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**SPRING**

Strengthening Partnerships, Results,  
and Innovations in Nutrition Globally

# Baseline Nutrition Survey in the Kyrgyz Republic

## Analytical Report



June 2015





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**m-vector** | КОНСАЛТИНГОВОЕ  
АГЕНТСТВО

**SPRING**  
Strengthening Partnerships, Results,  
and Innovations in Nutrition Globally

## DISCLAIMER

The survey was conducted in October and November 2014 by the research agency “M-Vector” for SPRING, which is working in the Kyrgyz Republic to improve women’s and child’s nutrition.

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## ABOUT SPRING

The Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) Project is a five-year USAID-funded Cooperative Agreement to strengthen global and country efforts to scale up high-impact nutrition practices and policies and improve maternal and child nutrition outcomes. The project is managed by JSI Research & Training Institute, Inc., with partners Helen Keller International, The Manoff Group, Save the Children, and the International Food Policy Research Institute.

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**COVER PHOTO:** from Tim Williams, SPRING

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## Acronyms

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DHS	Demographic Health Survey
IFA	iron folic acid supplement
IYCF	Infant and Young Child Feeding
KR	Kyrgyz Republic
MAD	Minimum Acceptable Diet
PSU	primary sampling unit
SPRING	Strengthening Partnerships, Results, and Innovations in Nutrition Globally Project
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization



## Executive Summary

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To combat undernutrition in the Kyrgyz Republic, the Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) project is implementing a comprehensive, multisectoral program to influence 11 nutrition-related behaviors that are linked to stunting and anemia:

1. Consumption of iron supplements by pregnant women.
2. Dietary diversity for women, with emphasis on food sources of iron and foods that enhance iron absorption.
3. Dietary diversity for children 6 to 23 months, with emphasis on food sources of iron and vitamin A and foods that enhance iron absorption.
4. Optimal meal frequency for children 6 to 23 months of age.
5. Early initiation of breastfeeding.
6. Exclusive breastfeeding from birth through the first six months.
7. Timely introduction of appropriate complementary foods.
8. Reduction in the consumption of foods of low-nutrient value (junk food).
9. Presumptive treatment for helminthes for pregnant women and young children.
10. Handwashing at three out of five critical times (after using the latrine, after changing a baby's diaper/cleaning a child, before preparing food, before feeding a child, and before eating).
11. Adoption of methods for safe and prolonged storage of nutrient-dense produce for the winter.

In October 2014–November 2014, SPRING carried out a baseline survey in three *oblasts* (regions) of the Kyrgyz Republic to gain knowledge on the current status of a range of indicators related to the above nutrition practices among women and children under two years of age. The survey was conducted by the independent research and consulting agency M-Vector in two regions where SPRING will operate (Jalalabad *oblast* and Jumgal district in Naryn *oblast*), as well as in Uzgen (Osh *oblast*), which was selected as a comparison region. The sample size was 900 households with at least one child under two years old—or 300 in each region selected.

The main results of the survey are reported in Table 1 (below) and expanded upon in the main body of the report. Some of the nutrition-related practices of interest were found to be already widespread in the areas surveyed, while others were underutilized; in general, improvement is possible in many areas. Among the areas most in need of improvement were hygiene, sanitation, diet diversity, and other aspects of diet and feeding. There was substantial variation in many indicators by region, with levels often substantially worse in Jumgal than in Jalalabad or Uzgen. Jumgal had lower numbers of prenatal visits, lower percentages of women consuming IFA for 90+ days, lower exclusive breastfeeding, lower diet diversity for women and children, lower prevalence of proper handwashing at critical moments, less sanitary toilet facilities, and fewer types and quantities of foods preserved.

These findings are not entirely surprising, as Jumgal is a more rural district with relatively low socioeconomic levels. It is also characterized by long winters and short growing seasons, making availability of nutrient-rich fruits and vegetables an issue, especially in winter. On the other hand, Jumgal has some advantages, such as higher ownership of livestock and greater consumption of animal-sourced foods. And while nutrition practices and conditions were better in Jalalabad than in Jumgal according to most indicators, the report nevertheless found many areas needing improvement in both regions.

SPRING has used the findings of the survey to guide planning and help focus on areas where nutrition practices are weak, to build on those that are strong, and to gather more information where findings were surprising or

inconclusive. SPRING’s interventions will need to focus on all areas needing improvement and address them, bearing regional differences in mind. SPRING hopes this survey will facilitate evidence-based planning for effective project interventions, leading ultimately to improved nutrition outcomes among women and children in the Kyrgyz Republic.

**Table 1. SPRING/Kyrgyz Republic core indicators for target areas in Jalalabad, Jumgal, and Uzgen**

Indicators	Baseline survey results				
	SPRING Regions		Comparison	Total	
	Jalalabad	Jumgal	Uzgen	Count	%
<b>Consumption of iron supplements by pregnant women</b>					
% of mothers of children <2 who took iron supplements for 90 days or more during their last pregnancy	17%	14%	16%	Numerator: 142 Denominator: 900	16%
<b>Dietary diversity for women with emphasis on food sources of iron</b>					
% of mothers of children under two who ate foods from 5 or more of 9 food groups in the previous 24 hours	73%	42%	58%	Numerator: 520	58%
% of mothers of children under two who ate iron-rich foods	98%	90%	90%	Numerator: 834	93%
% of mothers of children under two who ate Vitamin C rich foods	96%	74%	88%	Numerator: 772 Denominators: 900	86%
<b>Dietary diversity for children 6 to 23 months with emphasis on food sources of iron and vitamin A, and foods or beverages that affect iron absorption</b>					
% of children 6 – 23 months who ate foods from four or more groups in the previous 24 hours	54%	33%	48%	Numerator: 272	45%
% of children 6 – 23 months who ate iron-rich foods in the previous 24 hours	78%	85%	72%	Numerator: 474	78%
% of children 6 – 23 months who ate Vitamin A-source foods in the previous 24 hours	58%	49%	62%	Numerator: 338	56%
% of children 6-23 months who consumed tea in the previous 24 hours	74%	69%	62%	Numerator: 415 Denominators: 604	69%
<b>Optimal meal frequency for children 6 to 23 months of age</b>					
% of children 6-23 months who were offered food the appropriate number of times for their age and breastfeeding status	69%	56%	52%	Numerator: 272 Denominator: 604	45%
<b>Minimum acceptable diet for children 6 to 23 months of age</b>					
% of children 6 - 23 months of age who had the minimum acceptable diet for their age and breast feeding status	31%	21%	27%	Numerator: 134 Denominator: 604	22%

Indicators	Baseline survey results				
	SPRING Regions		Comparison	Total	
	Jalalabad	Jungal	Uzgen	Count	%
<b>Early initiation of breastfeeding</b>					
% of children who were put to the breast within one hour of birth	67%	79%	54%	Numerator: 594 Denominator: 900	67%
<b>Exclusive breastfeeding from birth through the first six months</b>					
% of children 0-5.9 months of age who received only breast milk during the previous 24 hours	40%	15%	37%	Numerator: 95 Denominator: 296	32%
<b>Timely introduction of appropriate complementary foods</b>					
% of children 6 – 8 months who received semi-solid or solid food during the previous 24 hours	85%	85%	91%	Numerator: 115 Denominator: 131	88%
<b>Reduction in the consumption of foods of low nutrient value (junk food)</b>					
% of children under six months who consumed sugary food in the previous 24 hours	12%	20%	6%	Numerator: 35 Denominator: 296	12%
% of children 6-23 months who consumed sugary or processed food during the previous 24 hours	69%	57%	51%	Numerator: 356 Denominator: 604	59%
Average number of times per day children 6-23 months ate junk food (sugary or processed)	1.8	1.7	1.6	Count: 356	1.7
<b>Presumptive treatment for helminths for pregnant women and young children</b>					
% of children 0-23 months who received deworming medicine	10%	19%	12%	Numerator: 126	14%
% of women who received advice to take deworming medicine during pregnancy (Q12)	12%	7%	5%	Numerator: 72 Denominators: 900	8%



# Introduction

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The Kyrgyz Republic is a Central Asian country with a population of 5.7 million people, two-thirds (66.4 percent) of whom live in rural areas (*aiyls*).<sup>1</sup> Forty-one percent of the rural population lives below the poverty line,<sup>2</sup> meaning that many people lack the means to purchase basic necessities, including food commodities. According to the joint report from the United Nations Children’s Fund (UNICEF) and the World Bank, undernutrition is a major public health problem in the Kyrgyz Republic, particularly chronic undernutrition, or stunting, among young children, which irreversibly delays their physical and cognitive development.<sup>3</sup> The most recent Demographic Health Survey (DHS 2012) found that 18 percent of children under age five were stunted, and United Nations (UN) research reports that nearly one in every four deaths of young children in the Kyrgyz Republic is caused by underlying undernutrition.<sup>3</sup>

The Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) project is working to improve nutrition for women and children in the Kyrgyz Republic through a wide range of interventions. SPRING is a five-year cooperative agreement funded by the U.S. Agency for International Development (USAID) to provide state-of-the-art technical support and to facilitate country-led, regional, and global programs to improve the nutritional status of women and children. SPRING builds on past USAID investments and its partner expertise to deliver high impact nutrition interventions, such as feeding of infants and young children, control of micronutrient deficiencies, and maternal nutrition practices focusing on the period from conception through the first 1,000 days. Currently, SPRING is implementing a project aimed at reducing stunting and anemia through evidence-based interventions in 12 jurisdictions of Jalalabad *oblast* (province), and Jumgal district in Naryn *oblast*, with a clear pathway to national scale-up. The interventions are intended to reduce stunting and anemia by positively influencing 11 key nutrition-related practices, as shown below in the results framework for SPRING (Figure 1). SPRING is also leading efforts to strengthen the evidence base and to build on, clarify, and strengthen understanding, application, and use of the most promising nutrition-sensitive agriculture interventions.<sup>4</sup>

Prior to project implementation, a baseline survey was conducted from October to November 2014 with the purpose of assessing current nutrition practices for children aged 0-23 months and their mothers, living in SPRING intervention areas. The baseline survey was conducted by the independent research and consulting agency M-Vector and studied nutrition practices of children aged 0-23 months and their mothers in Jalalabad *oblast*, Jumgal (Naryn *oblast*), and Uzgen (Osh *oblast*, the comparison region). In addition to nutrition practices, the survey asked about other important factors that may affect the health and nutrition of mothers and their children such as:

- prenatal care;
- child’s nutrient supplements and deworming medicine;
- storage and preservation of foods for wintertime (for dietary diversity);
- sources for drinking water and water treatment and the existence and maintenance of toilet facilities; and
- mothers’ preferences in television watching and the specific programs they watch.

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<sup>1</sup> National Statistics Committee of KR <http://stat.kg/images/stories/Demography2.pdf>

<sup>2</sup> National Statistics Committee of KR <http://stat.kg/images/stories/docs/tematika/living/2014/%202013%20.pdf>

<sup>3</sup> World Bank, UNICEF: Situational Analysis: Improving Economic Outcomes by Expanding Nutrition Programming in the Kyrgyz Republic <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/ECAEXT/0,,contentMDK:22940730~pagePK:146736~piPK:146830~theSitePK:258599,00.html>, <http://www.un.org/apps/news/story.asp?NewsID=38906#.VHIbFjSsXp4>

<sup>4</sup> SPRING <http://www.spring-nutrition.org/springprocurement>

**Figure 1. SPRING/Kyrgyz Republic Results Framework**

**Goal:** To improve nutritional status of children under two and women of reproductive age in the Kyrgyz Republic.



**Objective: Improve Uptake of Eleven Key Practices with the Potential to Reduce Stunting and Anemia**

1. Consumption of iron supplements by pregnant women.
2. Dietary diversity for women with emphasis on food sources of iron and foods that enhance iron absorption
3. Dietary diversity for children 6 to 23 months with emphasis on food sources of iron and vitamin A, and foods that enhance iron absorption;
4. Optimal meal frequency for children 6 to 23 months of age
5. Early initiation of breastfeeding;
6. Exclusive breastfeeding from birth through the first six months
7. Timely introduction of appropriate complementary foods;
8. Reduction in the consumption of foods of low nutrient value (junk food) Presumptive treatment for helminthes for pregnant women and young children;
9. Presumptive treatment for helminthes for pregnant women and young children
10. Hand washing at three out of five critical times (after using the latrine, after changing a baby's diaper/cleaning a child, before preparing food, and before feeding a child, before eating.)
11. Adoption of methods for safe and prolonged storage of nutrient-dense produce for the winter



**IR 1** Increased access to quality nutrition services



**IR 2** Increased demand for priority nutrition practices and services



**IR 3** Enhanced access to a diversified diet

Information collected during the survey will help SPRING design better programs and deliver effective messages to improve the nutritional status of women and young children in the Kyrgyz Republic.

This report starts with a description of the survey methodology, followed by a description of the basic sociodemographic characteristics of mothers with children 0-23 months of age. It then shows the main results, followed by a brief discussion and conclusion.

## Brief Information about the Regions

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**Jumgal district** is a part of Naryn oblast in central Kyrgyz Republic. Actually Jumgal region includes 16 rural communities (*aiyl okmotus*), and each *aiyl okmoty* includes one or more villages. According to the National Statistics Committee, the population of Jumgal region was 42,400 in 2014, which is 16 percent of the entire population of the *oblast*. The entire area is rural, and the main ethnicity is Kyrgyz.



**Uzgen district** is a part of Osh oblast in the southern part of the Kyrgyz Republic. The capital of the region is the town of Uzgen. In 2014, according to the National Statistics Committee, the total population of the Uzgen region was 244,900, about 20 percent of the population of Osh oblast. In all, 78 percent of the population of Uzgen lives in rural areas. Uzgen includes one town and about 120 settlements, managed by 22 *akiyl okmotus*. The dominant ethnicity is Kyrgyz, but about a fifth of the population is of Uzbek origin.



**Jalalabad oblast** is one of the seven *oblasts* of the Kyrgyz Republic. It is usually considered to be in the southern part of the country. The capital of the *oblast* is the Jalalabad City. There are eight districts in the *oblast*. There are also eight towns, five urban settlements and about 400 villages. SPRING programs cover approximately two-thirds of the *oblast*, and the survey sample focused on those areas. In 2014, the total population of the *oblast*, according to the National Statistics Committee, was 1,099,000 people, 78 percent of whom lived in rural areas. The ethnic composition is approximately 70 percent Kyrgyz, 25 percent Uzbek, and five percent other nationalities.





## Methodology

In order to achieve the goals of the research, a quantitative household survey was conducted.

A quantitative survey gathers quantitative information from a large number of respondents (consumers, organizations, companies). The main purpose of such research is to quantitatively evaluate the situation in the market or to measure the respondents' reaction to a particular event. Such research is used when precise and statistically reliable data is required.

The target population of the survey was women with at least one child 0-23 months of age living in villages and towns in Jalalabad *oblast*, Uzgen region (Osh *oblast*) and Jumgal region (Naryn *oblast*) of the Kyrgyz Republic. The survey covered 36 villages and towns: 16 villages and towns in Jalalabad, 10 villages in Uzgen, and 10 villages in Jumgal. The total sample size was 900 respondents, and there were 300 respondents in each region, as shown in Table 2 below.

