

NATIONAL SURVEY OF THE NUTRITIONAL STATUS OF CHILDREN 6-59 MONTHS OF AGE AND THEIR MOTHERS THE KYRGYZ REPUBLIC, 2009



Ministry of Health
of Kyrgyz Republic

National Statistical
Committee of the
Kyrgyz Republic



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
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Investigators and Collaborators

The current survey was administered under the Cooperative Agreement between UNICEF and the U.S. Centers for Disease Control and Prevention. Support for this survey was provided by several investigating and collaborating agencies including:

- UNICEF- Regional Office (CEE/CIS)
- UNICEF -Kyrgyzstan
- U.S. Centers for Disease Control and Prevention (CDC)
- Ministry of Health - Kyrgyzstan
- National Statistics Committee (NSC)- Kyrgyzstan

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LIST OF ABBREVIATIONS

AGP	α 1- glycoprotein acid
BMI	Body mass index= Weight (kg)/ Height ² (m)
CDC	United States Centers for Disease Control and Prevention
CEE	Central and Eastern Europe
CHSD	Center for Health System Development
CI	Confidence Interval
CIS	Commonwealth of Independent States
CRP	C–reactive protein
DDPME	Department for Drugs, Procurement and Medical Equipment
DEFF	Design effect
DHS	Demographic and Health Survey
EDTA	Ethylenediaminetetraacetic acid
FAP	Feldsher Obstetrics Point
FGP	Family Group Practitioners
HAZ	Height-for-age, Z-score
ICC	Inter-cluster correlation
IDA	Iron deficiency anemia
IYCF	Infant and young child feeding
KSSHPP	Kyrgyz-Swiss-Swedish Health Project
MOH	Ministry of Health
NCMCH	National Center for Mother and Child Health
NSC	National Statistical Committee
PPS	Probability proportional to size
RBP	Retinol-binding protein
SD	Standard Deviation
SE	Standard Error
SES	State Health Epidemiologic Surveillance Central Department
SRC	Swiss Red Cross
sTfR	Soluble transferrin receptor protein
UNICEF	United Nations Children’s Fund
VAD	Vitamin A Deficiency
VHCs	Village Health Committees
WAZ	Weight-for-age, Z-score
WHO	World Health Organization
WHZ	Weight-for-height Z-score

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EXECUTIVE SUMMARY

This report summarizes the findings of the National Nutrition Survey conducted in Kyrgyzstan in June and July 2009. The collaborating partners included the Ministry of Health of the Kyrgyz Republic (MOH), National Statistical Committee of the Kyrgyz Republic (NSC), United Nations Children's Fund (UNICEF), and the U.S. Centers for Disease Control and Prevention (CDC).

Survey objectives and design

The objectives of the 2009 Kyrgyzstan National Survey of Nutritional Status in Children 6 to 59 months of age and their mothers were to determine:

- knowledge, attitudes and practices related to infant and young child feeding
- the prevalence of stunting, wasting, and underweight among children 6 to 59 months of age
- the prevalence of underweight, overweight and obesity among mothers of children 6 to 59 months of age
- the prevalence of anemia, iron deficiency anemia and iron deficiency among children 6 to 59 months of age and their mothers
- the prevalence of folate deficiency among mothers
- the prevalence of vitamin A deficiency among children 6 to 59 months of age and their mothers

The survey was designed for two strata: rural and urban. For each stratum, a two stage cluster sampling design was employed using probability proportional size (PPS) methodology to select 33 clusters of primary health clinics (FAP/FGP) catchment areas and, within cluster, randomly select 30 children aged 6-59 months and their mothers.

A total of 1,745 children 6-59 months and 1,325 mothers of these children were included in the survey. Of these mothers, 1,162 were non-pregnant. Anthropometry and blood samples were taken from all children and their mothers (non-pregnant only).

Infant and young child feeding practices: knowledge, attitudes and practices

For the first 6 months of age WHO recommends exclusive breastfeeding; at six months of age WHO recommends introduction of solid, semi-solid and soft foods to supplement the breastfed child's diet (WHO, 2001). Appropriate infant and young child feeding (IYCF) practices include altering the frequency, variety, and amount of foods as a child gets older, while continuing breastfeeding until 2 years of age. Among children 6 to 23.9 months of age, 97.9% were reported to have ever been breastfed and 16.3% were reported to have been exclusively breastfed for the first six months after childbirth. At 1 year of age, 65.8% were reported to be breastfeeding and at 2 years of age, 13.5% were reported to be breastfeeding. The proportion of infants 6-8.9 months of age who were reported to have received solid, semi-solid or soft foods was 78.6%. The proportion of children 6-23.9 months who received a diet with the minimum recommended diversity (4 or more food groups) was 57.5% and the proportion who received a diet with at least the minimum recommended meal frequency was 67.3%.

Among mothers, 89.0% considered breastfeeding very important for the baby's health and nutrition while only 21.3% considered milk substitutes or formula to be very important. The main reported benefits of breastfeeding were that it is healthy for the child or mother (87.5%), rich in important vitamins and minerals (81.8%), and protects the child from infectious diseases (69.2%).

Mothers reported receiving nutrition advice from multiple sources. Among mothers, 78.0% reported receiving advice on diet during pregnancy. Mothers reported receiving information mainly from medical professionals (75.6%), and family members, friends and neighbors (68.9%). Regarding advice on breastfeeding, mothers received advice from medical staff (86.0%), and family members, friends or neighbors (73.9%).

Anthropometry

Among children 6 to 59 months of age, 1.3% had low weight for height (wasting), 22.6% had low height for age (stunting), 4.7% had low weight for age (underweight) and 4.4% had high weight for height (overweight). The prevalence of stunting was higher in rural than urban areas (26.1% versus 15.8%) and was lower in the younger age groups. According to the WHO classification criteria for public health significance, the prevalence of wasting (1.3%) and underweight (4.7%) among children were categorized as low public health significance and the prevalence of stunting (22.6%), as medium. Among non-pregnant mothers, 6.5% were underweight; 61.7%, normal weight; 22.3%, overweight; and 9.5%, obese. According to the WHO classification criteria for public health significance, the prevalence of underweight (6.5%) was categorized as low public health significance.

Biochemical indicators for micronutrient deficiency

Among children, the prevalence of iron deficiency as measured by ferritin was 40.3% and, as measured by soluble transferrin receptor (sTfR) was 35.1%. After adjustment for altitude, the prevalence of anemia was 26.0% and the prevalence of iron deficiency anemia (based on either decreased ferritin or elevated sTfR) was 18.1%. The prevalence of anemia and iron deficiency anemia was higher in rural areas compared to urban areas (25.5% vs 18.0% and 22.8% vs 14.7, respectively). The prevalence of anemia declined with age from 42.5% among children aged 6 to 11 months to 9.8% among children aged 48 to 59 months. Among males, 28.4% were anemic compared to 23.6% of females. Based on the WHO classification of public health significance of anemia, the prevalence of anemia in children (26.0%) constitutes a public health problem of moderate significance.

Among non-pregnant mothers, the prevalence of iron deficiency as measured by ferritin was 47.9% and, as measured by sTfR, was 22.9%. After adjustment for altitude, the prevalence of anemia was 23.0% and the prevalence of iron deficiency anemia was 20.1%. The prevalence of anemia and iron deficiency anemia was higher in rural areas (25.5%) compared to urban areas (18.0%). Based on the WHO classification of public health significance of anemia, the prevalence of anemia in mothers (23.0%) constitutes a public health problem of moderate significance.

Among non-pregnant mothers, the prevalence of folate deficiency was 37.4%. The prevalence of folate deficiency was 39.7% in rural mothers and 32.3% in urban mothers. Among all mothers, 31.9% reported having received folic acid supplements during pregnancy.

Among children, the prevalence of vitamin A deficiency was 4.2%. Among all children, the prevalence of vitamin A deficiency declined with age from 7.8% in children aged 6 to

11 months to 2.3% among children aged 48 to 59 months. The prevalence of vitamin A deficiency was similar in males and females. Among children, 94.7% were reported to have ever taken a vitamin A supplement, while 80% were reported to have received vitamin A supplements within 6 months of the survey. Based on the WHO classification of public health significance of vitamin A deficiency in children anemia, the prevalence of vitamin A deficiency in children (4.2%) would constitute a public health problem of mild significance. Among non-pregnant mothers, the prevalence of vitamin A deficiency was 0.6%.

CHAPTER 1: INTRODUCTION

Anemia is an important public health problem in the Kyrgyz Republic. In the 1997 Demographic and Health Survey, the prevalence of anemia was 50% in children 6-36 months of age, 38% in women of reproductive age (Research Institute of Obstetrics and Pediatrics, 1997). Non-nationally representative studies undertaken since 1997 suggest that the prevalence of anemia has not declined, despite various campaigns that have included the distribution of iron supplements. The result of one such study, a representative survey in rural Talas Oblast conducted in 2008, showed the prevalence of anemia to be 50.6% in children 6 to 24 months of age and 24.5% in their non-pregnant mothers (MOH, 2010). The same survey showed low levels of ferritin in 71.0% of children 6 to 24 months of age, and 31.7% of their non-pregnant mothers. These data suggest that micronutrient deficiencies are among the most important nutritional problems affecting children in Kyrgyzstan.

The high prevalence of micronutrient deficiencies and corresponding developmental delays are likely due to the consumption of diets adequate in energy but of poor micronutrient quality. A 35.6% prevalence of exclusive breastfeeding during the first 6 months of life was reported in 2006 (National Statistics Committee [NSC], 2007). Mothers may give their children micronutrient deficient liquids (diluted cow's milk, mixes of milk, sugar, and water) and often introduce tea very early in life. Furthermore, mothers often introduce complementary foods which are high in calories, but low in nutritional quality.

To address micronutrient deficiency and poor dietary intake the Ministry of Health of the Kyrgyz Republic in close collaboration with the UNICEF country office and Kyrgyz-Swiss-Swedish Health Project developed a nation-wide health education campaign to improve diet during pregnancy, breastfeeding and complementary feeding practices with the aim to improve micronutrient status and eventually lower rates of stunting and overweight. The education campaign is community based with active involvement of the Village Health Committees (VHCs). This program is a nationally owned effort supported by the Ministry of Health (MOH), UNICEF, and the Kyrgyz-Swiss-Swedish Health Project. The campaign began in the Talas Oblast in June 9, 2009 and was subsequently conducted in the other oblasts during the remainder of 2009.

The educational campaign utilizes the infrastructure of the VHCs for the dissemination of educational messages to mothers. The VHCs consist of volunteers, mainly women, who learn about specific public health issues and ways to address the issues and then share their knowledge through campaigns and personal interactions with the targeted population. The VHCs are trained by the Republican Center for Health Promotion (MOH) in close collaboration with the Kyrgyz-Swiss-Swedish Health Project and UNICEF.

In addition to the nationwide VHC nutrition education campaign, in June 2009 the MOH began a pilot program in the Talas Oblast to distribute micronutrient powders (Gulazyk) to all children 6 to 24 months of age. Gulazyk is being distributed through the primary health care clinics and plans are that the VHCs will follow-up with mothers to reinforce the instructions received at the medical clinics on use of the Gulazyk. Future plans are for Gulazyk to be distributed to children throughout the country. In the meantime, a law on mandatory flour fortification was passed in July 2009, requiring all commercial mills to fortify flour with an approved combination of micronutrients.

In advance of these interventions, a national nutrition survey was conducted to provide the necessary information to monitor and evaluate the nutrition interventions as well as provide a baseline for future assessments to be conducted after the initiation of a national

micronutrient powder program and implementation of a flour fortification program. This survey would provide information on the prevalence of anemia and other micronutrient deficiencies in children and women of childbearing age, and guide future decision making at the national level.

Objectives

The primary objective of the household survey was to assess feeding practices and nutrition status of children 6 to 59 months. A secondary objective was to measure knowledge, attitudes and practices regarding feeding practices of children and the nutrition status of the mothers of children in the survey. Estimates were stratified by urban and rural populations. These assessments will allow the MOH and partners to plan, implement, monitor, and evaluate nutrition interventions.

The objectives of the 2009 Kyrgyzstan National Survey of Nutritional Status in Children 6 to 59 months of age and their mothers were to determine:

- knowledge, attitudes and practices related to infant and young child feeding
- the prevalence of stunting, wasting, and underweight among children 6 to 59 months of age
- the prevalence of underweight, overweight and obesity among mothers of children 6 to 59 months of age
- the prevalence of anemia, iron deficiency anemia and iron deficiency among children 6 to 59 months of age and their mothers
- the prevalence of folate deficiency among mothers
- the prevalence of vitamin A deficiency among children 6 to 59 months of age and their mothers

CHAPTER 2: METHODS

Survey population

To assess anemia, iron, and vitamin A status, the target populations were children 6 to 59 months of age and the mothers of these children. The primary target population was children 6-59 months of age. The secondary target population was mothers of the children who were surveyed. Since many nutritional indicators are altered with pregnancy, no blood samples or anthropometry measurements were taken from pregnant women.

Sampling

Sample size

The objective of the 2009 National Nutrition Survey was to describe the nutritional status of both the urban and rural populations based on a number of indicators including anemia, iron deficiency, iron deficiency anemia, and vitamin A deficiency in women and children. The sample was stratified into rural and urban. For each stratum (rural and urban), 33 clusters were included in the survey, with 30 children invited to participate in each cluster. Thus, the total number of children invited was 1980 (990 children in rural and 990 in urban areas). Although the mothers of all 1980 children were invited to participate, the number of mothers participating was expected to be smaller because some mothers might have more than 1 child randomly selected in the target age group and because some mothers may not have accompanied children to the interview. For more details on sample size calculations see Appendix I.

First stage of sampling (selection of clusters)

The Republican Health Information Center provided a list of primary health care clinics (known in Kyrgyzstan as Feldsher Obstetrics [Accoucher] Points [FAP's] or Family Group Practitioners [FGPs]) with the number of children assigned to each FAP/FGP. All children in Kyrgyzstan are assigned to a FAP/FGP based on the geographic location of residence. Each FAP/FGP was designated as a Primary Sampling Unit (PSU).

A national urban/rural code was assigned to all settlements in accord with the State Classification of Administrative and Territorial Objects (SOATO). Roughly 66% of the population lives in rural areas and 34% of the population lives in urban areas. Therefore in order to obtain the necessary sample size in both urban and rural areas, the PSUs were stratified by rural or urban residence.

After stratification by residence, 33 primary sampling units were selected for each stratum through a probability proportional to size (PPS) cluster sampling (66 PSUs in total) (for details on the cluster selection procedures, see Micronutrient Initiative, 2007). Using this method, the likelihood of a sampling unit being selected is proportional to the size of its population. For this survey, the probability of PSU selection depended on the number of children between the ages of 6 and 59 months assigned to each PSU.

Second stage of sampling

Before the beginning of the second stage of sampling, a list was gathered from every selected FAP/FGP of all children born during the period from June 1, 2004 through December 31, 2008. Thirty children were randomly selected from the lists from every FAP/FGP. Before

fieldwork in each PSU, the fieldwork coordinator informed all selected children of the day and time they should visit the FAP/FGP for participation in the study. Appointment times were staggered to prevent a situation when too many children were at a clinic at the same time. Children could arrive at the FAP/FGP with an individual who was not their mother.

On-site training

Survey Teams

Four field teams collected the data for the survey. Each team consisted of one team supervisor, two interviewers/anthropometrists, one phlebotomist/nurse and a driver. The Survey Coordinator was responsible for the organization and transport of supplies and laboratory specimens.

Training

Prior to data collection, a 3-day training workshop was conducted to prepare supervisors and field workers on various aspects of data collection. The supervisors attended an additional day of training to prepare them for their additional responsibility in the survey.

Immediately after the training sessions, the questionnaire was pilot tested in villages which had not been selected for the survey. On average, each team was responsible for 10 children and their mothers during the pilot study. The interviewers conducted the questionnaire and took anthropometric measurements of women and children. The phlebotomists obtained blood samples and the laboratory technicians processed the blood samples. After the pilot test, the group reconvened for one day to discuss logistics, and make adjustments to the questionnaire-based results of the pilot.

Data collection

Preparation for field work

The Ethics Committee under the Department of Drug Provision and Medical Equipment (DDPME) approved the survey protocol and biochemical handling and testing procedures (Protocol #9, dated 01/07/2009). This order of the Ministry of Health of Kyrgyz Republic outlined the responsibilities and obligations of health care facilities in the survey.

Before beginning fieldwork, the Survey Coordinator obtained a letter that was signed and contained the seal of the MOH that provided an introduction to the survey including the survey background, justification and an explanation of the methodology. This letter was sent to the leaders of all communities in selected clusters. Before fieldwork began, the field supervisor first visited the village officials, shared the letter, explained the purpose of the survey, answered questions and received permission to conduct the survey. In each cluster, the heads of the primary health care facilities were informed in advance.

Before the survey teams arrived in the villages, the Survey Coordinator contacted the village health worker and obtained a list of all children eligible for inclusion in the survey. The Survey Coordinator randomly selected the children for inclusion in the survey using a computer generated random number list. The health care workers invited those children and their mothers to the health clinic on the pre-determined day.

Field work

Data collection started on June 9 and was completed on July 18. Four field teams collected data through face-to-face interviews with mothers or child caretakers. The survey

team received the mother/child as they arrived for their survey appointments, explained the survey to the mother and received written consent before proceeding to data collection. No substitutions from the original randomly selected participant list were made. If a mother on the list did not arrive with her child, the medical worker and a member of the survey team visited the home and invited the mother to the health clinic. If the mother refused to visit the health clinic but agreed to participate, measurements were taken in the home. If the mother refused to participate, the reason was noted on the household questionnaire.

Table 2-1 Survey questionnaire modules, National Nutrition Survey, Kyrgyzstan 2009

Module	Scope of questions
1. Demographics	Mother and child's age, child gender, ethnic group, mother's employment, the reason of mother's absence at interview if applicable, and family size
2. Household characteristic module	Questions regarding household items and building materials used to develop an economic index
3. Women's module	Woman's age, education level, reproductive status, and knowledge of child nutrition
4. Breastfeeding and infant feeding module	History of breastfeeding and infant feeding for the child
5. Attitude and behavior module	Attitude of the mother on breastfeeding, knowledge of complementary feeding practices
6. Dietary advice module	From whom mothers receive advice on nutrition, impact of consultations from medical professionals, family, friends, neighbors on breastfeeding and complementary feeding practices
7. Vitamins/supplements module	Vitamin and supplement intake during pregnancy, child history of vitamin or mineral supplement intake including intake in the case of diagnosed anemia
8. Contact module	Knowledge of and contact with Village Health Committees
9. Anthropometry module	Height/length and weight measurements
10. Blood sample module	Blood sample collected, hemoglobin analysis

Data collection instrument

The questionnaire consisted of a joint mother/child questionnaire and contained modules on socio-demographic information, infant and young child feeding patterns, supplement use, knowledge, attitude and practices on infant and young child feeding, VHCs, and anthropometric measurements (Table 2-1). The questionnaire was written in English and then translated into Kyrgyz and Russian languages and pre-tested. They were then back translated into English to ensure accuracy. Amendments were made to the survey instrument after pre-testing the survey in the field (see Appendix II for survey instruments). In the north of the country, interviewers were selected who could conduct the interviews in Kyrgyz and Russian. In the south of the country, interviewers were selected who could conduct the interviews in Kyrgyz, Uzbek and Russian.

Anthropometry

The age of the child was calculated based on the difference between the child's birth date and the date of the measurement. Women's ages were based on self-reported age in years. For children, recumbent length was measured for those less than 24 months and standing height for those ≥ 24 months. For all children length/height was measured to the nearest 0.1 cm using a field appropriate Shorr stadiometer (Olney, Maryland, USA). Anthropometrists measured the height of mothers using a Harpinden pocket Stadiometer. All subjects were measured without shoes and hair adornments. UNICEF Seca Uniscales were used to measure body weight of children and their mothers. For children who could not stand alone, the weight of the children was assessed using the mother-child function on the scale.

Blood collection and biological sample processing

Blood collection

The phlebotomist collected capillary blood samples into a Microtainer® containing the anticoagulant EDTA by performing a finger stick. The phlebotomist first wiped the middle finger clean with an alcohol swab, and after drying with gauze, the finger was punctured using a retractable lancet. The first drop was wiped clean with gauze and the second drop of blood was collected into a HemoCue® cuvette. Subsequent drops were collected into the Microtainer®. Phlebotomists gently inverted the Microtainer® 10 times before storage to ensure that blood came into complete contact with the EDTA. For each participant, 1 Microtainer® was labeled with a self-adhesive, preprinted identification number immediately before blood collection began. In the event of two unsuccessful attempts, capillary blood collection efforts were discontinued. If this occurred, a note was made on the questionnaire regarding the reason for a missing blood sample from that participant. Blood collection was conducted on blue absorbent pads, and standard laboratory safety precautions were followed.

The phlebotomists stored the labeled Microtainer® in a cold box with frozen gel packs. Padding materials were used to prevent direct contact between Microtainers® and frozen gel packs. The samples were stored in cold boxes at a temperature of 4-10°C. The phlebotomist closely monitored the temperature of the cold boxes during blood collection. Additional gel packs were stored in a backup cold box to be used if needed.

Hemoglobin measurement

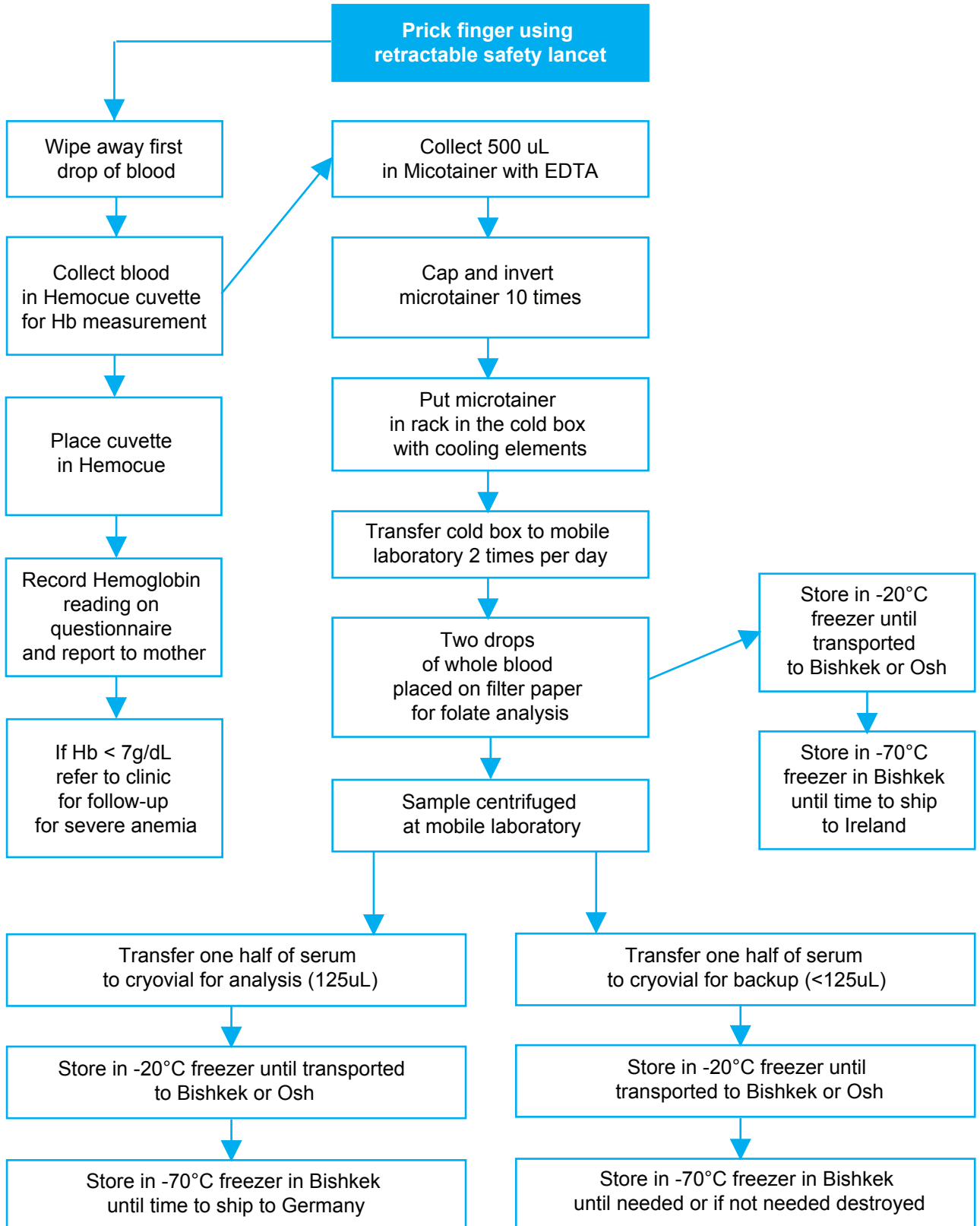
Hemoglobin was assessed in the field using the HemoCue® photometric instrument (Model 301, HemoCue AB, Angelholm, Sweden). Laboratory personnel collected capillary blood samples through a finger stick using a retractable lancet. After the first drop, the finger was then wiped clean and the second drop was drawn into a HemoCue® cuvette. Quality control of the HemoCue® instrument was ensured by using liquid controls at the beginning and end of each day. Log sheets of all the quality control measurements were maintained by the phlebotomist/nurse on each survey team.

During field surveys, if the hemoglobin value indicated that the child had anemia (hemoglobin < 11.0 g/dL), his or her caregiver was informed, and the child was referred to the local health facility. If the hemoglobin level indicated that the child had severe anemia (hemoglobin < 7.0 g/dL), the phlebotomist informed his or her caregiver and arranged a medical check-up for the child. At the end of each day, the team leader provided the FAP/FGP with a list of the hemoglobin results of all subjects.

