subsidies from Moscow and the intensive cultivation of cotton for export. As a result of bitter regional disputes over control of the country, civil conflict erupted in 1992 and a peaceful resolution was not found until five years later in 1997.

2.1. Economy & Employment

Tajikistan remains in a state of poverty. Low wages and high unemployment encourage migration of many Tajiks (trained professionals and untrained workers) to Russia and other neighboring countries. Some estimates suggest that monthly incomes of 80% of the population fall below the minimum food basket cost\(^8\). It is thought that 64% of the population is living below the poverty line\(^9\), while estimates suggest that between 20 to 33 percent of the population is extremely poor\(^10\).

Recovery in Tajikistan is reported to be improving at the macro economic level\(^11\). Despite this, Tajikistan remains the poorest in the CIS region and ranks 116\(^12\) in the world according to the UNDP’s HDI. Moreover, there remain very high rates of unemployment and many professionals under-employed. Reports suggest that 40% of the population is unemployed\(^12\), and only 34% of families surveyed in 2001 said they have a salaried worker\(^13\). It is estimated that between 800,000 and 1.5 million Tajiks have migrated to Russia, Turkey, Dubai, or other Central Asian countries. This has a huge impact on the economy of the individual households and the country’s economy. In earlier nutrition surveys, these factors were assessed to determine what, if any role, they played in influencing malnutrition status. Although direct links are difficult to establish it is inevitable that coping strategies are altered and vulnerability to malnutrition is affected.

Around 70% of the population lives in rural areas and the agricultural sector employs around two thirds of the total labour force. Current issues in land reform and agriculture policies result in land use that is often not profitable to the food security of individual households\(^14\), or for agricultural production and Tajikistan’s economy as a whole.

During the growing seasons from 1999 through 2002, Tajikistan suffered from the same devastating drought that affected neighbouring Afghanistan. Families dependent on their own food production suffered most, but the whole nation was affected since the fragile economy is largely based on export agriculture. The situation remains fragile and many reports show concern for the high vulnerability of much of the country.

2.2. Water and Sanitation Situation

Tajikistan boasts a colossal 46.5 km\(^3\) of water in lakes within its boarders (20 km\(^3\) of this is drinkable water). The population makes good use of this, with consumption by urban Tajiks reportedly at an astounding 550 litres per person per day (UNDP, 2003). This and the attitudes surrounding water conservation, all paradoxically impede the progress for organizations that are involved in water activities and interventions. The World Bank estimates that 60% of the water fed

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\(^8\) ACTED. (February 2002). Support to Small Farmers Associations in Tajikistan: Khatlon and Sughd Regions. Dushanbe, ACTED.

\(^9\) UNDP Human Development Report 2004


\(^12\) ICG Asian Report No. 51; Tajikistan: A road map for development (2003).

\(^13\) AAH National Nutrition Survey (2001)

\(^14\) AAH Report; Land Reform in Tajikistan: From the Capital to the Cotton Fields (2003)
into urban systems is lost due to leakages. Leakages also mean contamination in the lines. These systems reportedly provide safe drinking water to 93% of urban populations, 43% of rural populations, amid a total estimate of 57% coverage of drinking water nationwide (Ibid). However the ADB Poverty Survey reports that almost 40% of the population gets its drinking water from recognized contaminated water sources (e.g. ponds, lakes, streams and other unprotected wells). Even those taking their water from “safe” water sources are quite likely to be drinking contaminated water (around 30%\textsuperscript{15}). It is highly likely that seasonal variations in rates of malnutrition are related (although not solely) to the same seasonal variations in water borne diarrheal diseases.

Although poor sanitation is evident in rural and urban environments there is little to document the sanitary conditions outside that of the domestic situation. The AAH/Mercy Corps NNWS 2003 describes that only 5.2% of the population does not have access to a latrine domestically (although only 1.8% of those surveyed had no latrine at all). However, even though this is the case open urination and defecation is evident.

2.3. The Burden of Disease on Malnutrition

The decline in health status is a reflection of the decline in health system performance. Prior to independence in 1991, under-five mortality was at 78/1000 live births and virtually all births occurred in hospitals. Malnutrition was reportedly rare, and considered to be an anomaly associated with endocrine disorders. By 2000, when UNICEF conducted its Multiple Indicator Cluster Survey (MICS), child mortality was estimated at 126 per thousand.\textsuperscript{16} While no national statistic on maternal mortality exists, estimates range as high as 170/100,000 (MSF, unpublished data, 2001).