**Table 2. Geography of the survey**

Region					
Jalalabad <i>oblast</i>		Jumgal (Naryn <i>oblast</i> )		Uzgen (Osh <i>oblast</i> )	
Village or Town	Number of Respondents	Village or Town	Number of Respondents	Village or Town	Number of Respondents
Jalalabad town	75	Bash-Kuugandy	30	Kakyr	30
Tash-kumyr town	15	Bazar Turuk	30	Kurbu-Tash	30
Majлуу-suu town	15	Jumgal	30	Bakmal	30
Kara-kul town	15	Kek-Oy	30	Kayrat	30
Ak-korgon	15	Bayzak	30	Kara-Dyikan	30
Ak-tam	15	Kuyruchuk	30	Djiyde	30
Dostuk	15	Tyugol-Say	30	Osturuu	30
Ajry-tam	15	Tash-Dobo	30	Karool	30
Kosh-terek	15	Chaek	30	Alga	30
Kok-zhangak town	15	Kyzyl-Djyldyz	30	Kyzyl-Too	30
Kazarman	15				
Toktogul	15				
Kyzyl-tuu	15				
Chon-aryk	15				
Torkent	15				
Kanysh-kyja	15				
<b>Total</b>	<b>300</b>	<b>Total</b>	<b>300</b>	<b>Total</b>	<b>300</b>

The sample design was constructed based on the following elements:

### **1. Oblast and region**

The *oblasts* and districts/jurisdictions surveyed were identified by SPRING as being within their areas of intervention.

### **2. Settlements**

Settlements (*aiyls*) within these regions were selected by an automatic probabilistic program. The program used a database of all settlements in the selected regions (based on demographic data provided by the National Statistics Committee of the Kyrgyz Republic) and randomly selected the necessary number of settlements (based on the RANDOM principle). The probability of selection was the same for all rural settlements, which means that every rural settlement had an equal chance to be selected into the sample. A similar approach was applied to urban settlements.

Villages and sectors/clusters of towns were the primary sampling units (PSU). Traditional cluster sampling was used to select PSUs in Naryn and Uzgen, while probability proportional to size (PPS) was used in Jalalabad because SPRING works in both rural and urban areas throughout the *oblast*. Using PPS ensured that every member of the population had an equal chance of selection when the sample frame covered both high-density and low-density areas. The size of one PSU (about 15-30 respondents) was identified by an M-Vector specialist. To ensure representativeness of the sample and territorial coverage, 15-30 respondents were surveyed (minimum PSU size) in each settlement. There were 10 PSUs in Uzgen and Jumgal, and 20 PSUs in Jalalabad *oblast*. Jalalabad town contained five PSUs (based on larger population size); in all other villages, there was one PSU per village.

### **3. Sector/Cluster**

All settlements were divided into sectors/clusters to ensure full coverage (distribution of respondents) of the territory and different layers of population. Villages were usually divided into three sectors: the center of the village, the outskirts of the village (remote areas), and the area between the center and the remote areas. Jalalabad was divided into five sectors in order to cover the whole territory of the town. Ten respondents were interviewed in each sector of the villages in Uzgen and Jumgal regions: three villages/clusters and 30 respondents were selected per village. In the villages of Jalalabad *oblast*, five respondents were interviewed in each sector: there were three sectors and 15 respondents per sector. In Jalalabad, 15 respondents were interviewed in each sector: there were five sectors and 75 respondents in the entire town. Each sector was assigned to one interviewer.

### **4. Households**

The survey was conducted using the face-to-face interview method. The personal interview is the most common way to study a topic. Professional interviewers ensured that the responses were complete and reliable, and made sure that they did not tire the respondents.

To receive necessary information, interviewers visited private houses and apartments and surveyed mothers with children aged 0-23 months. They selected houses and apartments in each sector/cluster using the "random walk" method, which was carried out as follows:

1. Determination of the point of departure and direction in town (Jalalabad):

Interviewers were provided with the exact address (street and house number) of departure point (a central polling point in an entrusted area). Interviewers stood with their backs facing the main entrance of the building, then plotted a route and started moving right.

2. Determination of points of departure and directions in villages:

Interviewers selected three points in their responsible areas: one at the center and two boundary points. Interviewers stood with their backs to the main entrance of the building, then plotted a route and started moving right.

3. The procedure for selecting households was as follows:

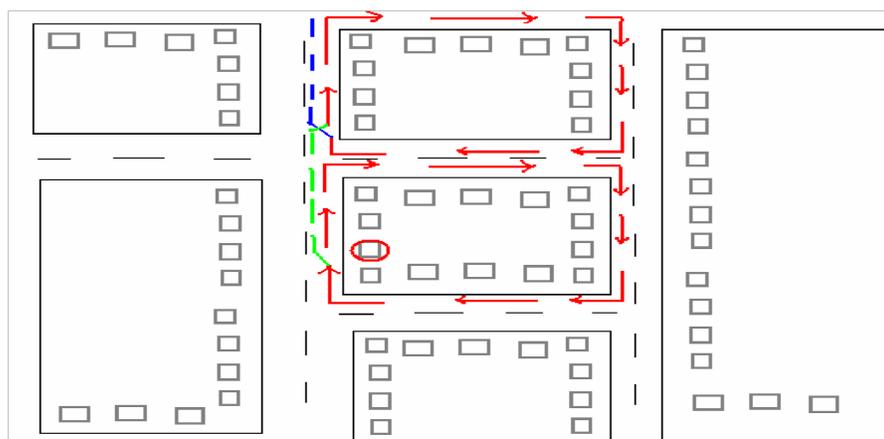
3.1 Private Houses

3.1.1 Choosing the First House

If from the point of departure and/or the direction of the route (the right of polling point), the interviewer saw private houses, they chose the first house, located closest to the address from which they started moving (polling point) and tried to contact its residents.

3.1.2 Selecting the Next Houses in Towns (Jalalabad)

Interviewers chose every third house after the first house that was selected according to the defined direction (the right of the polling point). In this case, "three" was the "step of selection." When approaching an equivalent crossroad, interviewers turned to the right:



If the interviewer made a circle and returned to a point where he/she had already been, (circled house in the picture above), he/she moved on (green arrow) and did not turn at the crossroads where he/she was already.

3.2 Apartment Buildings and Multi-Story Cottages

3.2.1 Selecting Apartment Buildings or Multi-Story Cottages:

If the apartment building was located next to the point of departure and/or in the direction of movement, interviewers chose the first building located closest to the starting point. If the building had several entrances, they went in the first one that they saw.

3.2.2 Selecting the First Household in an Apartment Building or Cottage:

Inside the building, the interviewer entered the first doorway and chose the first apartment. The interviewer moved with step  $(n + 5)$  after each successful interview and with step  $(n + 1)$  if they were unsuccessful. If the apartments did not have numbers, or if they did not begin with numbers one, two, three, and so on, the interviewers numbered the apartments on their own, starting from the first floor, and calculating apartments from right to left.

3.2.3 Selecting the Next Apartment Building or Cottage:

When leaving a given house, the interviewers continued in the same direction and selected the next building on the way. If the next building was a private house, they used the above selection interval for private houses (3), but only if there were at least three houses on the way. If there were less than three private houses between apartment buildings, the interviewers went to the next apartment building or cottage.

## 5. Selecting Respondents

If there was more than one mother with children aged 0-23 months of age in the household, interviewers used the “closest birthday” method to choose the respondent, meaning that interviewers chose the mother whose birthday was closest to the date of the interview. Similarly, if the mother had more than one child 0-23 months of age, interviewers applied the “closest birthday” method to choose the child about whom they would ask questions. This method provided a random selection of respondents and ensured sample representativeness.

## 6. Organization of Fieldwork

Fieldwork was conducted by 24 interviewers: six in Jumgal, 13 in Jalalabad, and seven in Uzgen. They used a questionnaire developed by SPRING (and revised in collaboration with M-Vector), to survey mothers with children 0-23 months of age. The questionnaire consisted of 53 closed-ended questions meant to assess maternal-child nutrition practices and other factors related to nutrition. Prior to doing the fieldwork, all interviewers were provided with instructions/briefings of the goals, methodology, and rules of the survey. The instrument was pretested in Kyrgyz, Uzbek, and Russian, in Osh *oblast* and Jumgal region, over a one-day period by a subset of interviewers. Improvements were made based on discussions of the pretest experiences. During fieldwork, interviewers had paper questionnaires, printed instructions, an interviewer’s ID, a support letter (from SPRING and M-Vector), and a permission letter from local government authorities (in the Uzgen region). The interviewers’ work was coordinated and monitored by three supervisors (one supervisor per region).

The survey took place from October 10, 2014 until October 17, 2014 in Jumgal; from October 9, 2014 until October 22, 2014 in Uzgen; and from October 25, 2014 until November 11, 2014 in Jalalabad. The majority of interviews were conducted between 10:00 a.m. and 6:00 p.m. The average length of each interview was 41.5 minutes. Interviews were mostly conducted in the Kyrgyz language in Jumgal and Uzgen. In Jalalabad, 21 percent of interviews were conducted in Uzbek, and 78 percent were conducted in Kyrgyz. Interviews in Russian constituted only one percent of all interviews.

**Table 3. Language of the survey**

Language	Region			Total	
	Jumgal	Jalalabad	Uzgen	Count	Column N %
Kyrgyz	100%	78%	98%	830	92%
Russian	0%	1%	1%	5	1%
Uzbek	0%	21%	1%	65	7%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>900</b>	<b>100%</b>

During the process of fieldwork, 20 percent (n=240) of all completed questionnaires from each interviewer were checked for completeness, logic, and reliability by three supervisors. Questionnaires were randomly selected for quality control.

## 7. Ethical Considerations

Before and during fieldwork the following ethical norms were followed:

- Participation was completely voluntary and informed consent forms were received from survey participants;
- Personal information from survey participants was kept confidential and was only used in the report in a general form. Personal information was only available to M-Vector and SPRING teams and could not be transmitted to third parties. It could not be used for any purposes other than the current survey report;
- Approval and letters of support from Ministry of Health were received prior the survey;
- Women under 18 years old were not included into the survey;
- No biologic samples were taken;
- Pregnancy status of surveyed women was not assessed; and
- The study protocol was submitted to the John Snow Institute's Institutional Review Board (IRB), and was declared to be exempt from IRB approval.

## 8. Processing of Received Data

Received data was entered into the Statistical Package for the Social Sciences (SPSS) program by five database operators. The database consisted of observations of 900 mothers and their children aged 0-23 months. The SPSS database was checked and analyzed by the agency's analytical staff.

## 9. Limitations

Because of the difference in sample sizes for different ages of children: 1) a t-test was applied to assess the statistical significance of differences in the column means (different sample sizes don't cause a problem for the test); and 2) a z-test was applied to assess the statistical significance of differences in the column proportions. The results were based on two-sided tests with a significance level 0.05. The tests were adjusted for all pairwise comparisons within a row of each innermost sub-table using the Bonferroni correction.

Column proportion tests were applied to tables in which categorical variables (variables that can take one of a limited number of possible values, assigning each individual to a particular category) existed in both rows and columns. Column mean tests were applied to tables in which scale variables existed in the rows and categorical variables existed in the columns. None of the tests was performed on multiple response variables or tables in which category labels were moved out of their default table dimension.



# 1. Socio-Demographic Profile of the Sample

This chapter looks at the socio-demographic characteristics of mothers and their households and presents data about living conditions in the households that were surveyed.

## 1.1. Socio-Demographic Profile of Mothers and Children

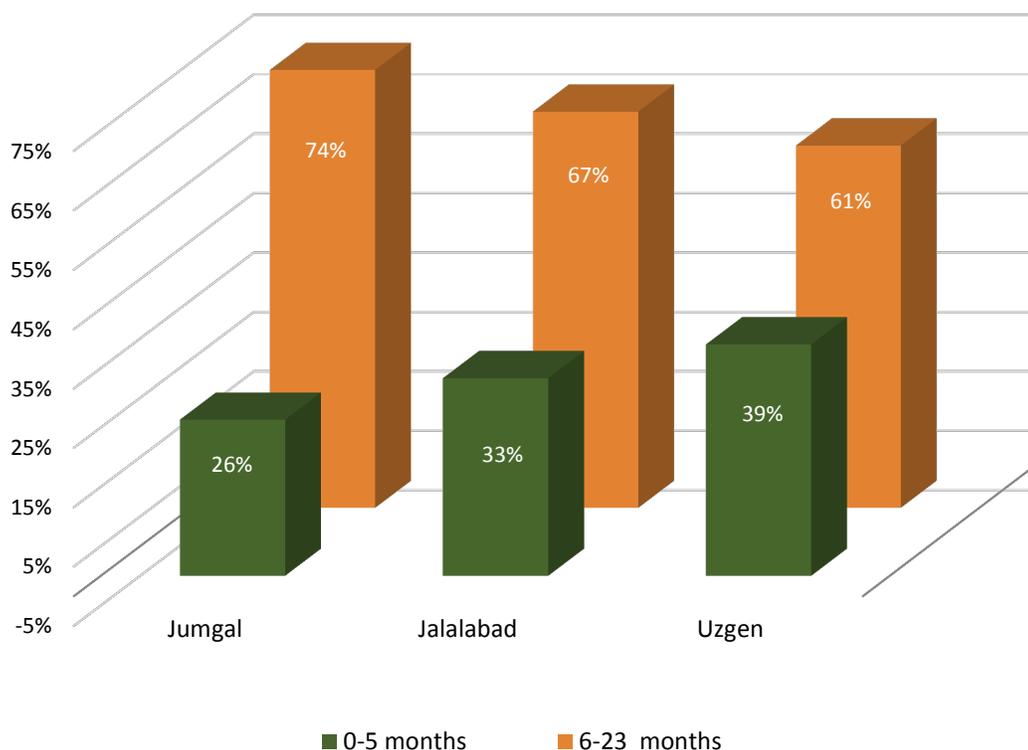
The distribution of children by age across regions is shown in Table 1.1.1. In Uzgen, infants 0-5 constituted 39 percent of the total number of observations. In Jalalabad, infants made up 33 percent of the total, and in Jumgal, 26 percent. The remaining children were aged 6 to 23.9 months.

**Table 1.1.1. Age of children whose mothers were surveyed (N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>U</sub>=300)**

Age of Children	Region			Total	
	Jumgal	Jalalabad	Uzgen	Count	Column N %
	Column N %				
0-5 months	26%	33%	39%	296	<b>33%</b>
6-11 months	27%	27%	30%	252	<b>28%</b>
12-17 months	27%	27%	19%	217	<b>24%</b>
18-23 months	20%	13%	12%	135	<b>15%</b>
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>900</b>	<b>100%</b>

**Graph 1.1.1. Age of children whose mothers were surveyed**

(N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>U</sub>=300)

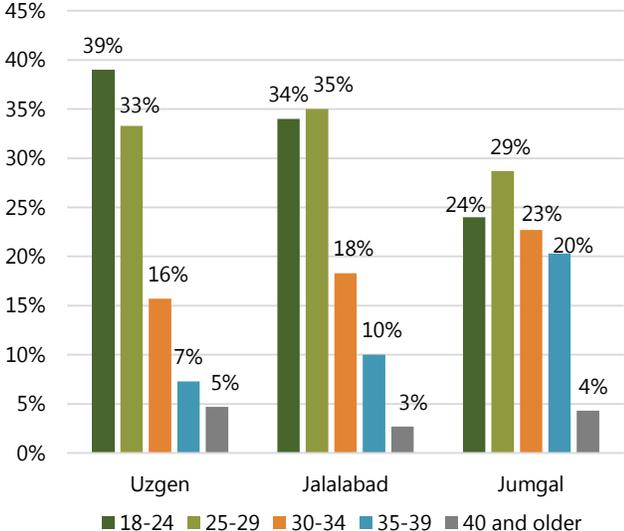


According to Graph 1.1.2, young women 18-29 years of age in all three regions comprised the majority of sample. In the total, 65 percent of mothers were 18-29 years of age, 32 percent were 35-39 years old, and only four percent were 40 years and older. The predominant ethnicity of mothers in all regions was Kyrgyz. However, in Jalalabad *oblast* 24 percent of women were of Uzbek origin (Graph 1.1.3).