Figure 2-1 Blood specimen flow chart, National Nutrition Survey, Kyrgyzstan 2009

Immediately before drawing blood, label the microtainer for the subject

GOAL = 500 uL capillary blood collection



Biological sampling processing and storage

Blood samples were delivered in Microtainers® to a mobile laboratory at the end of data collection each day and were maintained at a temperature between 4-10°C. Figure 2-1 shows the flow of the blood specimens taken from women participants. (The flow of blood specimens taken from child participants was identical except that dried blood spots (DBS) were not prepared).

For blood specimens taken from women, laboratory assistants prepared dried blood spots samples on a special filter paper (Whatman 903® Lot W041 A01836) in order to analyze the content of whole blood folate. After application of two drops of whole blood on filter paper, the filter paper cards were labeled and lab assistants dried the paper cards at room temperature for three hours. The specimens were then packed in calking paper (glassine paper) with water sorbents and stored them at -20°C.

After centrifugation and separation of the plasma into cryovials, the cryovials were labeled and stored in a -20°C freezer. After the completion of fieldwork, frozen cryovials were transported on dry ice to the State Health Epidemiologic Surveillance Center (SES) in Bishkek where samples were stored at a temperature of -70°C until shipment. Finally, cryovials and DBS were express mailed on dry ice to Germany and Ireland, respectively, for analysis.

Analysis of biochemical indicators of iron status (ferritin, sTfR), vitamin A status (retinol binding protein [RBP]) and markers of acute inflammation (C-reactive protein [CRP] and α 1-glycoprotein acid [AGP]) in blood plasma was conducted in a laboratory in Germany (DBS-Tech, Willstaett, Germany (Erhardt, 2004). Analysis of whole blood folate using DBS was performed at the Hematology Laboratory of St. James Hospital (Dublin, Ireland) (O'Broin, 1992). A brief summary of quality control assurance for biochemical indicators can be found in Appendix III.

Data reduction and statistical analysis

On site, the survey team leaders checked, verified, and compiled the questionnaires by cluster and then delivered them to the central office of the NSC for data processing. The data were entered into computers using CSPRO software. Data were entered in duplicate to ensure quality and consistency of data. The analysis of data was conducted using PASW (SPSS) software (<http://www.spss.com/software/statistics/>). Confidence intervals and design effects (DEFF) for key variables were calculated at the NSC based on complex sampling methods (PASW Complex Samples) (<http://www.spss.com/software/statistics/complex-samples/>). Confidence intervals, design effects, and intra-class correlation coefficients for major indicators can be found in Appendix IV. In each table presented in this report, the N is always the denominator. Prevalence and 95% confidence intervals were calculated for various nutrition and household indicators. Confidence intervals provide a range in which the true population prevalence or coverage is likely to be captured (for additional information on confidence intervals, see Appendix V: Interpretation of Prevalence and Confidence Intervals).

The survey sample is not self-weighted; different sampling fractions were used in each stratum since the size of the urban and rural populations varied. For this reason, sample weights were calculated and these weights were used in the subsequent analyses of the survey data.

The major component of the weight is the reciprocal of the sampling fraction employed in selecting respondents

$$W_i = 1/F_i$$

where these sampling fractions are equal to the product of the probability of selection of the cluster (in that particular sampling domain) and the probability of selection of a child in the cluster.

$$F_i = P_{1i} * P_{2i}$$

A second component which has to be taken into account in the calculation of sample weights is the level of non-response for individual interviews. The adjustment for non-response is equal to the inverse value of:

$$RR = \text{Number of interviews} / \text{Number of invited respondents}$$

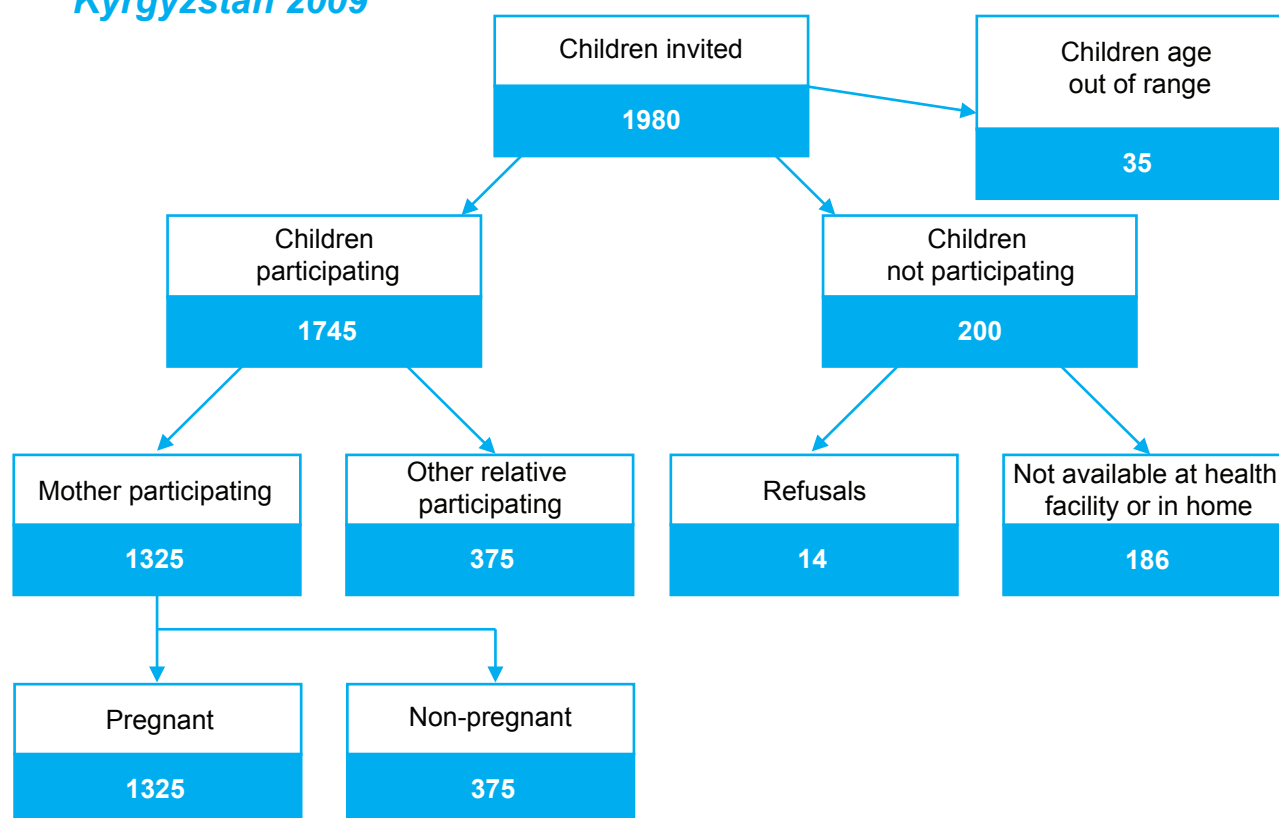
After the completion of fieldwork, response rates were calculated for each cluster to adjust the sample weights.

CHAPTER 3: DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Response rates

A total of 1980 children and their mothers were invited for interviews. However, 35 children were not in the survey age range (6.0 to 59.9 months of age); these children and their mothers were excluded from further consideration leaving a total of 1945 children (see Figure 3-1). Of the 1945 remaining children, 89.7% children participated in the survey. Interviews were conducted with 1325 mothers of participating survey children, of whom 1162 were non-pregnant and 163 were pregnant. Among mothers, 41 non-pregnant and 4 pregnant mothers had 2 children in the survey. (No mother had more than 2 children). Anthropometry measurements and blood samples were requested from all children and from their non-pregnant mothers.

Figure 3-1 Flow chart of interviews, National Nutrition Survey, Kyrgyzstan 2009



Note: 41 non-pregnant and 4 pregnant mothers had 2 children in the survey and the number of participating mothers and other relatives is reduced accordingly.

Reasons for non-response and characteristics of respondents

Limited information was collected on reasons for non-response (Table 3-1). Among the 235 households that did not participate, the principal reason for non-participation was out of age range (20.0%), family moved from village (20.0%) and mother had to work (14.0%). Of the 1745 children who participated in the survey, 78.5% of interviews were conducted with mothers, 7.8% with grandmothers, 6.0% with aunts and 7.7% with others. An equal

proportion of interviews were conducted in urban and rural areas (49.5% versus 50.5%, respectively).

Table 3-1: Reasons for non-response, National Nutrition Survey, Kyrgyzstan 2009

	N	%
Reasons interview not obtained	235	
Children to age out of range		20.0
Family moved from village		20.0
Mother had to work		14.0
Mother refused		4.7
Child sick		3.8
Mother sick		1.7
Family (husband, mother-in-law, etc) refused		1.3
Was not invited by the health clinic		0.9
Other		37.9
Don't know/can't find out		1.3

Note: Percentages are un-weighted.

Demographic and socio-economic characteristics of respondents

The average age of children was 30.1 (SD 15.3) months. There were slightly fewer males than females (male= 48.8%, female= 51.2%). The age of mothers included in the survey ranged from 17 to 55 years old. The majority of mothers were in the 25-34 year old age group (Table 3-2). The mean age in years was 29.2 years (SD 5.9).

Table 3-2 Age and sex distribution of survey participants, National Nutrition Survey, Kyrgyzstan 2009

Target Group	Urban (N=863) %	Rural (N=882) %	National (N=1745) %
Children			
6 - 11 months	10.4	10.5	10.5
12 - 23 months	26.4	22.7	24.5
24 - 35 months	24.9	24.1	24.5
36 - 47 months	17.8	21.7	19.8
48 - 59 months	20.4	21.0	20.7
Sex			
Male	48.0	49.5	48.8
Female	52.0	50.5	51.2
Mothers	Urban (N=693)	Rural (N=632)	National (N=1325)
17 - 24 years	22.2	24.4	23.2
25 - 34 years	59.0	55.2	57.3
35 + years	18.8	20.4	19.6

Note: Percentages are un-weighted.

The majority of mothers of the majority of children identified themselves as Kyrgyz (71.1%) (Table 3-3).

Table 3-3 Frequency distribution of the mothers' ethnicity (identified by mother's ethnicity) by residence, National Nutrition Survey, Kyrgyzstan 2009

Ethnic Group	Urban (N=693)	Rural (N=632)	National (N=1325)
	%	%	%
Kyrgyz	69.3	73.1	71.1
Russian	8.1	2.2	5.3
Kazakh	0.1	0.3	0.2
Uzbek	17.9	22.6	20.2
Other	4.6	1.7	3.2

Note: Percentages are un-weighted

Among mothers, 52.2% had completed secondary education, 16.6% had completed secondary technical education, and 24.2% had completed higher education (Table 3-4).

Table 3-4. Education level of mothers by rural and urban residence, National Nutrition Survey, Kyrgyzstan 2009

Highest level of school completed	Urban (N=693)	Rural (N=632)	National (N=1325)
	%	%	%
Never attended	0.0	0.3	0.2
Primary (1-4 grades)	0.0	0.3	0.2
Incomplete secondary (5-9)	6.4	7.3	6.8
Complete secondary (10-11)	43.8	61.3	52.2
Technical school	16.6	16.5	16.6
Higher education	33.2	14.3	24.2

Note: Percentages are un-weighted.

Table 3-5 Occupation of mothers among those who worked outside the home or studied by rural and urban residence, National Nutrition Survey, Kyrgyzstan 2009

Occupation	Urban (N=693)	Rural (N=632)	National (N=1325)
	%	%	%
Laborer (in the fields)	12.3	54.0	34.0
Professional	58.7	38.0	47.9
Sells fruit/other products	9.4	3.3	6.3
Employee in a business	13.0	3.3	8.0
Student	4.3	0.7	2.4
Business owner	2.2	0.7	1.4

Note: Percentages are un-weighted.

Approximately 78.3% of mothers did not work outside the home or study at the time of interview. Of the mothers who reported working or studying (N=288), 34.0% reported working in the fields and 47.9% reported a professional occupation (Table 3-5). Among mothers who resided in rural areas 54.0% reported working in the fields compared with 12.3% of mothers who resided in urban areas.

Among mothers, 57.7% reported having one child; 36.7%, two children, and 5.6%, three or more children (Table 3-6).

Table 3-6 Percent of mothers reported to have 1, 2, 3, or 4 or more children by residence, National Nutrition Survey, Kyrgyzstan 2009

	Urban (N=693)	Rural (N=632)	National (N=1325)
	%	%	%
# of living children	58.0	57.3	57.7
1 child	36.4	37.0	36.7
2 children	5.2	5.7	5.4
3 children	0.4	0.0	0.2
4 or more children	4.3	0.7	2.4

Note: Percentages are un-weighted.

CHAPTER 4: INFANT AND YOUNG CHILD FEEDING PRACTICES, KNOWLEDGE AND ATTITUDES

WHO recommends exclusive breastfeeding for the first six months and then at six months introduction of solid, semi-solid and soft foods is recommended to supplement the child's diet (WHO, 2001). Appropriate infant and young child feeding (IYCF) practices include altering the frequency, variety, and amount of foods as a child gets older, while continuing breastfeeding until 2 years of age.

IYCF practices

Optimal IYCF practices within the first two years of life are integral to child survival and healthy child development. In an effort to standardize IYCF indicators that can be used for population-based surveys, WHO convened a group of experts to establish a set of indicators on appropriate feeding practices for children under the age of two in 2007 (WHO, 2008). The population-level indicators that were developed under the guidance of the WHO are used primarily for the purpose of 1) assessing comparisons on the national or sub-national levels and to monitor trends over time 2) targeting at risk populations, interventions, and allocation of resources 3) monitoring the progress towards achieving goals and evaluating the impact of interventions. The WHO Indicators for Assessing Infant and Young Child Feeding Practices were used in this survey to measure infant and young child feeding practices. Because children under 6 months of age were not included in the survey, we could not use the standard WHO indicators for exclusive breastfeeding. Based on maternal recall, we defined exclusive breastfeeding under 6 months of age as the proportion of children 6-23.9 months of age whose mothers reported that they were exclusively breastfed (no other liquids, milks, or other foods) until 6 months of age.

Definitions of the WHO indicators for infant and young child feeding practices (WHO, 2008)

Early initiation of breastfeeding*: **Proportion of children born in the last 23.9 months who were put to the breast within one hour of birth**

Children born in the last 23.9 months who were put to the breast within one hour of birth

Children born in the last 23.9 months

** included only children 6-23.9 months*

Ever breastfed*: **Proportion of children born in the last 23.9 months who were ever breastfed**

Children born in the last 23.9 months who were ever breastfed

Children born in the last 23.9 months

** included only children 6-23.9 months*

Continued breastfeeding at 1 year: **Proportion of children 12-15.9 months of age who are fed breast milk**

$$\frac{\text{Children 12-15.9 months of age who received breast milk during the previous day}}{\text{Children 12-15.9 months of age}}$$

Continued breastfeeding at 2 years: **Proportion of children 20-23.9 months of age who are fed breast milk**

$$\frac{\text{Children 20-23.9 months of age who received breast milk during the previous day}}{\text{Children 20-23.9 months of age}}$$

Introduction of solid, semi-solid or soft foods: **Proportion of infants 6-8.9 months of age who receive solid, semi-solid or soft foods**

$$\frac{\text{Infants 6-8.9 months of age who received solid, semi-solid or soft foods during the previous day}}{\text{Infants 6-8.9 months of age}}$$

Minimum dietary diversity: **Proportion of children 6-23.9 months of age who receive foods from ≥ 4 food groups**

$$\frac{\text{Children 6-23.9 months of age who received foods from } \geq 4 \text{ food groups during the previous day}}{\text{Children 6-23.9 months of age}}$$

Note: The 7 food groups used for calculation of this indicator are: dairy products (milk, yogurt, cheese); grains, roots and tubers (kasha, potatoes, noodles, beets, bread, biscuits or baby cereal); legumes and nuts (haricot, pea or nuts); flesh foods (meat, fish, poultry, liver/organ meat); eggs; vitamin A rich fruits and vegetables (carrots, pumpkin and tomatoes); other fruits and vegetables (spinach, dried apricots, cucumbers)

Minimum meal frequency: **Proportion of breastfed and non-breastfed children 6-23.9 months of age who receive solid, semi-solid, or soft foods (but also including milk feeds for non-breastfed children) the minimum number of times or more**

Breastfed children 6-23.9 months of age who received solid, semi-solid or soft foods the minimum number of times or more during the previous day

$$\frac{\text{Breastfed children 6-23.9 months of age}}{\text{Breastfed children 6-23.9 months of age}}$$

Non-breastfed children 6-23.9 months of age who received solid, semi-solid or soft foods or milk feeds the minimum number of times or more during the previous day

$$\frac{\text{Non-breastfed children 6-23.9 months of age}}{\text{Non-breastfed children 6-23.9 months of age}}$$

Note: For breastfed children, the minimum number of times was ≥ 2 for children 6-8.9 months and ≥ 3 for children 9.0-23.9 months. For non-breastfed children, the minimum number of times was ≥ 4 for children 6-23.9 months

Adequate milk feeding frequency for non-breastfed children: **Proportion of non-breastfed children 6-23.9 months of age who receive at least 2 milk feedings**

Non-breastfed children 6-23.9 months of age who received at least 2 milk feedings during the previous day

Non-breastfed children 6-23.9 months of age

Minimum acceptable diet: **Proportion of children 6-23.9 months of age who receive a minimum acceptable diet (apart from breast milk)**

Breastfed children 6-23.9 months of age who had at least the minimum dietary diversity AND the minimum meal frequency during the previous day

Breastfed children 6-23.9 months of age

Non-breastfed children 6-23.9 months of age who received at least 2 milk feedings AND had at least the minimum dietary diversity AND the minimum meal frequency during the previous day

Non-breastfed children 6-23.9 months of age

The estimates of indicators for infant and young child feeding practices for Kyrgyzstan are summarized in Table 4-1. A total of 73.7% of mothers started breastfeeding their newborn infant during the first hour after birth. Only 16.3% of children were exclusively breastfed during the first 6 months of their life. A total of 97.9% mothers had ever breastfed their children, 65.8% continued breastfeeding at 1 year and 13.5% continued breastfeeding at 2 years.

In addition to breast milk, within 6 to 8.9 months after birth, 78.6% of children were given solid or semi-solid foods. Approximately 57.5% of the children aged 6-23.9 months met the criteria for minimum dietary diversity (four or more food groups) and 67.6% met the criteria for minimum meal frequency (three or more times a day), together resulting in 37.2% reaching the criteria for minimum acceptable diet. Among children aged 6-23.9 months, 48.1% consumed breast milk and food appropriate for their age (solid, semi-solid, or soft foods). A total of 57.6% of non-breastfed children aged 6-23.9 months were fed milk with the recommended frequency (at least 2 milk feedings a day).

Table 4-1 Prevalence of infants completing each indicator for appropriate infant and young child feeding practices, National Nutrition Survey, Kyrgyzstan 2009

Indicator	Urban			Rural			National		
	N	% (95% CI)	N	% (95% CI)	N	% (95% CI)	N	% (95% CI)	
Early initiation of breastfeeding	290	76.3 (70.8 81.8)	244	72.0 (63.7 80.3)	534	73.7 (68.3 79.1)			
Exclusive breastfeeding under 6 months	290	19.1 (13.4 24.8)	246	14.5 (9.0 20.1)	536	16.3 (12.3 20.3)			
Ever breastfed	290	96.9 (94.9 99.0)	246	98.5 (96.3 100)	536	97.9 (96.4 99.4)			
Continued breastfeeding at 1 year	77	55.3 (42.8 67.9)	53	73.6 (56.4 90.9)	130	65.8 (55.0 76.5)			
Continued breastfeeding at 2 years	64	18.9 (7.5 30.3)	55	10.2 (0 23.5)	119	13.5 (4.6 22.5)			
Consuming minimum dietary diversity	27	60.6 (39.8 81.4)	34	86.0 (73.8 98.2)	61	78.6 (68.1 89.1)			
Consuming minimum meal frequency	290	62.3 (53.6 71.0)	246	54.4 (44.7 64.2)	536	57.5 (50.7 64.2)			
Consuming minimum acceptable diet	288	67.5 (57.3 77.7)	246	67.6 (60.1 75.1)	534	67.6 (61.7 73.4)			
Age-appropriate breastfeeding	290	41.3 (31.7 50.8)	246	34.8 (26.1 43.4)	536	37.2 (30.9 43.6)			

Note: Percent estimates are weighted and 95% confidence intervals adjusted for cluster survey design *CIs= Confidence Interval

Knowledge and attitudes of mothers regarding infant and young child feeding

Among mothers, 89.0% mothers considered breastfeeding very important for the healthy growth of a child, while only 21.3% considered milk substitutes such as formula or other types of milk as very important for the growth of their child (Table 4-2).

Table 4-2 Perceived importance of breastfeeding and feeding other types of milk/formula for a baby's health and nutrition as reported by mothers, National Nutrition Survey, Kyrgyzstan 2009

Feeding practice	Urban (N=693) % (95% CI)			Rural (N=632) % (95% CI)			National (N=1325) % (95% CI)		
Breastfeeding									
Very important	87.7	(80.9	92.3)	89.7	(84.0	93.5)	89.0	(84.8	92.2)
Important	12.1	(7.5	18.9)	9.5	(5.7	15.3)	10.3	(7.2	14.6)
Somewhat important	0.1	(0.0	1.0)	0.2	(0.0	1.1)	0.1	(0.0	0.7)
Not important	0.1	(0.0	1.0)	0.7	(0.2	1.7)	0.5	(0.2	1.2)
Feeding animal milk or formula									
Very important	25.6	(18.0	35.2)	19.1	(12.8	27.6)	21.3	(16.2	27.6)
Important	58.8	(50.5	66.7)	63.6	(55.8	70.7)	62.0	(56.2	67.5)
Somewhat important	14.8	(11.4	19.1)	16.0	(12.0	20.9)	15.6	(12.6	19.1)
Not important	0.7	(0.3	1.8)	1.3	(0.7	2.7)	1.1	(0.6	2.0)

Note: CI= confidence interval. Prevalence estimates are weighted and 95% confidence intervals are adjusted for cluster survey design.

Among mothers (N=1325), 99.5% (n=1318) thought that breastfeeding had advantages. Among mothers who perceived that breastfeeding had advantages, the main reported benefits of breastfeeding were that it is healthy for baby and/or mother, is rich in vitamins/nutrients, and that it protects baby from infections (Table 4 3).

When mothers were asked how long a baby should be breastfed, on average they reported that children ideally should be breastfed for the first 22.0 months (SD 7.3). Mothers reported children should be given other liquids (boiled water, tea, animal milk) at the age of 4.0 months (SD 2.7), and children should start eating other foods at the age of 7.1 months (SD 2.7).

Among mothers (N=1325), 8.7% (N=115) thought that breastfeeding had disadvantages. Among the mothers who perceived disadvantages, the most common reported disadvantages were that mother cannot leave baby for very long (56.4%) and that the mother must be very careful about her diet (46.9%) (Table 4-4).

Table 4-3 Advantages of breastfeeding as reported by mothers who perceived that breastfeeding had advantages, National Nutrition Survey, Kyrgyzstan 2009

Advantage of breastfeeding	Urban (N=688) % (95% CI)			Rural (N=630) % (95% CI)			National (N=1318) % (95% CI)		
Healthy for baby and/or mother	91.3	(85.5	94.9)	85.6	(77.9	90.9)	87.5	(82.2	91.4)
Breast milk rich in vitamins/nutrients	83.1	(77.1	87.8)	81.2	(74.1	86.7)	81.8	(76.8	85.9)
Protects from infections	71.8	(63.9	78.6)	67.9	(60.6	74.5)	69.2	(63.7	74.3)
Saves time	24.3	(17.9	32.2)	20.9	(13.8	30.4)	22.0	(16.6	28.6)
Saves money	23.4	(16.8	31.4)	21.7	(15.2	29.9)	22.2	(17.2	28.2)
Safer than bottle feeding	29.7	(20.7	40.7)	26.2	(18.8	35.1)	27.4	(21.4	34.2)

Note: CI= confidence interval. Percent estimates are weighted and 95% confidence intervals are adjusted for cluster survey design. Mothers who perceived that there were advantages to breastfeeding were asked: "In your opinion, what are some advantages to breastfeeding? Predefined response options were not read aloud, but rather respondents' individual answers were recorded and categorized.

Table 4-4 Disadvantages of breastfeeding reported by mothers who perceived that breastfeeding had disadvantages, National Nutrition Survey, Kyrgyzstan 2009

Disadvantages of breastfeeding	Urban (N=80) % (95% CI)			Rural (N=35) ^a % (95% CI)			National (N=115) % (95% CI)		
Mother cannot leave baby for very long	66.3	(53.3	77.2)	46.3	(25.1	69.0)	56.4	(43.3	68.7)
Mother must be careful about her diet	43.0	(30.9	55.9)	50.9	(35.0	66.7)	46.9	(36.9	57.2)
Causes sore nipples	13.1	(5.6	27.7)	8.5	(3.0	21.6)	10.8	(5.7	19.6)
Concerned about sufficient breast milk	14.3	(5.6	31.8)	21.4	(9.6	41.2)	17.8	(9.8	30.2)
Concerned about adequate nutrients	13.9	(5.8	29.8)	22.1	(9.5	43.6)	18.0	(9.8	30.8)

Note: CI= confidence interval percent estimates are weighted and 95% confidence intervals are adjusted for cluster survey design. Mothers who perceived that breastfeeding had disadvantages were asked: "In your opinion, what are some disadvantages to breastfeeding? Predefined response options were not read aloud, but rather respondents' individual answers were recorded and categorized. ^aPrevalence estimate is based on 25-49 observations and should be interpreted cautiously.