The disease patterns in Tajikistan would indicate high levels of respiratory infections during the winter months, October to March (peaking in January), and high levels of diarrheal diseases during the summer months, May to September (peaking in July)\textsuperscript{17}.

The continued chronic exposure to diarrheal diseases, and other intestinal infections such as parasitic worms, has both short and long term consequences on the nutritional status of children. This continual exposure to disease, either symptomatic or non-symptomatic, may contribute significantly not only to acute losses of weight but also to growth failure (stunting)\textsuperscript{18}. Such continual pressures on the immune systems are evident to the children in Tajikistan and there is certainly circumstantial evidence to support that health status is contributing to the high prevalence of stunting seen in Tajikistan.

A recent survey at the end of 2004 shows that up to 55% of school children are infected by parasitic worms in Tajikistan\textsuperscript{19}. Parasitic worm infections include round worms and hook worms (as well as tape worms), all of which contribute to poor nutritional status of children (and women). Some sources would suggest that hook worm infections could be similar to those found in Afghanistan, where a study in 2003 demonstrated a prevalence of over 50%\textsuperscript{20}.

Outbreaks of typhoid and cholera, a once rare occurrence every ten years or so, have now become yearly events. The typhoid outbreak of September-November 2003 affected an estimated 3500 persons (Asia Plus, 2003). There have been two official outbreaks of typhoid in 2004.

2.4. Care Practices

The type and consistency of current breastfeeding, feeding and complementary feeding practices vary moderately by region, and by reporting. Where NGOs have worked intensively in Mother and

\textsuperscript{15} AAH/Mercy Corps NNWS 2003
\textsuperscript{16} MICS and the NNS are the only national surveys on infant mortality which have been conducted. There is no Demographic and Health Survey available for Tajikistan.
\textsuperscript{17} According to AAHs Child Health programme morbidity data collection since Jan 2004
\textsuperscript{18} State of the Worlds Children 1998, UNICEF
\textsuperscript{19} According to a presentation made by WFP/UNICEF/SES in December 2004
\textsuperscript{20} Email correspondence with Dr. Antonin Montresor, WHO (PVC/CPE), Geneva 2003.
Child Health programs, collective data suggest that the message has made it into practice. Despite this, a recent KAP survey conducted by AAH (Unpublished data) would suggest that almost 40% of the women whose child was seen to lose weight during the weaning period did nothing about it (unpublished data). This may go towards explaining the large differences in the levels of malnutrition between the children aged 6-29 months in the 2004 NNS and the 30-59 months old children (see discussion later).

As regards hygiene practices, anecdotal and area-specific studies suggest that individual and collective behaviour and practices do not meet the requirements for prevention from contamination. This includes infrequent hand washing post toilet use or prior to food preparation, minimal use of soap, irregular cleaning of facilities, minimal use of lids for pits, inadequate washing of foods, washing pots, etc. Increasing the quantity of water available still does not automatically translate into increased use for domestic and personal hygiene in Tajikistan. Distance to water supply plays a significant role in the choice made by water bearers, as to which source to use especially in summer where surface water is an ‘easy and free of charge’ alternative to groundwater. Neither does the construction of latrines automatically translate into hygienic use of those facilities. Knowledge, attitude and behaviour, as ever, are ultimately behind such practices and must be assessed as thoroughly and scientifically as the factors related to infrastructure, quality and quantity.

2.5. Food Security

Poverty and food insecurity are intricately linked. Even though the World Bank and IMF indicate, at the macroeconomic level, there have been improvements in recent years, many other reports present large numbers of poor and food insecure households. What seems to be lacking in Tajikistan is widespread food security surveillance that considers changes over time. Oxfam does consider these trends with their Community Situation Indicators (CSI) but focus on only a few districts in the Khatlon Region. Their reports would suggest there is indeed a decline in household food security during the middle part of this year. Even so their nutritional indicators showed some improvement from the situation the year before.