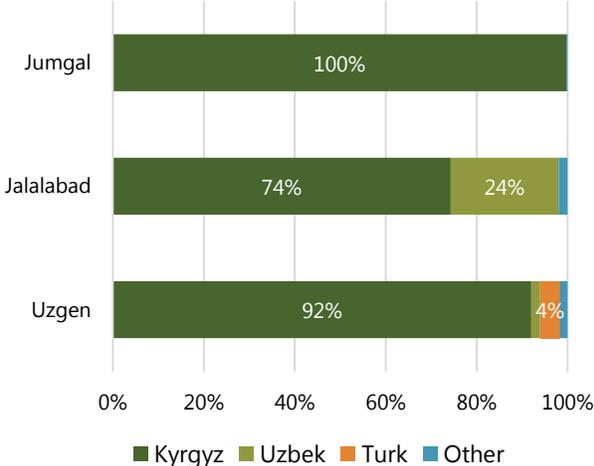
With regard to education, 100 percent of the women had attended school and only a fraction of them had not completed ninth grade. A little more than half of mothers in all regions had finished high school (through grade 11), while the rest had at least some higher education. Twenty-three percent of women had completed higher education (college or university degree), and 18 percent reported having either completed vocational education or some college education. Graph 1.1.4 shows that the educational level of the women who were surveyed is similar across regions but varies by ethnicity. Women of Uzbek ethnicity have lower levels of education on average than Kyrgyz women. Whereas only two percent of mothers of Kyrgyz origin had not finished high school, 18 percent of Uzbek mothers had completed nine years of schooling or less (Graph 1.1.5). In addition, 26 percent of Kyrgyz mothers had completed some higher education, as compared with only eight percent of Uzbek mothers.

The study also examined the work status of mothers. Employment outside of the home is uncommon among mothers in all regions, but there are some distinctions. For instance, Jumgal had the lowest percentage of women who engaged in salaried employment (26 percent); 31 percent of women did so in Jalalabad, and 45 percent of women in Uzgen were in the paid workforce. It should be noted that most women who reported they were on maternity leave were likely on leave from paid work (Graph 1.1.6). As Graph 1.1.7 shows, the large majority of women with fewer than 11 years of education did not engage in paid employment. Most of the women who work outside of the home (74 percent) have some higher education.

**Graph 1.1.2. Mother's age**  
(N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>Ju</sub>=300)

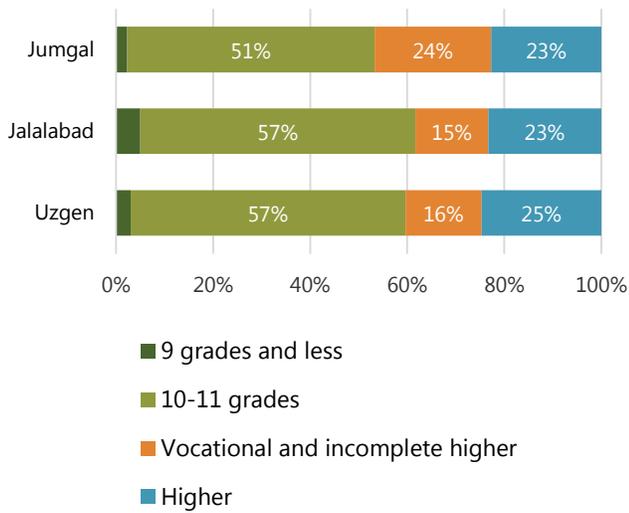


**Graph 1.1.3. Mother's ethnicity**  
(N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>Ju</sub>=300)



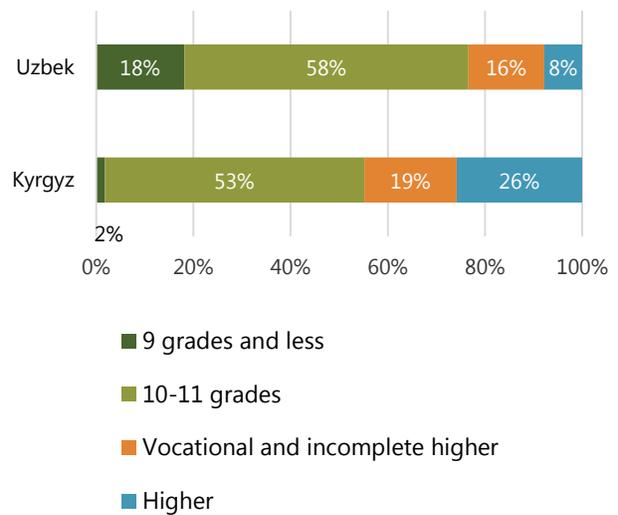
**Graph 1.1.4. Mother's education**

(N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>U</sub>=300)



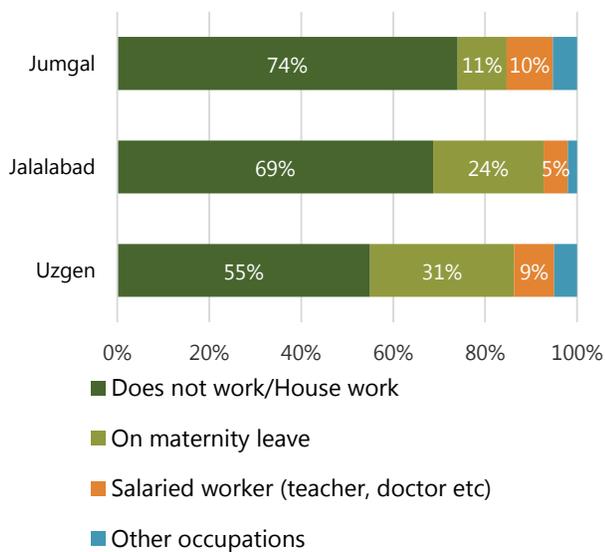
**Graph 1.1.5. Mother's education by ethnicity**

(N<sub>Kyrgyz</sub>=798, N<sub>Uzbek</sub>=77)



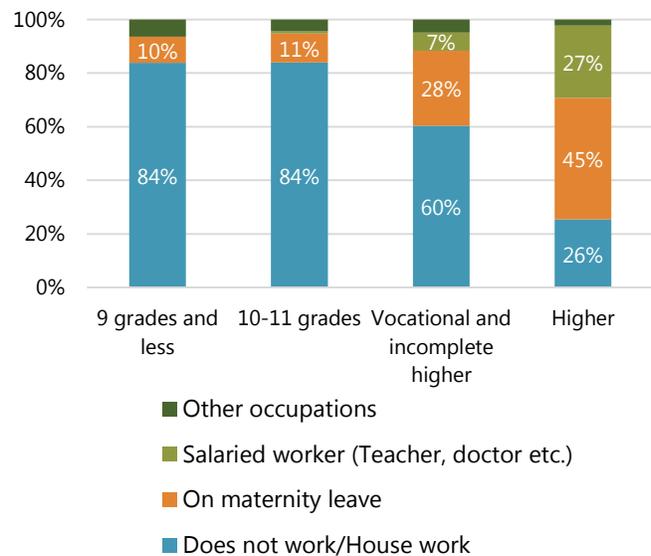
**Graph 1.1.6. Mother's work status**

(N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>U</sub>=300)



**Graph 1.1.7. Work status by education**

(N<sub>9</sub>=31, N<sub>10-11</sub>=493, N<sub>voc/inc</sub>=164, N<sub>higher</sub>=212)



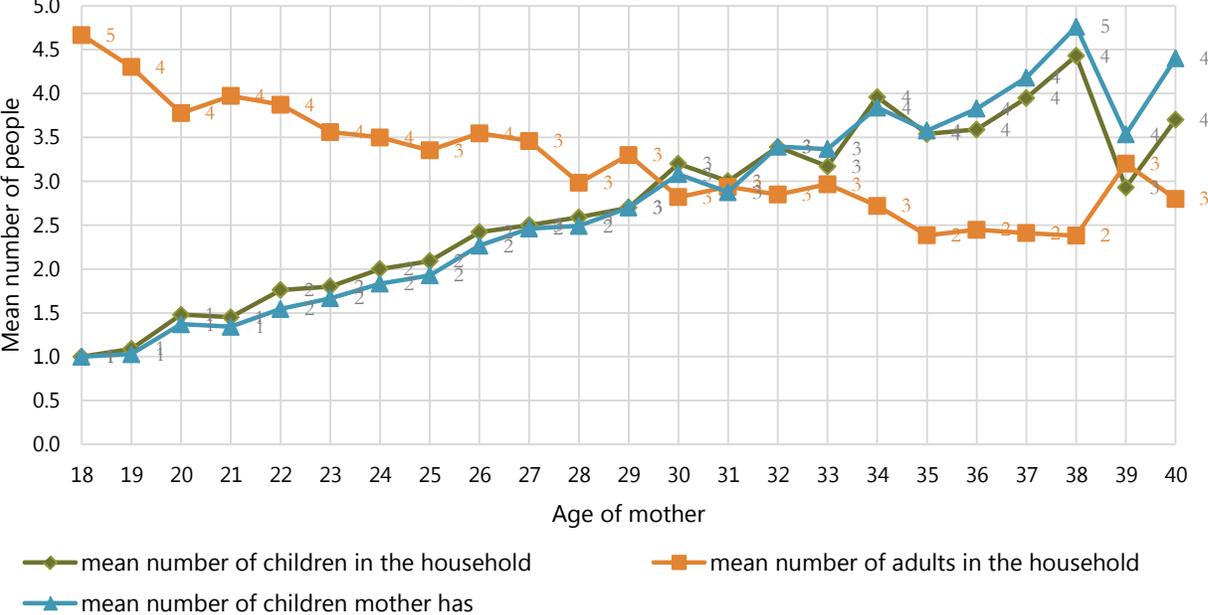
## 1.2. Information on Number of People in Household

The study collected information about the number of people living in households with mothers who have at least one child 0-23 months of age. The hypothesis was that the number of children and adults, and the average number of adults per child in the household, would influence the level and quality of the child's (and the mother's) care and health.

As seen in Graph 1.2.1, young mothers had fewer children on average than older mothers. The blue line (mean number of children) is almost identical to the green line (mean number of children living in the household), which indicates that women usually live with only their own children. For women aged 35 and older, the number of children living in the household decreased slightly, probably because women older than 35 years of age had older children who lived separately. The orange line in the graph indicates that the mean number of adults living in the

household decreased with the mother’s age. This can be explained by the fact that young mothers in the Kyrgyz Republic usually lived with their husband’s parents, their own parents, or shared an apartment with other families in order to save money. The mean number of adults in the household was five adults for 18-year-old mothers and two adults for mothers aged 35-38 years.

**Graph 1.2.1. Mean number of children and adults in the household by mother's age (N=900)**



The overall mean number of children living in the average household was 2.6, with a mean 3.3 adults (Table 1.2.1 below). There was an average of 5.8 people of all ages per household. The difference across regions is mostly explained by the larger number of older women surveyed in Jumgal. There was an estimated average of 1.8 adults per child in the household.

**Table 1.2.1. Mean number of children (all ages) and adults in a household by region (N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>U</sub>=300)**

	Region			Average
	Jumgal	Jalalabad	Uzgen	
Mean number of children mother has	3.0	2.0	2.0	3.0
Mean number of children living in the household	2.9	2.5	2.3	2.6
Mean number of adults living in the household	3.1	3.3	3.4	3.3
Mean number of people living in the household	6.0	5.8	5.7	5.8
Mean number of adults per 1 child in the household	1.5	1.9	2.1	1.8

### 1.3. Household Living Standard

Basic living standards were assessed by calculating the number of home appliances and assets, as listed in Table 1.3.1. The table illustrates that in all regions, most families owned kitchen appliances such as a fridge and an electric or gas stove. About half of all families also owned an automobile. In Jumgal, all other appliances and assets were found in only a small number of households. This may be partially due to the fact that Jumgal is very remote and families would have to travel a day or more to purchase such items. Also, few households in Jumgal had water piped into the home, which means there would be no reason to own a washing machine. In contrast, most families in Jalalabad (60 percent) and Uzgen (70 percent) owned a washing machine, and a smaller

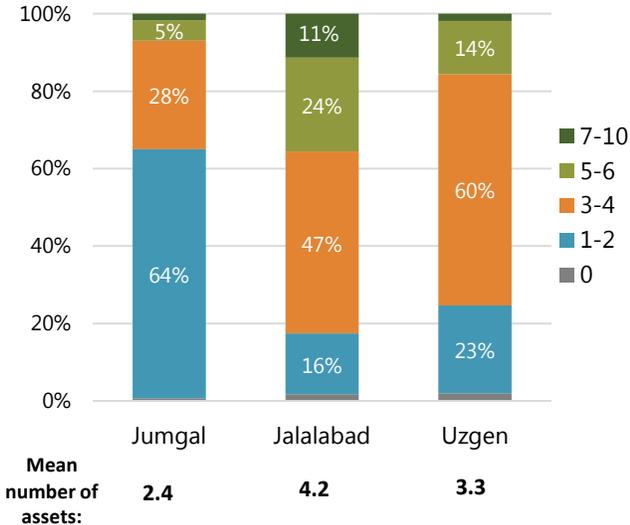
percentage owned other assets such as a water heater, sauna, computer or telephone. A telephone and access to the Internet were the least commonly owned assets.

**Table 1.3.1. Assets and appliances available in the household (N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>U</sub>=300)**

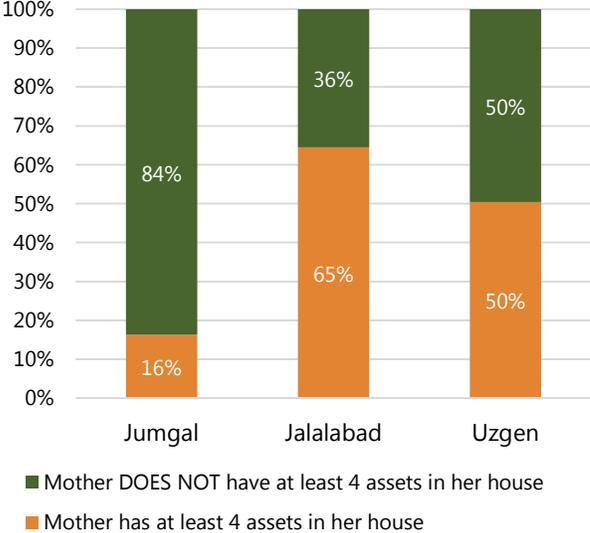
Asset	Region			Total
	Jumgal	Jalalabad	Uzgen	
1. Fridge	72%	91%	90%	85%
2. Electric or gas stove	88%	89%	66%	81%
3. Automobile	47%	55%	50%	51%
4. Washing machine	13%	60%	70%	48%
5. Water heater	4%	45%	17%	22%
6. Sauna	10%	28%	18%	19%
7. Computer	6%	15%	17%	13%
8. Telephone	1%	22%	3%	9%
9. Internet	1%	6%	8%	5%
10. Air conditioner/heater	1%	9%	1%	3%

The average number of assets per household was highest in Jalalabad (4.2 items), as compared to 3.3 in Uzgen, and 2.4 in Jumgal. Households with at least four of these assets (Graph 1.3.2) were not common: in Jumgal, 84 percent of families had fewer than four assets; as compared to 50 percent of families in Uzgen and 45 percent of families in Jalalabad.

**Graph 1.3.1. Number of assets mothers have in the house (N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>U</sub>=300)**



**Graph 1.3.2. Mothers who have at least 4 assets in the house (N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>U</sub>=300)**



The number of assets was higher in households where both parents worked outside the home (and the mother had higher education.) In such households, the mean number of assets was 3.9. If both the woman and her husband were unsalaried, the mean number of assets was only 2.5. Most of these families were from Jalalabad and Uzgen. In families with mothers of Uzbek origin (all from Jalalabad *oblast*) the average number of assets was higher (5 assets) than in families with mothers of Kyrgyz ethnicity (3.2 assets in Kyrgyz and 4 assets for Kyrgyz in

Jalalabad *oblast*). The number of assets was higher in families where there were more adults and where there were a higher proportion of adults per child. In households with two adults, there was an average of 3.1 assets, but households with five to seven adults, averaged 3.9 assets (Table 1.3.2).