Sources of nutrition information

Mothers were asked about the sources that they had consulted for diet during pregnancy and breastfeeding advice. They were asked questions about information that they had

received from the Village Health Committee (VHC) volunteers, medical professionals, friends, family, and neighbors on nutrition during pregnancy and infant feeding practices. Since 2004, VHC volunteers trained by the Republican Center for Health Promotion (MOH) have been holding interactive discussions with community members throughout rural Kyrgyzstan on various health issues. At the time the National Nutrition Survey was conducted (June 2009), the VHC had begun a program to inform mothers about diet during pregnancy and breastfeeding; however, the program had not yet been implemented in all rural villages.

Mothers reported receiving nutrition advice from multiple sources. Mothers were asked to report all the sources that they had consulted for diet during pregnancy and breastfeeding advice. Of all mothers (N=1325), 78.0% reported receiving advice on diet during pregnancy (Table 4-5). Mothers received information regarding diet during pregnancy mainly from medical professionals (75.6%), and family members, friends and neighbors (68.9%).

Mothers received advice regarding breastfeeding from medical staff (86.0%), and family members, friends or neighbors (73.9%). In rural areas, 57.0% (CI's 45.2 to 68.1) of mothers who had heard of VHCs (n=155) reported ever having received health advice from a VHC member. Of those who reported receiving advice (n=87), 65.7% (52.9%, 76.6%) reported they had received advice from a VHC member on either diet during pregnancy or breastfeeding.

Table 4-5 Source of advice received on diet and breastfeeding, National Nutrition Survey, Kyrgyzstan 2009

	Urban (N = 693) % матерей (95% CI)			Rural (N = 631) % матерей (95% CI)			National (N = 1325) % матерей (95% CI)		
Women who reported receiving advice on:									
Diet during pregnancy	79.5	(73.3	84.5)	77.2	(71.2	82.3)	78.0	(73.6	81.8)
Source of advice on diet during pregnancy:									
Doctor, nurse, midwife, feldsher	76.4	70.5	81.4	75.1	68.6	80.7	75.6	70.9	79.7
Family, friend, neighbor	69.1	61.4	75.9	68.8	61.0	75.7	68.9	63.2	74.1
Source of advice on breastfeeding:									
Doctor, nurse, midwife, feldsher	82.5	(75.3	88.0)	87.8	(82.6	91.6)	86.0	(82.0	89.3)
Family, friend, neighbor	71.6	(64.5	77.8)	75.0	(68.0	80.9)	73.9	(68.7	78.4)

Note: CI=confidence interval; Percent estimates are weighted and 95% confidence intervals are adjusted for cluster survey design.

Mothers were also asked how long they were advised to breastfeed by medical professionals, and family members, friends, or neighbors. On average, mothers reported that medical professionals recommended breastfeeding for 22.0 months (SE0.22), while family members, friends and neighbors recommended breastfeeding for 21.7 months (SE0.24) (Table 4-6). Medical professionals, family members, friends, and neighbors advised mothers to exclusively breastfeed for approximately 9 months.

Table 4-6 Advice received on breastfeeding, National Nutrition Survey, Kyrgyzstan 2009

	Urban			Rural			National		
	N	Mean	SE	N	Mean	SE	N	Mean	SE
Average age advised to stop breastfeeding:									
by doctor, nurse, midwife, feldsher	443	20.87	0.295	400	23.27	0.330	843	22.01	0.224
by family, friend, neighbor	427	20.58	0.297	397	22.98	0.377	824	21.73	0.242
Average age advised to breastfeed without giving other liquids or solids:									
by doctor, nurse, midwife, feldsher	560	8.93	0.279	540	8.63	0.275	1100	8.78	0.196
by family, friend, neighbor	483	9.29	0.313	457	8.87	0.327	940	9.08	0.226

Note: SE=standard error. Mean estimates are weighted and SE's are adjusted for cluster survey design

CHAPTER 5: ANTHROPOMETRY

This chapter documents the anthropometric measurements of children and their mothers and compares them to international standards for growth. Anthropometric indicators of height-for-age, weight-for-age, weight-for-height were determined for all children. The age of the child was calculated based on the difference between the child's birth date and the date of the measurement. Supine length rather than height was measured for children under 24 months of age. Women's ages were based on self-reported age in years.

Interpretation of anthropometric indicators for children

Reference: The WHO growth curves for nutritional status were used for interpreting the anthropometric data of children under five (WHO, 2006). This system is based on parameters of height and weight of children receiving optimal nutrition in six different countries. The WHO system bases growth curves on from various countries where children receive proper nutrition and health care in a hygienic environment. The present system is appropriate to use for all population groups. Healthy and well-nourished children from most countries have growth patterns similar to the parameters of this system.

Z-scores: The anthropometric indices used for evaluating the nutritional status of children include height-for-age, weight-for-age, and weight-for-height. These indices are interpreted using classifications based on Z-scores (standard deviation units from the reference median). The WHO recommends that a Z-score cut-off point of <-2 be used to classify low height-for-age (stunting), low weight-for-age (underweight), and low weight-for-height (wasting) for estimating the prevalence of malnutrition (WHO, 1995). A Z-score cut off of <-3 indicates severe wasting, stunting or underweight. The reference Z-score distribution for each index has a mean of 0.0 and a standard deviation of 1.0. A Z-score cut-off of $+2$ should be used to classify high weight-for-height for estimating the prevalence of overweight. A Z-score of -2 corresponds to the 2.3rd percentile of the reference distribution, while a Z-score of 2 corresponds to the 97.7th percentile on the reference distribution. Thus, with any of the indicators, a prevalence less than or equal to 2.3% is regarded as the surveyed population being free from malnutrition based on that indicator.

Height-for-age: A low height-for-age indicates growth stunting, which reflects a long-term deficit of nutritional status and/or a history of illness and disease such as diarrhea and acute respiratory infection. On a population level, a high prevalence of stunting is usually associated with poor socioeconomic conditions and a greater risk for frequent and/or early exposure to adverse environmental conditions such as illness and inadequate nutrition. A decrease in the prevalence of stunting usually parallels improvements in economic conditions (WHO, 1995).

Weight-for-age: This index is a composite of height-for-age and weight-for-height. On a cross-sectional basis, weight-for-age is less useful than height-for-age or weight-for-height in defining nutritional status. In most populations where there are few children with low weight-for-height, the weight-for-age status provides essentially the same information as height-for-age.

Weight-for-height: Low weight-for-height, or wasting, is an indicator of acute under-nutrition and is often the result of severe food shortages and/or prolonged illness.

Records with potentially erroneous data were excluded from analysis based on the following standard Z-score cutoffs (WHO, 1995): HAZ <-6.0 or >6.0; WAZ <-6.0 or >5.0; WHZ <-5.0 or >5.0. The Standard Deviation (SD) of the Z-score provides information on the spread of the distribution and the quality of the anthropometric measurements done for a survey. According to the 1995 WHO guidelines, surveys with Z-scores outside the ranges listed below are suggestive of inaccurate anthropometric measurements and/or inaccurate age information: HAZ (1.10 to 1.30), WAZ (1.00 to 1.20) and WHZ (0.85 to 1.10) (WHO, 1995). Anthropometry results for the WHO global database on child growth and malnutrition can be found in Appendix VI.

Weight, height and body mass index (BMI) were determined for all non-pregnant mothers. Adult nutritional status was assessed by calculating the Body Mass Index (BMI) from the weight and height of non-pregnant women included in the survey (BMI= weight (kg)/height² (m)). The categories for BMI were as follows: underweight (<18.5); normal weight (18.5-24.9); overweight (25-29.9); and obese (≥30.0) (WHO, 1995).

Children aged 6-59 months

A total of 1743 children aged 6-59 months had anthropometric measurements recorded; however, data from 10 children were excluded after applying the z-score cut offs (10 for HAZ) and data from 7 children were excluded after applying cutoffs for WHZ. (No children were excluded after applying cutoffs for WAZ). The SD's (un-weighted) were 1.331 for HAZ, 0.986 for WHZ and 1.018 for WAZ. The SD's for both WHZ and WAZ fall within the acceptable range for data quality; however, the SD for HAZ falls outside the acceptable range and measurements may be slightly inaccurate (inaccurate height/length measurements or age determination). Although the SD for HAZ is wider than expected based on 1995 WHO, these guidelines were based on an earlier growth reference and it has been shown that higher standard deviations may be expected based on the 2006 WHO growth reference (Mei 2007).

Table 5-1 Distribution of anthropometry measurements among children aged 6-59 months, National Nutrition Survey, Kyrgyzstan 2009

Anthropometry index	N	Mean	(95% CI)	
WHZ (Wasting WHZ < -2)	1736	0.394	(0.321	0.468)
HAZ (Stunting HAZ < -2)	1733	-1.037	(-1.142	-0.932)
WAZ (Underweight WAZ < -2)	1743	-0.304	(-0.386	-0.223)

Note: Mean estimates are weighted and 95% CI's are adjusted for cluster survey design. Anthropometric values based on WHO growth reference curves (WHO, 2006)

Table 5-2 Prevalence of malnutrition for various anthropometric indicators for children 6-59 months by residence, age and sex, National Nutrition Survey, Kyrgyzstan 2009

Characteristic of child	Urban			Rural			National		
	N	%	(95% CI)	N	%	(95% CI)	N	%	(95% CI)
Wasting (WHZ <-2.0)	857	1.5	(0.8 2.7)	879	1.2	(0.6 2.1)	1736	1.3	(0.8 2.0)
Age (months)									
6-11	90	2.1	(0.6 8.0)	91	2.1	(0.5 7.9)	181	2.1	(0.8 5.7)
12-23	225	0.9	(0.2 3.5)	199	1.5	(0.5 4.6)	424	1.3	(0.5 3.1)
24-35	214	2.1	(0.8 5.5)	213	1.0	(0.3 4.2)	427	1.4	(0.6 3.2)
36-47	153	0.0	(- -)	191	0.5	(0.1 3.8)	344	0.4	(0.0 2.7)
48-59	175	2.5	(0.9 6.7)	185	1.1	(0.2 7.8)	360	1.6	(0.5 4.6)
Sex									
Male	411	1.4	(0.7 3.1)	435	1.4	(0.7 3.0)	846	1.4	(0.8 2.5)
Female	446	1.5	(0.6 3.9)	444	0.9	(0.3 3.0)	890	1.1	(0.5 2.4)
Severe Wasting (WHZ<-3.0)	857	0.5	(0.1 1.5)	879	0.2	(0.1 0.8)	1736	0.3	(0.1 0.7)
Overweight (WHZ >2.0)	857	4.0	(2.6 5.9)	879	4.6	(3.5 6.0)	1736	4.4	(3.5 5.5)
Stunting (HAZ <-2.0)	855	15.8	(12.6 19.5)	878	26.1	(21.9 30.7)	1733	22.6	(19.6 25.9)
Age (months)									
6-11	89	2.3	(0.6 8.3)	91	7.7	(4.1 14.1)	180	5.8	(3.3 10.2)
12-23	226	16.2	(11.3 22.6)	200	20.0	(15.0 26.1)	426	18.6	(14.8 23.0)
24-35	214	22.0	(16.9 28.0)	212	40.1	(32.9 47.9)	426	33.9	(28.9 39.3)
36-47	153	14.5	(10.1 20.4)	191	28.2	(20.9 36.8)	344	24.2	(18.8 30.6)
48-59	173	15.9	(10.5 23.4)	184	23.3	(17.4 30.4)	357	20.9	(16.4 26.2)

The mean WHZ was 0.394 (Table 5-1) and the prevalence of wasting was 1.3% and the prevalence of severe wasting was 0.3% (Table 5-2). The mean HAZ was -1.037 and the prevalence of stunting was 22.6% and the prevalence of severe stunting was 5.0%. The prevalence of stunting was higher in rural than urban areas (26.1% versus 15.8%). The mean WAZ was -0.304 and the prevalence of underweight was 4.7% and the prevalence of severe underweight was 0.9%. According to the WHO classification criteria for public health significance, the prevalence of wasting (1.3%) and underweight (4.7%) would be classified as low public health significance and the prevalence of stunting (22.6%), as medium public health significance (WHO 1995).

Mothers (non-pregnant)

Body mass index was calculated only for non-pregnant mothers (N=1153). The prevalence of underweight women (BMI < 18.5) was 6.5% (Table 5-3). About 1 in 3 mothers were either overweight (22.3%) or obese (9.5%). Among mothers, the prevalence of underweight (6.5%) was considered low public health significance according to the WHO criteria (WHO 1995).

Table 5-3 Body mass index (BMI) of non-pregnant mothers by residence, National Nutrition Survey, Kyrgyzstan 2009

Mothers	Urban (N=597)			Rural (N=556)			National (N=1153)		
	%	(95% CI)		%	(95% CI)		%	(95% CI)	
Obese (BMI ≥ 30.0)	9.6	(6.7	13.4)	9.5	(7.0	12.7)	9.5	(7.5	11.9)
Overweight (BMI = 25-29.9)	24.8	(21.9	28.0)	21.0	(17.6	24.9)	22.3	(19.8	25.0)
Normal weight (BMI 18.5-24.9)	59.3	(54.8	63.6)	62.8	(59.3	66.3)	61.7	(58.9	64.4)
Underweight (BMI < 18.5)	6.3	(4.7	8.5)	6.7	(4.7	9.3)	6.5	(5.1	8.4)

Note: CI= confidence interval; BMI=Body Mass Index. Categories are based on WHO guidelines (WHO, 1995). Estimates are weighted and 95% CI's are adjusted for cluster survey design.

CHAPTER 6: BIOCHEMICAL INDICATORS FOR MICRONUTRIENT DEFICIENCY AND THE USE OF MICRONUTRIENT SUPPLEMENTS

This chapter highlights 1) the results from biochemical tests to estimate the extent of iron, folate, and vitamin A deficiencies and 2) the use of micronutrient supplements in children and their mothers.

Anemia, iron deficiency, and iron deficiency anemia

Iron deficiency affects the cognitive development and growth of infants, and young children as well as compromises immunity against infections for all age groups. Children aged 6-59 months are especially vulnerable to the adverse effects of iron deficiency because of rapid growth that is experienced at this age range (WHO, 2001).

The prevalence of anemia was determined from hemoglobin levels collected from capillary blood samples using a Hemocue®. Cut-off values for anemia depend on the age and sex of the person and the altitude where the person lives (WHO 2001). For determining the prevalence of anemia in the population, adjustments for altitude were necessary to account for a reduction in oxygen saturation of blood and a subsequent increase in hemoglobin values. The adjustment for altitude was done using the following formula (Sullivan 2008):

$$\text{Hb adjustment} = -0.032 \times [\text{altitude (m)} \times 0.0032808] + 0.022 \times [(\text{altitude (m)} \times 0.0032808)]^2$$

where the Hb (hemoglobin) adjustment was the value subtracted from each individual's observed hemoglobin level and then compared to the cut-off values for sea level. If the altitude where the individual lives is <1,000 meters, adjustment is not needed. The hemoglobin cut-off value for children under 59 months of age is 11.0 g/dL and for women of reproductive age is 12.0 g/dL after adjusting for altitude (WHO 2001).

The magnitude of iron deficiency can be assessed by several biochemical indicators, including ferritin, sTfR, and hemoglobin. Both CRP and AGP are indicators of infection and have been used to account for the influence of inflammation on biochemical indicators. Cut off levels for biochemical indicators used to estimate iron deficiency and inflammation status are presented in Table 6-1.

Table 6-1 Biochemical indicators for identification of anemia and iron deficiency among children aged 6-59 months and their mothers (non-pregnant), National Nutrition Survey, Kyrgyzstan 2009

Indicators	Children	Mothers	Iron/anemia status
Ferritin	<12 µg/L	<15 µg/L	Iron deficiency (defined by ferritin)
sTfR	>8.3 mg/L	>8.3 mg/L	Iron deficiency (defined by sTfR)
CRP	>5 mg/L	>5 mg/L	Inflammation present
AGP	>1.0 g/L	>1.0 g/L	Inflammation present
Anemia	<11.0g/dL	<12.0g/dL	Anemia present

Note: sTfR=soluble transferrin receptor protein; CRP=C-reactive protein; AGP=α1-glycoprotein acid

Iron deficiency is the leading cause of anemia, yet not all cases of anemia are caused by iron deficiency and iron deficiency does not necessarily develop into anemia. On the population level, a prevalence of iron deficiency is on average 2-5 times higher than the prevalence of iron deficiency anemia (WHO 2001). In this survey, iron deficiency was defined as (1) decreased ferritin concentration in plasma and/or (2) increased sTfR levels (Table 6-1). Iron deficiency as measured by low ferritin is defined as <12 µg/L in children and <15 µg/L in mothers (WHO 2001). Iron deficiency as measured by high sTfR was defined as >8.3 mg/L (Erhardt 2004). Iron deficiency anemia as measured by low ferritin was defined as having both 1) a low hemoglobin value and 2) low plasma ferritin. Iron deficiency anemia as measured by high sTfR was defined as having both 1) a low hemoglobin value and 2) high sTfR. Total iron deficiency anemia was defined as having both 1) a low hemoglobin value and 2) low plasma ferritin and/or high sTfR.

Ferritin is an acute-phase reactant protein and is therefore elevated during infection/inflammation. In order to account for the presence of inflammation, the acute phase indicators CRP and AGP were measured. CRP is an acute phase protein that is often used as a marker for acute inflammation and AGP is used as a marker for chronic inflammation (Thurnham 2003, Thurnham 2010). Presence of inflammation as measured by CRP is defined as >5mg/L and presence of inflammation as defined by AGP was defined as >1.0 g/L (Thurnham 2003, Thurnham 2010). Iron deficiency as measured by plasma ferritin and iron deficiency anemia was also calculated for all participants as well as for those participants without evidence of inflammation (i.e. after exclusion of those with high CRP and/or AGP).

Children aged 6-59 months old

Iron deficiency, anemia, and iron deficiency anemia were calculated for all participants (with and without evidence of inflammation) (Table 6-2a) as well as for those participants without evidence of inflammation (i.e. after exclusion of those with high CRP and/or AGP) (Table 6-2b). Among all children, the prevalence of inflammation was 19.0%. The prevalence of iron deficiency as measured by ferritin was 40.3% (44.6% among children without inflammation), and, as measured by sTfR, was 35.1% (33.6% among children without inflammation). After adjustment for altitude, the prevalence of anemia was 26.0% (24.6% among children without inflammation). The prevalence of iron deficiency anemia as measured by low ferritin alone was 18.0% (18.6% among those without inflammation). The prevalence of iron deficiency anemia as measured by high sTfR was 16.8% (16.0% among those without inflammation). The prevalence of total iron deficiency anemia was 20.3% (20.0% among children without inflammation). For all children and those without inflammation, the prevalence of anemia and total iron deficiency anemia was higher in rural areas compared to urban areas. Severe anemia (hemoglobin level < 7.0 g/dl) was identified in 0.5% (CI 0.2% to 1.4%) of children.

Based on the WHO classification of public health significance of anemia, the prevalence of anemia in children (26.0%) would constitute a public health problem of moderate significance (WHO 2001).

Table 6-2a Prevalence of iron deficiency, anemia, and inflammation among children aged 6-59 months, all participants, National Nutrition Survey, Kyrgyzstan 2009

Indicator	Urban (N=861)			Rural (N=882)			National (N=1743)		
	%	(95% CI)		%	(95% CI)		%	(95% CI)	
Iron deficiency									
Low ferritin (< 12 µg/L)	37.6	(33.8	41.6)	41.6	(36.6	46.8)	40.3	(36.7	43.9)
High sTfR (> 8.3 mg/L)	32.3	(28.3	36.6)	36.4	(31.5	41.7)	35.1	(31.5	38.8)
Total Iron deficiency	46.8	(42.9	50.7)	51.0	(45.7	56.2)	49.6	(45.8	53.3)
Anemia (Hb < 11.0 g/dL)	19.9	(16.3	24.1)	29.0	(24.2	34.4)	26.0	(22.5	29.8)
Iron deficiency anemia									
Low ferritin (< 12 µg/L)	12.7	(10.3	15.7)	20.6	(17.2	24.6)	18.0	(15.5	20.7)
High sTfR (> 8.3 mg/L)	12.1	(9.6	15.2)	19.2	(16.0	22.9)	16.8	(14.5	19.4)
Total iron deficiency anemia	13.9	(11.3	17.1)	23.5	(19.5	28.0)	20.3	(17.5	23.4)
Inflammation									
High AGP(> 1 g/L)	14.1	(11.4	17.4)	13.0	(10.4	16.2)	13.4	(11.4	15.7)
High CRP (> 5 mg/L)	12.5	(10.3	15.2)	11.4	(9.3	14.0)	11.8	(10.1	13.7)
Total Inflammation	19.2	(15.8	23.1)	19.0	(16.0	22.3)	19.0	(16.7	21.6)

Note: CI=confidence interval; sTfR=soluble transferrin receptor protein; Hb=hemoglobin. Percent estimates are weighted and 95% confidence intervals are adjusted for cluster survey design. Anemia is adjusted for altitude. Total iron deficiency was defined as having either low plasma ferritin (<12 µg/L) or high sTfR (>8.3 mg/L). Total iron deficiency anemia was defined as having a Hb level < 11.0 g/dL and low plasma ferritin (<12 µg/L) or high sTfR (>8.3 mg/L). Presence of inflammation (total) was defined as: CRP (C-reactive protein) > 5 mg/L or AGP(α1-glycoprotein acid) >1 g/L. Total inflammation was defined as having either high AGP or high CRP.

Table 6-2b Prevalence of iron deficiency and anemia among children aged 6-59 months without inflammation, National Nutrition Survey, Kyrgyzstan 2009

Indicator	Urban (N=698)			Rural (N=715)			National (N=1413)		
	%	(95% CI)		%	(95% CI)		%	(95% CI)	
Iron deficiency									
Low ferritin (< 12 µg/L)	43.1	(38.5	47.8)	45.3	(40.2	50.5)	44.6	(40.8	48.4)
High sTfR (> 8.3 mg/L)	32.4	(28.0	37.2)	34.2	(29.2	39.6)	33.6	(29.9	37.5)
Total Iron deficiency	49.5	(44.7	54.3)	51.9	(46.6	57.1)	51.1	(47.2	54.9)
Total anemia (Hb < 11.0 g/dL)	18.7	(15.4	22.6)	27.6	(22.9	32.8)	24.6	(21.3	28.3)
Iron deficiency anemia									
Low ferritin (< 12 µg/L)	13.9	(11.2	17.2)	21.0	(17.4	25.2)	18.6	(16.0	21.5)
High sTfR (> 8.3 mg/L)	12.0	(9.4	15.3)	18.0	(14.9	21.5)	16.0	(13.7	18.5)
Total iron deficiency anemia	14.3	(11.5	17.7)	22.9	(19.0	27.4)	20.0	(17.2	23.2)

Note: CI=confidence interval; sTfR=soluble transferrin receptor protein; Hb=hemoglobin. Percent estimates are weighted and 95% confidence intervals are adjusted for cluster survey design. Anemia is adjusted for

altitude. Total Iron deficiency anemia was defined as having either low plasma ferritin (<12 µg/L) or high sTfR (>8.3 mg/L). Iron deficiency anemia was defined as having a Hb level < 11.0 g/dL and low plasma ferritin (<12 µg/L) or high sTfR (>8.3 mg/L). Inflammation not present: CRP (C-reactive protein) ≤ 5 mg/L and AGP (α1-glycoprotein acid) ≤1 g/L.

The prevalence of anemia among children stratified by age, gender, and place of residence is found in Table 6-4 below. The prevalence of anemia declined with age from 42.5% in children aged 6 to 11 months to 9.8% among children aged 48 to 59 months. Among males, 28.4% were anemic compared to 23.6% of females.

Table 6-3 Prevalence of anemia among children aged 6-59 months stratified by place of residence, age, and gender, National Nutrition Survey, Kyrgyzstan 2009

Characteristic of child	Urban (N=698)			Rural (N=715)			National (N=1413)		
	%	(95% CI)		%	(95% CI)		%	(95% CI)	
Age (months)									
6 - 11	38.2	(27.0	50.8)	44.7	(33.1	57.1)	42.5	(33.8	51.7)
12 - 23	25.8	(19.2	33.6)	44.9	(36.7	53.3)	37.8	(31.8	44.1)
24 - 35	22.7	(16.5	30.5)	34.5	(26.7	43.2)	30.5	(24.8	36.8)
36 - 47	10.0	(6.1	16.2)	16.0	(11.2	22.4)	14.3	(10.6	19.0)
48 - 59	7.8	(4.7	12.6)	10.8	(6.4	17.6)	9.8	(6.6	14.4)
Gender									
Male	22.3	(17.1	28.5)	31.4	(25.4	38.1)	28.4	(23.9	33.3)
Female	17.7	(13.8	22.4)	26.7	(21.5	32.6)	23.6	(19.9	27.7)
Total	19.9	(16.3	24.1)	29.0	(24.2	34.4)	26.0	(22.5	29.8)

Note: CI= confidence interval. Percent estimates are weighted and 95% confidence intervals are adjusted for cluster survey design. Anemia level was adjusted for altitude. Anemia was defined as having a Hb level < 12.0 g/dL

Mothers (non-pregnant)

Iron deficiency, anemia, and iron deficiency anemia were calculated for all non-pregnant mothers (with and without evidence of inflammation) (Table 6-5a) as well as for those without evidence of inflammation (i.e. after exclusion of those with high CRP and/or AGP) (Table 6-5b). Among all mothers, the prevalence of inflammation was 11.5 %. The prevalence of iron deficiency as measured by ferritin was 47.9% (51.0% among mothers without inflammation), and, as measured by sTfR, was 22.9% (23.9% among mothers without inflammation). After adjustment for altitude, the prevalence of anemia was 23.0% (23.1% among mothers without inflammation) and the prevalence of iron deficiency anemia was 20.1% (20.8% among mothers without inflammation). For all mothers and those without inflammation, the prevalence of anemia and iron deficiency anemia was higher in rural areas compared to urban areas. Severe anemia (hemoglobin level < 7.0 g/dl) was identified in 0.2 % of mothers.