Cotton production, occupies much of the women’s time in Tajikistan. Up to 60% of all cotton production in Tajikistan originates from the Khatlon Oblast. Removed from the household these women are less able to care for their children at key stages in their development. Thus food quality and quantity given to children is likely to be affected. Each year the Ministry of Economics issues harvest plans, which is a cash crop for the Tajik Government, although this is called ‘forecast’ there remain little difference from the Soviet quota style of crop production. Meeting these forecasts requires more time to be spent in the fields. Land reforms and land use continue to reduce the number of households that use land for household crop cultivation.

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21 AKF in GBAO, SCF (USA) in Khatlon, Care in RRS, Mercy Corps and MSF in the Rasht Valley.
23 Situation Analysis of Food Security in Tajikistan Baseline Chronic Food Insecurity; WFP VAM unit (March 2003)
25 Oxfam CSI Bulletin May-June 2004
26 AAH Report; Land Reform in Tajikistan: From the Capital to the Cotton Fields (2003)
3. METHODOLOGY

3.1. Delineation of Survey Areas

This national survey was conducted in five regions: Gorno Badakhshan Autonomous Oblast (GBAO), Sughd Oblast, Region of Republican Subordination (RRS)\(^{27}\) and Khatlon Oblast divided into two regions; Kurgan Teppe (KT) and Kulyab. These areas encompass the entire country of the republic of Tajikistan. For logistical reasons the survey was not conducted simultaneously in all five regions but was staggered, starting within one week of each other. The survey took place between the 16\textsuperscript{th} October 2004 – 17\textsuperscript{th} December 2004.

3.2. Survey Training

A three-day training course was provided for the enumerators, considering the following topics; “Causes, types and prevention of malnutrition”, “Basic Nutrition”, how to complete the survey questionnaires, sampling methodology, taking anthropometric measurements.

The first day of training focused on the sampling methodology and interview technique. The second day was spent learning about the anthropometric equipment. The third day was for piloting, giving the teams the opportunity to test the tools and to get elementary experience of the fieldwork.

3.3. Sampling

Nutrition

A two stage, 30 x 30, cluster sampling methodology was used to randomly select 30 children in 30 clusters in each region (see Annex 1). A sample greater than, or equal to 900, allows for statistical significance within 95\% confidence. This is an internationally recognised method for assessing the nutritional situation in large populations. Clusters were selected randomly using population figures obtained from the 2000 National Population Census. The census had been updated during 2001 and 2002. The census was also updated and corrected during the survey, for districts, Jamoats and communities/villages that had changed names. The total sample population size was 4681.

Children between 6-59 months of age were selected to represent the age group most vulnerable to disease and malnutrition and resultant morbidity and mortality. Only one child was selected per family at random for interview. For the purposes of the survey the “family” was defined as all of the people eating from the same cooking pot and doing so for the past six months. Mothers of these randomly selected children were also measured and interviewed when available.

To maintain the confidentiality of an individual respondent an oral consent was requested before filling the questionnaire and beginning measurements.

3.4. Survey Tools

The following instruments were used in the survey (please see Annex 1 for more detail):

- Anthropometric Data and Household Questionnaire Sheet
- Mortality Data Sheet

Measuring Equipment

The children were weighed using a 25k g Salter hanging scale with 100g graduations and standard type culottes. The pointer of the scale was zeroed with the culottes before each child was weighed. Each child was weighed without clothes. Children were weighed to the nearest 100g.

\(^{27}\) RRS includes the capital of Dushanbe
Height was measured using a height board. For children less than two years or less than 85 cm the height was taken with the child lying down. For children older than two years, or taller than 85 cm the height was taken with the child standing up. The height was measured to the nearest 0.1 cm.

Mid Upper Arm Circumference (MUAC) was measured with a 30 cm tape. The measurement was taken on the left arm on children and their mothers at the midpoint between the shoulder and the elbow with the arm relaxed, hanging on the side. MUAC was measured to the nearest one mm.

3.5. Data Analysis

The nutritional indices from the National Centre for Health Statistics\textsuperscript{28} (NCHS), which are universally recognised standards of measure that define categories of malnutrition, have been used in this study (NCHS, 1997).

Acute Malnutrition

Two indicators of acute malnutrition exist, they are:

- Weight for Height
- Presence of bilateral oedema

Weight for Height

Weight for height expresses the weight of a child in relation to his height comparing the weight of the child with the weight of the reference population for the same height (NCHS, 1977). The calculation shows the “thinness” of a child, but cannot differentiate between a child too small for his age (suffering from chronic malnutrition) and a child of satisfactory height for his age. The index Weight for Height characterises the malnutrition present at the moment of the survey, therefore acute malnutrition, otherwise known as wasting.