**Table 1.3.2. Mean number of assets/appliances available in the household by socio-demographic characteristics**

1. Age of Mother					2. Level of Education			
18-24	25-29	30-34	35-39	40 and older	9 grades and less	10-11 grades	Vocational /incompl. higher	Higher
N=291	N=291	N=170	N=113	N=35	N=31	N=493	N=164	N=212
Mean number of assets in the house					Mean number of assets in the house			
3.6	3.4	3.2	3.1	3.1	4.2	3.1	3.3	3.9
3. Work Status of the Mother								
Do not work/House work		On maternity leave	Farm work, own farm	Paid farm work	Migrant	Shop keeper	Salaried worker	
N=593		N=198	N=10	N=4	N=7	N=13	N=72	
Mean number of assets in the house								
3.2		3.9	2.9	3.0	3.6	3.6	3.6	
5. Number of Adults Living in the Household					6. Mother's Ethnicity			
1	2	3-4	5-7	8-9	Kyrgyz		Uzbek	
N=29	N=341	N=360	N=159	N=11	N=798		N=77	
Mean number of assets in the house					Mean number of assets in the house			
3.3	3.1	3.3	3.9	4.3	3.2		5.0	

The number of appliances in the house is not a perfect indicator of wealth, since many families also possessed another important asset: livestock. For instance, although Jumgal had the fewest number of purchased assets per household, it had the largest overall number of families who owned livestock (Table 1.3.3). Thus, it can be concluded that families in Jumgal relied on livestock as a key means for subsistence.

**Table 1.3.3. Percentage and numbers of mothers who reported that the household possessed domestic animals**  
(N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>U</sub>=300)

Livestock	Region						Total
	Jumgal		Jalalabad		Uzgen		
	%	Mean Number	%	Mean Number	%	Mean Number	%
<b>Cattle</b>	82	2	44	1	69	2	65
<b>Sheep</b>	84	17	44	4	46	5	58
<b>Chickens</b>	56	6	40	5	69	11	55
<b>Horses</b>	61	2	17	0	25	1	34
<b>Goats</b>	44	3	5	0	8	1	19
<b>Pigs</b>	0	0	0	3	1	0	0
<b>Ducks</b>	0	0	0	1	0	0	0
<b>Donkeys</b>	0	1	0	1	0	1	0

## Summary of Chapter One

**Education:** Women aged 18-29 comprised the majority of respondents (65 percent). The rest were mostly between the ages of 35-39. About half of mothers in all regions finished high school (grade 11). The other half had a university degree, vocational education, or at least some higher education. On average, women in Uzbek had a lower level of education than Kyrgyz women.

**Work:** It was common in all regions for women not to be engaged in salaried work (66 percent overall). The remaining 44 percent of women reported that they were either on maternity leave or currently working. Women without education beyond high school did not usually work outside the home or farm, whereas women with higher education were mostly employed in salaried work.

**People in Household:** In total, the average family size was 5.8 people: 2.6 children and 3.3 adults, which meant there were 1.8 adults per child. The number of children living in a household is usually equal to the number of children per mother. The mean number of adults living in the household was higher for young mothers, since young mothers in the Kyrgyz Republic sometimes lived with their husbands' parents.

**Wealth:** Most families in all regions had basic kitchen appliances (fridge and electric or gas stove), and just over half of all families had automobiles. Other assets were found less often. The average number of total assets was highest in Jalalabad (4.2). In Uzgen, the mean number of assets was 3.3, and in Jumgal, the mean was only 2.4. The number of assets was higher in: 1) households where mothers had higher education and both the wife and her husband worked at salaried jobs; and in 2) families with more adults and a higher proportion of adults per child. In households with only two adults, the average of assets was 3.1, whereas in household with five to seven adults, the average number of assets was 3.9. Many families also owned livestock. Families in Jumgal were far more likely to own livestock than were families in other regions. They were also more likely to own a variety of livestock. These data indicate that raising livestock was a major source of income for these households.



## 2. Prenatal Care

Proper prenatal care is vital for both the mother and her child. Mothers who do not receive adequate medical services during pregnancy have a higher risk of complications. Absence of timely prenatal care can lead to complications not being detected in time. Mothers may need to change or stop taking certain medicines, especially during the first trimester (12 weeks), to reduce risks to the fetus. Lack of adequate prenatal care can lead to potentially serious consequences for the mother and child. Therefore, it is very important to start prenatal care as early as possible.

The current study found that almost all women went to a health facility during their pregnancy at least once. The rate of health facility attendance in Jumgal (90 percent) was a bit lower than the rate in Jalalabad (98 percent) and Uzgen (99 percent).

On average, pregnant women in Uzgen and Jalalabad visited health facilities more frequently than did mothers in Jumgal (see Graph 2.1 below). Eighty percent of mothers in Jalalabad and 78 percent of mothers in Uzgen visited a health facility four times or more during their most recent pregnancies, whereas only 64 percent of mothers in Jumgal did so. Therefore, over one-third of mothers from Jumgal (36 percent) visited a health facility three times or less during their pregnancies. This may be related to difficulty traveling during winter in Jumgal.

### 2.1. Number of times mother visited health facility during pregnancy

(N<sub>Jm</sub>=270, N<sub>Jl</sub>=294, N<sub>U</sub>=296)

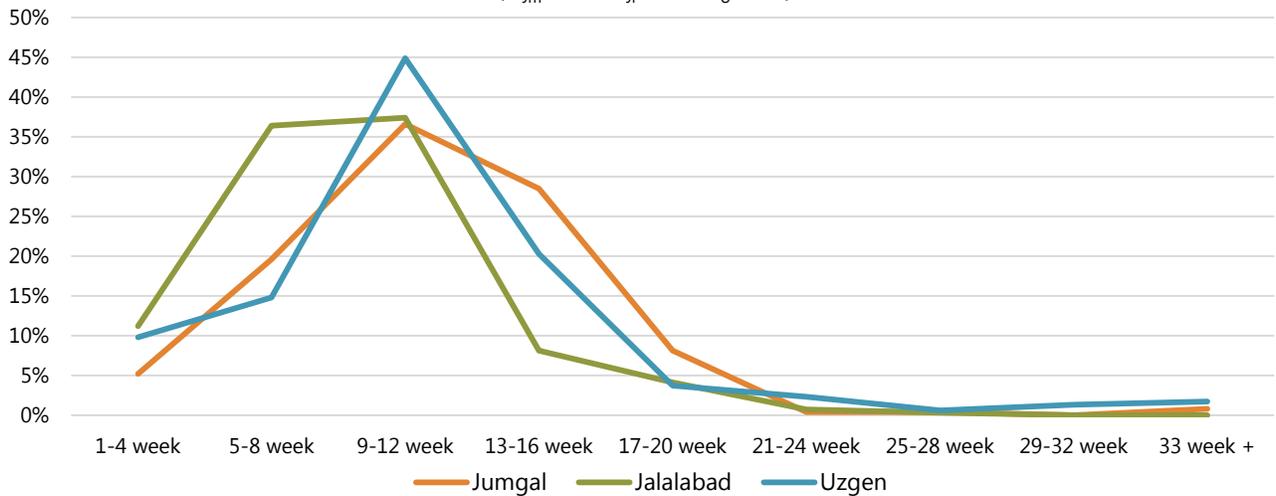


In addition to having more frequent visits to health facilities during pregnancy, on average, mothers in Jalalabad had their first visits earlier. The mean the first visit for women in Jalalabad was in the 10<sup>th</sup> week, whereas it was the 12<sup>th</sup> week for Jumgal and Uzgen. Twenty-six percent of women from Jalalabad had their first prenatal visit prior to the end of their second month of pregnancy, while only 15 percent and nine percent of mothers from other regions did the same. It must be noted that this data is from their recall.

In general, the majority of mothers (85 percent from Jalalabad, 70 percent from Uzgen, and 61 percent from Jumgal) first visited health facilities within their first trimester of pregnancy. However, as shown in Graph 2.2, nearly half of those women did not have their first visit until the last (12<sup>th</sup>) week of the first trimester.

**Graph 2.2. Week of pregnancy mother first visited health facility for consultation**

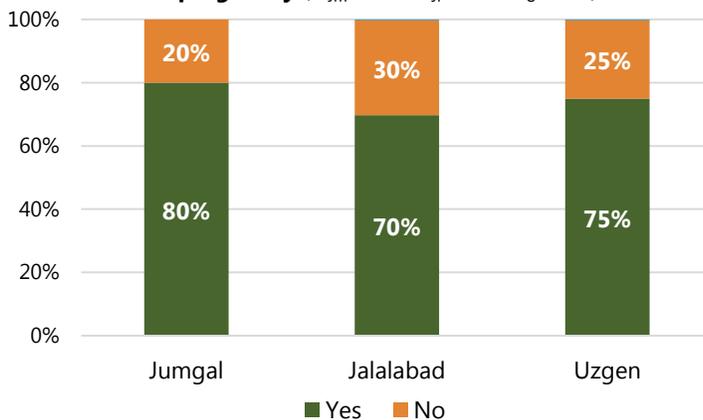
(N<sub>Jm</sub>=270, N<sub>Jl</sub>=294, N<sub>U</sub>=296)



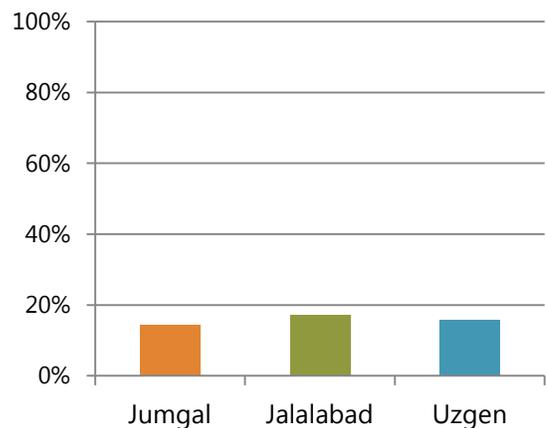
The World Health Organization recommends daily oral iron and folic acid supplements throughout pregnancy as part of antenatal care to reduce the risk of low birth weight, maternal anemia, and iron deficiency.

A majority of women in all regions reported that they received or purchased iron supplements during their last pregnancy: 80 percent in Jumgal, 75 percent in Uzgen, and 70 percent in Jalalabad (see Graph 2.3). As shown by Graph 2.4, only 16 percent of all women took iron supplements for the minimum recommended amount of time during pregnancy (at least 90 days or 3 months).

**Graph 2.3. Percent of women who report receiving or buying any iron supplement during last pregnancy** (N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>U</sub>=300)



**Graph 2.4. Percent of mothers who took iron supplements during pregnancy for at least 90 days**



Pregnant woman took iron supplements for an average of 49 days in Jumgal, 57 days in Uzgen, and 60 days in Jalalabad. Less than one-fifth of women who received iron supplements during pregnancy took them for at least 90 days (3 months).

Most of the women who received advice about iron supplements in Jalalabad and Uzgen were provided with supplements (see Table 2.1), whereas only about half (55 percent) of those who did not get advice on this topic were provided with supplements. In addition, 86 percent of women with higher levels of education were provided with iron supplements, whereas only 67 percent of women with lower levels of education got them. There was no association found between whether or not a woman got counseling/advice on taking iron and the length of time she took iron supplements.

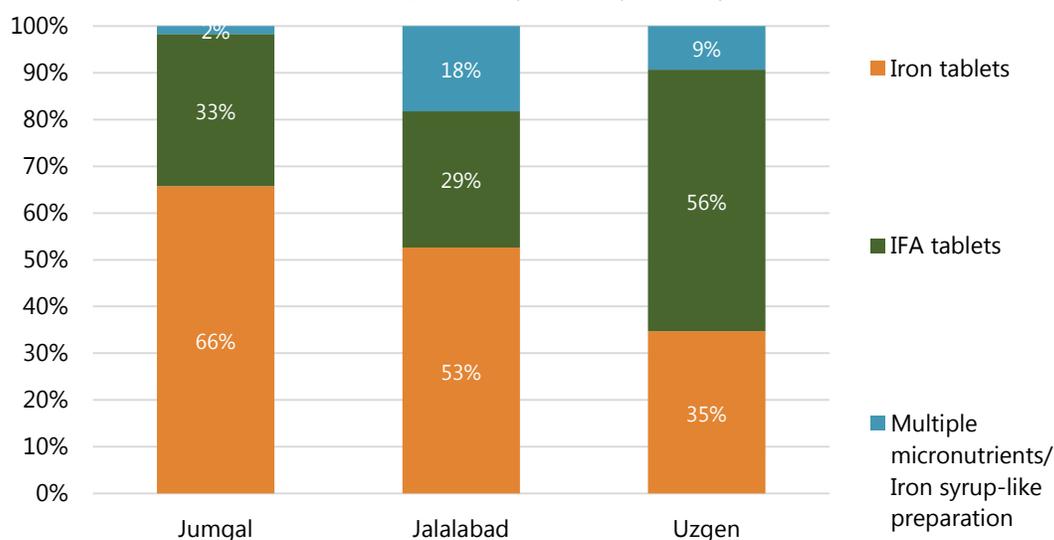
**Table 2.1. Effect of counseling on whether pregnant women obtained iron supplements**

	Obtained Iron Supplements	Did Not Obtain Iron Supplements	Total	
			Count	%
<b>Jalalabad</b>				
Received counseling on iron	82%	18%	165	100%
Did not receive counseling on iron	55%	45%	135	100%
<b>Uzgen</b>				
Received counseling on iron	95%	5%	148	100%
Did not receive counseling on iron	56%	44%	152	100%

*\*No effect was found in Jumgal\**

Iron tablets and iron-folic acid (IFA) tablets were the main types of supplements obtained by pregnant women. Multiple micronutrients and iron syrup preparations were taken by about nine percent of women overall. The most commonly obtained iron supplement type varied from region to region: iron tablets were more popular in Jumgal and Uzgen, and IFA tablets were more widespread in Jalalabad (Graph 2.5).

**Graph 2.5. Types of iron consumed by women who reported obtaining iron during pregnancy** (N<sub>Jm</sub>=240, N<sub>Jl</sub>=209, N<sub>U</sub>=225)



Iron supplements were mostly purchased in pharmacies (85 percent). In other cases, supplements were received during antenatal visits to health facility. The average pregnant woman took iron supplements for 49 days in Jumgal, 57 days in Uzgen, and 60 days in Jalalabad. Only one-fifth of women who ever took iron supplements took them for least 90 days (3 months).

Women received advice on different subjects related to their pregnancy and postpartum care. All mothers received advice at least on one topic out of the eleven topics listed in Table 2.2. This table illustrates that pregnant women from Jalalabad and Uzgen received advice on different subjects than did women from Jumgal. The average number of topics covered by mothers in Jalalabad was 4.5 out of 11. The average number of topics covered by mothers in Uzgen was 3.8, and mothers in Jumgal sought advice on 2.2 topics. Almost all topics (except the last three in the table) were disclosed to about half of mothers in Jalalabad and Uzgen. Nevertheless, none of the topics was reported by more than 50 percent of mothers, and most topics were reported by approximately equal percentages of mothers.