Based on the WHO classification of public health significance of anemia, the prevalence of anemia in mothers (23.0%) would constitute a public health problem of moderate significance (WHO 2001).

Table 6-4a Prevalence of iron deficiency, anemia, and inflammation among all mothers (non-pregnant) by residence, National Nutrition Survey, Kyrgyzstan 2009

Indicator	Urban (N=600)			Rural (N=562)			National (N=1162)		
	%	(95% CI)		%	(95% CI)		%	(95% CI)	
Iron deficiency									
Low ferritin (< 15 µg/L)	44.7	(39.7	49.8)	49.4	(43.8	55.0)	47.9	(43.8	52.0)
High sTfR (> 8.3 mg/L)	19.9	(16.9	23.4)	24.4	(20.4	28.8)	22.9	(20.0	26.1)
Total Iron deficiency	47.5	42.5	52.7	52.6	46.8	58.3	50.9	46.7	26.2)
Anemia (Hb<12.0/dL)	18.0	(14.9	21.6)	25.5	(21.5	29.9)	23.0	(20.1	55.1)
Iron deficiency anemia									
Low ferritin	14.1	(11.7	17.0)	22.1	(18.4	26.4)	19.5	(16.8	22.4)
High sTfR	10.9	(8.7	13.6)	15.4	(12.5	18.9)	13.9	(11.8	16.4)
Total iron deficiency anemia	14.7	(12.1	17.7)	22.8	(19.0	27.2)	20.1	(17.4	23.2)
Inflammation									
High AGP(>1 g/L)	3.1	(1.7	5.3)	4.4	(2.9	6.7)	4.0	(2.8	5.6)
High CRP (> 5 mg/L)	9.5	(7.3	12.3)	6.9	(5.2	9.1)	7.8	(6.4	9.4)
Total Inflammation	12.3	(9.5	15.8)	11.1	(8.7	14.0)	11.5	(9.6	13.7)

Note: CI= confidence interval; sTfR= soluble transferrin receptor; Hb=hemoglobin. Percentage estimates are weighted and 95% confidence intervals are adjusted for cluster survey design. Anemia level was adjusted for altitude. Total iron deficiency anemia was defined as having either low ferritin (< 15 µg/L) or high sTfR (> 8.3 mg/L). Iron deficiency anemia was defined as having a hemoglobin level < 12.0 g/dL and low ferritin (< 15 µg/L) or high sTfR (> 8.3 mg/L). Presence of inflammation (total) was defined as: CRP (C-reactive protein) > 5 mg/L or AGP (α1-glycoprotein acid) > 1 g/L. Total inflammation was defined as having either high AGP or high CRP.

Folate deficiency and insufficiency

Folate is a water-soluble B vitamin found naturally in foods. Folic acid is the synthetic form of folate that is added to fortified foods and found in dietary supplements. Folate is essential during periods of rapid cell division and growth especially during infancy and pregnancy. Both adults and children require folic acid to prevent anemia and for healthy cell replication (NIH 2011). Adequate consumption of folic acid before and during the early weeks of pregnancy protects fetuses from developing neural tube defects (Institute of Medicine 1998). In Kyrgyzstan, the MOH recommends that pregnant women take folic acid supplements during the first trimester of pregnancy in order to prevent neural tube defects in their developing fetus.

In this survey, red blood cell (RBC) folate levels were assessed from dried blood spot (DBS) samples collected from a subsample of non-pregnant mothers (O'Broin 1992). DBS folate was measured using a microbiologic assay and DBS hemoglobin was measured using a colorimetric method. Results were converted to RBC folate using the mean cell hemoglobin concentration (MCHC) as shown in the formula below. The MCHC is a fairly constant parameter that reflects the ratio of hemoglobin to hematocrit in a population. A value of 345 g/L was used for the MCHC.

$$\text{RBC folate (ng/mL)} = (\text{DBS folate [ng/mL]} / \text{DBS hemoglobin [g/L]}) * \text{MCHC (g/L)}$$

Folate deficiency, as measured by RBC folate, is defined as < 151 ng/mL by the WHO (WHO, 2008).

There is no defined whole blood folate concentration established by international

organizations for the prevention of folic-acid-sensitive NTDs in populations. Only one prospective study has been conducted that investigated this topic (Daly, 1995). The study reported that the prevalence of neural tube defects, in an Irish population, was lowest when RBC folate concentrations were ≥ 400 ng/mL. Thus, we used RBC folate concentrations < 400 ng/mL to define folate insufficiency for the prevention of NTDs (Daly, 1995).

Among mothers, the prevalence of folate deficiency was 49.3% (Table 6-6). The prevalence of folate deficiency was 51.1% in rural mothers and 46.0% in urban mothers. Among mothers, the prevalence of folate insufficiency was 97.9%. The prevalence of folate insufficiency was 97.5% in rural mothers and 98.5% in urban mothers. Among mothers (N=1,160), 32.1% reported receiving folic acid supplements during their pregnancy.

Table 6-4b Prevalence of iron deficiency and anemia among mothers without inflammation by residence, National Nutrition Survey, Kyrgyzstan 2009

Indicator	Urban (N=526)			Rural (N=500)			National (N=1026)		
	%	(95% CI)		%	(95% CI)		%	(95% CI)	
Iron deficiency									
Low ferritin (< 15 $\mu\text{g/L}$)	47.0	(41.4	52.6)	53.0	(47.4	58.5)	51.0	(46.8	55.2)
High sTfR (> 8.3 mg/L)	19.9	(16.2	24.2)	25.8	(21.8	30.2)	23.9	(20.8	27.1)
Total iron deficiency	49.2	(43.4	55.0)	55.7	(49.8	61.5)	53.6	(49.1	58.0)
Anemia (Hb <12.0 /dL)	17.9	(14.4	22.1)	25.7	(21.0	31.0)	23.1	(19.8	26.9)
Iron deficiency anemia									
Low ferritin	14.7	(11.8	18.1)	23.0	(18.9	27.7)	20.2	(17.3	23.6)
High sTfR	11.3	(8.7	14.6)	16.3	(13.2	20.1)	14.7	(12.3	17.4)
Total iron deficiency anemia	15.2	(12.2	18.9)	23.5	(19.2	28.4)	20.8	(17.7	24.3)

Note: CI= confidence interval; sTfR (Ramco)=soluble transferrin receptor. Percent estimates are weighted and 95% confidence intervals are adjusted for cluster survey design. Anemia level was adjusted for altitude. Total iron deficiency anemia was defined as having either low ferritin (< 15 $\mu\text{g/L}$) or high sTfR (> 8.3 mg/L). Iron deficiency anemia was defined as having a hemoglobin level <12.0 g/dL and low plasma ferritin (< 15 $\mu\text{g/L}$) or high sTfR (> 8.3 mg/L). Inflammation not present: CRP (C-reactive protein) ≤ 5 mg/L and AGP (α 1-glycoprotein acid) ≤ 1 g/L.

Table 6-5 Prevalence of folate deficiency and insufficiency among mothers (non-pregnant) by residence, National Nutrition Survey, Kyrgyzstan 2009

Indicator	Urban (N=223)			Rural (N=259)			National по стране (N=482)		
	%	(95% CI)		%	(95% CI)		%	(95% CI)	
Folate deficiency(<151 ng/ml)	46.0	(37.3	55.0)	51.1	(40.9	61.1)	49.3	(42.0	56.5)
Folate Insufficiency (<400 ng/ml)	98.5	(96.6	99.4)	97.5	(95.2	98.7)	97.9	(96.3	98.8)

Note: Percent estimates are weighted and 95% confidence intervals are adjusted for cluster survey design. Folate deficiency was defined as having an RBC folate level of <151 ng/mL. Folate insufficiency was defined as having an RBC folate level of <400 ng/mL.

Vitamin A deficiency

Vitamin A is an essential nutrient required for the immune system, cell function and growth, and epithelial maintenance (WHO 2009). Vitamin A deficiency (VAD) is the leading cause of preventable blindness globally. The groups most vulnerable to VAD are infants, young children, pregnant women, and lactating women.

The most common biochemical indicator to assess the prevalence of VAD in a population is plasma retinol. A plasma retinol concentration $<0.70 \mu\text{mol/L}$ indicates mild or sub-clinical VAD. In this survey, retinol binding protein (RBP) was used as a measure of vitamin A status. In order to validate the use of RBP as an indicator of vitamin A status, the CDC nutrition laboratory developed a correlation index comparing plasma retinol to RBP. Approximately equal numbers of specimens from women and children ($N=215$) were tested for retinol and RBP. It was determined that the RBP cut-off of $0.71 \mu\text{mol/L}$ provides the best sensitivity and specificity compared with plasma retinol of $<0.70 \mu\text{mol/L}$. Therefore, the RBP cut-off of $<0.71 \mu\text{mol/L}$ was used to indicate vitamin A deficiency among mothers and children. The correlation agreed with past research showing that RBP behaves like serum retinol and can be used as an indicator of vitamin A status (Gorstein 2008).

RBP is an acute phase reactant which decreases during infection/inflammation. In order to account for the presence of inflammation, the prevalence of Vitamin A deficiency was calculated for all participants as well as for those participants without evidence of inflammation (i.e., after exclusion of those with high CRP and/or AGP).

The prevalence of vitamin A deficiency among all children and those without inflammation is found in Tables 6-7a and 6-7b, respectively. Among children, the prevalence of vitamin A deficiency was 4.2% (1.8% among those without inflammation). Among all children, the prevalence of vitamin A deficiency declined with age from 7.8% in children aged 6 to 11 months to 2.3% among children aged 48 to 59 months. The prevalence of vitamin A deficiency was the same in males and females. Similar patterns in vitamin A deficiency were seen among children without inflammation.

Table 6-6a Prevalence of vitamin A deficiency among all children aged 6-59 months by residence, age and sex, National Nutrition Survey, Kyrgyzstan 2009

Characteristic	Urban			Rural			National			
	N	%	(95% CI)	N	%	(95% CI)	N	%	(95% CI)	
Age (months)										
6-11	90	5.8	(2.2 14.6)	93	8.9	(5.1 14.8)	183	7.8	(4.8 12.4)	
12-23	228	6.2	(3.8 9.9)	200	4.5	(2.5 8.0)	428	5.1	(3.4 7.5)	
24-35	215	4.8	(2.2 9.9)	213	2.7	(1.1 6.3)	428	3.4	(1.9 6.0)	
36-47	153	2.8	(1.1 7.2)	191	4.6	(2.3 9.0)	344	4.1	(2.3 7.2)	
48-59	175	3.5	(1.7 7.2)	185	1.7	(0.6 4.9)	360	2.3	(1.2 4.3)	
Sex										
Male	412	4.2	(2.5 7.0)	437	4.2	(2.6 6.6)	849	4.2	(2.9 5.9)	
Female	449	5.1	(3.4 7.5)	445	3.7	(2.4 5.8)	894	4.2	(3.1 5.7)	
Total	861	4.6	(3.3 6.5)	882	4.0	(2.8 5.6)	1743	4.2	(3.2 5.4)	

Note: Percent estimates are weighted and 95% confidence intervals are adjusted for cluster survey design. Vitamin A deficiency was defined as retinol binding protein (RBP) $< 0.71 \mu\text{mol/L}$.

Based on the WHO classification of public health significance of vitamin A deficiency in children, the prevalence of vitamin A deficiency in children (4.2%) would constitute a public health problem of mild significance (WHO 2009).

Table 6-6b Prevalence of vitamin A deficiency among children aged 6-59 months without inflammation by residence, age, and sex, National Nutrition Survey, Kyrgyzstan 2009

Characteristic	Urban			Rural			National		
	N	%	(95% CI)	N	%	(95% CI)	N	%	(95% CI)
Age (months)									
6-11	79	5.5	(2.1 13.2)	72	4.4	(1.6 11.7)	151	4.8	(2.4 9.5)
12-23	171	2.3	(0.9 5.7)	152	2.6	(1.0 6.6)	323	2.5	(1.2 4.9)
24-35	172	1.6	(0.5 5.0)	177	1.5	0.4 6.4	349	1.6	(0.6 4.4)
36-47	133	0.0	(- -)	149	1.4	(0.4 5.3)	282	1.0	(0.2 3.7)
48-59	143	0.7	(0.1 5.0)	165	0.6	(0.1 4.4)	308	0.7	(0.2 2.8)
Sex									
Male	340	1.4	(0.5 3.9)	356	2.0	(0.9 4.2)	696	1.8	(1.0 3.4)
Female	358	2.0	(0.9 4.4)	359	1.6	(0.8 3.4)	717	1.8	(1.0 3.1)
Total	698	1.7	(1.0 3.1)	715	1.8	(1.0 3.2)	1413	1.8	(1.2 2.8)

Note: Percent estimates are weighted and 95% confidence intervals are adjusted for cluster survey design. Vitamin A deficiency was defined as retinol binding protein (RBP) < 0.71 µmol/L. Inflammation not present: CRP (C-reactive protein) ≤ 5 mg/L and AGP (α1-glycoprotein acid) ≤ 1 g/L.

Among non-pregnant mothers, the prevalence of VAD was 0.6% (0.3, 1.3) among all mothers (N=1,138) and was 0.5% (0.2, 1.3) among mothers without presence of inflammation (N=1,026).

Use of dietary supplements

Mothers were asked about the use of vitamins and supplements in their diet and in their child's diet in order to assess measures taken to prevent or treat micronutrient deficiencies. 83.8% mothers gave vitamin or mineral supplements to their children. The most common supplements given were Vitamin D (70.8%), followed by multi-vitamins (57.2%), and fish oil (29.7%).

Among mothers (N=1320), 36.4% reported receiving a vitamin A dose within the first two months after their last delivery. Among children aged 6-59 months, 94.7% were reported to have ever taken a vitamin A supplement, while 80% were reported to have received vitamin A supplements within 6 months of the survey.

Among all mothers (N=1321), 47.0% received iron supplements during pregnancy. One in two mothers (50.0%) had been told at some time by their doctors that they had anemia. Among these mothers (N=655), 69.5% had taken iron capsules or iron syrup to improve their anemia status. Among mothers (N=1321), 23.8% said they were told that their child had anemia. Among these mothers (N=332), 71.3% reported that their child had received pills or iron syrup for treatment.

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APPENDIX I: SAMPLE SIZE CALCULATIONS

The survey was designed for two strata: rural and urban. For each stratum, we calculated the sample sizes for the prevalence values using the following equation:

$$n = z^2 p (1-p) e / d^2$$

where:

n = sample size.

z = standard normal deviate. (A value of 1.96 was used for a confidence level of 95%.)

p = expected prevalence in the target population.

e = design effect (conservatively assumed to be 2).

d = precision of anticipated prevalence (5%).

Estimated sample size for indicators in the 2009 National Nutrition Survey based on the estimated prevalence in the population

Group	Indicator	Estimated Prevalence 2009*	Precision	Response Rate	Sample Size
6-59 months of age	Anemia	50.0	5.0	0.85	904
	Iron deficiency	60.0	5.0	0.85	868
	Iron deficiency anemia	40.0	5.0	0.85	868
	Vitamin A deficiency	50.0	5.0	0.85	904
15-49 yrs Non-Preg women	Anemia	35.0	5.0	0.85	823
	Iron deficiency	60.0	5.0	0.85	868
	Iron deficiency anemia	30.0	5.0	0.85	760
	Vitamin A deficiency	50.0	5.0	0.85	904

**When no information on prevalence is known, the prevalence is estimated at 50% to provide the most conservative estimate of necessary sample size*

Based on this table we decided that a sample size of 904 would be sufficient. To have representative estimates for rural and urban areas, the total population was divided into two strata (urban and rural) with sample size equal to 904 children and 904 mothers per stratum. Thus, the total sample size was equal to 1808 children and 1808 mothers total. However, after field work began, we realized that there would be a higher non-response rate than anticipated due to relatively high migration during the summer period. We therefore increased the sample size by 10%. The total sample size (rounded to simplify organization of survey process) was, therefore, 990 children and mothers in rural areas and 990 children and mothers urban areas (See Chapter 2, Methods). In the first stage of sampling, we retained the same clusters, but, at the second stage of sampling, we increased to 30 the number of children (and their mothers) selected within each cluster.

The sample size for folate measurement was calculated separately and was based on the anticipated population average serum folate value (based on other populations not consuming fortified flour) using the following equation:

$$n = [(z * \text{variance})/d]^2$$

Where:

n = sample size

z = standard normal deviate. (A value of 1.96 was for a confidence level of 95%.)

variance = estimated variance (from the literature).

d = desired level of precision (in same unit of measure as the variance)

Based on the literature, we assumed the average folate value in the population was 9 ng/mL and the precision would be 0.6 ng/mL. With these values, the estimated necessary sample size for the folate analysis was 400 per stratum.

The random selection was done by stratifying the 66 clusters (PSUs) into urban and rural stratum. Within each stratum, a random number list was generated with cluster numbers from 0 to 33. Initially, the clusters corresponding to the lowest 22 numbers were selected. However, because of the higher than expected non-response due to migration (see above), we increased that number of clusters selected (26 clusters with the lowest numbers in the rural stratum and 25 in the urban stratum). Folate testing would be conducted on the biological samples from all 25 mothers in the selected clusters.

APPENDIX II: QUESTIONNAIRES FOR NATIONAL NUTRITION SURVEY, KYRGYZSTAN 2009

A. ENGLISH

NATIONAL NUTRITION AND DIET SURVEY

Fill the following information before beginning the interview.

HH1. Cluster number

--	--

HH4. Supervisor's code

--	--

HH2. Interviewer code

--	--

HH5. Data entry operator code

--	--

HH3. Day/Month/Year of interview:

				0		9	
d	d	m	m	y		y	

HH6. Oblast code

02 Issyk-Kul	05 Batken	08 Chui
03 Jalal-Abad	06 Osh	11 Bishkek city
04 Naryn	07 Talas	21 Osh city

HH7. Result of interview		HH8. Result of anthropometry		HH9. Result of blood collection		HH10. Location of data collection	
Completed		Complete on mother/child	1	Complete on mother/child	1	Clinic	1
Refused	1	Complete on mother only	2	Complete on mother only	2	Home	2
Partially completed	2	Complete on child only	3	Complete on child only	3	Partial in clinic /	3
Not available to interview	3	Not completed on either	4	Not completed on either	4	partial in home	4
	4						

ID Label - **CHILD**

Affix child label here

L1. In what language was the interview conducted?

Kyrgyz	1
Russian	2
other (specify) _____	3

If no data is collected on a mother and child. Find the following information from the clinic, the medical worker, the VHC volunteer or by visiting the home of the mother/child.

HH11. How old (in years) is the mother?
(put 88 if don't know/cannot find out)

--	--

HH12. How old (in months) is the child?
(put 88 if don't know/cannot find out)

--	--

HH13. What is the gender of the child?

1=male; 2=female

HH14. What is the ethnicity of the mother?

Kyrgyz	1
Russian	2
Kazakh	3
Uzbek	4
Tajik	5
Uigher	6
Other (specify) _____	7
Don't know	8

HH15. Where does the family live?

Near or in the village center	1
On the outskirts of the village	2
Not in the village	3
Other (specify) _____	4
Don't know	8

HH16. How many brothers/sisters does the child have?
(put 88 if don't know/cannot find out)

--	--

HH17. Does the mother work/study outside of the home?

1=yes; 0=no; 8=don't know/can't find out

--	--

HH18. Reason for not coming to the interview?

family moved from village	1
mother refused	2
family (husband, mother-in-law, etc) refused	3
mother sick	4
child sick	5
mother had to work	6
was not invited by the health clinic	7
Other (specify) _____	8
Don't know/can't find out	9

We are from the Ministry of Health and the National Statistics Committee. We are working on a joint project concerned with mother and child diet, nutrition and health. I would like to talk to you about this and record your answers to some questions that I have. This interview will take approximately 20 minutes. After the interview, we will weigh and measure you and your baby and take a small blood sample from your finger and the finger of your baby. From this sample we will be able to inform you if you or your baby has anemia. The only direct benefit to you is the knowledge of your and your baby's anemia status. The risks to you are small and consist of the possible discomfort caused by pricking the finger in order to draw the blood sample. The discomfort will only be temporary and will not be very great. All of the information we obtain will remain strictly confidential and nobody will know that the information is yours, however, your hemoglobin results will be shared with your village health clinic. You have the right to choose whether or not you would like to participate, and there are no consequences if you decide you would rather not participate. If you agree to participate, I would like you to sign this form. May we begin?

Would you please sign?

If permission is given, ask respondent to sign here and begin the interview.

(Signature) _____

(Name) _____

Permission for woman's participation

(Signature) _____

(Name) _____

Permission for child's participation

HH19. What is your name?

(last, first, middle initial)

HH22. What is the gender of the child?

1=male; 2=female

HH20. What is the name of the child?

(last, first, middle initial)

HH23. What is your relationship to (child's name):

mother	1	1→HC1
grandmother	2	
aunt	3	
other(specify) _____	6	

HH21. In what day, month, and year was (child's name) born? Probe: What is his/her birthday?

--	--	--	--	--	--

d d m m y y

(put 88 for day, month, or year if don't know/remember)

HH24. Why is (child's name)'s mother not here today?

working/studying	1	
sick	2	If mother is not present,
did not want to attend	3	record reason
family did not allow	4	and skip to
busy at home/with housework	5	AN1
other (specify) _____	7	
don't know	8	

Check to make sure the baby's birthday is between June 1, 2004 and December 31, 2008. If the birthday does not fall between these dates, the child cannot participate. Explain this to the mother and thank her for coming. If the mother is unsure of the birthday, check the birthdate with the registry at the clinic.

Household Characteristics Module

HC

I would now like to ask you a few questions about your home and those who live in it.

HC1. Does your family currently receive the universal monthly benefit?

1=yes; 0=no; 8=don't know

HC2. Including (child's name) how many children age 6 - 59 months live in your home?

Woman's Module

WM

WM1. What is your native language?

Kyrgyz	1
Russian	2
Kazakh	3
Uzbek	4
Other (specify) _____	6
Don't know	8

WM2. What is your date of birth?

d	d	m	m	y	y

(put 88 for day, month, or year if don't know/remember)

WM3. How many live children do you have?

--	--

WM4. What is the highest level of school you completed?

Never attended	0
Primary (1-4 grades)	1
Incomplete secondary (5-9)	2
Complete secondary	3
Technical school	4
Higher	5
Religious curriculum	6
Don't know	8

WM5. Are you currently married?

1=yes; 0=no

0→WM7

WM6. What is the highest level of school your spouse completed?

Never attended	0
Primary (1-4 grades)	1
Incomplete secondary (5-9)	2
Complete secondary	3
Technical school	4
Higher	5
Religious curriculum	6
Don't know	8

WM7. Do you currently work or study outside the home (for example, as an employee, business owner, laborer in fields, etc.)?

1=yes; 0=no

0→WM12

WM8. What type of work or study do you do?

laborer (in the fields)	1
vender of food, fruit, homemade goods or other	2
employee in a business	3
business owner	4
professional (nurse, doctor, teacher, pharmacists, etc)	5
student	6
other (specific) _____	7
Don't know	8

WM9. How many hours a day do you USUALLY work or study outside of the home?

(put 88 if don't know)

--	--

WM10. Who USUALLY takes care of (child's name) while you are outside of the home?

The mother (takes the child with her)	1
Baby's grandmother	2
Baby's sisters/brothers	3
Baby's father	4
Other family member	5
Baby sitter	6
Day care / children's garden	7
Other (specify) _____	8
Don't know	9

WM11. Who USUALLY feeds (child's name) while you are outside of the home?

The mother (takes the child with her)	1
Baby's grandmother	2
Baby's sisters/brothers	3
Baby's father	4
Other family member	5
Baby sitter	6
Day care / children's garden	7
Other (specify) _____	8
Don't know	9

WM12. How often does someone other than the mother feed (child's name) meals?

never	0
< 1 time / day	1
1 time / day	2
2 times / day	3
3 times / day	4
> 3 times / day	5
Don't know	8

Sometimes if mothers have to leave their child with a friend or family member while they are out of the house, they may not know everything the baby eats because someone else feeds them meals or snacks.....

WM13. Using the scale, can you estimate how much you know about what (child's name) usually eats?

(show scale and note number that corresponds to the answer)

--

Breastfeeding and Infant Feeding**BF**

Now I would like to ask you some questions about the breastfeeding and feeding of (child's name)

BF1. Was (child's name) ever breastfed?
1=yes; 0=no

0→BF3

BF2. Approximately, how long after birth was (child's name) first put to the breast?

Immediately (< 1 hour after birth)	0
During first 24 hours	1
Between 24 - 48 hours	2
> 48 hours	3
Don't know/remember	8

The next few questions are about the first time (child's name) was fed something other than breastmilk.

BF3. How old was [child's name] in months when (he/she) was first fed animal milk, powdered milk or formula?

(if less than 1 month put 00, if NEVER fed milk, powdered milk or formula put 99, if don't know put 88)
(round down to nearest whole month)

M M

BF4. The next question is about liquids. Please include all liquids such as animal milk, powdered milk, formula, juice, water, sugar or fruit water, tea, or anything else that (child's name) might have been given. How old was (child's name) in months when he/she was first given any liquid, even tea, other than breastmilk?

(if less than 1 month put 00, if NEVER fed anything other than breastmilk put 99 if don't know put 88)

(round down to nearest whole month)

M M

BF5. The next question is about solid or semi-solid foods. Please include all solids such as porridge, rice, cereal, bulymak or anything else that (child's name) might have been given. How old was (child's name) in months when he/she was first fed any solid food?

(if less than 1 month put 00, if NEVER fed anything other than breastmilk put 99 if don't know put 88)

(round down to nearest whole month)

M M

Now think about everything (child's name) has drunk or eaten since this time yesterday. Don't forget snacks and eating or drinking during the night or things (child's name) ate with someone other than yourself.