Weight for height is presented in Z-Scores (expressed as the number of standard deviations the weight of the child is from the median of the reference population) and as a percentage of the reference median. Acute malnutrition is classified into moderate and severe malnutrition (see Table 1 for classification). Global Acute Malnutrition (GAM) is a combination of moderate malnutrition and severe malnutrition.

| Table 1: Classification of acute Malnutrition expressed in Z-scores and % of the median |
|---------------------------------|-----------------|-----------------|-----------------|
|                                 | Z-Score | % of Median | Oedema          |
| Severe Acute Malnutrition       | <-3 SD*  | <70%         | Present         |
| Moderate Acute Malnutrition     | <-2>=>-3 SD | >=70<-80%   | Absent          |
| #Global Acute Malnutrition      | <2 SD   | <80%         | Present         |
| At risk of developing acute malnutrition | <-1.5>=>-2 SD | <85%>=>80% | Absent          |
| Not acutely malnourished        | >=-1.5 SD | >= 85%      | Absent          |

* SD = Standard Deviations

Presence of Bilateral Oedema

Pitting oedema is a defining characteristic of severe malnutrition otherwise known as Kwashiorkor. It is caused by retention of water and sodium in the extra cellular spaces and is usually found on the legs but can also spread to the rest of the body right to the eyes. The presence of extensive bilateral oedema increases the risk of mortality (Greletty, 2000).

Chronic Malnutrition

The index Height for Age expresses the height of a child in relation to his age. It shows the growth deficit for a child compared to the reference population of the same age. Height for Age cannot differentiate the level of “thinness” between two children of equal height and age. Height for Age reflects the past history of the child better than the actual nutritional status, it shows chronic

malnutrition, otherwise known as stunting (see Table 2). To a large extent, stunting is irreversible as the deficit of nutrition occurs during the growth periods, however in very young children, under three years of age, it can be reversed with appropriate nutrition.

| Table 2: Classification of Chronic Malnutrition in Z-Scores and % of the Median |
|---------------------------------|-----------------|------------------|
| Z-Scores                        | % of the Median |
| Severe Chronic Malnutrition     | <-3 SD*         | <85%             |
| Moderate Chronic Malnutrition   | >=-3-<-2 SD     | 85%-89%          |
| Global Chronic Malnutrition#    | <-2 SD          | <=89%            |
| Not chronically malnourished    | >= -2 SD        | >=90%            |

* SD = Standard Deviations

MUAC
MUAC is relatively accurate in identifying mortality risk in children 75cm and above (roughly one year of age and above). Action Against Hunger uses the following cut-offs:

- MUAC <11.0 cm severe malnutrition and high risk of mortality
- MUAC>=11.0 cm and <12.0 cm moderate malnutrition and moderate risk of mortality
- MUAC>=12.0 cm and <12.5 cm high risk of malnutrition
- MUAC>=12.5 cm and <13.5 cm moderate risk of malnutrition
- MUAC>=13.5 cm ‘adequate’ nutritional status

In this study the MUAC of mothers of the target children is also measured. Action Against Hunger uses <22.0 cm to identify moderate malnutrition in women.

Mortality Data
In all households visited, including those without children less than five years of age, data was collected on whether there had been any deaths in the previous three months. The caregiver was questioned on whether there had been any deaths in the household, from one month (excluding neonatal deaths) to five years and above five years of age. The reported cause of death was also recorded if known. Two mortality rates were calculated for the purpose of this survey:

1) Crude Mortality Rate (CMR)
2) <5 years Mortality Rate (<5 MR)

3.6. Constraints and Limitations

- Population figures may not always be accurate and up-to-date and therefore the population may not have been entirely represented.
- The analysis of the RRS Mortality data was excluded, due to possible misunderstanding of the process involved with the survey teams.
- The sampling included the capital city of Dushanbe and therefore the sample was not homogeneous. This may result in discrepancies in the prevalence and the rates of malnutrition in the rural areas.
- Heavily heterogeneous (dissimilar) areas are included in the surveys conducted. For example, Cities/large towns are included with very rural villages (with the exception of Kulyab).
- The results of the measles vaccination are difficult to interpret, as vaccination cards were not distributed by UNICEF/MoH in the recent measles campaign, and the caretakers not normally holding vaccination cards. Therefore confirmation of vaccination relied upon the memory of the caretakers.
4. ANTHROPOMETRIC RESULTS

4.1. Demographics and Setting

The average size of family included in the survey had 1.6 children less than five years of age and 6.1 members over five years of age. This gives an average family size of 7-8 individuals.