**Table 2.2. Topics on which mothers received consultations (N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>U</sub>=300)**

Subject of Consultation	Region		
	Jungal	Jalalabad	Uzgen
Birth preparedness	54%	47%	47%
Danger signs during pregnancy	27%	57%	43%
Self-care during pregnancy	37%	47%	41%
Taking iron supplements during pregnancy	20%	55%	49%
Nutritious diet during pregnancy	18%	47%	52%
Breastfeeding	13%	53%	30%
Post-partum danger signs for mother	8%	37%	39%
Danger signs for the newborn	4%	45%	28%
Rest during pregnancy	17%	24%	29%
Postpartum family planning	11%	23%	20%
Taking drugs to treat intestinal worms during pregnancy	7%	12%	5%

Most women (94 percent) of women in all regions gave birth in a government maternity center. Three percent of women gave birth at a government hospital; two percent gave birth in private maternity/hospitals. Only one percent delivered at home.

## Summary of Chapter Two

The majority of women received prenatal care in a health facility during pregnancy. Most had their first visit within the first trimester of pregnancy, but less than half were advised to take iron supplements. Eighty-five percent of those who took iron supplements purchased them at a pharmacy. About 16 percent of women from all regions took iron supplements for the recommended three months. Women from Jalalabad and Uzgen generally received information on a wider range of prenatal and postnatal care topics compared to women from Jungal.

Ninety-four percent of women reported delivering in a government maternity center. The remaining six percent delivered at governmental hospitals or private maternity/hospitals, and only one percent delivered at home.

## 3. Nutrition of Mothers and Children

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According to UNICEF, the period from conception to two years of age is the “critical window” for the promotion of good growth, health, and behavioral and cognitive development. Therefore, optimal infant and young child feeding (IYCF) is crucial during this “1,000 days” period. Maternal nutrition is also important for ensuring the good nutritional status of the infant.<sup>5</sup>

This chapter examines mothers’ compliance with optimal breastfeeding practices, dietary diversity of both mother and child, and the appropriate frequency of feeding. It also considers the level of consumption of vitamin A (an essential vitamin to support rapid growth and avoid infections) among young children.

### 3.1. Nutrition of Infants and Young Children

Optimal infant and young child feeding<sup>6</sup> implies that mothers:

- initiate breastfeeding within one hour of birth;
- breastfeed exclusively for the first six months;
- continue to breastfeed up to two years or beyond;
- start nutritionally adequate, safe complementary feeding at about six months.

#### 3.1.1. Initiation of Breastfeeding

Breastfeeding has many health benefits for both the mother and infant. Breast milk contains all the nutrients an infant needs in the first six months of life. Breastfeeding protects against diarrhea and common childhood illnesses.<sup>5</sup>

As seen in Table 3.1.1, almost all children aged 0-23 months in all regions of observation (Jumgal region, Jalalabad *oblast*, and Uzgen region) were ever breastfed.

It is important for mothers to breastfeed their children within one hour after delivery. Early initiation of breastfeeding ensures that the infant receives the colostrum (first milk secreted by breasts for approximately three days after delivery), which is rich in protective factors.<sup>5</sup> In this study, the percentage of children put to breast within one hour after birth was 67 percent overall (N=889 out of mothers who ever breastfed). However, there were some differences across regions. Seventy-nine percent of mothers in Jumgal breastfed their children immediately, and 67 percent did so in Jalalabad. In Uzgen, only 54 percent of mothers breastfed their children immediately after birth.

Overall, 24 percent of all mothers who ever breastfed brought their child to the breast within the first hour after delivery. However, 74 percent of the women who did not breastfeed within the first hour after delivery did breastfeed their children within two or three hours after birth. This means that about 95 percent of children in all regions (N=889) received colostrum the day they were born.

Prelacteal feeds, fluids, and/or semi-solids given to infants in the first few days after delivery, were given to 11 percent of infants in Jalalabad and seven percent of infants in Jumgal and Uzgen (Table 3.1.2). Prelacteal feeds are not recommended, since they may introduce pathogens that cause diarrhea and other diseases and replace the important colostrum.<sup>7</sup>

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<sup>5</sup> World Health Organization <http://www.who.int/elena/titles/en/>

<sup>6</sup> UNICEF [http://www.unicef.org/nutrition/index\\_breastfeeding.html](http://www.unicef.org/nutrition/index_breastfeeding.html)

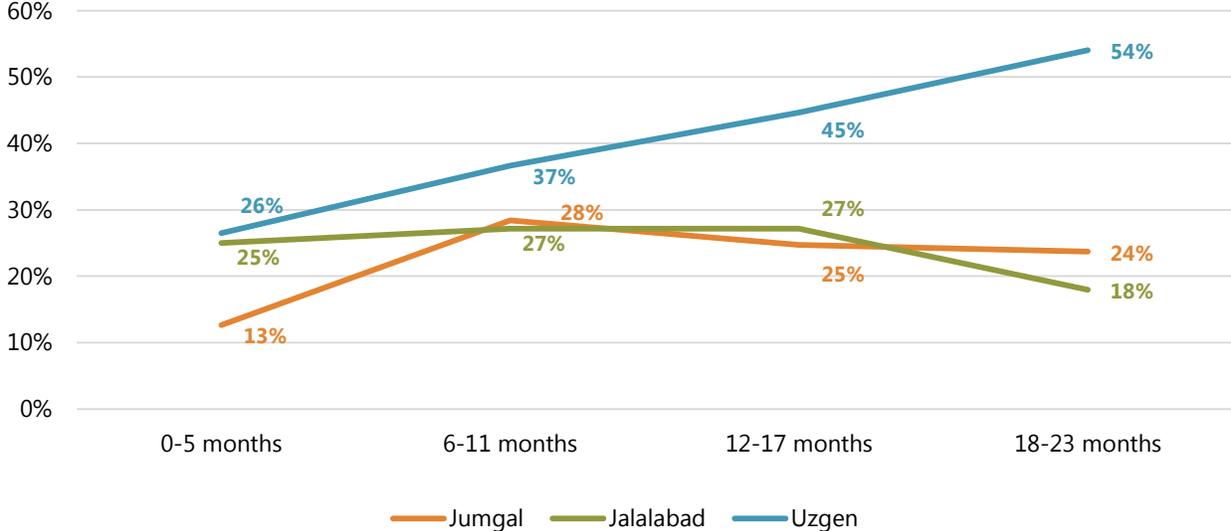
<sup>7</sup> UNICEF [http://www.unicef.org/nutrition/index\\_breastfeeding.html](http://www.unicef.org/nutrition/index_breastfeeding.html)

Among those who received prelacteal feeds (N=78), 67 percent were given infant formula, 18 percent were given plain water, 17 percent were fed other milk (mostly in Uzgen, where the rate was 55 percent), 15 percent were given sugar or glucose water (32 percent of whom were in Jalalabad), and one percent were given a sugar-salt-water solution.

Bottle feeding is not recommended, because the bottles are very difficult to clean and are likely to be contaminated and to make the baby sick.<sup>7</sup> Moreover, feeding infants with bottles may cause “nipple confusion,” resulting in the child rejecting the breast in preference for the bottle. Every third mother (36 percent) from Uzgen reported that her child aged 0-23 months was given a baby bottle with a nipple the previous day or night. This indicator was lower in Jalalabad (27 percent) and in Jumgal (22 percent). The difference in usage of baby bottles across regions is mostly due to high levels of usage among older children (12-23 months) in Uzgen. For instance, 54 percent of children from Uzgen aged 18-23 months were fed with baby bottles, compared with only 24 percent of children from Jumgal and 18 percent of children from Jalalabad.

As Graph 3.1.1 shows, in Jumgal and Jalalabad, bottle feeding of children was similar among all age groups (27 percent and 29 percent respectively). In Uzgen children, 26 percent of children aged 0-5 months were bottle fed, but the rate jumped to about half (54 percent) for children aged 18-23 months.

**Graph 3.1.1. Bottle use by child's age** (N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>U</sub>=300)



**Table 3.1.1. Breastfeeding practices for children aged 0-23 months**

Indicator	Region			Total
	Jumgal	Jalalabad	Uzgen	
1. Ever breastfed (N=900)	98%	99%	99%	99%
2. Breastfed within 1 hour after birth (out of mothers who ever breastfed, N=889)	79%	67%	54%	67%
Breastfed within 2-3 hours after birth (N=889)	12%	24%	37%	24%
Breastfed later than 3 hours after birth (N=889)	9%	9%	9%	9%
Mean hours a child was put first to breast after birth (excluding women who breastfed their children later than 24 hours after delivery) (N=889)	0.6	0.6	0.9	0.7
3. Received colostrum (N=889)	94%	96%	95%	95%
4. Received a prelacteal feeding within 3 days after delivery (N=900)	7%	11%	7%	9%
5. Bottle use, previous 24 hours (N=900)	22%	27%	36%	29%

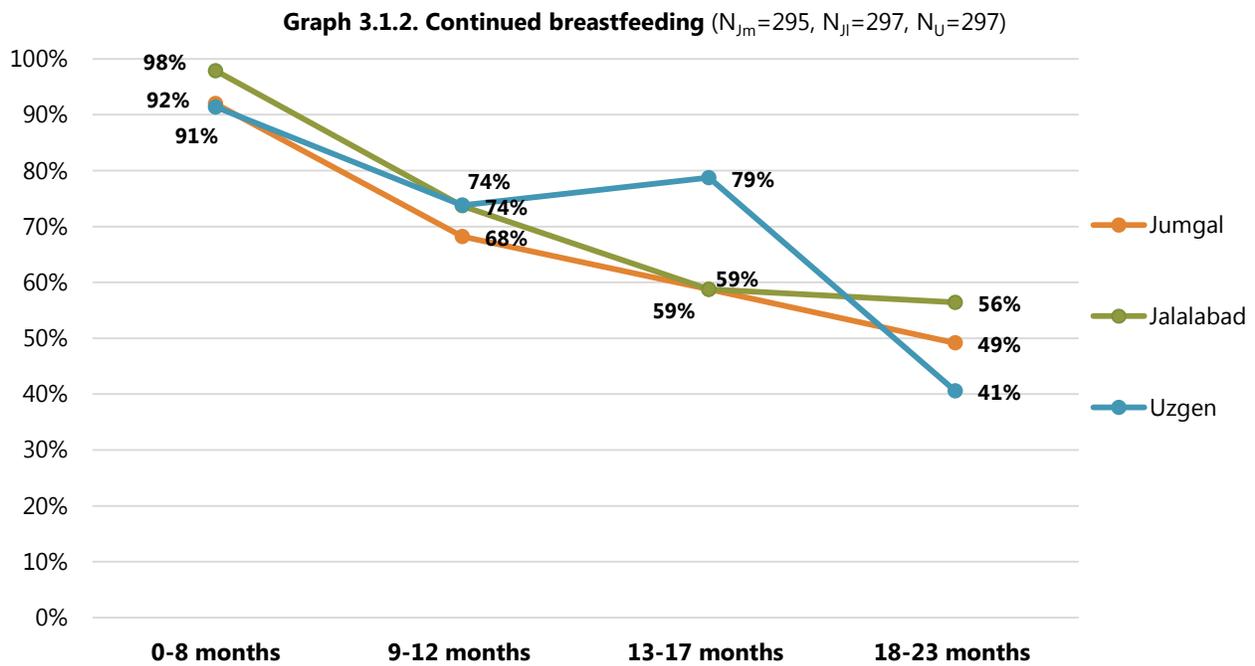
**Table 3.1.2. Prelacteal feeds received within three days after birth ((N<sub>Jm</sub>=22, N<sub>Jl</sub>=34, N<sub>U</sub>=22)**

Prelacteal feeds	Region			Total
	Jumgal	Jalalabad	Uzgen	
Infant formula (for instance, "malysh", "malutka," etc.	59%	59%	86%	67%
Plain water	36%	12%	9%	18%
Milk (not breast milk)	5%	0%	55%	17%
Sugar or glucose water	0%	32%	5%	15%
Sugar-salt-water solution	0%	3%	0%	1%

## 2. Continued Breastfeeding

Breastfeeding continues to make an important nutritional contribution even beyond the first year of life. It is a significant energy source and provides key nutrients to the growing infant. It is recommended that mothers continue breastfeeding their children up to two years of age and beyond.<sup>7</sup>

Breastfeeding rates were lower among older children. Starting in the ninth month, breastfeeding rates plummeted drastically (down 26 percentage points). Between 9-11 months, 24 percent fewer children were breastfed than they were at birth (see Graph 3.1.2). Although 99 percent of infants were breastfed at birth, for infants ages 9-12 months, the breastfeeding rate dropped to only 72 percent in all regions. For children aged 13-17 months the rate dropped to 64 percent and only 49 percent of children aged 18-23 were still breastfed. The difference in breastfeeding rates across regions for groups of children older than 0-8 months was found to be statistically insignificant for given number of observations.



\*The graph is based on the question to mother "Are you still breastfeeding?"

### 3. Exclusive Breastfeeding at 0-5 Months of Age

The WHO recommends exclusive breastfeeding for the first six months of life to achieve optimal growth and development.<sup>8</sup> Exclusive breastfeeding means that the infant receives only breast milk, and that no other liquids or solids are given. Exclusive breastfeeding is the perfect way to provide the best food for a baby's first six months of life.

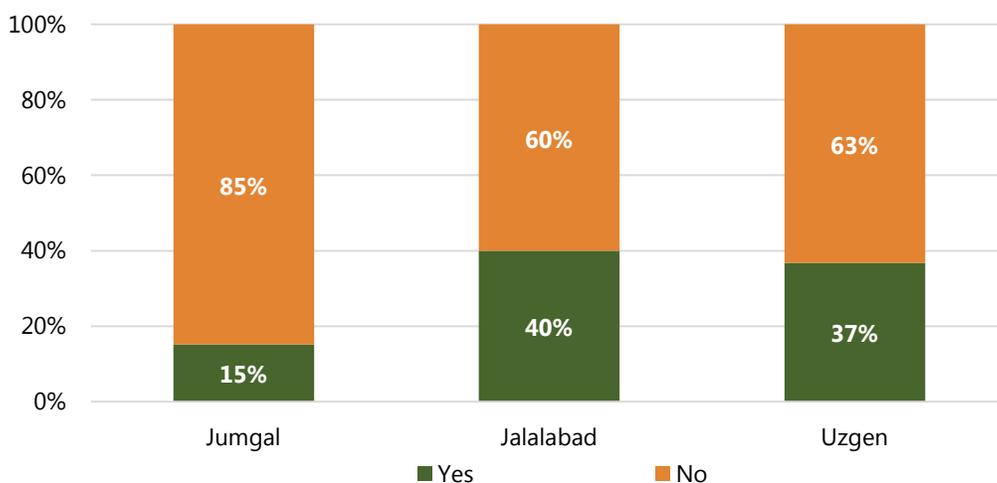
Despite the high breastfeeding rates among infants aged 0-5 months (Graph 3.1.2), the results of this study showed very low levels of exclusive breastfeeding among 0-5 months-old children in all regions, especially in Jumgal, where only 15 percent of mothers reported that they exclusively breastfeed. Forty percent of mothers in Jalalabad and 37 percent of mothers in Uzgen, reported that they exclusively breastfed their infants at this age (Graph 3.1.3).

Receiving advice on breastfeeding during pregnancy had no effect on the rates of exclusive breastfeeding in Jumgal and Jalalabad (Table 3.1.3). However, in Uzgen, there was a small difference between these two groups of mothers. Whereas 50 percent of mothers who received counseling on breastfeeding fed their infants only breast milk, just 30 percent of mothers who did not receive counseling on breastfeeding stuck to this practice.