BF6. Since this time yesterday, was (child's name) fed any of the following items? (read each item aloud and record response before proceeding to the next item)

1=yes; 0=no; 8=don't know

Breastmilk	a	
Animal milk, yogurt, kefir, cheese, etc	b	
infant formula or powdered milk (probe: what was the name?)	c	
Brand name? _____		
haricot, pea or nuts	d	
kasha, potatoes, noodles, beet	e	
meat, fish, poultry, liver/organ meat	f	
eggs	g	
carrots, pumpkin, tomatoes	h	
other fruit or vegetable (spinach, dried apricots, cucumbers)	i	
bread or biscuit	j	
baby cereal/food which was purchased	k	
Brand name? _____		
any food with Sprinkles added (show packet)	l	

BF7. Since this time yesterday, how many times was (child's name) fed: (if more than 7 put 7. If don't know put 8) ("fed" means any meal or snack, excluding trivial amounts)

any solid, semisolid, or soft food such as porridge, cereal, meat, vegetables, cookies, fruit, etc.

Breastmilk	a	
animal milk, powdered milk or formula	b	
anything from a bottle	c	
	d	

BF8. Has (child's name) stopped breastfeeding?

1=yes; 0=no

0→AB1

BF9. At what age in months did you stop breastfeeding (child's name)?

(put 88 if don't know/can't remember)

Attitude, Behavior Module**AB**

We are interested in knowing what mothers think about breastfeeding and feeding of their babies. I would like to ask you what you think about breastfeeding and feeding of your baby. Remember there are no right or wrong answers to any of these questions. We just want to know what you think about these topics.

AB1. Using this scale, how would you describe the importance of breastfeeding for a baby's health and nutrition?
(show scale and note number that corresponds to the answer)

AB2. Using this scale, how would you describe the importance of feeding other types of milk or formula for a baby's health and nutrition?
(show scale and note number that corresponds to the answer)

AB3. In your opinion, should a baby be breastfed?
1=yes; 0=no **0→AB5**

AB4. In your opinion, how long in months should a baby be breastfed?
(note 00 if < 1 m; 88 if don't know)

m	m

AB5. In your opinion, at what age in months should a baby start drinking other liquids like tea, water, milk, etc?
(note 00 if < 1 m; 88 if don't know)

m	m

AB6. In your opinion, at what age in months should a baby start eating foods like porridge, cereal, bulymak, etc?
(note 00 if < 1 m; 88 if don't know)

m	m

AB7. Some people think there are advantages to breast-feeding while some people do not. In your opinion, are there advantages to breastfeeding?
1=yes; 0=no; 8=don't know **0→AB9**
8→AB9

AB8. In your opinion, what are some advantages to breastfeeding? (don't read, mark all mentioned with 1)

healthy for baby and/or mother	a	
breastmilk is rich with vitamins/nutrients	b	
saves money	c	
saves time	d	
protects baby from infections	e	
safer than feeding from a bottle	f	
Other (specify) _____		

g

AB9. Some people think there are disadvantages to breast-feeding while some people do not. In your opinion, are there disadvantages to breastfeeding?

1=yes; 0=no; 8=don't know

0→DA1
8→DA1

AB10. In your opinion, what are some disadvantages to breastfeeding? The things that make it more difficult. (don't read, mark all mentioned with 1)

mother cannot leave baby for very long (ie, to work or be outside the home)	a	
mother must be very careful about her diet	b	
causes sore nipples	c	
concerned they are not producing enough milk	d	
concerned mother's milk does not contain enough nutrients	e	
Other (specify) _____		

f

Dietary Advice Module**DA**

When a woman is pregnant and after she has a baby, many people give advice on her diet, breastfeeding and feeding the baby. I want to ask just about the advice you have received, it doesn't matter if it is advice you followed or not. I am just interested in what people have told you and who you have heard it from.

DA1. Did you ever receive advice on your diet or nutrition when you were pregnant?	<input type="text"/>
1=yes; 0=no; 8=don't know	0→DA4 8→DA4

DA8. Did family, friends or neighbors give you advice on breastfeeding?	<input type="text"/>
1=yes; 0=no	0→DA12

DA2. Did a doctor, nurse, midwife or feldsher give you advice on your diet?	<input type="text"/>
1=yes; 0=no	

DA9. For how long (in months) did family, friends or neighbors advise you to breastfeed without giving other liquids or solids? (Put 00 if < 1 m; 88 if don't know/remember; 99 if they did not give advice on length or did not specify exact length)	<input type="text"/>	<input type="text"/>
	m	m

DA3. Did a family member, friend or neighbor give you advice on your diet?	<input type="text"/>
1=yes; 0=no	

DA10. At what age (in months) did family, friends, or neighbors advise you to stop breastfeeding? (Put 00 if < 1 m; 88 if don't know/remember; 99 if they did not give advice on length or did not specify exact length)	<input type="text"/>	<input type="text"/>
	m	m

DA4. Did a doctor, nurse, midwife or feldsher give you advice on breastfeeding?	<input type="text"/>
1=yes; 0=no; 8=don't know	0→DA8 8→DA8

DA5. For how long (in months) did a doctor, nurse, midwife or feldsher advise you to breastfeed without giving other liquids or solids? (Put 00 if < 1 m; 88 if don't know/remember; 99 if they did not give advice on length or did not specify exact length)	<input type="text"/>	<input type="text"/>
	m	m

DA11. Using the scale, how important is the advice we get on breastfeeding from family, friends or neighbors? (show scale and note number that corresponds to the answer)	<input type="text"/>
--	----------------------

DA6. At what age (in months) did a doctor, nurse, midwife or feldsher advise you to stop breastfeeding? (Put 00 if < 1 m; 88 if don't know/remember; 99 if they did not give advice on length or did not specify exact length)	<input type="text"/>	<input type="text"/>
	m	m

Ask the Q. is at least on of answers of DA4, DA8=1	
DA12. Using the scale, rate the extent to which this advice would influence your own decisions regarding breastfeeding. (show scale and note number that corresponds to the answer)	<input type="text"/>

DA7. Using the scale, how important is the advice we get on breastfeeding from a doctor, nurse, midwife or feldsher? (show scale and note number that corresponds to the answer)	<input type="text"/>
---	----------------------

Vitamins/Supplements Module

VS

I am now going to ask some questions about vitamins and supplements you and your baby might have taken. Some people take these supplements and some don't and that is okay. I will start with the supplements you might have taken.

VS1. During your most recent pregnancy, did you take a folic acid supplement like this? (Show dispenser)

1=yes; 0=no; 8=don't know

VS2. During your most recent pregnancy, did you take an iron supplement like this? (Show dispenser)

1=yes; 0=no; 8=don't know

VS3. In the first two months after the birth of your youngest child, did you take a Vitamin A dose like this? (Show Vitamin A capsule)

1=yes; 0=no; 8=don't know

VS4. Have you ever been told by a doctor or nurse that you have anemia?

1=yes; 0=no; 8=don't know

0→VS6
8→VS6

VS5. Did you take iron capsules or iron syrup to improve your anemia status?

1=yes; 0=no; 8=don't know

Now I'd like to ask a few questions about vitamins, minerals and supplements that (child's name) might have received. It is okay if (child's name) hasn't received these supplements.

VS6. Has (child's name) ever taken a Vitamin A capsule like this one?

Show 100,000IU for 6-11 month old
Show 200,000IU for 12-59 month old

0→VS8
8→VS8

1=yes; 0=no; 8=don't know

VS7. How long ago (in months) did (child's name) take the most recent vitamin A capsule?

(note 00 if < 1 m; put 88 if don't know/remember)

m m

VS8. Have you ever been told by a doctor or nurse that (child's name) had anemia?

1=yes; 0=no; 8=don't know

0→VS10
8→VS10

VS9. Did (child's name) take iron syrup or tablets to improve his/her anemia status?

1=yes; 0=no; 8=don't know

VS10. Have you, or someone else, ever given (child's name) any of these other vitamin or mineral supplements? (read the list and mark each answer)

Vitamin D

a

Fish oil

b

Multi-vitamins

c

Other (specify) _____

d

1=yes; 0=no; 8=don't know

VS11. Have you ever seen a Sprinkles package like this?

(Show Sprinkles sachet)

1=yes; 0=no; 8=don't know

0→FF1
8→FF1

VS12. Have you ever received a Sprinkles package like this?

(Show Sprinkles sachet)

1=yes; 0=no; 8=don't know

0→FF1
8→FF1

VS13. Has (child's name) ever consumed Sprinkles?

1=yes; 0=no; 8=don't know

Fortified Flour Module

FF

Now I would like to ask you about the flour you use for baking bread or cakes or any other food in your house.

FF1. How much flour does your family consume in one month (in kilos)?

--	--	--

If the family does not consume/use flour skip to FF6

FF2. What grade of flour do you usually use for cooking?

Extra	1	1→FF4
First grade	2	2→FF4
Second grade	3	3→FF4
Milled flour from own grain	4	4→FF3

FF3. With which type of flour do you mix your milled flour from your own grain?

Do not mix milled flour with other flour	0	0→FF6
Extra	1	
First grade	2	
Second grade	3	
Don't know	8	

FF4 Where do you usually buy the flour for baking?

Grocery store	1
Market	2
Local mill	3
Other (specify) _____	4
Don't know	8

FF5. When you buy flour, what type do you most often purchase?

Kazakh	1
National (Kyrgyz)	2
Local (from your region)	3
Don't know	8

FF6. Have you ever heard about fortified flour?

1=yes; 0=no

0→VHC1

FF7. Do you think there are any benefits to using fortified flour?

1=yes; 0=no; 8=don't know

0→VHC1

8→VHC1

FF8. In your opinion what are the benefits of fortified flour? (Don't read. Probe and mark all mentioned with a 1. If not mentioned, mark with a 0)

Flour is better quality	a	
Flour tastes better	b	
Kids like the flour more	c	
Makes children grow better	d	
Contains vitamins/minerals	e	
It makes kids smarter	f	
It makes kids stronger	g	
It makes kids healthier	h	
It makes women/men healthier	i	
Prevents anemia	j	
Prevents illness	k	
It has adverse/negative effects	l	
other (specify) _____	m	

FF9. If you were given the choice of two loaves of bread of the same size and cost, but one had added iron and vitamins and the other did not, which would you prefer?

Loaf with added iron or vitamins	1
Loaf without added iron or vitamins	2
Don't care	3
Don't know	8

VHC Contact Module**VHC**

In some villages around Talas Oblast, there are Village Health Committees. I would like to ask you what you have heard of about these Village Health Committees, if anything. Remember no answers are right or wrong we just want to know what you have heard and your personal experience.

VHC1. Have you ever heard of the Village Health Committee (VHC)?

1=yes; 0=no; 8=don't know

0→P1

VHC2. Have you ever talked to someone from the VHC about health issues?

1=yes; 0=no; 8=don't know

0→P1

8→P1

VHC3. How long ago was the last time you talked with a VHC member about health issues?

> 1 year ago

0

6-12 months ago

1

3 - 6 months ago

2

1- 3 months ago

3

< 1 month ago

4

VHC4. Have you talked to a VHC member about your diet during pregnancy, or about breastfeeding or feeding your baby?

1=yes; 0=no; 8=don't know

0→P1

8→P1

VHC5. Using the scale, how helpful do you think the visit(s) with the VHC member was (the visit(s) on diet, breastfeeding and feeding a baby)?

(show scale and note number that corresponds to the answer)

VHC6. Are you interested in receiving more advice from the VHC?

1=yes; 0=no; 8=don't know

0→P1

8→P1

VHC7. What topics would you be interested in receiving advice about?

(Write in all topics mentioned)_____

Pregnancy**P**

Before we continue, I need to know if you are pregnant. Even if you think you may be pregnant, but do not know for sure, we would still like to know that.

P1. Are you pregnant right now?

1=yes; 0=no; 7=may be, but not sure;
8=don't know

0→AN1

7→AN1

8→AN1

P2. How many weeks pregnant are you right now?

(put 88 if don't know)

If YES (1) Do not take blood or anthropometric measures from the mother. Take measurements only from the child.

Anthropometry**AN**

Now I am going to measure your height and weight and the length and weight of your baby.

AN1. Were anthropometrics taken from mother?	
1=yes; 0=no	1→AN3

AN5. Were anthropometrics taken from the child?	
1=yes; 0=no	1→AN7

AN2. Why not? 1=refused 2=pregnant 4=other (specify) _____	3=not present	
---	---------------	--

AN6. Why not? 1=refused (cried, kicked, etc) 2=mother/guardian refused 4=other (specify) _____	3=not present	
---	---------------	--

AN3. Mother's height (cms)	
<input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/>	

AN7. Child's weight (kg)	
<input type="text"/> <input type="text"/> . <input type="text"/>	

AN4. Mother's weight (kg)	
<input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/>	

AN8. Child's length/height (cm)	
<input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/>	

Blood Sample Module**BS**

The last thing we will do today is take a small sample of blood from your finger and the finger of your baby. This might cause a little discomfort from the stick but we will be able to tell you if your or your baby has anemia.

BS1. What time did you eat for the last time?

<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>
h	h		m	m

BS8. At what time did (child's name) eat for the last time?

<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>
h	h		m	m

BS2. Was a capillary sample obtained from the mother?

1=yes; 0=no

1→BS4

BS9. Was a capillary sample obtained from the child?

1=yes; 0=no

1→BS11

BS3. Why not?

1=refused 3=not present
 2=pregnant 4=Technical difficulties
 5=other (specify) _____

→BS7

BS10. Why not?

1=refused (cried, 3=not present
 kicked, etc) 4=Technical
 2=mother/guardian difficulties
 refused
 5=other (specify) _____

→BS14

BS4. Approximately how many microliters of blood were collected in the microtainer?

<input type="text"/>	<input type="text"/>	<input type="text"/>
----------------------	----------------------	----------------------

BS11. Approximately how many microliters of blood were

<input type="text"/>	<input type="text"/>	<input type="text"/>
----------------------	----------------------	----------------------

BS5. At what time was the sample obtained?

<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>
h	h		m	m

BS12. At what time was the sample obtained?

<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>
h	h		m	m

BS6. Hemoglobin concentration from Hemocue

<input type="text"/>	<input type="text"/>	.	<input type="text"/>	g/dL
(put 88.8 if not measured/don't know)				

BS13. Hemoglobin concentration from Hemocue

<input type="text"/>	<input type="text"/>	.	<input type="text"/>	g/dL
(put 88.8 if not measured/don't know)				

BS7. ID Label - **MOTHER**

Affix mother label for blood here

BS14. ID Label - **CHILD**

Affix child label for blood here

Signature of site supervisor confirming woman or child was referred to primary health care provider for treatment if hemoglobin <7.0 g/dL.

Signature _____

Date _____

Don't forget to provide the mother with the Hb measurement results for herself and her baby. Ask mother to sign here to confirm receipt of Hb measurement results and referral (if appropriate).

Signature _____

Date _____

Signature of site supervisor confirming they have checked the questionnaire and it is complete:

Signature _____

Date _____

Interviewer Comments:

B. RUSSIAN

ИССЛЕДОВАНИЯ ПО ПИТАНИЮ НА НАЦИОНАЛЬНОМ УРОВНЕ

Заполните следующую информацию до проведения интервью.

НН1. Номер кластера

--	--

НН4. Код руководителя

--	--

НН2. Код интервьюера

--	--

НН5. Код оператора ввода данных

--	--

НН3. День/Месяц/Год интервью:

НН6. Код области

0	9				
д	д	м	м	г	г

02 Иссык-Кульская	05 Баткенская	08 Чуйская
03 Джалал-Абадская	06 Ошская	11 г.Бишкек
04 Нарынская	07 Таласская	21 г.Ош

НН7. Результат интервью Заполнено	1	НН8. Результат антропометрии Заполнено на мать/ребенка	1	НН9. Результат забора крови Заполнено на мать/ребенка	1	НН10. Место сбора данных Клиника	1
Отказано	2	Заполнено только на мать	2	Заполнено только на мать	2	Дома	2
Заполнено частично	3	Заполнено только на ребенка	3	Заполнено только на ребенка	3	Частично в клинике	3
Нет на интервью	4	На обоих не заполнено	4	На обоих не заполнено	4	Частично дома	4

Наклейка с ИН - РЕБЕНОК

Вклейте ее сюда

Л1. На каком языке было проведено интервью?

На кыргызском языке	1
На русском языке	2
Другое (укажите)	3

Если нет данных, собранных на маму и ребенка. Найдите информацию в клинике, у медицинского работника, члена СКЗ или посетив дом матери/ребенка.

НН11. Сколько лет (в годах) матери?

(поставьте 88, если не знаете/не можете выяснить)

--	--

НН15. Где живет семья?

Около или в центре села/города	1
На окраине села/города	2
Не в селе/городе	3
Прочее (укажите)	4
Не знаю	8

НН12. Каков возраст (в месяцах) ребенка?

(поставьте 88, если не знаете/не можете выяснить)

--	--

НН16. Сколько братьев/сестер есть у ребенка?

(поставьте 88, если не знаете/не можете выяснить)

--	--

НН13. Каков пол ребенка?

1=мужской; 2=женский

НН17. Работает/учится мать вне дома?

1=да; 0=нет; 8=не знаю/не могу выяснить

НН14. Какова этническая группа матери?

Кыргызы	1
Русские	2
Казахи	3
Узбеки	4
Таджики	5
Уйгуры	6
Прочее (укажите)	7

Не знаю

8

НН18. Причина неявки на интервью?

семья переехала из села/города	1
мать отказалась	2
семья (муж, свекровь, и т.д.) отказалась	3
мать больна	4
ребенок болен	5
матери нужно работать	6
не была приглашена в поликлинику	7
Прочее (укажите)	8
Не знаю/не могу выяснить	9

Мы из Министерства Здравоохранения и работаем по совместному проекту по вопросам питания и здоровья матери и ребенка. Я бы хотел(а) поговорить с вами об этом и записать ваши ответы на некоторые вопросы. На это интервью потребуется приблизительно 20 минут. После интервью мы взвесим и сделаем замеры вас и вашего ребенка, и возьмем небольшую пробу крови с вашего пальца и пальца вашего ребенка. На основе этой пробы мы сможем проинформировать вас, имеется ли у вас или вашего ребенка анемия. Единственной прямой выгодой для вас является знание статуса анемии у вас и вашего ребенка. Риск для вас маленький и состоит из возможного дискомфорта, вызванного прокалыванием пальца для получения пробы крови. Дискомфорт будет только временным и не будет очень большим. Вся полученная нами информация останется строго конфиденциальной и никто не будет знать, что это ваша информация, однако результаты гемоглобина будут переданы медицинскому работнику ФАПа/ГСВ. Вы вправе выбрать, участвовать в интервью, или нет, и если вы решите не участвовать, то это не будет иметь для вас никаких последствий. Если вы согласны участвовать, я бы хотел(а), чтобы вы подписали эту форму.

Мы можем начинать? Пожалуйста, подпишите.

Если вы получили разрешение, попросите респондента подписаться здесь, и начинайте интервью.

(Подпись) _____

(Ф.И.О.) _____

Согласие на участие женщины

(Подпись) _____

(Ф.И.О.) _____

Согласие на участие ребенка

НН19. Ваши Ф.И.О.?

(фамилия, имя, инициал отчества)

НН20. Имя ребенка?

(фамилия, имя, инициал отчества)

НН21. День, месяц и год рождения (имя ребенка)?
Спросите день его/ее рождения.

--	--	--	--	--	--

Д Д М М Г Г

(напишите 88 вместо день, месяц, или год, если не знаете/не помните)

Убедитесь, что ребенок родился в период между 1 июня 2004 г. и 31 декабря 2008 г. Если дата рождения не соответствует этому периоду, ребенок не может участвовать. Объясните это матери и поблагодарите ее за то, что пришла. Если мать не уверена, проверьте дату рождения по журналу регистрации в поликлинике.

НН22. Каков пол ребенка?

1=мужской; 2=женский

НН23. Кем вы являетесь (имя ребенка):

мать	1	1→НС1
бабушка	2	
тетя	3	
прочее (укажите)	6	

НН24. Почему (имя ребенка) мать не пришла сегодня?

на работе/на учебе	1	Если мать отсутствует, указать причину и перейти к AN1
болеет	2	
не захотела прийти	3	
семья не разрешила	4	
занята дома/домашней работой	5	
прочее (укажите)	7	
не знаю	8	

Модуль характеристики домохозяйств

НС

Я теперь хотела бы задать вам несколько вопросов о вашем доме и о тех, кто живет в нем.

НС1. Ваша семья получает сейчас единое ежемесячное пособие малообеспеченным семьям (ЕЕП)?

1=да; 0=нет; 8=не знаю

НС2. Сколько детей включая (имя ребенка) в возрасте 6-59 месяцев живут в вашем доме?

Модуль для женщины

WM

WM1. Какой у вас [у матери] родной язык?	
Кыргызский	1
Русский	2
Казахский	3
Узбекский	4
Другой (укажите) _____	6
Не знаю	8

WM2. Дата вашего [матери] рождения?	
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
Д Д М М Г Г	
(напишите 88 вместо день, месяц, или год, если не знаете/не помните)	

WM3. Сколько живых детей вы [мать] имеете?	<input type="text"/>	<input type="text"/>
--	----------------------	----------------------

WM4. Какой самый высокий уровень образования вы получили?	
Никогда не посещала	0
Начальное (1-4 класс)	1
Неполное среднее (5-9)	2
Полное среднее	3
Средне-техническое образование	4
Высшее	5
Религиозная учебная программа	6
Не знаю	8

WM5. Вы замужем в настоящее время?	<input type="text"/>
1=да; 0=нет	0→WM7

WM6. Какой самый высокий уровень образования получил ваш супруг?	
Никогда не посещал	0
Начальное (1-4 класс)	1
Неполное среднее (5-9)	2
Полное среднее	3
Средне-техническое образование	4
Высшее	5
Религиозная учебная программа	6
Не знаю	8

WM7. В настоящее время вы [мать] работаете, либо учитесь вне дома (например, как сотрудник, владелец бизнеса, работник на поле, и т.д.)?	<input type="text"/>
1=да; 0=нет	0→WM12

WM8. Какой вид работы или учебы у вас [у матери]?	
работник (на полях)	1
продавец продуктов, фруктов, товаров домашнего приг. и др.	2
сотрудник предприятия	3
владелец бизнеса	4
специалист (медсестра, врач, учитель, фармацевт, т.д.)	5
студент	6
другое (укажите) _____	7
не знаю	8

WM9. Сколько часов в день вы [мать] ОБЫЧНО находитесь на работе или учебе вне дома?	<input type="text"/>	<input type="text"/>
(напишите 88, если не знаете)		

WM10. Кто ОБЫЧНО заботится о ребенке (имя ребенка) пока вы [мать] вне дома?	
Мать (берет ребенка с собой)	1
Бабушка ребенка	2
Сестры/братья ребенка	3
Отец ребенка	4
Другой член семьи	5
Няня	6
Детский сад	7
Прочие (укажите) _____	8
Не знаю	9

WM11. Кто ОБЫЧНО кормит ребенка (имя ребенка) пока вы [мать] вне дома?	
Мать (берет ребенка с собой)	1
Бабушка ребенка	2
Сестры/братья ребенка	3
Отец ребенка	4
Другой член семьи	5
Няня	6
Детский сад	7
Прочие (укажите) _____	8
Не знаю	9

WM12. Как часто кто-нибудь помимо матери кормит (имя ребенка)?	
никогда	0
Менее 1 раза в день	1
1 раз в день	2
2 раза в день	3
3 раза в день	4
Более 3 раз в день	5
Не знаю	8

Иногда мамы оставляют своих детей с друзьями или членами семьи, чтобы куда-то уйти, поэтому они могут не знать всего, что ребенок ест в это время, потому что кто-то другой кормит ребенка.....

WM13. Используя шкалу, оцените, как много вы знаете о том, что обычно ест (имя ребенка)	<input type="text"/>
(покажите шкалу и отметьте цифру, соответствующую ответу)	

Грудное вскармливание и питание младенца**BF**

Теперь бы я хотела задать вам несколько вопросов о кормлении грудью и питании (имя ребенка)

BF1. (имя ребенка) когда-либо кормили грудью? 1=да; 0=нет	<input type="text"/>	0→BF3
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BF2. Приблизительно в течение какого времени после рождения (имя ребенка) был впервые приложен к груди?	<input type="text"/>
Сразу же (менее 1 часа после рождения)	0
В течение первых 24 часов	1
Между 24 - 48 часами	2
Более 48 часов	3
Не знаю/не помню	8

Следующие несколько вопросов касаются того, когда впервые (имя ребенка) дали что-то еще помимо грудного молока.	
BF3. Сколько было [имя ребенка] в месяцах, когда (ему/ей) дали впервые молоко животных, сухое молоко или смесь?	<input type="text"/>
(если младше 1 месяца, поставьте 00; если НИКОГДА не давали молоко, сухое молоко или смесь, поставьте 99; если не знаете, поставьте 88)	<input type="text"/>
(округлите в меньшую сторону до ближайшего целого месяца)	М М

BF4. Следующий вопрос будет о жидкостях. Пожалуйста, включите все жидкости, такие как молоко животных, сухое молоко, смесь, сок, воду, сладкую воду, компот, чай или другое, что могли давать (имя ребенка). Сколько было (имя ребенка) в месяцах, когда ему/ей впервые дали жидкость, даже чай, помимо грудного молока?	
(если младше 1 месяца, поставьте 00, если НИКОГДА не давали ничего, кроме грудного молока, поставьте 99, если не знаете, поставьте 88)	<input type="text"/>
(округлите в меньшую сторону до ближайшего целого месяца)	М М

BF5. Следующий вопрос будет о густой или твердой пище. Пожалуйста, включите всю твердую пищу, такую как каши, рис, злаковые, булмык или другое, что могли давать (имя ребенка). Сколько было (имя ребенка) в месяцах, когда ему/ей впервые дали твердую пищу?	
(если младше 1 месяца, поставьте 00, если НИКОГДА не давали ничего, кроме грудного молока, поставьте 99, если не знаете, поставьте 88)	<input type="text"/>
(округлите в меньшую сторону до ближайшего целого месяца)	М М

Теперь вспомните обо всем, что (имя ребенка) выпил или съел с этого часа со вчерашнего дня. Не забудьте про легкий прием пищи и еду, или жидкости ночью, или что (имя ребенка) ел с кем-то, помимо вас.