The target population for the survey were children in the age group of 6 and 59 months. There was an even gender distribution throughout the regions among the target children with 50.2% males and 49.8% females measured. Although there are more boys than girls, the corresponding sex ratio of 1.01 boys to girls is within the recommended range of 0.8-1.2, demonstrating an unbiased sample. 50.9% of the children were between 6-29 months and 49.1% were between 30-59 months.

Table 3: Age and Sex distribution

<table>
<thead>
<tr>
<th>Age</th>
<th>N</th>
<th>Observed</th>
<th>Expected</th>
<th>Boys</th>
<th>Girls</th>
<th>Sex Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-17 months</td>
<td>1105</td>
<td>23.61%</td>
<td>22%</td>
<td>548</td>
<td>557</td>
<td>0.98</td>
</tr>
<tr>
<td>18-29 months</td>
<td>1278</td>
<td>27.30%</td>
<td>21%</td>
<td>623</td>
<td>655</td>
<td>0.95</td>
</tr>
<tr>
<td>30-41 months</td>
<td>1011</td>
<td>21.60%</td>
<td>20%</td>
<td>539</td>
<td>472</td>
<td>1.14</td>
</tr>
<tr>
<td>42-53 months</td>
<td>860</td>
<td>18.37%</td>
<td>19%</td>
<td>429</td>
<td>431</td>
<td>1.00</td>
</tr>
<tr>
<td>54-59 months</td>
<td>427</td>
<td>9.12%</td>
<td>18%</td>
<td>210</td>
<td>217</td>
<td>0.97</td>
</tr>
<tr>
<td>Total</td>
<td>4681</td>
<td></td>
<td></td>
<td>2349</td>
<td>2332</td>
<td>1.01</td>
</tr>
</tbody>
</table>

4.2. Acute Malnutrition

Acute malnutrition refers to children who are “wasted”, those with a low weight for height. Acute malnutrition indicates recent nutritional “shocks”, i.e. sudden decline in food intake over recent months. The overall prevalence of Global Acute Malnutrition (GAM) was 7.6%. The results ranged from 32.4% in Sughd to 11.1% in Kulyab. The median rate for Severe Acute Malnutrition (SAM) was found to be 1.5% for all regions. The rates for SAM were found to be highest in Kurgan Tyube and lowest in RRS with 3.1% and 0.8% respectively (see Table 4). There were no reported cases of oedema in any of the five regions surveyed.

Table 4: Acute Malnutrition by Region in 2004 and 2003

<table>
<thead>
<tr>
<th>Region</th>
<th>n</th>
<th>Global Acute Malnutrition ≤-2 Z-scores</th>
<th>Severe Acute Malnutrition ≤-3 Z-scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2004 (%)</td>
<td>CI (95%)</td>
<td>2003 (%)</td>
</tr>
<tr>
<td>GBAO</td>
<td>901</td>
<td>8.7 (4.7-10.7)</td>
<td>3.7 (2.7-5.2)</td>
</tr>
<tr>
<td>Sughd</td>
<td>971</td>
<td>2.4 (1.5-3.6)</td>
<td>3.3 (2.3-4.7)</td>
</tr>
<tr>
<td>RRS</td>
<td>948</td>
<td>6.1 (4.7-7.9)</td>
<td>4.0 (2.9-5.5)</td>
</tr>
<tr>
<td>Kurgan Tyube</td>
<td>891</td>
<td>11.1 (9.1-13.3)</td>
<td>5.4 (4.1-7.1)</td>
</tr>
<tr>
<td>Kulyab</td>
<td>966</td>
<td>9.9 (8.2-12.0)</td>
<td>7.1 (5.6-9.0)</td>
</tr>
<tr>
<td>All Regions</td>
<td>4681</td>
<td>7.6 (6.8-8.4)</td>
<td>4.7 n/a</td>
</tr>
</tbody>
</table>