<sup>8</sup> World Health Organization <http://www.who.int/elena/titles/en/>

**Graph 3.1.3. Exclusively breastfed infants 0-5 months of age**

(N<sub>Jm</sub>=79, N<sub>Jl</sub>=100, N<sub>U</sub>=117)

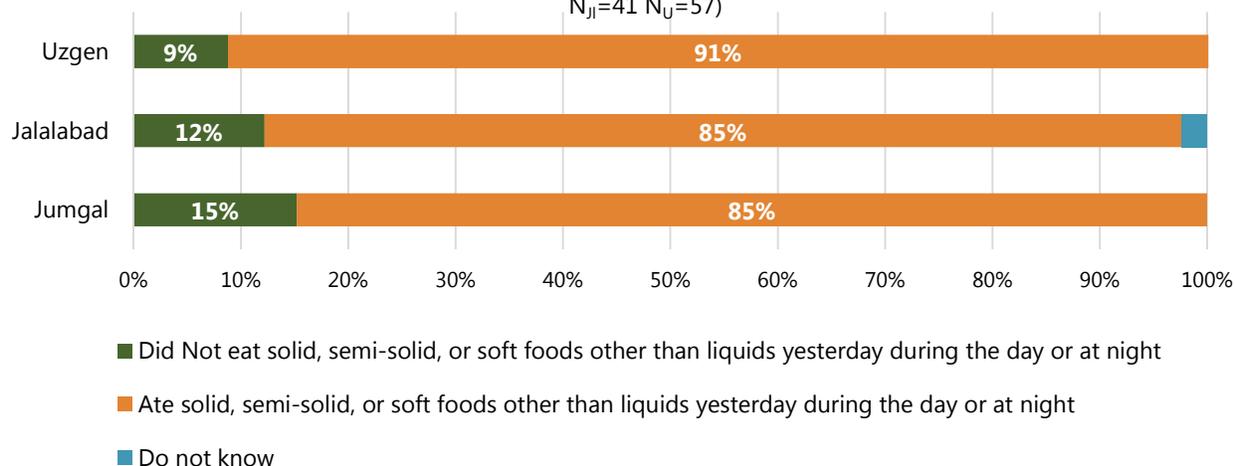


**Table 3.1.3. Exclusive breastfeeding by women who received counseling vs. women who did not (N<sub>Jm</sub>=79, N<sub>Jl</sub>=100, N<sub>U</sub>=117)**

Region	Did not receive advice on breastfeeding		Received advice on breastfeeding	
	Count	Column N %	Count	Column N %
<b>Jumgal</b>				
Exclusively breastfed	11	18%	1	6%
Total	62	100%	17	100%
<b>Jalalabad</b>				
Exclusively breastfed	17	35%	23	44%
Total	48	100%	52	100%
<b>Uzgen</b>				
Exclusively breastfed	24	30%	19	50%
Total	79	100%	38	100%

**Graph 3.1.4. Consumption of solid, semi-solid, or soft food (at 6-8 months) (N<sub>Jm</sub>=33,**

N<sub>Jl</sub>=41 N<sub>U</sub>=57)



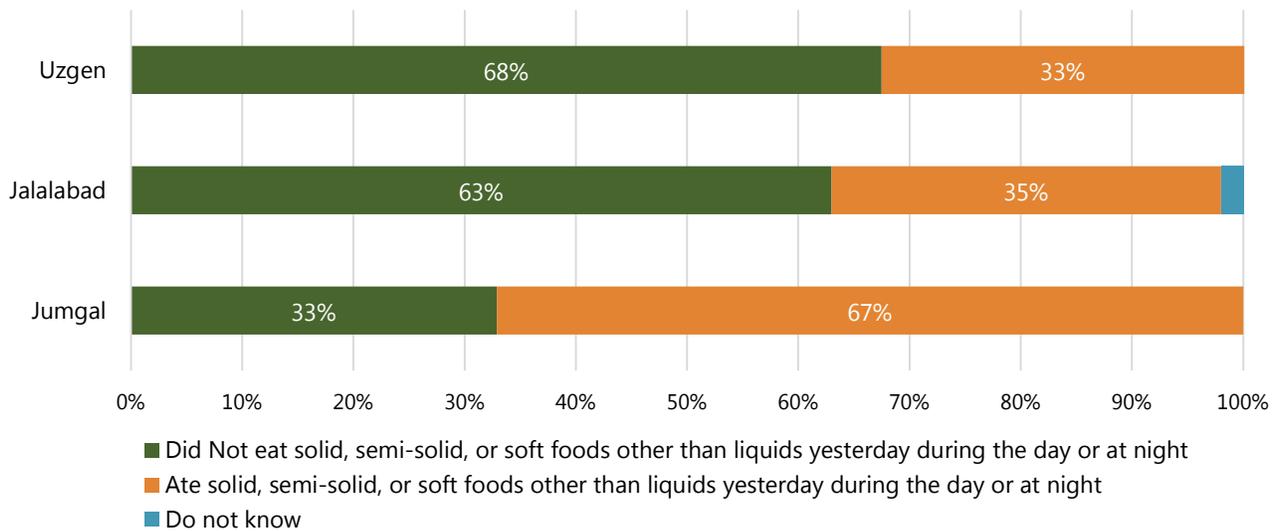
## 4. Introducing Complementary Food

Complementary feeding should start at about six months when breast milk alone is no longer sufficient to meet the nutritional requirements of infants, and additional foods are needed to supplement nutrition. The transition from exclusive breastfeeding to a wider variety of foods usually happens between 6 and 24 months of age, even though breastfeeding may continue to two years of age and beyond.<sup>9</sup>

### Introduction of Solid, Semi-Solid, or Soft Food at 6-8 Months of Age

According to current recommendations for optimal infant and child feeding, complementary foods should be introduced when the child is six months old. The results of this study show that the majority of children aged six to eight months already consumed solid, semi-solid, or soft food (Graph 3.1.4). Only about 12 percent of children that age consumed only breast milk and other liquids. This means that complementary food was introduced to most children before the age of six months. As Graph 3.1.5 indicates, a significant share of infants aged 0-5 months consumed complementary food. This is particularly true of infants in Jumgal (67 percent) and to a lesser extent, for infants in Jalalabad (35 percent) and Uzgen (33 percent).

**Graph 3.1.5. Consumption of solid, semi-solid, or soft food (at 0-5 months)** (N<sub>Jm</sub>=79, N<sub>Jl</sub>=100, N<sub>U</sub>=117)

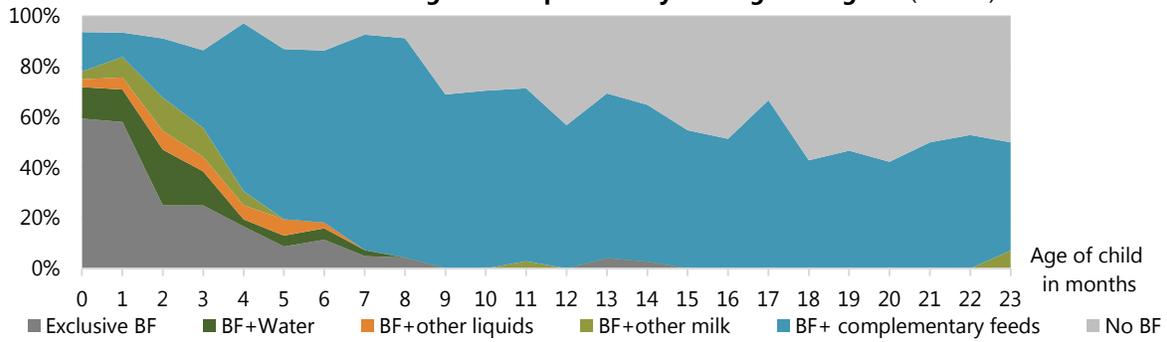


Graphs 3.1.6 through 3.1.9 (*Daily Diets of Children by Age*) show that the majority of infants in Jalalabad and Uzgen infants aged 0-1 months were exclusively breastfed. By two or three months, however, exclusive breastfeeding dropped to around 30 percent. Infants 0-3 months of age received mainly water, other types of milk (animal, powdered), and liquids (without solid, semi-solid or soft food) in addition to breast milk. Active introduction of complementary feeding began at four months. About 60 percent of infants in Jalalabad and 80 percent of infants in Uzgen consumed solid, semi-solid, or soft food. At seven months of age, all children had been introduced to complementary foods.

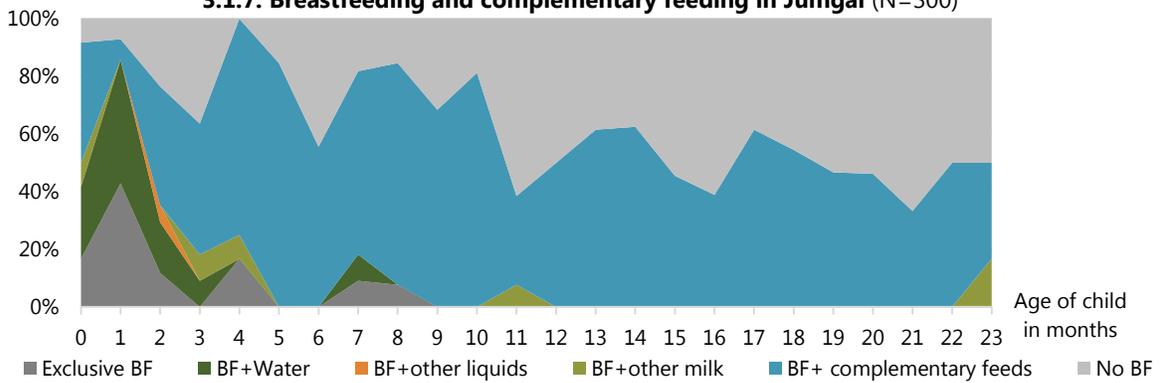
Complementary feeding in Jumgal started even earlier: at the age of two months, complementary feeding was already provided to 59 percent of infants. By their fifth month, almost all children ate solid, semi-solid, or soft food. In addition, the breastfeeding rate for children in Jumgal aged 0-8 months was reported to be 82 percent (see Graph 3.1.7), which is lower than the rate reported in Graph 3.1.2 (92 percent). This discrepancy can be explained by the fact that 10 percent of mothers who reported (in Graph 3.1.2) that they were still breastfeeding did not give their child breast milk the day before they were surveyed.

<sup>9</sup> UNICEF [http://www.unicef.org/nutrition/index\\_breastfeeding.html](http://www.unicef.org/nutrition/index_breastfeeding.html)

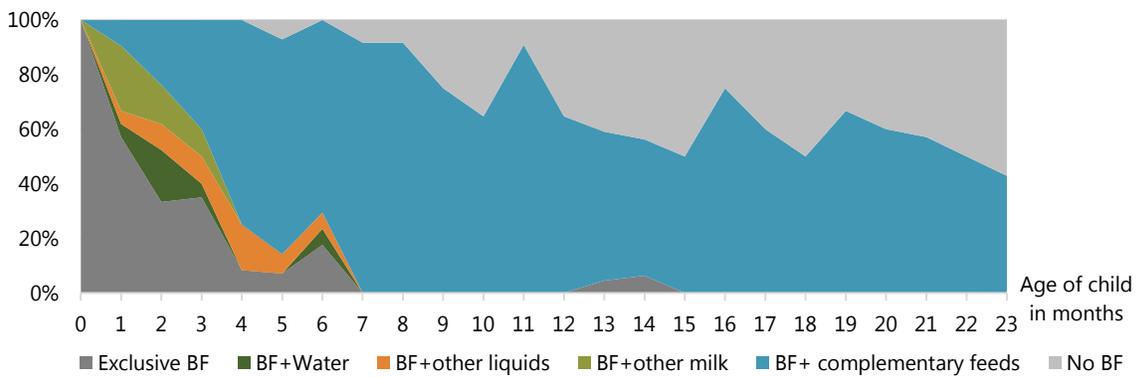
### 3.1.6. Breastfeeding and complementary feeding in 3 regions (N=900)



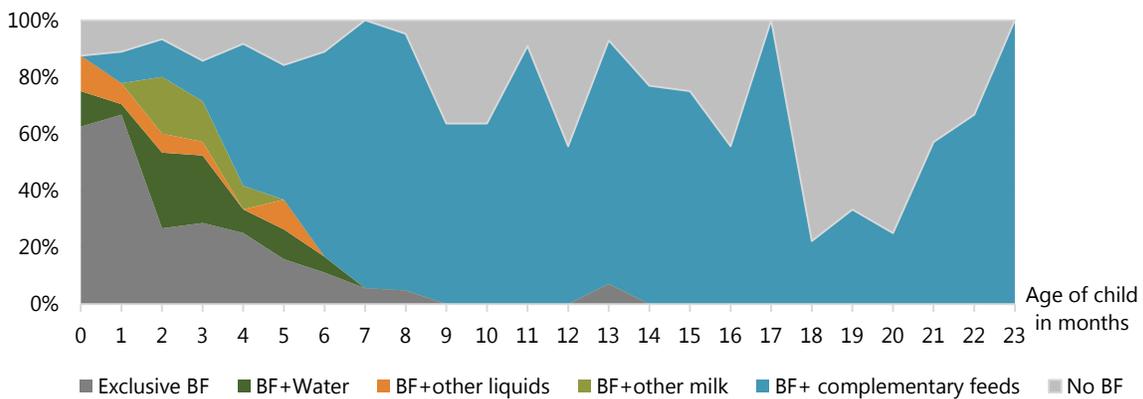
### 3.1.7. Breastfeeding and complementary feeding in Jumgal (N=300)



### 3.1.8. Breastfeeding and complementary feeding in Jalalabad (N=300)



### 3.1.9. Breastfeeding and complementary feeding in Uzgen (N=300)



The graphs are based on the question "What kind of solid, semi-solid, soft food and liquids were given to child during the day or night yesterday?"

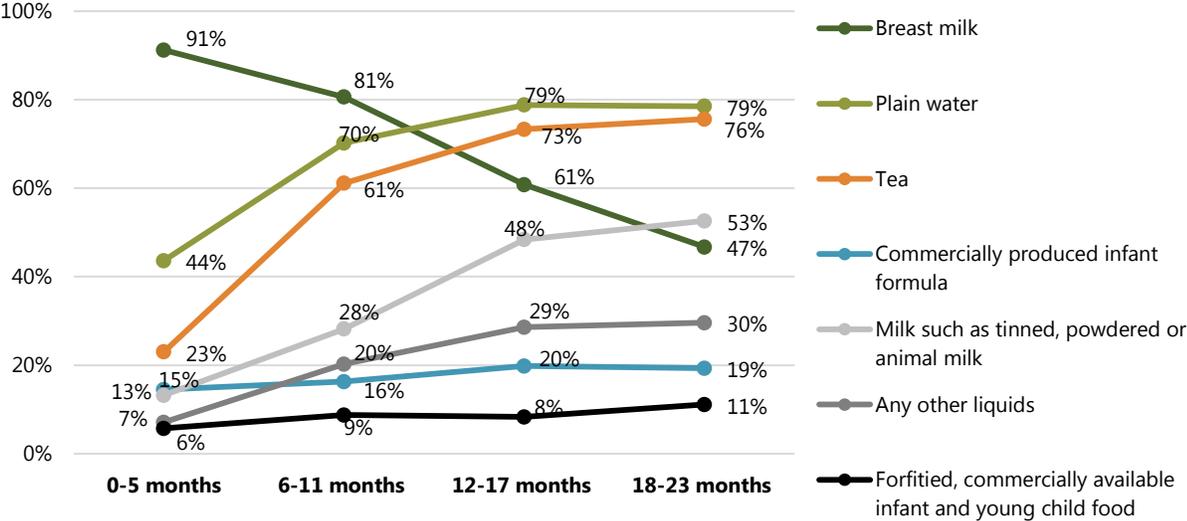
The liquids most commonly given to infants were plain water and tea. Plain water was given to 44 percent of infants aged 0-5 months, and tea was given to 23 percent. Giving plain water is even more widespread in Jumgal, where it is provided to 60 percent of children aged 0-5 months. Jumgal is also the region with the lowest level of exclusive breastfeeding.