BF6. С этого времени со вчера давалось ли (имя ребенка) что-нибудь из следующего: (прочитайте вслух каждое название и сделайте запись ответа, прежде чем приступить к следующему наименованию) 1=да; 0=нет; 8=не знаю	<input type="text"/>
Грудное молоко	a <input type="text"/>
Молоко животных, йогурт, кефир, сыр и т.д.	b <input type="text"/>
Молочная смесь, сухое молоко (образец: как называется?) Название торговой марки	c <input type="text"/>
фасоль, горох или орехи	d <input type="text"/>
каша, картофель, лапша, свекла	e <input type="text"/>
мясо, рыба, птица, печень/внутренности	f <input type="text"/>
яйца	g <input type="text"/>
морковь, тыква, помидоры	h <input type="text"/>
другие фрукты или овощи (шпинат, сушеный урюк, огурцы)	i <input type="text"/>
хлеб или печенье	j <input type="text"/>
купленная детская крупа/питание Название торговой марки	k <input type="text"/>
любое питание с добавками Спринклз (показать пакет)	l <input type="text"/>

BF7. С этого часа вчера сколько раз кормили (имя ребенка): (если больше 7, поставьте 7. Если не знаете, поставьте 8). ("кормили" означает любая еда или перекус, не включая маленькие объемы)	<input type="text"/>
любая твердая, густая или мягкая пища, типа каши, злаковых, мяса, овощей, печенья, фруктов и т.д.	a <input type="text"/>
Грудное молоко	b <input type="text"/>
Молоко животных, сухое молоко, смесь	c <input type="text"/>
что-нибудь из бутылочки	d <input type="text"/>

BF8. Вы перестали кормить грудью (имя ребенка)?	<input type="text"/>
1=да; 0=нет	0→AB1

BF9. В каком возрасте в месяцах вы перестали кормить грудью (имя ребенка)? (поставьте 88, если не знаете/не помните)	<input type="text"/>
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Модуль отношения, поведения**AB**

Мы заинтересованы в том, чтобы знать, что матери думают о грудном вскармливании и питании своих детей. Я хочу спросить вас, что вы думаете о грудном вскармливании и питании своего ребенка. Помните, что здесь нет ни правильных, ни неверных ответов на любой из этих вопросов. Мы просто хотим знать, что вы думаете по этому поводу.

AB1. Используя эту шкалу, как бы вы описали важность грудного вскармливания для здоровья и питания ребенка?
(покажите шкалу и отметьте цифру, соответствующую ответу)

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AB2. Используя эту шкалу, как бы вы описали важность кормления другими видами молока или смесью для здоровья и питания ребенка?
(покажите шкалу и отметьте цифру, соответствующую ответу)

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AB3. По вашему мнению, следует ли вскармливать ребенка грудью?
1=да; 0=нет **0→AB5**

AB4. По вашему мнению, сколько месяцев следует вскармливать ребенка грудью?
(поставьте 00, если <1 мес; 88 - если не знаете)

M	M

AB5. По вашему мнению, в каком возрасте в месяцах ребенок должен начинать пить другие жидкости (чай, вода, молоко и т.д.)?
(поставьте 00, если <1 мес; 88 - если не знаете)

M	M

AB6. По вашему мнению, в каком возрасте в месяцах ребенок должен начинать есть пищу типа каши, злаковых, булмык, и т.д.?
(поставьте 00, если <1 мес; 88 - если не знаете)

M	M

AB7. Некоторые считают, что грудное вскармливание имеет преимущества, а некоторые так не считают. По-вашему, есть ли преимущества при грудном вскармливании?
1=да; 0=нет; 8=не знаю **0→AB9**
8→AB9

AB8. По вашему мнению, каковы преимущества грудного вскармливания?
(не читайте, отметьте упомянутое цифрой 1)

полезно для малыша и/или матери	a	
грудное молоко богато витаминами/полезными веществами	b	
экономия денег	c	
экономия времени	d	
защита ребенка от инфекций	e	
безопаснее, чем кормление ч/з бутылочку	f	
Другое (укажите) _____	g	

AB9. Некоторые считают, что грудное вскармливание имеет недостатки, а некоторые так не считают. По-вашему, есть ли недостатки при грудном вскармливании?
1=да; 0=нет; 8=не знаю **0→DA1**
8→DA1

AB10. По вашему мнению, каковы недостатки при грудном вскармливании? Причины, которые делают его более трудным.
(не читайте, отметьте упомянутое цифрой 1)

мама не может оставить ребенка надолго (т.е., работа, гости)	a	
мама должна следить за своим питанием	b	
болезненность грудных сосков	c	
беспокойство о нехватке молока	d	
беспокойство о том, что молоко матери не содержит достаточно питательных веществ	e	
Другое (укажите) _____	f	

Модуль советов о питании**DA**

Когда женщина беременна и после рождения ребенка, многие люди дают советы относительно ее питания, кормления грудью и питания ребенка. Некоторым советам мы следуем, а некоторым нет. Я хочу спросить вас именно о совете, полученном вами. не имеет значения следовали ли вы этому совету или нет. Мне просто интересно, какой совет вам дали и кто.

DA1. Получали ли вы советы по питанию в период вашей беременности?

1=да; 0=нет; 8=не знаю

0→DA4
8→DA4

DA2. Давали ли вам врач, медсестра, акушер или фельдшер советы по питанию?

1=да; 0=нет

DA3. Давал ли вам член семьи, друг или сосед советы по питанию?

1=да; 0=нет

DA4. Давали ли вам врач, медсестра, акушер или фельдшер советы по грудному вскармливанию?

1=да; 0=нет; 8=не знаю

0→DA8
8→DA8

DA5. Как долго (в месяцах) советовали вам врач, медсестра, акушер или фельдшер кормить грудью, не давая другие жидкости или густую пищу?

(Поставьте 00, если < 1 мес; 88 - если не знаете/не помните; 99 - если не давали советы по длительности или не указывали длительность)

М М

DA6. В каком возрасте (в месяцах) советовали вам врач, медсестра, акушер или фельдшер прекратить грудное вскармливание?

(Поставьте 00, если < 1 мес; 88 - если не знаете/не помните; 99 - если не давали советы по длительности или не указывали длительность)

М М

DA7. Используя шкалу, оцените насколько важны советы по грудному вскармливанию, которые мы получаем от врача, медсестры, акушера или фельдшера?

(покажите шкалу и отметьте цифру, соответствующую ответу)

DA8. Давали ли вам советы по грудному вскармливанию члены семьи, друзья или соседи?

1=да; 0=нет

0→DA12

DA9. Как долго (в месяцах) советовали вам члены семьи, друзья или соседи кормить грудью без кормления другими жидкостями или сухим питанием?

(Поставьте 00, если < 1 мес; 88 - если не знаете/не помните; 99 - если не давали советы по длительности или не указывали длительность)

М М

DA10. В каком возрасте (в месяцах) советовали вам члены семьи, друзья, соседи прекратить грудное вскармливание?

(Поставьте 00, если < 1 мес; 88 - если не знаете/не помните; 99 - если не давали советы по длительности или не указывали длительность)

М М

DA11. Используя шкалу, оцените насколько важны советы по грудному вскармливанию, которые мы получаем от семьи, друзей или соседей?

(покажите шкалу и отметьте цифру, соответствующую ответу)

Интервьюер! Задайте вопрос, если хотя бы один из ответов DA4, DA8=1

DA12. Используя шкалу, оцените, насколько полученные советы повлияли на ваши собственные решения в отношении грудного вскармливания.

(покажите шкалу и отметьте цифру, соответствующую ответу)

Модуль витаминов/добавок**VS**

Я теперь задам вам вопросы о витаминах и добавках, которые могли принимать вы и ваш ребенок. Некоторые люди принимают эти добавки, а некоторые не принимают их, и это нормально. Я начну с добавок, которые вы, возможно, могли принимать.

VS1. Во время вашей последней беременности принимали ли вы подобную добавку фолиевой кислоты? (Покажите диспенсер) 1=да; 0=нет; 8=не знаю	<input type="text"/>
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VS7. Как давно (в месяцах) (имя ребенка) в последний раз принимал капсулу с витамином А? (поставьте 00, если < 1 мес; 88 - если не знаете/не помните)	<input type="text"/>	<input type="text"/>
	M	M

VS2. Во время вашей последней беременности принимали ли вы подобную добавку железа? (Покажите диспенсер) 1=да; 0=нет; 8=не знаю	<input type="text"/>
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VS8. Говорил ли вам врач или медсестра, что у (имя ребенка) анемия? 1=да; 0=нет; 8=не знаю	<input type="text"/>
	0→VS10 8→VS10

VS3. Принимали ли вы подобную дозу витамина А в первые два месяца после рождения самого младшего ребенка? (Покажите капсулу витамина А) 1=да; 0=нет; 8=не знаю	<input type="text"/>
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VS9. (имя ребенка) принимал железосодержащий сироп или таблетки для лечения анемии? 1=да; 0=нет; 8=не знаю	<input type="text"/>
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VS4. Говорил ли вам врач или медсестра о том, что у вас анемия? 1=да; 0=нет; 8=не знаю	<input type="text"/>
	0→VS6 8→VS6

VS10. Давали ли вы, или кто-то другой, когда-либо (имя ребенка) что-нибудь из этих витаминно-минеральных добавок? (прочитайте список и отметьте каждый ответ)	
Витамин Д	a <input type="text"/>
Рыбий жир	b <input type="text"/>
Мультивитамины	c <input type="text"/>
Другое (укажите)	d <input type="text"/>
1=да; 0=нет; 8=не знаю	

VS5. Принимали ли вы железосодержащие капсулы или сироп для лечения анемии у вас? 1=да; 0=нет; 8=не знаю	<input type="text"/>
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VS11. Вы когда-нибудь видели подобную упаковку Спринклз? (Покажите пакет Спринклз) 1=да; 0=нет; 8=не знаю	<input type="text"/>
	0→FF1 8→FF1

Теперь я хочу задать несколько вопросов насчет витаминов, минералов и добавок, которые, возможно, мог принимать (имя ребенка). Это нормально, если (имя ребенка) не принимал этих добавок.	
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VS6. Принимал ли (имя ребенка) подобную капсулу витамина А? (Покажите 100000МЕ для детей 6-11 месяцев) (Покажите 200000МЕ для детей 12-59 месяцев) 1=да; 0=нет; 8=не знаю	<input type="text"/>
	0→VS8 8→VS8

VS12. Вы когда-нибудь получали подобную упаковку Спринклз? (Покажите пакет Спринклз) 1=да; 0=нет; 8=не знаю	<input type="text"/>
	0→FF1 8→FF1

VS13. (имя ребенка) когда-нибудь употреблял Спринклз? 1=да; 0=нет; 8=не знаю	<input type="text"/>
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Модуль обогащенной муки**FF**

Сейчас я задам вам вопрос о муке, которую вы используете для выпечки хлеба или тортов, либо других блюд в вашем доме.

FF1. Сколько муки потребляет ваша семья за один месяц (в кг)?

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Если семья не потребляет муку, перейдите к FF6

FF2. Какой сорт муки вы обычно используете в приготовлении пищи?

Высшего сорта	1	1→FF4
Первого сорта	2	2→FF4
Второго сорта	3	3→FF4
Муку, перемолотую из собственного зерна	4	4→FF3

FF3. С какой мукой вы смешиваете муку, перемолотую из собственного зерна?

Не смешиваю перемолотую муку с другой мукой	0	0→FF6
Высшего сорта	1	
Первого сорта	2	
Второго сорта	3	
Не знаю	8	

FF4. Где вы обычно покупаете муку для выпечки?

Продовольственный магазин	1
Рынок	2
Мельница	3
Другое (укажите) _____	4
Не знаю	8

FF5. При покупке муки какую именно муку вы покупаете чаще?

казахстанскую	1
национальную (кыргызскую)	2
местную (из района)	3
Не знаю	8

FF6. Вы слышали когда-нибудь о муке, обогащенной витаминно-минеральными добавками?

1=да; 0=нет

0→VHC1

FF7. Есть ли, по-вашему, преимущества использования обогащенной муки?

1=да; 0=нет; 8=не знаю

0→VHC1

8→VHC1

FF8. По вашему мнению, каковы преимущества обогащенной муки? (Не читайте. Отметьте упомянутые пункты цифрой 1, неупомянутые - 0)

Мука имеет более высокое качество	a	
Вкус муки лучше	b	
Дети больше любят муку	c	
Дети растут лучше	d	
Содержит витамины/минералы	e	
Дети становятся умнее	f	
Дети становятся крепче	g	
Оздоровляет детей	h	
Оздоровляет мужчин/женщин	i	
Предупреждает анемию	j	
Предупреждает болезни	k	
Влияет отрицательно	l	
Другое (укажите) _____	m	

FF9. Если бы у вас было право выбора из двух буханок хлеба одинакового веса и цены, но одна бы содержала витаминно-минеральные добавки, а другая - нет; какую буханку вы бы купили?

Буханка с витаминно-минеральными добавками	1
Буханка без витаминно-минеральных добавок	2
Мне все равно	3
Не знаю	8

Модуль контактов с СКЗ**VHC**

В некоторых селах Кыргызской Республики существуют Сельские комитеты здоровья. Я хотела вас спросить, что вы слышали об СКЗ. Помните, нет правильных ответов или неправильных ответов, мы просто хотим знать что вы слышали об этом и ваш личный опыт.

VHC1. Вы когда-нибудь слышали о Сельском комитете здоровья (СКЗ)?
1=да; 0=нет; 8=не знаю

0→P1

VHC2. Вы когда-нибудь разговаривали с кем-нибудь из СКЗ о вопросах здоровья?
1=да; 0=нет; 8=не знаю

0→P1

8→P1

VHC3. Сколько времени прошло с тех пор, как вы в последний раз разговаривали с членом СКЗ о вопросах здоровья?

> 1 года назад	0
6-12 месяцев назад	1
3 - 6 месяцев назад	2
1- 3 месяца назад	3
< 1 месяца назад	4

VHC4. Разговаривали ли вы с членом СКЗ о вопросах вашего питания во время беременности, или о грудном вскармливании или питании ребенка?
1=да; 0=нет; 8=не знаю

0→P1

8→P1

VHC5. Используя шкалу, насколько полезными, по-вашему, были визиты к членам СКЗ (по вопросам питания, грудного вскармливания или питания ребенка)?
(покажите шкалу и отметьте цифру, соответствующую ответу)

VHC6. Заинтересованы ли вы в получении советов от СКЗ?
1=да; 0=нет; 8=не знаю

0→P1

8→P1

VHC7. По каким вопросам вы бы хотели получить совет?
(Запишите все упомянутые темы)

Беременность**P**

Прежде чем мы продолжим, мне нужно знать, беременны ли вы. Даже если вы не уверены, но думаете, что возможно вы беременны, но не знаете точно, нам бы хотелось знать это.

P1. Вы беременны сейчас?
1=да; 0=нет; 7=может быть, не уверена; 8=не знаю

0→AN1

7→AN1

8→AN1

WM9. Сколько часов в день вы [мать] ОБЫЧНО находитесь на работе или учебе вне дома?
(напишите 88, если не знаете)

Если ДА (1), то не нужно брать кровь или производить антропометрические замеры у матери. Возьмите кровь и замеры только у ребенка.

Модуль пробы крови**BS**

Последнее, что мы сделаем сегодня, это возьмем небольшое количество крови с вашего пальца и пальца вашего ребенка. Это может причинить немного дискомфорта, но мы сможем сказать, есть ли у вас или вашего ребенка анемия.

BS1. Когда вы ели в последний раз?

<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>
ч	ч		м	м

BS2. Была ли получена капиллярная проба от матери?

1=да, 0=нет

1→BS4

BS3. Почему нет?

1=отказалась 3=не присутствовала
2=беременна 4=технические
5=прочее (укажите)_____ трудности

→BS7

BS8. Когда (имя ребенка) в последний раз принимал питание?

<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>
ч	ч		м	м

BS9. Была ли получена капиллярная проба у ребенка?

1=да, 0=нет

1→BS11

BS10. Почему нет?

1=отказался (плакал, 3=не
бил ножками и т.д.) присутствовала
2=мать/ 4=технические
сопровождающий трудности
отказались
5=прочее (укажите)_____

→BS14

BS4. Приблизительно сколько микролитров крови было собрано в микротейнере?

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
----------------------	----------------------	----------------------	----------------------

BS11. Приблизительно сколько микролитров крови было собрано в микротейнере?

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
----------------------	----------------------	----------------------	----------------------

BS5. В какое время была взята проба?

<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>
ч	ч		м	м

BS12. В какое время была взята проба?

<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>
ч	ч		м	м

BS6. Концентрация гемоглобина из Гемокью

<input type="text"/>	<input type="text"/>	.	<input type="text"/>	г/длитр
----------------------	----------------------	---	----------------------	---------

(поставьте 88.8 если не измерялось/не знаете)

BS13. Концентрация гемоглобина из Гемокью

<input type="text"/>	<input type="text"/>	.	<input type="text"/>	г/длитр
----------------------	----------------------	---	----------------------	---------

(поставьте 88.8 если не измерялось/не знаете)

BS7. Идентификационная бирка - **МАТЬ**

Поставьте бирку крови матери здесь

BS14. Идентификационная бирка - **РЕБЕНОК**

Поставьте бирку крови ребенка здесь

Подпись супервайзера по исследованию, подтверждающая, что женщина или ребенок были направлены в медицинское учреждение на лечение, в случае, если гемоглобин <7,0 г/длитр

Подпись _____ Дата _____

Не забудьте предоставить матери результаты ее анализа гемоглобина и анализа гемоглобина ее ребенка. Попросите мать расписаться здесь в подтверждение того, что она получила результаты анализа гемоглобина и направление (если необходимо).

Подпись _____ Дата _____

Подпись супервайзера по исследованию, подтверждающая, что вопросник проверен и заполнен:

Подпись _____ Дата _____

Комментарии интервьюера:

C. KYRGYZ

ТАМАКТАНУУ БОЮНЧА УЛУТТУК ДЕҢГЭЭЛДЕ ИЗИЛДӨӨ

Интервьюну баштаардан мурун төмөнкү маалыматты толтуруңуз

НН1. Кластердин номери

НН4. Жетекчинин коду

НН2. Интервьюердин коду

НН5. Маалымат киргизген оператордун коду

НН3. Интервью Күн/ Ай/ Жыл:

НН6. Код области

					0	9
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02 Ысык-Көл	05 Баткен	08 Чуй
03 Жалалабат	06 Ош обл.	11 Бишкек ш.
04 Нарын	07 Талас	21 Ош ш.

к к а а ж ж

НН7. Интервьюнун жыйынтыгы	НН8. Антропометрия жыйынтыгы	НН9. Кан чогултуунун жыйынтыгы	НН10. Маалымат чогултулган жер
Толук	Апа/баласына толтурулду	Апа/баласына толтурулду	Клиника
1	1	1	1
Жооп берүүдөн баш тартты	Апасына гана толтурулду	Апасына гана толтурулду	Үй
2	2	2	2
Толук эмес толтурулган	Баласына гана толтурулду	Баласына гана толтурулду	Бир бөлүгү клиникада
3	3	3	3
Маалымат берүүгө келе алган жок	Экөөнө тең толтурулган жок	Экөөнө тең толтурулган жок	Бир бөлүгү үйдө
4	4	4	4

БАЛАНЫН идентификациялык номери (лейбл)

Ушул жерге чаптаныз

L1. Кайсы тилинде интервью өткөздүңөр?

Кыргыз тилинде	1
Орус тилинде	2
Башка (жазыңыз)	3

Эгер апа/бала тууралуу эч кандай маалымат чогултулбаса, анда маалыматты клиникадан, медицина кызматкерлеринен, АДК волонтерлордон, же апа/бала жашаган үйгө барып алуу керек.

НН11. Апасы канчада? (жашын жыл менен көрсөткүлө)

(Эгер билбесеңиз же тактай албасаңыз 88 деп жазыңыз)

НН15. Үй-бүлө кайсы жерде жашайт?

Айылдын борборунда же борборуна жакын жерде	1
Айылдын чет жагында	2
Айылда эмес	3
Башка (жазыңыз)	4
Билбейм	8

НН12. Баласы канчада? (жашын ай менен көрсөткүлө)

(Эгер билбесеңиз же тактай албасаңыз 88 деп жазыңыз)

НН13. Баланын жынысы?

1=эркек; 2=кыз

НН16. Баланын канча бир тууганы бар?

(Эгер билбесеңиз же тактай албасаңыз 88 деп жазыңыз)

НН14. Эненин улуту?

Кыргыз	1
Орус	2
Казак	3
Өзбек	4
Тажик	5
Уйгур	6
Башка (жазыңыз)	7
Билбейм	8

НН17. Апасы үйдөн сырт жакта иштейби/окуйбу?

1=ооба; 0 = жок; 8=билбейм/тактай алган жокмун

НН18. Интервьюга келбей калганынын себеби?

Үй-бүлө айылдан көчүп кетти	1
Апасы жооп берүүдөн баш тартты	2
Үй-бүлө (күйөөсү, кайненеси, ж.б.) уруксат берген жок	3
Апасы ооруп жатат	4
Баласы ооруп жатат	5
Апасы иштеш керек	6
Поликлиникага чакырылган эмес	7
Башка (жазыңыз)	8
Не знаю/не могу выяснить	9

Биз Саламаттык сактоо министрлигинен келдик. Биз апа/баланын тамактануусу жана ден-соолугу тууралуу иш жүргүзгөн биргелешкен проектте иштейбиз. Мен сиз менен ушул тууралуу сүйлөшүп, меңдеги суроолорго жооп алсамбы дедим эле. Бул интервью жалпысынан 20 минутадай убакытты алат. Интервьюдан кийин сиздин жана балаңыздын салмагын, боюн ченеп, экөөңөрдүн тең бармагынардан бир аз кан алабыз. Бул кан алуунун себеби сизде жана сиздин балаңызда анемия бар же жок экенин аныктоо. Сиздер үчүн бул маалыматты билип алуу абдан пайдалуу болот деп ойлойбуз. Кан алып жатканда эч кандай зыянчылык болбойт, бир гана бармакты тешкенде эле кичине жагымсыз сезим болушу мүмкүн. Бул ыңгайсыздык көпкө созулбайт. Биз сизден алган маалыматты эч бир адам менен бөлүшпөйбүз, жана эч ким бул маалыматтын сизге таандык экенин билбейт, бирок гемоглобиндин натыйжасы жөнүндөгү маалымат айылдагы поликлиникага берилет. Сиз интервью берүүгө же бербөөгө укугуңуз бар, эгерде сиз интервью берүүнү каалабасыз, сиз үчүн эч кандай кесепеттүү натыйжалар болбойт.

Эгер сиз макул десеңиз, бул формага кол коюшуңуз керек болот. Баштайлыбы? Анда бул жерге колуңузду коюп койсоңуз.

Эгер макулдугун берсе, бул жерге колун койдуруп интервьюну баштаңыз.

(Колу)	_____	(Аты жөнү)	_____
	Энесинин (апасынын) макулдугу		
(Колу)	_____	(Аты жөнү)	_____
	Баласынын макулдугу		

НН19. Сиздин аты жөнүңүз?

(фамилия, аты, атасынын аты)

НН20. Баланын аты ким?

(фамилия, аты, атасынын аты)

НН21. (баланын аты) туулган күнү, айы, жылы?
Туулган күнү качан?

к	к	а	а	ж	ж

(эгер билбесе/эстей албаса күн, ай, жылдын ордуна 88 деп жазыңыз)

Бала 2004 жылдын 1-июнь айынан 2008 жылдын 31-декабрь айына чейин төрөлгөнүн текшериниз. Эгерде ушул даталарга туура келбесе, бала катыша албайт. Муну баланын апасына түшүндүрүп, келгендиги үчүн ыраазычылык билдирип коюңуз. Эгер апасы баласынын туулган күнүн так билбесе, анда баланын туулган күнүн поликлиникадагы каттоодон тактаңыз.

НН22. Баланын жынысы? _____

1=эркек; 2=кыз

НН23. Сиз (баланын аты жөнү) кимиси болосуз:

апасы	1	1→HC1
чоң апасы	2	
эжеси, таяжеси	3	
башка (жазыңыз)	6	

НН24. Эмне себептен (баланын аты)нын апасы бул жерде эмес?

окуп жатат/иштеп жатат	1	Эгерде апасы келбесе, себебин жазып өтүңүз
ооруп жатат	2	
келгиси келген жок	3	
Үй-бүлөсү уруксат берген жок	4	
колу бош эмес	5	
башка (жазыңыз)	7	
билбейм	8	

Үй-чарбасы тууралуу аныктоо модулу **HC**

Азыр мен Сизден Сиздин үйүңүз жана бул үйдө жашаган адамдар тууралуу суроо бергим келет.

HC1. Үй-бүлөңүз бүгүнкү күндө айлык социалдык жардам алабы?

1=ооба; 0 = жок; 8= билбейм

HC2. Сиздин үйүңүздө 6 айдан 59 айга чейинки канча бала жашайт (баланын аты)?

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Аялдардын Модулу

WM

WM1. Сиздин [апасы] эне тилиңиз кайсы?	
Кыргыз	1
Орус	2
Казак	3
Өзбек	4
Башка (жазыңыз) _____	6
Билбейм	8

WM2. Сиздин [апасы] туулган жылыңыз?	

к к а а ж ж	
(эгер билбесе/эстей албаса күн, ай, жылдын ордуна 88 деп жазыңыз)	

WM3. Сиздин [апасы] азыркы учурда канча тирүү балаңыз бар?		