Comparison with 2003 Survey

In all survey areas except Sughd, the rates of acute malnutrition have increased. In the cases of GBAO and KT the rates have doubled and are currently around half of that seen during the height of the drought in 2001. Figure 1 shows the evolution of acute malnutrition over the last 4 years. What is very difficult to understand is how the rates of acute malnutrition fluctuated in the period between the 2003 NNS and the 2004 NNS (or any of the NNS surveys) and what circumstances have changed at the household level since the time of the 2003 NNS. As will be discussed, the key
to the increases in acute malnutrition would seem to be with food security and household socio-economic status.

Of great concern are the rates of acute malnutrition in GBAO and Khatlon. They have shown significant and alarming increases, reaching around half that of the rates experienced during the drought period as Figure 1 demonstrates. The situation in Sughd has remained stable from 2002 until 2004. RRS has shown a degree of stability during 2002 and 2003. However an increase, although not significant, in the rate of acute malnutrition in RRS has been recorded in the 2004 NNS.

**Figure 1: Global Acute Malnutrition in Tajikistan Between 2001 and 2004 (expressed in z-scores)**

Comparison to Earlier Surveys 1999-2004

The NNS 1999 and 2000 used a different methodology for the delineation for the sampling and the NNS 2002 was conducted in May, whereas all other surveys have been conducted in September/October. However, while taking this into account, the differences of these surveys, when comparing all five surveys a general pattern does emerge. Figure 3 is based on the mean figures for severe and moderate malnutrition for each survey and offers a trend of the nutritional status of Tajik children aged 6-59 months. It reveals the steady decrease of malnutrition in Tajikistan since 1999 with the exception of 2001, which was a drought year. 2004 shows an increase in the rates.

**Figure 2: Severe Acute Malnutrition in Tajikistan 2001 and 2004 (expressed in z-scores)**
Acute Malnutrition and Age

There are stark differences between the rates of acute malnutrition in children aged between 6-29 months and 30-59 months. The rates of global acute malnutrition are up to 10 times higher, in the example of RRS. On average the younger age group is around 6 times more likely to be acutely malnourished.

If children ages 6-17 months are compared to those aged 54-59 months, the odds of being acutely malnourished are much greater. The greatest difference is seen in RRS where the younger age group is 15 times more likely to be acutely malnourished. On average the youngest children are 8 times more like to be acutely malnourished (see Table 5).

Table 5: Comparison of the likelihood of acute malnutrition between age groups

<table>
<thead>
<tr>
<th>Survey</th>
<th>Relative Risk comparison between age groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6-17 months &amp; 54-59 months</td>
</tr>
<tr>
<td>RRS</td>
<td>15 times</td>
</tr>
<tr>
<td>GBAO</td>
<td>8 times</td>
</tr>
<tr>
<td>Kurgan Tyube</td>
<td>12 times</td>
</tr>
<tr>
<td>Sughd</td>
<td>2 times</td>
</tr>
<tr>
<td>Kulyab</td>
<td>4 times</td>
</tr>
<tr>
<td>Average</td>
<td>8 times</td>
</tr>
</tbody>
</table>

4.3. Chronic Malnutrition

The index of height for age expresses the height of a child in relation to their age. It illustrates a growth deficit in a child when compared to the reference population. For this reason height for age is a reflector of past and cumulative nutrition, therefore chronic malnutrition. The average prevalence of chronic stunting was 31.4% (CI 95%:30.0-32.8) Table 6 demonstrates the height for age (stunting) rates in z-scores (HAZ) for the five regions of Tajikistan.

There has been an overall drop in the rates of Chronic Malnutrition in Tajikistan since the same period of 2002.
Table 6: Chronic Malnutrition by Region in 2004 and 2003