Porridge/gruel was the most popular food given to infants aged 0-5 months in all regions. It was given to nearly half (48 percent) of infants in Jumgal, 27 percent of infants in Jalalabad, and 14 percent of infants in Uzgen. Other types of complementary foods were less common in Jalalabad and Uzgen, where they were consumed by less than 13 percent of infants. Jumgal had the highest percentage (67 percent) of infants aged 0-5 who consume complementary foods. Besides porridge, the most popular types of foods included bread, rice, and any food made of grains (33 percent), meat (27 percent), oil, fats, or butter (22 percent), sugary foods (20 percent), milk products (18 percent), potatoes (18 percent), and eggs (17 percent).

Although breast milk remains the most common liquid given to children aged 6-11 months, other liquids such as water and tea were also given to a majority of children: 70 percent of children were given water and 61 percent were given tea. In addition, as shown in the graphs, other types of milk (animal and powdered) were commonly consumed by 28 percent of children aged 6-11 months (28 percent), along with more varieties of solid, semi-solid and soft foods. Bread, rice, food made of grains (75 percent), and porridge (63 percent) were the most common complimentary foods given to infants. Different foods were consumed in different regions. In Jumgal, 67 percent of children aged 6-11 months consumed meat, since this region where the majority of families keep livestock (cows, sheep, or horses). Meat was consumed by 42 percent of children in Jalalabad and 43 percent of children in Uzgen. Likewise, consumption of fruits and orange vegetables was much higher in Jalalabad (49 percent) and Uzgen (42 percent), since both are in the southern region of the country which has a warmer climate and richer harvests of fruits and vegetables. Only 16 percent of children consumed fruits and vegetables in Jumgal (see Table 1 of Annex).

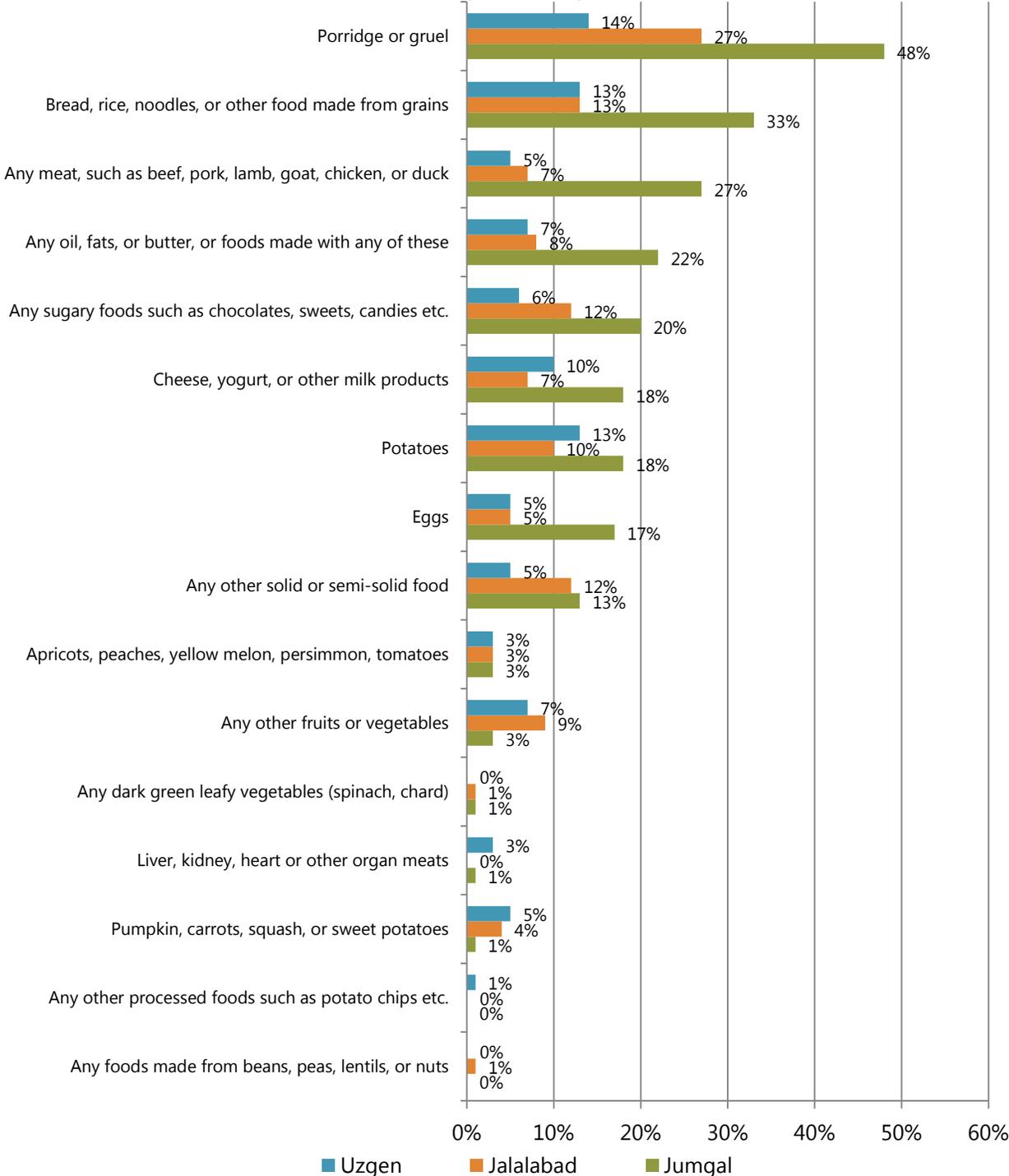
Plain water and tea were the most commonly consumed liquids by children aged 12-17 months and 18-23 months. Graph 3.1.10 shows a gradual convergence of the two lines that indicate the levels of breast milk and animal milk consumption intersect at 18-23 months. This means that mothers of children aged 12-23 months gradually substituted animal milk (powdered/tinned) for breast milk. As a result, half of all children (53 percent) aged 17-23 months drank animal (or powdered/tinned) milk.

**Graph 3.1.10. Child drank the following yesterday during the day or night by child's age (N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>Ju</sub>=300)**

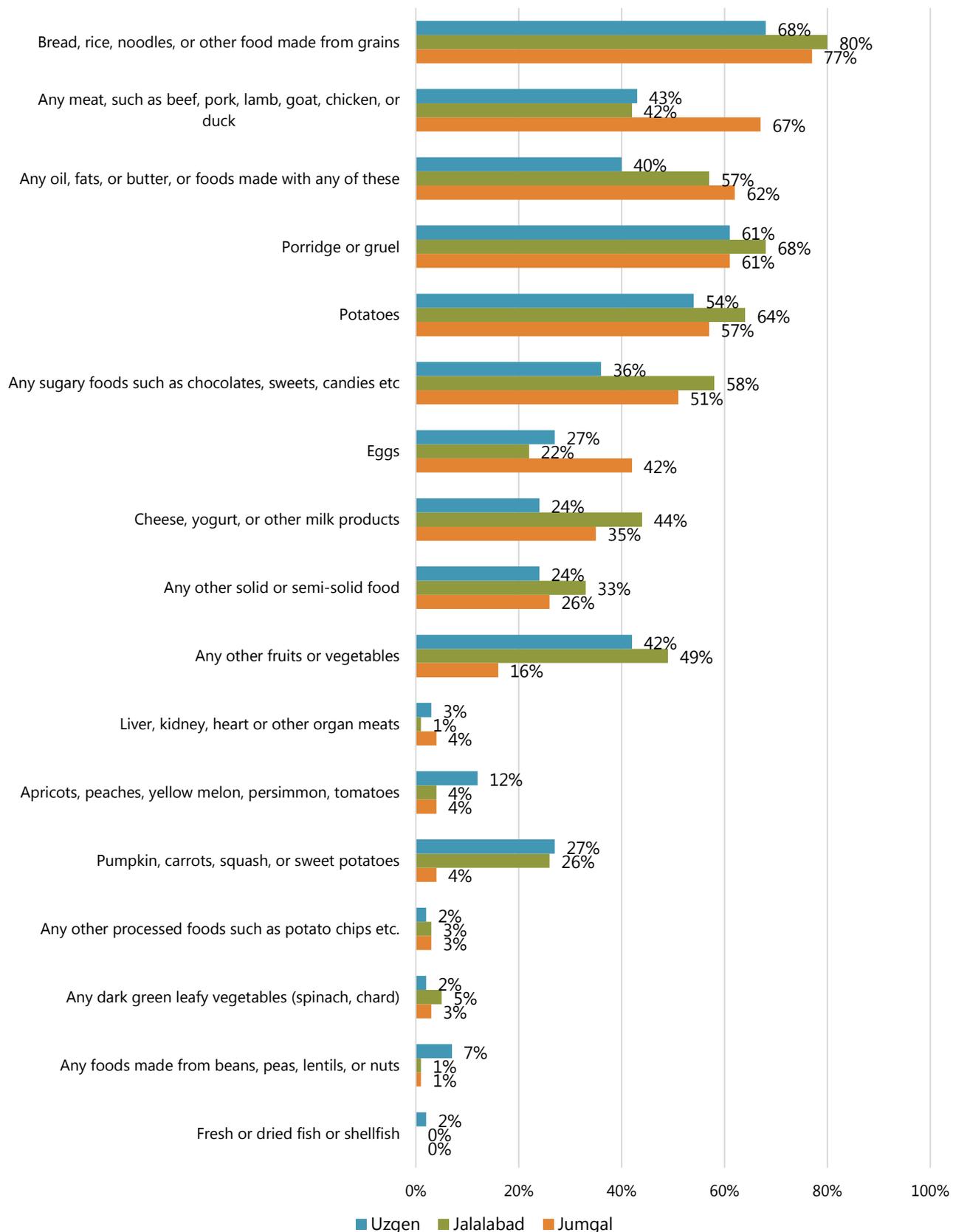


As shown in Graphs 3.1.11 through 3.1.14, the main solid foods consumed by children, especially older children, were bread, rice, noodles, and other food made of grains, and meat. Other commonly consumed foods were those containing oils, fats, or butter. The difference in the level of consumption of fruits and vegetables was present across regions. Whereas 69 percent of children in Jalalabad and 62 percent of children in Uzgen aged 18-23 months ate fruits and vegetables, only five percent of children this age in Jumgal ate any fruits and vegetables. A similar situation was observed for such vegetables as pumpkin, carrots, squash, and sweet potatoes (41 percent for Jalalabad, 51 percent for Uzgen and only five percent for Jumgal).

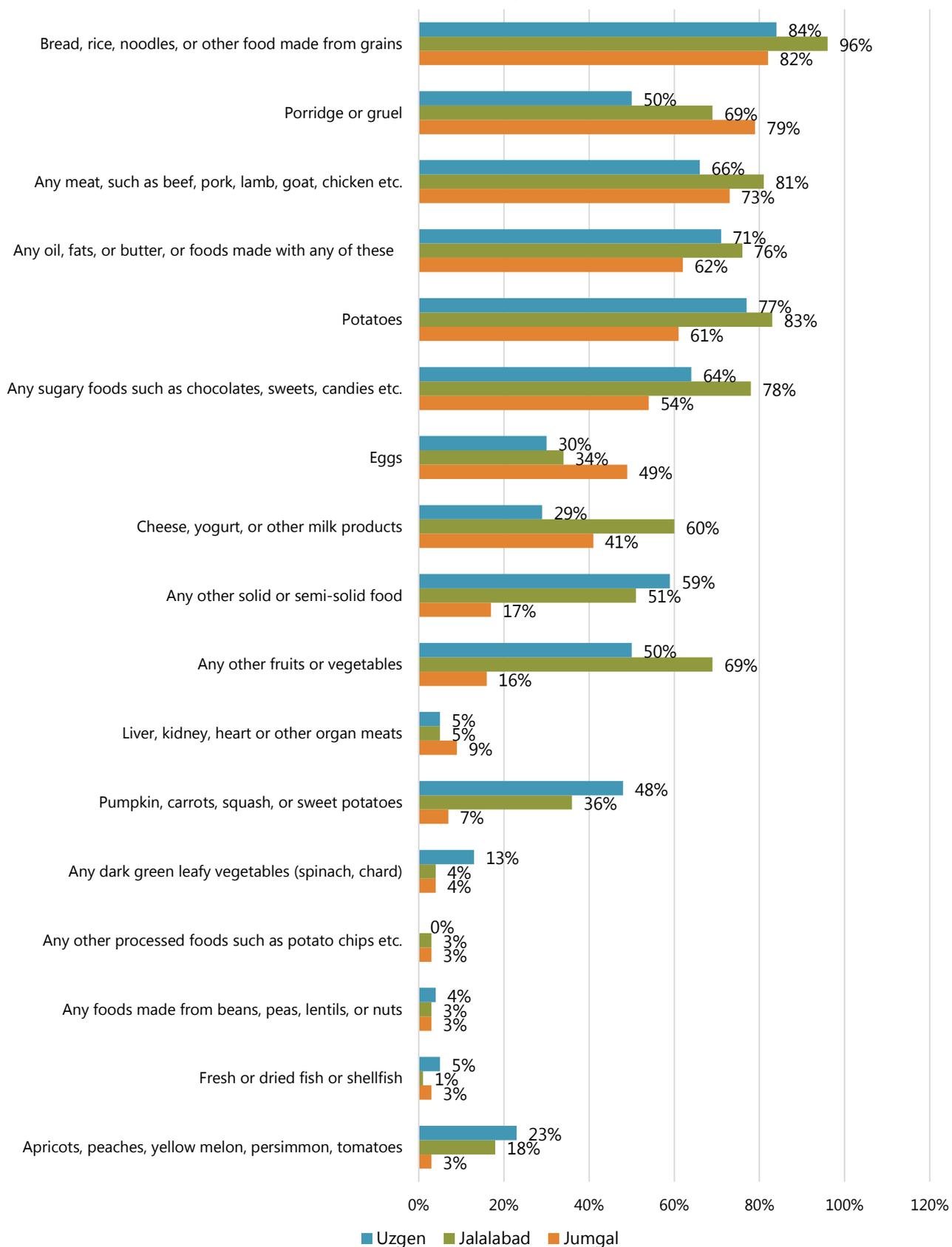
**Graph 3.1.11. Solid and semi-solid foods child ate yesterday during the day or night (0-5 months)**