WM4. Сиздин [апасы] алган билимиңиздин эң жогорку деңгээли кандай?	
Эч кандай билим жок	0
Баштапкы (1-4 класс)	1
Толук эмес орто билимдүү (5-9)	2
Толук орто билимдүү	3
Техникалык орто билимдүү	4
Жогорку	5
Диний билим алгам	6
Билбейм	8

WM5. Азыркы учурда сиз турмуштасызбы?	
1=ооба; 0 = жок	0→WM7

WM6. Сиздин жолдошунуздун алган билиминин эң жогорку деңгээли кандай?	
Эч кандай билим жок	0
Баштапкы (1-4 класс)	1
Толук эмес орто билимдүү (5-9)	2
Толук орто билимдүү	3
Техникалык орто билимдүү	4
Жогорку	5
Диний билим алган	6
Билбейм	8

WM7. Сиз [апасы] азыркы учурда үйдөн сырт жакта иштейсизби же окуйсузбу (мисалы: мекемеде, өзүңүздүүүн бизнесиңиз барбы, талаада иштейсизби, ж.б.)?	
1=ооба; 0 = жок	0→WM12

WM8. Сиз [апасы] кандай жумушта иштейсиз же окуйсузбу?	
талаада жумушчу	1
тамак-аш, жашылча-жемиш, үйдөн жасалган нерселердин же башка нерселердин сатуучусу	2
бизнес кызматкери	3
бизнес ээси	4
кесип ээси (медсестра, доктор, мугалим, аптекар, ж.б.)	5
студент	6
башка (жазыңыз) _____	7
билбейм	8

WM9. КӨБҮНЧӨ сиз күнүнө канча сааттай үйдөн сырт жакта окууда же иште болосуз? (билбесе, 88 деп жазыңыз)		

WM10. Сиз [апасы] үйдө эмес болгондо КӨБҮНЧӨ (баланын аты) ким карап калат?	
Апасы (баланы өзү менен кошо алып кетет)	1
Баланын чоң энеси	2
Баланын эже/байкелери	3
Баланын атасы	4
Үй-бүлөнүн башка мүчөлөрү	5
Бала баккан киши	6
Балдар бакчасы	7
Башка (жазыңыз) _____	8
Билбейм	9

WM11. Сиз [апасы] үйдө эмес болгондо КӨБҮНЧӨ Ким (баланын аты) тамак берет?	
Апасы (баланы өзү менен кошо алып кетет)	1
Баланын чоң энеси	2
Баланын эже/байкелери	3
Баланын атасы	4
Үй-бүлөнүн башка мүчөлөрү	5
Бала баккан киши	6
Балдар бакчасы	7
Башка (жазыңыз)	8
Билбейм	9

WM12. Канча маал апасынан башка киши (баланын аты) тамак берет?	
эч качан	0
күнүнө <1 жолу	1
күнүнө 1 жолу	2
күнүнө 2 жолу	3
күнүнө 3 жолу	4
күнүнө 3 жолудан ашык	5
Билбейм	8

Кээде апалар балдарын тууган-туушкандарга же досторуна убактылуу калтырып кетишет, ошондуктан баланын ошол учурда эмне жегенин билбеши мумкун, анткени баланы башка киши тамактандырат.....

WM13. Шкаланы колдонуу менен айтсаныз Сиз (баланын аты) КӨБҮНЧӨ кандай тамактарды жээрин канчалык жакшы денгээлде билесиз? (шкаланы көрсөтүп, жоопко дал келген санды жазыңыз)	

Эмчек берүү жана кичинекей баланын тамактануусу

BF

Азыр Сизден мен (баланын аты) эмчек эмүүсү жана тамактануусу жөнүндө сурайын дедим эле.

BF1. (Баланын аты) эмчек эмип чоңойду беле?

1=ооба; 0 = жок

0→BF3

BF2. Болжолдоп айтканда, төрөлгөндөн кийин канча убакыттан кийин (баланын аты) эмчек эме баштады?

Төрөлгөндөн кийин 1 саатка жетпей	0
Биринчи 24 сааттын ичинде	1
24-48 сааттын аралыгында	2
48 сааттан кийин	3
Билбейм/эсимде жок	8

Следующие несколько вопросов касаются того, когда впервые (имя ребенка) дали что-то еще помимо грудного молока.

BF3. Келерки суроолор (баланын аты) (жашын ай менен көрсөткүлө) биринчи жолу эне сүттөн башка тамактарды мисалы малдын сүтүн, смесь, кургатылган, сүт, биринчи жолу ичкенде канча айда эле?

(эгер 1 айдан аз болсо 00, ЭЧ КАЧАН малдын сүтүн, кургак сүт, смесь ичпесе 99, билбесе 88 деп жазыңыз) (айы толук эмес болсо, кайсы айга толгонун жазышыңыз керек)

a a

BF4. Келерки суроо суюктуктар тууралуу болот.

(Баланын аты) ичкен бардык суюктуктарды эстеңиз: (малдын сүтү, кургак сүт, сүт аралашмалары, сок, суу, таттуу суу, компот, чай, ж.б. суюктуктарды). Эненин сүтүнөн башка суюктук же болбосо чай биринчи жолу (баланын аты) (жашын ай менен көрсөткүлө) берилгенде ал канча жашта эле?

(эгер 1 айдан аз болсо 00, эненин сүтүнөн башка ЭЧ НЕРСЕ ичпесе 99, билбесе 88 деп жазыңыз) (айы толук эмес болсо, кайсы айга толгонун жазышыңыз керек)

a a

BF5. Келерки суроо кургак жана койуу тамактар тууралуу. (Баланын аты) жеп жүргөн ботко, күрүч, буламык сыяктуу бүт койуу тамактарды эстеңиз. Биринчи жолу кургак жана койуу тамак жегенде (баланын аты) (жашын ай менен көрсөткүлө) канча жашта эле?

(эгер 1 айдан аз болсо 00, эненин сүтүнөн башка ЭЧ НЕРСЕ берилбесе 99, билбесе 88 деп жазыңыз) (айы толук эмес болсо, кайсы айга толгонун жазышыңыз керек)

a a

Эстеп көрсөңүз, (баланын аты) кечээден баштап азыркы убакка чейин эмнелерди жеп, эмнелерди ичти эле. Бала шам-шум, түнүчүндө жеген, ичкен нерселерин да унутпаңыз. Ошондой эле, сизден башка (баланын аты) ким тамак бергенин да эске алсаңыз.

BF6. Кечээ ушул убакыттан бери (баланын аты) төмөнкү нерселерди жеди беле? (төмөнкүнүн ар бирин угуза окуп, ар бир номердин жообун жазып туруңуз)

1=ооба; 0 = жок; 8= билбейм

эненин сүтү a

малдын сүтү, йогурт, кефир, быштак, ж.б. b

балдардын тамагы (формула) же кургак сүт (үлгү: аты эмне эле?) c

Маркасын билесизби? _____

төө буурчак, буурчак, жаңгак d

ботко, картошка, кесме, кызылча e

эт, балык, тооктун эти, боор, ичек-карын f

жумуртка g

сабиз, ашкабак, помидор h

башка жашылча-жемиштер (кургатылган өрүк, шпинат, бадыраң) i

нан же печенье j

сатып алынган баланын тамагы k

Маркасын билесизби? _____

Спринклз кошулган тамактар (пакетин көргөзгүлө) l

BF7. Кечээ ушул убакыттан бери (баланын аты) канча жолу тамак бердиңиз: (7 жолудан көп болсо 7, билбесе 8 деп жазыңыз). ("тамак берүү" деген тамак жана шам шум дегенди билдирет, аздан тамактанууну кошпогондо)

ботко (каша), эт, жашылча-жемиш, печенье ж.б. сыяктуу кургак, койуу, жумшак тамактар a

эненин сүтү b

малдын сүтү, кургак сүт, формула c

бөтөлкөдөгү тамак же суюктуктан башка d

BF8. Сиз баланы эмчектен чыгардыңызбы?

1=ооба; 0 = жок

0→AB1

BF9. (Баланын аты) канча айга толгондо Сиз (апасы) эмчек берүүнү токтоттуңуз?

(эгерде билбесеңиз, же унутуп калсаңыз, 88 деп жазыңыз)

Мамиле, Жүрүм-турум Модулу**AB**

Апалардын эмчек берүү жана баланы тамактандыруу тууралуу ою кандай экенин билүү бизди абдан кызыктырат. Сизден балаңызга эмчек беруу, тамактандыруу туураалуу оюңузду сурайлы дедик эле. Эске салып кетчү нерсе, бул жооптордун туура же туура эмеси болбойт. Сиздин ушул нерселер тууралуу оюңуз кандай экенин гана билгибиз келет.

AB1. Баланын ден-соолугуна жана тамактануусуна эненин сүтү канчалык маанилүү экенин Сиз ушул шкаланы колдонуу менен кантип сүрөттөйт элеңиз?
(шкаланы көрсөтүп, жоопко дал келген санды жазыңыз)

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AB2. Баланын ден-соолугуна жана тамактануусуна эненин сүтүнөн башка сүттөр жана сүт аралашмаларын канчалык маанилүү экенин Сиз ушул шкаланы колдонуу менен кантип сүрөттөйт элеңиз?
(шкаланы көрсөтүп, жоопко дал келген санды жазыңыз)

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AB3. Сиздин оюңузча, балага эмчек берилүүсү керекпи?
1=ооба; 0 = жок

0→AB5

AB4. Сиздин оюңузча, канча айга чейин балага эмчек берүү керек?
(эгер < 1 ай болсо 00, билбесе 88 деп жазыңыз)

a	a
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AB5. Сиздин оюңузча, канча жаштан (жашын ай менен көрсөткүлө) баштап бала чай, суу, сүт сыяктуу башка суюктуктарды иче башташ керек?
(эгер < 1 ай болсо 00, билбесе 88 деп жазыңыз)

a	a
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AB6. Сиздин оюңузча, бала канча жаштан (жашын ай менен көрсөткүлө) баштап ботко (каша), буламык ж.б.у. сыяктуу тамактарды жеп башташ керек?
(эгер < 1 ай болсо 00, билбесе 88 деп жазыңыз)

a	a
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AB7. Кээ бир адамдар эмчек берүүнүн пайдалуу жактары бар дешет, калганы антип ойлошпойт. Сиздин оюңузча, эмчек берүүнүн пайдалуу жактары барбы?
1=ооба; 0 = жок; 8= билбейм

0→AB9
8→AB9

AB8. Сиздин оюңуз боюнча эненин сүтүн эмүүнүн кандай керектүү жактары бар? (окубаңыз, аталгандардын баарын 1 менен белгилениз)

баланын же/жана апанын ден соолугуна жакшы	a	
эмчектин сүтүндө витамин жана башка керектүү азык-заттар бар	b	
акчаны үнөмдөө	c	
убакытты үнөмдөө	d	
баланы инфекциялардан сактайт	e	
бөтөлкөдөгү сүткө караганда коркунучсуз	f	
Башка (жазыңыз) _____	g	

AB9. Кээ бир адамдар эмчек берүүнүн кемчиликтери бар дешет, калганы антип ойлошпойт. Сиздин оюңузча, эмчек берүүнүн кемчиликтери барбы?
1=ооба; 0 = жок; 8= билбейм

0→DA1
8→DA1

AB10. Сиздин оюңузча, эмчек берүүнүн кандай кемчиликтери болушу мүмкүн? Эмне кыйынчылыктар пайда болушу мүмкүн? (окубаңыз, аталгандардын баарын 1 менен белгилениз)

апа баласын көпкө калтыра албайт (б.а. үйдөн сыртка же ишке көпкө кете албайт)	a	
апасы абайлап тамактануу керек эмчектин оорушуна алып келет	b	
сүт жетишээрлик чыкпайт деп тынчсызданат	c	
сүттө жетишээрлик азык-заттар жок деп тынчсызданат	d	
Башка (жазыңыз) _____	e	
	f	

Диета Тууралуу Кеңештин Модулу**DA**

Аял боюнда бар кезде жана бала төрөгөндөн кийин көп адамдар ага өзүнүн тамактануусу, эмчек эмизүү жана балага тамак берүү тууралуу кеңештерди беришет. Сиз кимден жана кандай кеңештерди алдыңыз эле, ошону сурайын дедим эле. Сиз ал кеңештерди аткарганыңыз же аткарбаганыңыз маанилүү эмес. Мени кызыктырган нерсе кимдер айтты эле жана эмне деп айтты эле.

DA1. Боюңузда бар кезде Сиз (апасы) тамактануу тууралуу кеңеш алдыңыз беле?	
1=ооба; 0 = жок; 8= билбейм	0→DA4 8→DA4

DA8. Сизге (апасы) үй-бүлөңүз, досторуңуз же кошунаңыз эмчек берүү тууралуу кеңеш берди беле?	
1=ооба; 0 = жок	0→DA12

DA2. Сизге (апасы) доктор, медсестра, акушер же фельдшер тамак-аш тууралуу кеңеш берди беле?	
1=ооба; 0 = жок	

DA9. Үй-бүлөңүз, досторуңуз же кошунаңыз кошумча суюктуктарды же койуу тамактарды бербей канча айга чейин балага эмчек эле эмизиш керек дешти эле? (эгер < 1 ай болсо 00, билбесе/эстей албаса 88 деп жазыңыз, эгер алар канча убакытка чейин же канча айга чейин эмчек эмизуу керектигин айтпаса 99 деп жазыңыз)		
	M	M

DA3. Сизге (апасы) үй-бүлө мүчөсү, досуңуз же кошунаңыз тамак-аш тууралуу кеңеш берди беле?	
1=ооба; 0 = жок	

DA10. Үй-бүлөңүз, досторуңуз же кошунаңыз бала канча жашка келгенде (ай менен) эмчек берүүнү токтотуш керек деп кеңеш берди эле? (эгер < 1 ай болсо 00, билбесе/эстей албаса 88 деп жазыңыз, эгер алар канча убакытка чейин же канча айга чейин эмчек эмизуу керектигин айтпаса 99 деп жазыңыз)		
	M	M

DA4. Сизге (апасы) доктор, медсестра, акушер же фельдшер эмчек эмизүү тууралуу кеңеш берди беле?	
1=ооба; 0 = жок; 8= билбейм	0→DA8 8→DA8

DA5. Доктор, медсестра, акушер же фельдшер кошумча суюктуктарды же коюу тамактарды бербей канча айга чейин эмчек эле эмизиш керек дешти эле? (эгер < 1 ай болсо 00, билбесе/эстей албаса 88 деп жазыңыз, эгер алар канча убакытка чейин же канча айга чейин эмчек эмизуу керектигин айтпаса 99 деп жазыңыз)		
	M	M

DA11. Шкаланы колдонуу менен үй-бүлө, достор же кошуналардын эмчек эмизүү кеңештери канчалык маанилүү экенин аныктасаныз. (шкаланы көрсөтүп, жоопко дал келген санды жазыңыз)	
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DA6. Доктор, медсестра, акушер же фельдшер бала канча жашка келгенде (ай менен) эмчек берүүнү токтот деп кеңеш берди эле? (эгер < 1 ай болсо 00, билбесе/эстей албаса 88 деп жазыңыз, эгер алар канча убакытка чейин же канча айга чейин эмчек эмизуу керектигин айтпаса 99 деп жазыңыз)		
	M	M

<i>Интервьюер! Задайте вопрос, если хотя бы один из ответов DA4, DA8=1</i>	
DA12. Шкаланы колдонуу менен эмчек эмизүү боюнча Сиздин өзүңүздүн чечиминизге кеңештердин мүмкүн болгон таасирин баалаңыз. (шкаланы көрсөтүп, жоопко дал келген санды жазыңыз)	

DA7. Шкаланы колдонуу менен доктор, медсестра, акушер же фельдшердин эмчек эмизүү кеңештери канчалык маанилүү экенин айтыңыз. (шкаланы көрсөтүп, жоопко дал келген санды жазыңыз)	
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Витамин/кошулмалардын модулу**VS**

Азыр сиз жана сиздин балаңыз мүмкүн ичип жүргөн витамин жана кошулмалар тууралуу суроо берейин дедим эле. Бул кошулмаларды кээ бири ичет, кээ бири ичпейт - бул нормалдуу нерсе. Сиз балким ичип жүргөн кошулмалардан баштасам.

VS1. Сиз (баланын аты) боюңузда бар кезде ушундай "фолиевая кислота" кошулмасын ичтиңиз беле? (Диспенсерди (пакетти) көрсөтүңүз)
1=ооба; 0 = жок; 8= билбейм

VS2. Сиз (баланын аты) боюңузда бар кезде ушундай темир кошулмасын ичтиңиз беле? (Диспенсерди (пакетти) көрсөтүңүз)
1=ооба; 0 = жок; 8= билбейм

VS3. (Баланын аты) төрөлгөндөн кийин биринчи эки айда сиз ушундай витамин А дозасын ичтиңиз беле? (Витамин А капсуласын көрсөтүңүз)
1=ооба; 0 = жок; 8= билбейм

VS4. Доктор же медсестра качандыр бир кезде сизде (апасында) анемияңыз бар деп айткан жок беле?
1=ооба; 0 = жок; 8= билбейм

0→VS6
8→VS6

VS5. Анемия статусун жакшыртуу үчүн сиз темир кошулган капсула же сироп ичтиңиз беле?
1=ооба; 0 = жок; 8= билбейм

Эми мен (баланын аты) балким ичип жүргөн витаминдер, минералдар жана кошулмалар тууралуу сурайын дедим эле. Эгер (баланын аты) мындай кошулмаларды ичпесе эч нерсе эмес.

VS6. (Баланын аты) ушундай Витамин А капсуласын ичти беле?
6-11 ай үчүн 100000МЕ көрсөтүңүз
12-59 ай үчүн 200000МЕ көрсөтүңүз
1=ооба; 0 = жок; 8= билбейм

0→VS8
8→VS8

VS7. (Баланын аты) Витамин А капсуласын акыркы жолу качан (айын эсептегенде) ичти эле? (эгер < 1 ай болсо 00, билбесе/эстей албаса 88 деп жазыңыз)

a a

VS8. Доктор же медсестра качандыр бир кезде (баланын аты) анемиясы бар деп айткан жок беле?

1=ооба; 0 = жок; 8= билбейм

0→VS10
8→VS10

VS9. Анемиясын айыктыруу үчүн (баланын аты) темир кошулган сироп же таблетка ичти беле?
1=ооба; 0 = жок; 8= билбейм

VS10. Сиз же башка бирөө (баланын аты) төмөнкү витаминди же минерал кошулмаларын берип көрдүңүз беле?

(тизмени окуп, ар биринин жообун жазыңыз)

Витамин Д

a

Балыктын майын

b

Мультивитамин препараттар

c

Башка (жазыңыз) _____

d

1=ооба; 0 = жок; 8= билбейм

VS11. Сиз мындай Спринклз деген дарыны көрдүңүз беле? (Спринклздын сыртын көрсөтүңүз)

1=ооба; 0 = жок; 8= билбейм

0→FF1
8→FF1

VS12. Сиз качандыр бир ушундай Спринклз деген дарыны алдыңыз беле? (Спринклздын сыртын көрсөтүңүз)

1=ооба; 0 = жок; 8= билбейм

0→FF1
8→FF1

VS13. (Баланын аты) качандыр бир кезде Спринклз ичти беле?

1=ооба; 0 = жок; 8= билбейм

Байытылган ундун модулу

FF

Сиздин үйүңүздө нанды же тортторду же болбосо башка тамактарды бышырууда Сиз колдонгон ун жөнүндө азыр суроо беремин.

FF1. Сиздин үй-бүлөнүз бир айда канча өлчөмдө унду пайдаланат (кг)?

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Эгерде үй-бүлө унду пайдаланбаса, FF6 пунктуна өтүңүз

FF2. Сиз тамак даярдоодо ундун кандай сортун пайдаланасыз?

Экстра	1	1→FF4
Биринчи сорт	2	2→FF4
Экинчи сорт	3	3→FF4
Өзү иштеп чыгарган буудайдан алынган ун	4	4→FF3

FF3. Өзү иштеп чыгарган буудайдан алынган унду кайсы ун менен аралаштырасыз?

Башка ун менен аралаштырбайм	0	0→FF6
Экстра	1	
Биринчи сорт	2	
Экинчи сорт	3	
Билбейм	8	

FF4. Нан бышыруу үчүн унду кайсы жерден аласыз?

Азык-түлүк дүкөнүнөн	1
Базардан	2
Жер кириктүү тегирменден	3
Башка (жазыңыз) _____	4
Билбейм	8

FF5. Унду сатып алууда сиз көбүнөшө кайсы унду сатып аласыз?

казакстандык	1
улуттук (кыргызстандык)	2
жер кириктүү (райондон)	3
Билбейм	8

FF6. Сиз байытылган ун жөнүндө уктуңар эле?

1=ооба; 0 = жок

0→VHC1

FF7. Сиздин оюңуз боюнча байытылган унду колдонуунун артыкчылыктары барбы?

1=ооба; 0 = жок; 8= билбейм

0→VHC1

8→VHC1

FF8. Сиздин оюңуз боюнча байытылган ундун артыкчылыктары эмнеде? (Окубаңыз. Айтылган пункттарды 1, айтылбагандарды - 0 менен белгилеңиз)

Ундун сапатты жогорураак	a	
Ундун даамы жакшыраак	b	
Балдар унду көбүрөөк жакшы көрөт	c	
Балдар жакшыраак өсүшөт	d	
Курамында витаминдер/минералдар бар	e	
Балдар акылдуураак болушат	f	
Балдар бекемирээк болушат	g	
Балдардын ден-соолугун чындайт	h	
Эркектердин/аялдардын ден-соолугун чындайт	i	
Аз кандуулукту алдын алат	j	
Оорулардан алдын алат	k	
Тескери таасир берет	l	
Башка (жазыңыз)	m	

FF9. Бирдей баадагы жана бирдей көлөмдөгү нан, алардын бирөөсүндө темир-витаминдуу кошумчалар бар, экинчисинде жок нандардын ичинен сиз кайсы нанды сатып алмаксыз?

Темир-витаминдуу кошумчалары бар нан	1
Темир-витаминдуу кошумчалары жок нан	2
Баары бир	3
Билбейм	8

Айылдык Ден Соолук Комитеттери (АДК) менен байланышуу модулу**VHC**

Кыргызстанда кээ бир айылдарында Айылдык Ден-Соолук Комитеттери (АДК) бар. Сиз ушул АДК тууралуу эмнени уктунуз эле. Бул жерде туура же туура эмес деген жооп жок. Сиз эмнени уктунуз, ошол тууралуу гана билгибиз келет.

VHC1. Сиз (апасы) Айылдык Ден-Соолук Комитети (АДК) тууралуу деги уктунуз беле?
1=ооба; 0 = жок; 8= билбейм **0→P1**

VHC2. Сиз АДКнын мүчөсү менен качандыр бир ден-соолукка байланыштуу сүйлөштүңүз беле?
1=ооба; 0 = жок; 8= билбейм **0→P1**
8→P1

VHC3. Эң акыркы жолу Сиз АДК мүчөсү менен ден-соолук тууралуу качан сүйлөштүңүз эле?

бир жылдан ашты	0
6-12 ай мурун	1
3-6 ай мурун	2
1-3 ай мурун	3
бир айга жете элек	4

VHC4. Сиз АДК мүчөсү менен боюнда бар кезде өзүңүздүн тамагыңыз, эмчек берүү кезиндеги тамактануу же баланы эмчек эмизүү, тамактандыруу тууралуу сүйлөштүңүз беле?
1=ооба; 0 = жок; 8= билбейм **0→P1**
8→P1

VHC5. Шкаланы колдонуп, жооп бериңиз, сиздин оюңузча, диетага, эмчек эмизүүгө жана баланы тамактандырууга АДК менен жолугушуу канчалык пайдалуу?
(шкаланы көрсөтүп, жоопко дал келген санды жазыңыз)

VHC6. АДКдан кеңеш алууну кызыктарсызбы?
1=ооба; 0 = жок; 8= билбейм **0→P1**
8→P1

VHC7. Кайсы суроолорго сиз жооп алгыңыз келет? (Жогоруда айтылган темаларды жазыңыз)

Боюнда болуу**P**

Улантаардан мурун мен Сиздин боюңузда бар же жок экенин билишим керек. Сиз боюңузда бар экенин так билбесениз бирок болушу мүмкүн экенин билсек жакшы болот эле.

P1. Азыр боюңузда барбы?
1=ооба; 0=жок; 7=болушу мүмкүн; 8=билбейм **0→AN1**
7→AN1
8→AN1

P2. Азыркы учурда боюңузга бүткөнүнө канча жума болду?
(билбесе 88 деп жазыңыз)

Эгер БАР болсо (1) апасынан кан жана антропометрия ченемдерин албаңыз. Баласынан гана алыңыз.

Антропометрия**AN**

Азыр мен сиздин жана балаңыздын боюн жана салмагын ченейм.

AN1. Апасынан антропометрия алындыбы?

1=ооба, 0=жок

1→AN3

AN5. Баласынан антропометрия алындыбы?

1=ооба, 0=жок

1→AN7

AN2. Эмнеге алынган жок?

1=макул болгон жок 3=келген жок

2=боюнда бар

4=башка (жазыңыз)_____

AN6. Эмнеге алынган жок?

1=болгон жок (ыйлады,

тебинди, ж.б.)

2=апасы/алып келген адам

макул болгон жок

4=башка (жазыңыз)_____

3=не

присутст

вовал

AN3. Апасынын бою (см)

				.	
--	--	--	--	---	--

AN7. Баланын салмагы (кг)

				.	
--	--	--	--	---	--

AN4. Апасынын салмагы (кг)

				.	
--	--	--	--	---	--

AN8. Баланын бою (см)

				.	
--	--	--	--	---	--

Алынган кандын модулу**BS**

Эми акыркы жасай турган нерсе - бул Сиздин бармагыңыздан жана Сиздин балаңыздын бармагынан бир аз кан алуу. Сайып жатканда кичине жагымсыз болушу мүмкүн, бирок биз сизде жана сиздин балаңызда анемия бар же жок экенин айтып бере алабыз.