<table>
<thead>
<tr>
<th>Region</th>
<th>Children 6-59 months</th>
<th>Global Chronic Malnutrition, 2004 HAZ &lt; -2 Z-Scores</th>
<th>Global Chronic Malnutrition, 2002 HAZ &lt; -2 Z-Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>CI (95%)</td>
</tr>
<tr>
<td>GBAO</td>
<td>901</td>
<td>30.3</td>
<td>(27.3-33.4)</td>
</tr>
<tr>
<td>Sughd</td>
<td>971</td>
<td>28.8</td>
<td>(26.0-31.8)</td>
</tr>
<tr>
<td>RRS</td>
<td>948</td>
<td>27.5</td>
<td>(24.7-30.5)</td>
</tr>
<tr>
<td>Kurgan Teppe</td>
<td>895</td>
<td>32.6</td>
<td>(29.5-35.8)</td>
</tr>
<tr>
<td>Kulyab</td>
<td>966</td>
<td>37.6</td>
<td>(34.5-40.7)</td>
</tr>
<tr>
<td>All Regions</td>
<td>4681</td>
<td>31.4</td>
<td>(30.0-32.8)</td>
</tr>
</tbody>
</table>

It is a little difficult to understand, in some of the survey areas, if the trend of chronic malnutrition is increasing or decreasing. For example, in KT the trend could be interpreted as either increasing (between 2002 and 2003) or decreasing (between 2003 and 2004) as seen in Figure 4. However, limitations in the data collection are likely to explain this potential confusion and the general trend is, in fact, that of increasing chronic malnutrition. Other surveys where the general trend is that of increasing chronic malnutrition appear to be GBAO and Kulyab. In RRS there are signs of improvement, although not statistically (32.8% – 27.5%). The situation in Sughd has shown significant improvements in chronic malnutrition since 2001 to 2004 (43.8% – 28.8%). The apparent large improvements in Sughd are difficult to explain as one would only expect to see such changes over a longer period of time. A summary of the evolution of the chronic malnutrition situation is presented in Figure 4. It should be noted that, GBAO regional data for 2001 is not available therefore not included in the graph.

Figure 5: Global Chronic Malnutrition, Tajikistan, 2001 to 2004 (expressed in z-scores)
4.4. MUAC of Children

MUAC measurements were taken on all children, although only the measurements for children >1 yr (or >75 cm) were analysed as the use of MUAC in children <1 year (or <75 cm) is controversial. As shown in Table 7, the children in the two Khatlon regions demonstrate the highest prevalence of malnutrition according to the MUAC measure. This corresponds with the WHZ shown in Table 7, for the same regions.

Table 7: MUAC for Children 12-59 months by Region

<table>
<thead>
<tr>
<th>Region</th>
<th>No. (12-59 months)</th>
<th>MUAC &gt;/11-&lt;12.0 cm</th>
<th>MUAC &lt;11.0 cm</th>
<th>Mean MUAC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2004 (%)</td>
<td>2004 (%)</td>
<td>2004(cm)</td>
<td></td>
</tr>
<tr>
<td>GBAO</td>
<td>816</td>
<td>5</td>
<td>0</td>
<td>14.8</td>
</tr>
<tr>
<td>Sughd</td>
<td>867</td>
<td>3</td>
<td>0</td>
<td>15.6</td>
</tr>
<tr>
<td>RRS</td>
<td>852</td>
<td>3</td>
<td>0</td>
<td>15.1</td>
</tr>
<tr>
<td>Kurgan Tappe</td>
<td>768</td>
<td>24</td>
<td>7</td>
<td>14.1</td>
</tr>
<tr>
<td>Kulyab</td>
<td>831</td>
<td>7</td>
<td>5</td>
<td>14.5</td>
</tr>
<tr>
<td>Total</td>
<td>4134</td>
<td>42</td>
<td>12</td>
<td>14.8</td>
</tr>
</tbody>
</table>

4.5. Morbidity

Morbidity data on the measured child was collected at each household. The caregiver was asked if the child had been ill in the 2 weeks prior and the suspected cause of illness was recorded. It must be noted that there was no method of cross checking this data so caution is advised when interpreting. The survey showed that a total of 22.9% of children had suffered from an illness in the two weeks prior to survey. With such a low prevalence of illness at the time of the survey, it could be assumed that disease has no significant value in the higher rates of malnutrition seen in the 2004 NNS. As shown in Figure 5, the frequency of breakdown of the diseases identified in the survey among children of 6-59 month of age. Overall there seems to be almost half the rates of morbidity in the 2004 NNS as that of the 2003 NNS (23.9% compared to 40% respectively).

Figure 6: Total numbers of illnesses reported 2 weeks prior to Survey
4.6. Mortality

As seen in Table 8 the crude mortality rate and the under five mortality rate have decreased in all regions. RRS was excluded from the results due to translation difficulties in the training component, and information collected could not be analysed. Overall the rates of mortality shown in the survey remain low.

Table 8: CMR and <5 yr MR for all Regions, Tajikistan, 2004 and 2003

<table>
<thead>
<tr>
<th>Region</th>
<th>Crude Mortality Rate (CMR/10000/day)</th>
<th>Under 5 years Mortality Rate (&lt;5MR/10000/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2004</td>
<td>2003</td>
</tr>
<tr>
<td>GBAO</td>
<td>0.09</td>
<td>Excluded</td>
</tr>
<tr>
<td>Sughd</td>
<td>0.1</td>
<td>0.10</td>
</tr>
<tr>
<td>RRS</td>
<td>Excluded</td>
<td>0.24</td>
</tr>
<tr>
<td>Kurgan Tyube</td>
<td>0.01</td>
<td>0.24</td>
</tr>
<tr>
<td>Kulyab</td>
<td>0.19</td>
<td>0.23</td>
</tr>
<tr>
<td>All Regions</td>
<td>0.09</td>
<td>0.2</td>
</tr>
</tbody>
</table>

4.7. Measles Vaccination Status

The coverage rates of measles vaccination, has increased from 83.1% in 2003 to 95.7% in 2004. The increase is a result of a National Measles campaign conducted by The Ministry of Health and UNICEF in all regions of Tajikistan. These figures represent the sum of yes replies with and without confirmation. The results are of those children vaccinated who are 12 months or older, due to the immunization protocols for Tajikistan. Reported rates of vaccination may differ from other published and unpublished data due to differing methodologies used in information collection.
5. CONCLUSIONS

The data from the 2004 NNS points towards a worsening situation in terms of acute malnutrition in all the surveyed areas, with the exception of Sugd. GBAO and Kurgan Tyube zone (Khatlon Oblast) present rates that are significantly elevated from that of last year.

The 2004 NNS was mainly focused on gathering information about the nutritional status of the children surveyed. Therefore the survey itself is not able to consider what may be the underlying cause of this increase from last year’s rates of acute malnutrition. However the 2004 NNS does show that the prevalence of morbidity seems to be either the same or less in this year’s survey compared to the 2003 NNS. Therefore it would be difficult to implicate elevated levels of disease in the increase in acute malnutrition. Based on the data available to us from the surveys conducted, it seems unlikely that morbidity is related to these changes.

What also prevents further understanding of the nutritional situation are the patterns of acute malnutrition throughout the year. There is no solid information as to how acute malnutrition rises and falls during the year. There is no clear idea of the true extent of the problem in regards to acute malnutrition in Tajikistan and all the current evidence points to the highest rates corresponding to the peaks of diarrhea, that being in July and August. Further information will help to refine interventions and more consistent information gathering may help us to avoid waiting for one year before recognizing high rates of acute malnutrition.

Other sources of information that shed light on differences in the food security situation between the survey conducted in 2003 and this survey should be consulted to understand why the situation, in terms of acute malnutrition, seems to be worsening in GBAO and the Kurgan Tyube zone of Khatlon Oblast. What seems likely is that the situation may get worse in the coming months due to a seasonal reduction in access to food.
6. RECOMMENDATIONS

- Surveillance data is required in order to more closely monitor the nutritional situation. This will help to monitor changes in the nutritional situation and provide warning of sudden increases, helping to direct nutritional interventions.

- Further surveys are required during the main peaks of acute malnutrition in order to establish the full extent of the acute malnutrition situation in the regions that are presenting high rates.

- Targeted Nutrition Interventions are still required and justified in Khatlon Oblast and GBAO according to internationally recognised criteria.

- There is a need to identify the underlying causes of the observed increase in acute malnutrition between 2003 and 2004. This analysis should consider what important changes have occurred at the household level during this period that may lead to such high increases in acute malnutrition.

- A more widespread monitoring of household food security indicators would help to improve the understanding of changing circumstances over time, contributing to knowledge of the underlying causes of acute malnutrition.

- The large difference in the rates of acute malnutrition in children less than 30 months should be considered in future nutritional interventions.

- Measles vaccination campaigns should be continued at a national level to ensure that there is adequate measles vaccination coverage among children.
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