BS1. Акыркы жолу саат канчада тамак ичтиңиз эле?

<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>
С	С		М	М

BS2. Апасынын капиллярынан кан алындыбы?

1=ооба, 0=жок

1→BS4

BS3. Эмнеге алынган жок?

1=макул
болгон жок
2=боюнда бар
5=башка (жазыңыз)_____

3=келген жок
4=техникалык
кыйынчылыктар

→BS7

BS8. Акыркы жолу саат канчада (баланын аты) тамак ичти эле?

<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>
С	С		М	М

BS9. Баласынын капиллярынан кан алындыбы?

1=ооба, 0=жок

1→BS11

BS10. Эмнеге алынган жок?

1=болгон жок (ыйлады, тебинди, ж.б.)
2=апасы/алып келген адам макул болгон жок
5=башка (жазыңыз)_____

3=келген жок
4=техникалык кыйынчылыкта
р

→BS14

BS4. Болжолдуу микротейнерге канча микролитр кан чогултулду?

<input type="text"/>	<input type="text"/>	<input type="text"/>
----------------------	----------------------	----------------------

BS11. Болжолдуу микротейнерге канча микролитр кан чогултулду?

<input type="text"/>	<input type="text"/>	<input type="text"/>
----------------------	----------------------	----------------------

BS5. Кан саат канчада алынды?

<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>
С	С		М	М

BS12. Кан саат канчада алынды?

<input type="text"/>	<input type="text"/>	:	<input type="text"/>	<input type="text"/>
С	С		М	М

BS6. Гемокьюдагы гемоглобин концентрациясы

<input type="text"/>	<input type="text"/>	.	<input type="text"/>	г/длитр
----------------------	----------------------	---	----------------------	---------

(эгер ченелбесе/билбесе 88.8 деп жазыңыз)

BS13. Гемокьюдагы гемоглобин концентрациясы

<input type="text"/>	<input type="text"/>	.	<input type="text"/>	г/длитр
----------------------	----------------------	---	----------------------	---------

(эгер ченелбесе/билбесе 88.8 деп жазыңыз)

BS7. Идентификациондук белги - **АПАСЫ**

Апасынын канынын ярлыгын бул жерге чаптаңыз

BS14. Идентификациондук белги - **БАЛАСЫ**

Баласынын канынын ярлыгын бул жерге чаптаңыз

Эгерде апасынын же баласынын гемоглобини <7,0 г/длитр болсо, дарыланыш учун ооруканага жибериле керек деген чечим чыгарылса, жетекчинин (супервайзердин) колу коюлат.

Колу _____

Датасы _____

Апасынын жана баласынын ченелген гемоглобининин жыйынтыгын айтканды унутпаңыз. Гемоглобиндин жыйынтыгын жана рекомендацияларды алгандыгын билдирүү ирээтинде апасы бул жерге колун коюусун сураңыз.

Колу _____

Датасы _____

Вопросник текшерилип жана толук толтурулганын аныктап, Супервайзер колун коет:

Колу _____

Датасы _____

Интервьюердин комментарий:

APPENDIX III: BRIEF SUMMARY OF QUALITY ASSURANCE FOR MICRONUTRIENT MEASUREMENTS FROM THE 2009 KYRGYZSTAN SURVEY

External Quality Assurance

Dr. Juergen Erhardt's laboratory (Willstaett, Germany) has participated in CDC's external quality assurance program, VITAL-EQA, since 2006. The laboratory measures ferritin, soluble transferrin receptor (sTfR) and C-reactive protein (CRP) concentrations in plasma using an enzyme-linked immunosorbent assay (ELISA) technique. The precision and bias were excellent (>90% VITAL-EQA results being Optimal or Desirable) for the above indicators (Erhardt, 2004; Haynes, 2008). This quality assurance analysis is based on exercises immediately preceding and during the survey (Rounds 12-13).

The Hematology Laboratory of St. James Hospital (Dublin, Ireland) did not participate in the CDC Vitamin A Laboratory External Quality Assurance (VITAL-EQA) program. The lab is well-established and has over 10 years of expertise in analyzing folate using a microbiological assay. This lab trained the CDC Nutritional Biomarkers Branch staff in year 2000. A sample exchange was conducted in 2000 and showed good agreement.

Internal Quality Control

Dr. Juergen Erhardt's laboratory analyzed the survey samples for ferritin, TfR, CRP, retinol binding protein (RBP) and α -1 acid glycoprotein (AGP) using an ELISA technique. The lab routinely tested a single QC pool in 16 different wells randomly distributed in each 384-well plate. The inter-assay coefficients variation (CV) for these analytes were 3.0% for RBP, 3.3% for ferritin, 3.5% for AGP, 3.7% for TfR, and 8.9% for CRP, 3.0% for RBP. A CV of about 10% provides acceptable precision using an ELISA technique (Erhardt, 2004; Haynes, 2008). These data indicate that the lab's performance exceeded the acceptable performance expectations while analyzing the survey samples.

CDC reviewed internal quality control (QC) data from the Hematology Laboratory of St. James Hospital (Dublin, Ireland). The lab analyzed 340 dried blood spot survey samples for red blood cell (RBC) folate concentration using a microbiological assay. Three assays were needed to complete the sample analysis. The lab routinely runs 3 levels of QC samples (diluted 1:10 and 1:40) in all assays. The analytical coefficient of variation (CV) was 9.7% for all levels in the three assays. This amount of imprecision is acceptable for a microbiological assay (O'Broin, 1992).

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Biologist
NCEH/DLS/NBB
Centers for Disease Control & Prevention
November 14, 2011

APPENDIX IV: CONFIDENCE INTERVALS, DESIGN EFFECTS, AND INTRA- CLASS CORRELATION COEFFICIENTS FOR MAJOR INDICATORS, NATIONAL NUTRITION SURVEY, KYRGYZSTAN 2009

A. CHILDREN 6 TO 59 MONTHS

Indicator	Sample Size	Prevalence (%)	95% Confidence Interval	DEFF ^a	Number of Clusters	Average Cluster Size	ICC ^b
Anemia							
Hb < 11.0 g/dL	1743	26.0	22.5-29.8	3.0	66	26.41	0.079
Serum Ferritin (<12 µg/L)	1743	40.3	36.7-43.9	2.4	66	26.41	0.055
Serum Transferrin Receptor (sTfR)							
(>8.3 mg/L)	1743	35.1	31.5-38.8	2.6	66	26.41	0.061
Iron Deficiency Anemia (IDA)							
Hb < 11.0 g/dL and (ferritin < 12 µg/L or elevated sTfR)	1743	18.1	15.6-20.9	2.0	66	26.41	0.040
Serum Retinol Binding Protein (RBP)							
< 0.71 µmol/L	1743	4.2	3.2-5.4	1.3	66	26.41	0.010
Alpha-1-glycoprotein (AGP)							
> 1.0 g/L	1743	13.4	11.4-15.8	1.8	66	26.41	0.031
C-Reactive Protein (CRP)							
> 5.0 mg/L	1743	11.8	10.1-13.7	1.3	66	26.41	0.013
Stunting							
Height-for-age z-score (HAZ) < -2 SD	1732	22.6	19.6-25.9	2.5	66	26.24	0.059
Underweight							
Weight-for-age z-score (WAZ) < -2 SD	1742	4.7	3.7-6.0	1.3	66	26.39	0.013
Wasting							
Weight-for-height z-score (WHZ) < -2 SD	1735	1.3	0.8-2.0	1.1	66	26.29	0.004

Note: CI=confidence interval; DEFF=design effect; ICC=intraclass correlation coefficient; Hb=hemoglobin; percent estimates weighted for non-response and 95% Confidence intervals adjusted for cluster survey design; average cluster size=sample size / number of clusters.

^a The design effect or DEFF is the ratio of the actual variance to the variance computed under the assumption of simple random sampling, thus calculating the loss of effectiveness by the use of cluster sampling, instead of simple random sampling; the larger the DEFF, the greater the variance.

^b ICC=(DEFF-1)/(average cluster size - 1).

B. NON-PREGNANT MOTHERS

Indicator	Sample Size	Prevalence (%)	95% Confidence Interval	DEFF ^a	Number of Clusters	Average Cluster Size	ICC ^b
Anemia							
Hb<12.0 g/dL	1162	23.0	20.1-26.2	1.5	66	17.61	0.031
Serum Ferritin (<12µg/L)							
	1162	47.9	43.8-52.0	2.0	66	17.61	0.059
Serum Transferrin Receptor (sTfR) (>8.3 mg/L)							
	1162	22.9	20.0-26.1	1.5	66	17.61	0.030
Total Iron Deficiency Anemia (IDA)							
Hb <12.0 g/dL and (ferritin<12 µg/L or elevated sTfR)	1162	20.1	17.4-23.2	1.5	66	17.61	0.032
Serum Retinol Binding Protein (RBP) <0.71 µmol/L							
	1162	0.6	0.3-1.3	1.2	66	17.61	0.010
Alpha-1-glycoprotein (AGP) >1.0 g/L							
	1162	4.0	2.8-5.6	1.4	66	17.61	0.025
C-Reactive Protein (CRP) >5.0 mg/L							
	1162	7.8	6.4-9.4	0.9	66	17.61	-0.004
Whole Blood Folate <151 ng/ml							
	735	49.3	42.0-56.5	3.86	45	17.0	0.179
Obese (Body mass index >30)							
Normal weight	1152	61.7	58.9-64.4	0.9	66	17.45	-0.004
Underweight (Body mass index <18.5)	1152	6.5	5.1-8.4	1.3	66	17.45	0.015

Note: CI=confidence interval; DEFF=design effect; ICC=intraclass correlation coefficient; Hb=hemoglobin; percent estimates weighted for non-response and 95% Confidence intervals adjusted for cluster survey design; average cluster size=sample size / number of clusters.

^a The design effect or DEFF is the ratio of the actual variance to the variance computed under the assumption of simple random sampling, thus calculating the loss of effectiveness by the use of cluster sampling, instead of simple random sampling; the larger the DEFF, the greater the variance.

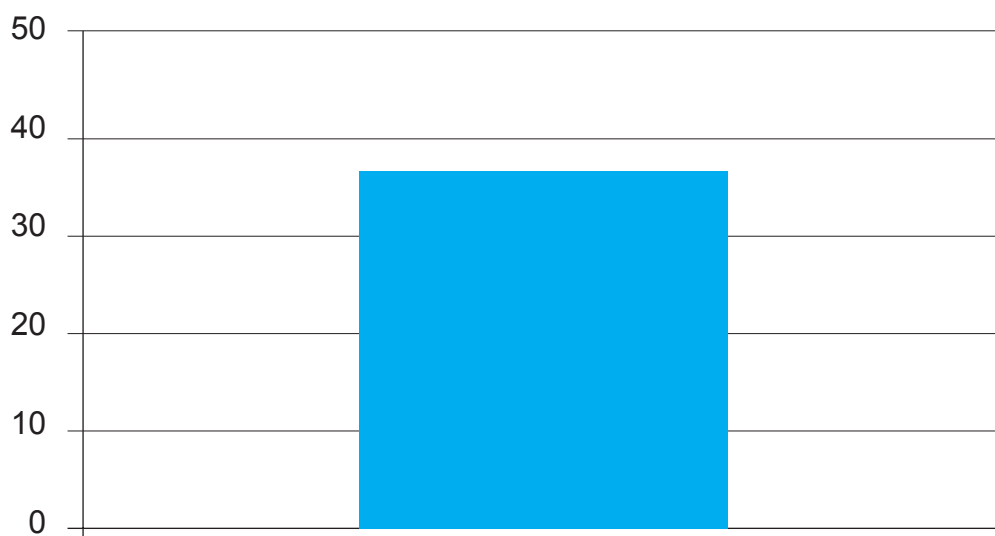
APPENDIX V: INTERPRETATION OF PREVALENCE AND CONFIDENCE INTERVALS

Single prevalence or coverage estimate and confidence interval

Surveys are usually performed to estimate prevalence or coverage in a population based on a representative sample. It is known that if the sampling procedures were to be repeated in a population again and again, each survey would likely provide a different estimate. Therefore, when reviewing the prevalence and coverage estimates in this report, these are estimates and unlikely to be the exact true prevalence or coverage in the population. This appendix provides example data not from this report to serve as illustrations of various issues.

Example 1: Based on survey results, the prevalence of anemia among non-pregnant women 15–49 years of age is estimated to be 35.7% (see Figure 1).

Figure 1. Prevalence of anemia among non-pregnant women of childbearing age (15-49 years of age), country Z, 2005

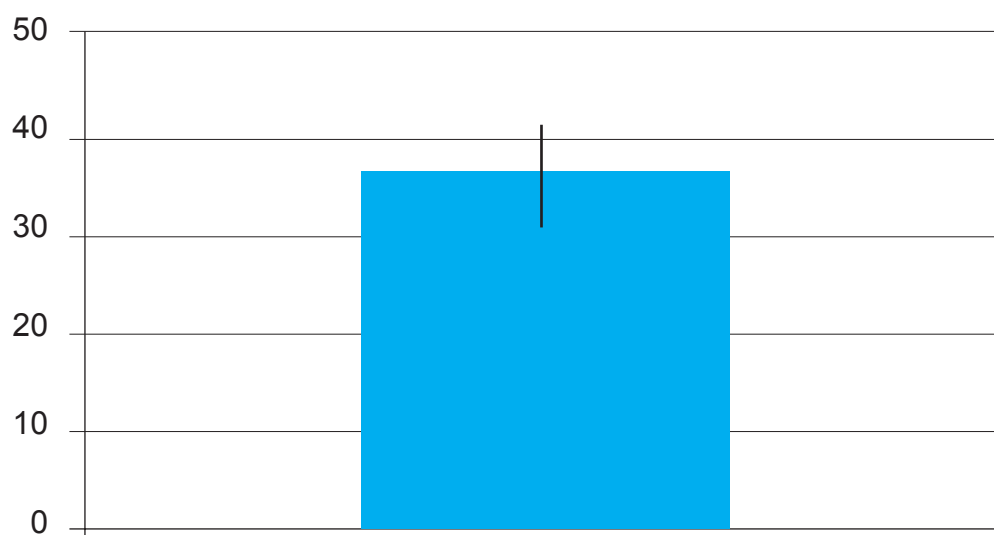


The true prevalence is unknown and could be higher or lower than the estimated prevalence of 35.7%. Confidence intervals provide a range in which the true population prevalence or coverage is likely to be captured. Frequently 95% confidence intervals are provided.

Example 2: Based on survey results, the prevalence of anemia among non-pregnant women 15-49 years of age is estimated to be 35.7% (95% CI: 31.0, 40.7) (see Figure 2).

The theory behind confidence intervals is that if we sample a population many times and calculate a 95% confidence interval for each estimate, 95% of the confidence intervals would capture the true prevalence and 5% would not capture truth. Many authors would state that this is equivalent to saying that for a specific 95% confidence interval, there would

Figure 2. Prevalence of anemia (with 95% confidence interval) among non-pregnant women of childbearing age (15-49 years of age), Country Z, 2005



be 95% confidence that the interval includes truth, and therefore 5% chance it does not include truth.(1) In this example this would mean that we are 95% confident that the true prevalence of anemia in this population is somewhere from 31.0% to 40.7%. There is a small chance (5%) that the true prevalence is less than 31.0% or greater than 40.7%.

What are the factors that affect the width of the confidence interval in surveys? The main factors are: 1) Sample size - in general, the bigger the sample size, the narrower the confidence interval; 2) the design effect - a measure of how much clusters differ from one another in terms of prevalence – the more they differ from each other, the larger the design effect and therefore the wider the confidence interval; and 3) the point estimate - in general, estimates near 50% tend to have a wider confidence intervals than estimates closer to 100% or 0%.

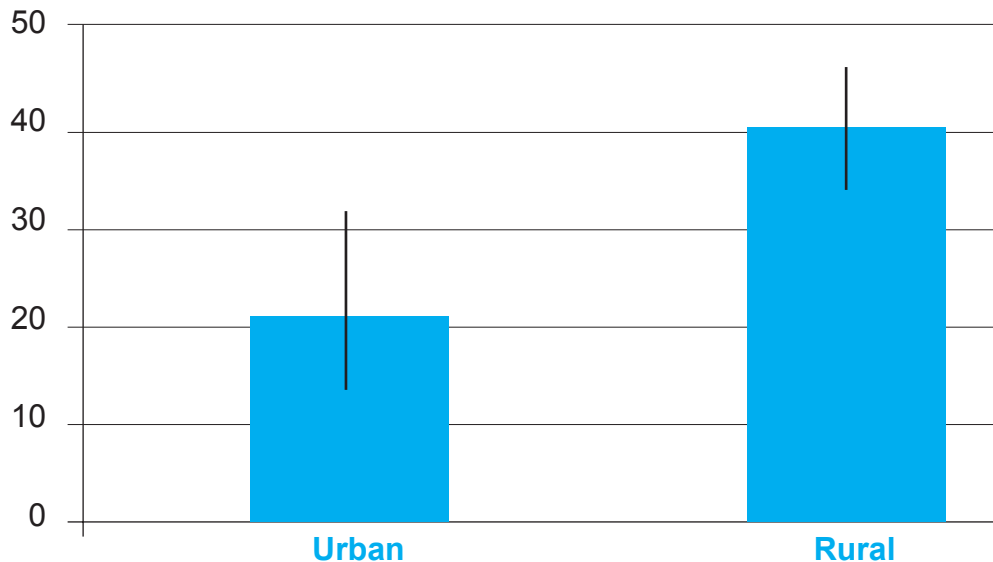
Comparing two or more prevalence or coverage estimates with confidence intervals and p-values.

Frequently estimates and confidence intervals are provided in subgroup analyses, such as the prevalence of anemia by urban/rural status, by age groups, etc. How should these be interpreted?

Example 3: The prevalence of anemia among women in urban areas was 20.7% (95% CI: 13.3, 30.9) and in rural areas, 39.4% (95% CI: 33.8, 45.2) (see Figure 3).

In general, if a p-value is available, it should be used to determine if two (or more) estimates are statistically significantly different from one another. A p-value is calculated under the assumption that the two estimates are the same and the p-value is the probability of the observed or more extreme difference. If the p-value is 0.04, this would mean that, assuming that there is no difference between two estimates, there is a 4% chance of the observed or more extreme difference. As a general rule of thumb, a p-value < 0.05 is considered to be

Figure 3. Prevalence of anemia (with 95% confidence interval) among non-pregnant women of childbearing age (15-49 years of age), by urban/rural status, Country Z, 2005



statistically significant and a p-value > 0.05 is considered to not be statistically significant. The value of 0.05 for determining statistical significance is arbitrary. In the above example the p-value is < 0.01 and therefore this would indicate a statistically significant difference in the prevalence of anemia between urban and rural women.

In some comparisons of two prevalence or coverage estimates with 95% confidence intervals, and where a p-value is not provided, is it possible to estimate the p-value? In the above example the prevalence of anemia is much lower in women from urban areas (~21%) compared to those living in rural areas (~39%). Note that the confidence interval for women from urban areas is wider compared to those from rural areas. In this example the primary reason for the wider confidence interval for women from urban areas is that the sample size (n=182 women) is much smaller than the sample size for women from rural areas (n=578 women).

Is there an important difference between these two prevalence estimates? This requires the investigator to determine what difference is important.

Is there a statistically significant difference between the prevalence estimates? Estimating statistical significance can be tricky when visually comparing two or more estimates with confidence intervals. In general it is not recommended to rely on visually comparing confidence limits to estimate a p-value, but here are some rules of thumb (2):

- If there is no overlap in confidence intervals, then there is a statistically significant difference between the two estimates and the p-value will be ≤ 0.01 .
- If the point estimate from one group is captured within the confidence interval for the other group, the p-value will be ≥ 0.18 .

Note that statistical significance does not necessarily mean public health significance. In situations where the sample size is very large, small differences between two groups might be statistically significant but may not be of clinical or public health significance.

References

1. Kleinbaum DG, Sullivan KM, Barker NF. *ActivEpi Companion Textbook: A supplement for use with the ActivEpi CD-ROM*. Springer-Verlag, New York, 2002
2. Cumming G. Inference by eye: reading the overlap of confidence intervals. *Stat Med* 30;28(2):205-20, 2009.

APPENDIX VI: NATIONAL NUTRITION SURVEY, KYRGYZSTAN 2009: RESULTS FOR THE WHO GLOBAL DATABASE ON CHILD GROWTH AND MALNUTRITION

AGE GROUPS (Months)	WEIGHT/AGE (%)					HEIGHT(LENGTH)/AGE (%)					WEIGHT/HEIGHT(LENGTH)/ (%)					BMI/AGE (%)							
	N	<-3 SD	<-2 SD	Mean z-score	SD	<-3 SD	<-2 SD	Mean z-score	SD	<-3 SD	<-2 SD	Mean z-score	SD	<-3 SD	<-2 SD	Mean z-score	SD	<-3 SD	<-2 SD	Mean z-score	SD		
TOTAL (6-23)	610	0.9	3.2	0.0	1.1	2.8	14.7	-0.6	1.4	0.5	1.5	28.1	4.9	0.3	0.4	1.1	0.5	1.2	31.9	6.7	1.0	0.5	1.1
6-11	180	0.6	2.0	0.3	1.1	1.1	5.8	0.0	1.4	1.4	2.1	34.9	6.3	1.0	0.4	1.2	1.0	2.1	30.4	6.7	1.7	0.4	1.3
12-23	426	1.0	3.7	-0.1	1.0	3.5	18.6	-0.8	1.3	0.2	1.3	25.1	4.3	0.0	0.3	1.0	0.3	0.8	32.6	6.7	0.6	0.5	1.0
24-35	426	0.9	6.4	-0.4	1.0	8.6	33.9	-1.3	1.4	0.3	1.4	28.6	3.8	0.1	0.5	1.0	0.3	1.6	37.9	8.4	1.0	0.7	1.0
36-47	344	1.0	4.9	-0.4	1.0	6.1	24.2	-1.2	1.1		0.4	28.6	6.3	0.2	0.5	0.9	0.0	0.4	31.8	8.2	0.5	0.6	0.9
48-59	357	0.8	4.9	-0.6	0.9	3.3	20.9	-1.1	1.0	0.2	1.6	22.0	2.3	0.2	0.2	0.9	0.2	1.2	23.5	2.8	0.0	0.2	0.9
Male (6-23)	302	1.3	4.2	0.0	1.1	3.1	15.2	-0.6	1.5	0.6	2.1	27.8	5.4	0.4	0.3	1.1	1.0	1.4	31.9	7.6	1.7	0.4	1.2
6-11	92	1.2	2.5	0.2	1.2	1.4	5.2	-0.1	1.4	1.9	1.9	35.7	8.3	1.2	0.4	1.3	1.9	1.9	32.1	7.5	2.5	0.4	1.4
12-23	208	1.3	5.1	-0.1	1.1	3.9	20.0	-0.8	1.4	0.0	2.3	24.0	4.0	0.0	0.3	1.0	0.6	1.2	31.8	7.6	1.3	0.5	1.1
24-35	219	1.1	7.8	-0.4	1.0	9.7	35.1	-1.3	1.6	0.0	1.7	31.8	3.6	0.0	0.4	1.0	0.0	2.0	40.1	8.2	0.9	0.7	1.1
36-47	157	0.8	3.6	-0.2	1.0	4.1	23.6	-1.2	1.2	0.0	0.8	34.6	9.6	0.5	0.6	1.0	0.0	0.8	37.6	12.9	1.0	0.8	1.0
48-59	169	0.4	2.3	-0.5	0.8	3.3	21.2	-1.1	1.0	0.0	0.4	28.6	3.6	0.0	0.3	0.9	0.0	0.4	33.1	4.3	0.0	0.4	0.9
Female (6-23)	308	0.5	2.1	0.0	1.0	2.4	14.2	-0.6	1.4	0.5	0.9	28.3	4.4	0.2	0.4	1.0	0.0	0.9	32.0	5.9	0.2	0.5	1.0
6-11	88	0.0	1.6	0.3	1.0	0.8	6.5	0.1	1.4	0.8	2.4	33.9	4.1	0.8	0.4	1.2	0.0	2.4	28.4	5.8	0.8	0.4	1.1
12-23	218	0.7	2.3	-0.1	1.0	3.1	17.2	-0.9	1.2	0.4	0.4	26.1	4.6	0.0	0.4	0.9	0.0	0.4	33.4	5.9	0.0	0.5	0.9
24-35	207	0.6	4.9	-0.4	1.0	7.4	32.6	-1.3	1.3	0.6	1.1	25.2	4.1	0.3	0.5	1.0	0.6	1.1	35.5	8.6	1.2	0.6	1.0
36-47	187	1.2	6.0	-0.5	0.9	7.7	24.7	-1.2	1.1	0.0	0.0	23.4	3.5	0.0	0.3	0.8	0.0	0.0	26.9	4.2	0.0	0.4	0.8
48-59	188	1.2	7.4	-0.6	0.9	3.2	20.6	-1.1	1.0	0.4	2.6	15.9	1.0	0.3	0.1	0.9	0.4	1.9	14.5	1.4	0.0	0.1	0.8
RESIDENCE																							
Urban	862	0.8	3.2	-0.2	1.0	3.1	15.8	-0.8	1.3	0.5	1.5	23.7	4.0	0.5	0.3	1.0	0.2	1.5	26.2	5.3	0.7	0.4	1.0
Rural ¹	881	1.0	5.5	-0.4	1.0	5.9	26.1	-1.2	1.3	0.2	1.2	28.7	4.6	0.1	0.4	1.0	0.3	0.9	34.4	7.3	0.7	0.6	1.0

¹ % <-2SD includes %<-3SD; %>+2SD includes %>+3SD; %>+1SD includes %>+3SD.