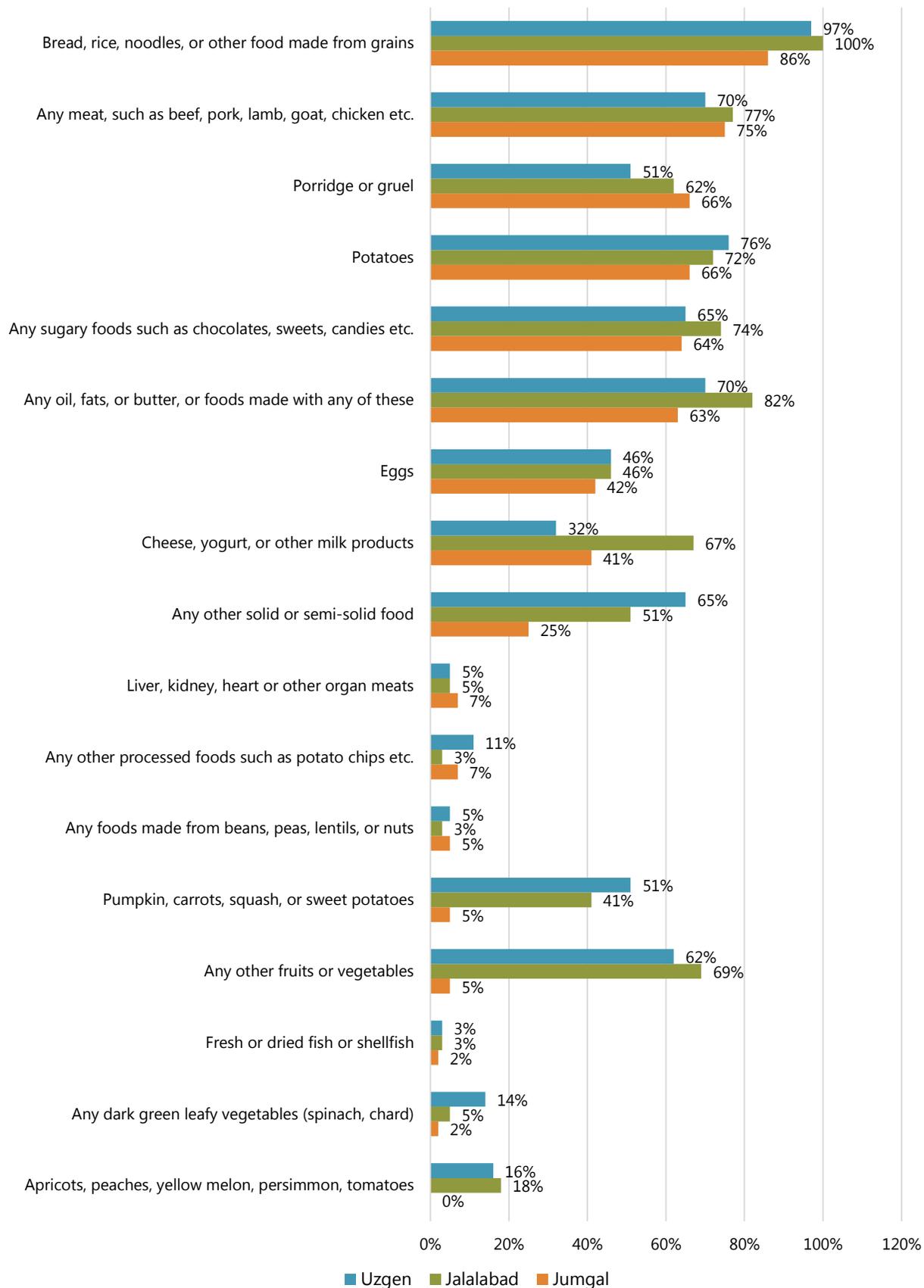
**Graph 3.1.12. Solid and semi-solid foods child ate yesterday during the day or night (6-11 months)**



**Graph 3.1.13. Solid and semi-solid foods child ate yesterday during the day or night (12-17 months)**



**Graph 3.1.14. Solid and semi-solid foods child ate yesterday during the day or night (18-23 months)**



## 5. "Junk" Food Consumption

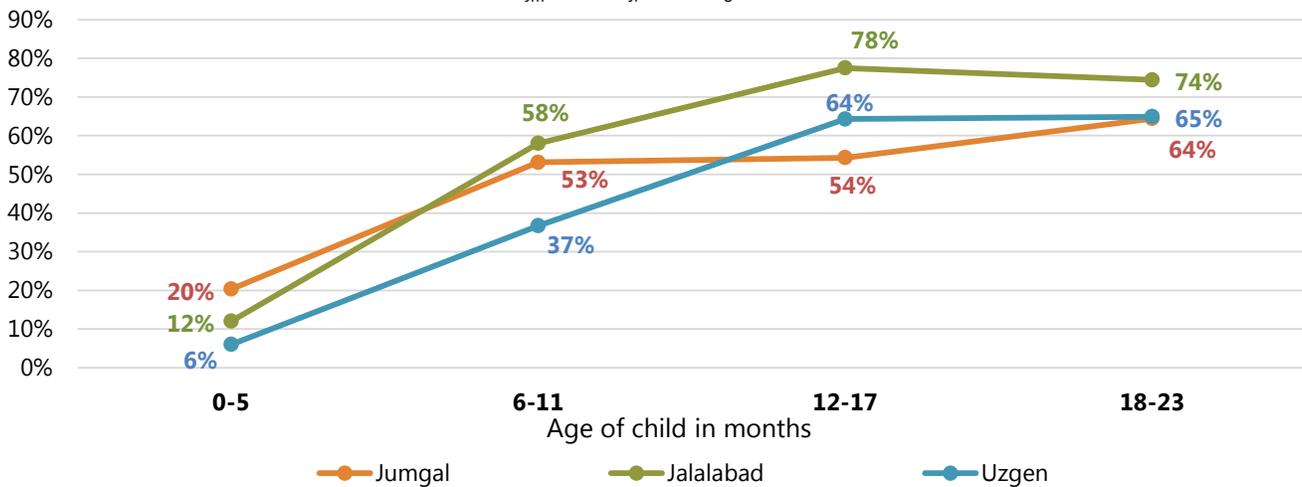
Sugary food (such as chocolates, sweets, candies, pastries, cakes, cookies, or biscuits) were reported to be the sixth most consumed type of food among children aged 6-17 months, and the fifth most commonly consumed food among children aged 18-23 months. Sugary foods and processed snack foods are referred to "junk" food (according to SPRING).

In this study, most "junk" food was sugary, and consumption of processed snack food was very low for all infants and young children. Seven percent of children aged 17-23 months consumed processed snack food, and younger children consumed even less.

As shown in Graph 3.1.15 and Table 3.1.3 (below), sugary food was consumed even by very young infants. Jumgal had the highest level of sugary food consumption among infants aged 0-5 months: 20 percent of whom ate sugary foods of some type. This indicator was lower in Uzgen and Jalalabad, at 12 percent and six percent respectively, among children in the same age group.

**Graph 3.1.15. Consumption of junk food (sugary or processed)**

( $N_{jm}=300$ ,  $N_{jl}=300$ ,  $N_{uj}=300$ )



**Table 3.1.3. “Junk” food consumption by children aged 0-23 months (N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>U</sub>=300)**

		Region			Total	
		Jumgal	Jalalabad	Uzgen	Count	%
<b>0-5 months (N<sub>Jm</sub>=79, (N<sub>Jl</sub>=100, N<sub>U</sub>=117)</b>						
1	Any sugary foods	20%	12%	6%	35	12%
	Number of times child ate sugary food, mean	1.7	1.5	1.6	1.6	
2	Any processed foods	0%	0%	1%	1	0%
	Number of times child ate processed food, mean	-	-	1.0	1.0	
3	Ate junk food ( sugary OR processed)	20%	12%	6%	35	12%
	Ate junk food (both sugary AND processed)	0%	0%	1%	1	0%
<b>6-11 months (N<sub>Jm</sub>=81, (N<sub>Jl</sub>=81, N<sub>U</sub>=90)</b>						
1	Any sugary foods	51%	58%	36%	120	48%
	Number of times child ate sugary food, mean	1.6	1.6	1.2	1.5	
2	Any processed foods	3%	3%	2%	6	2%
	Number of times child ate processed food, mean	2.0	2.0	1.0	1.7	
3	Ate junk food ( sugary OR processed)	53%	58%	37%	123	49%
	Ate junk food (both sugary AND processed)	0%	3%	1%	3	1%
<b>12-17 months (N<sub>Jm</sub>=81, N<sub>Jl</sub>=80, N<sub>U</sub>=56)</b>						
1	Any sugary foods	54%	78%	64%	142	65%
	Number of times child ate sugary food, mean	1.5	1.8	1.7	1.7	
2	Any processed foods	3%	3%	0%	4	2%
	Number of times child ate processed food, mean	1.0	1.5	-	1.25	
3	Ate Junk food ( sugary OR processed)	54%	78%	64%	142	65%
	Ate Junk food (both sugary AND processed)	3%	3%	0%	4	2%
<b>18-23 months (N<sub>Jm</sub>=59, N<sub>Jl</sub>=39, N<sub>U</sub>=37)</b>						
1	Any sugary foods	64%	74%	65%	91	67%
	Number of times child ate sugary food, mean	1.7	1.8	1.8	1.8	
2	Any processed foods	7%	3%	11%	9	7%
	Number of times child ate processed food, mean	1.5	1.0	1.5	1.4	
3	Ate junk food (sugary OR processed)	64%	74%	65%	91	67%
	Ate junk food (both sugary AND processed)	7%	3%	11%	9	7%

The level of sugary food consumption rose with the child’s age. About half (49 percent) of children aged 6-11 months and about 65 percent of children aged 12-23 months ate sugary foods. The level of consumption for children in these age groups was 10 percent higher in Jalalabad than in Uzgen and Jumgal. The frequency of sugary food consumption was similar for children of all ages of who consumed these foods. In the first year of life,

children ate sugary foods 1.6 times a day on average. Children older than one year of age ate sugary foods an average of 1.8 times a day.

## 6. Consumption of Vitamin-Rich Food

Nutrient-rich food has an important place in the daily diet of any child older than six months. Lack of vitamins can lead to unfavorable consequences. For instance, lack of vitamin A causes children to get sick more easily and in extreme cases can cause eye damage and blindness. Lack of iron can cause anemia.<sup>10</sup>

The results of this study show that the majority (78 percent) of children aged 6-23 months in all regions received iron-rich food (see Table 3.1.4). Iron is mostly received through meat such as beef, chicken, lamb or goat.

Vitamin A-rich food is consumed by 62 percent of children aged 6-23 months in Uzgen, 58 percent in Jalalabad, and 49 percent in Jumgal. Jumgal region has the lowest percentage of children who eat vitamin A-rich vegetables and fruit as a part of their daily diet. Fewer than nine percent of children in Jumgal eat these foods on a daily basis. Children from Jalalabad and Uzgen consume vitamin A-rich vegetables and fruit to a greater extent. One third (33 percent) of children from the southern region (Jalalabad and Uzgen) ate vitamin A-rich orange vegetables and vitamin A-rich plants as a part of their diets. Eggs, another source of vitamin A and iron, were consumed by about one third of all children in the study (36 percent).

A majority of children in all three regions consumed dairy products (66 percent overall). In particular, 71 percent of children in Jumgal and Jalalabad, and 54 percent of children in Uzgen, ate dairy products.

The majority of children aged 6-23 months in all regions consumed animal source food, but consumption of meat and eggs was a bit lower in Uzgen as compared to other regions. Dark green leafy vegetables and commercially available fortified food were the least consumed products. Finally, although the percentage of children who consumed meat was relatively high, qualitative research carried out by SPRING at around the same time as this survey suggests that the actual amount of meat consumed per child is quite small.

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<sup>10</sup> World Health Organization <http://www.who.int/nutrition/topics/ida/en/>

**Table 3.1.4: Consumption of vitamin-rich food by children aged 6-23 months** (N<sub>Jm</sub>=221, N<sub>Jl</sub>=200, N<sub>U</sub>=183)

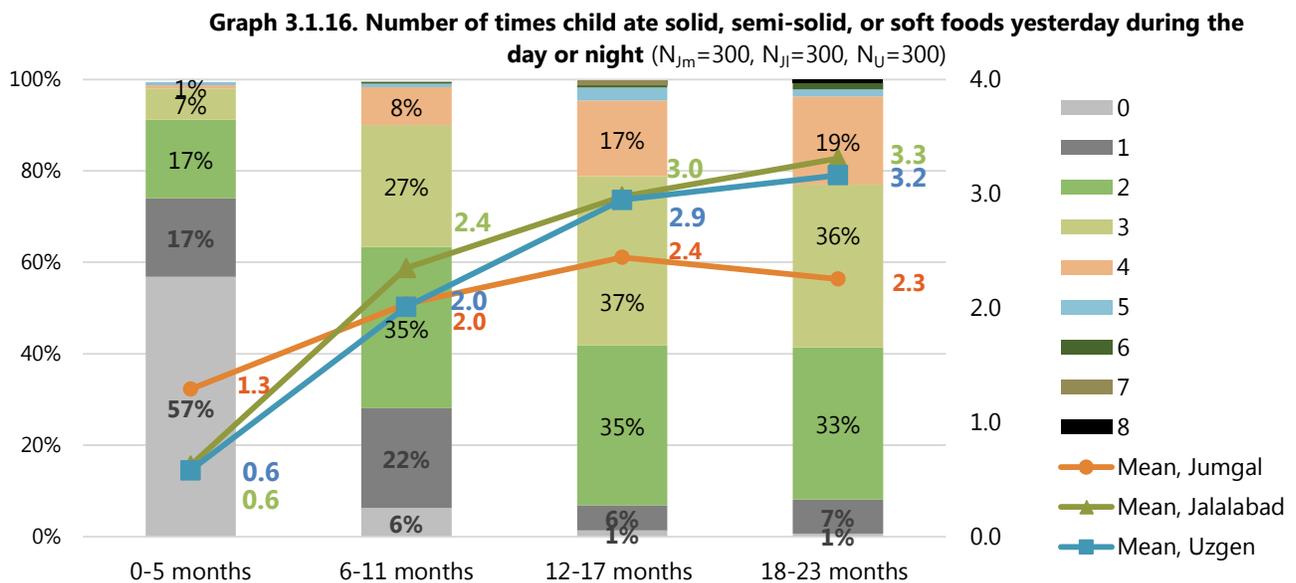
Food	Example of Products	Region			Total	
		Jumgal	Jalalabad	Uzgen	Count	Column N %
		Column N %				
<b>Vitamin A-rich food</b>	Pumpkin, carrots, squash, sweet potatoes yellow or orange inside, spinach, chard, apricot, peaches, yellow melon, persimmon, tomatoes, eggs	49%	58%	62%	338	56%
<b>Vitamin A-rich orange vegetables</b>	Pumpkin, carrots, squash, sweet potatoes yellow or orange inside	5%	33%	38%	148	25%
<b>Vitamin A-rich fruit</b>	Apricot, peaches, yellow melon, persimmon, tomatoes	2%	12%	16%	59	10%
<b>Any vitamin A - rich plant food</b>	Pumpkin, carrots, squash, sweet potatoes yellow or orange inside, spinach, chard, apricot, peaches, yellow melon, persimmon, tomatoes	9%	39%	45%	180	30%
<b>Dark green leafy vegetables</b>	Spinach, chard, etc.	3%	5%	8%	29	5%
<b>Any animal source food</b>	Liver, kidney, heart, other organ meats, beef, pork, lamb, goat, chicken, duck, eggs, dried fish, shellfish, commercially produced infant formula, cheese,	93%	93%	80%	537	89%
<b>Iron-rich food</b>	Liver, kidney, heart, other organ meats, beef, pork, lamb, goat, chicken, duck, eggs, dried fish, shellfish.	85%	78%	72%	473	78%
<b>Animal source flesh food</b>	Liver, kidney, heart, other organ meats, beef, pork, lamb, goat, chicken, duck, dried fish, shellfish.	73%	65%	59%	400	66%
<b>Eggs</b>	Eggs	45%	32%	32%	220	36%
<b>Diary</b>	Commercially produced infant formula, cheese, yogurt or other milk products, milk such as tinned, powdered, or fresh animal milk	71%	71%	54%	396	66%
<b>Fortified food</b>	Fortified commercially available infant and young child food	4%	16%	9%	55	9%

## 7. Frequency of Feeding

This study also looked at how many times children between the ages of 0 to 23 months consumed solid, semi-solid, or soft food during the day or night (Graph 3.1.16). Since infants aged 0-5 months consumed mostly liquids, the average number of times children of this age ate solid, semi-solid, or soft food was small: 0.6 times per day in Jalalabad and Uzgen, and 1.3 times a day in Jumgal (the region with the highest level of solid, semi-solid, and soft food consumption among infants this age).

Frequency of food consumption rose to two times a day for children aged 6-11 months in Uzgen and Jumgal. On average, children this age in Jalalabad ate 2.4 times a day. There was an increase in the frequency of food consumption for older children from Jalalabad and Uzgen: children between the ages of 12-17 months ate about three times a day on average, and children aged 18-23 months were fed 3.2 times per day.

The line on Graph 3.1.16 that indicates the mean number of times children from Jumgal ate solid, semi-solid, or soft food is flatter than the lines that represent Jalalabad and Uzgen. This reflects the fact that older children in Jumgal (12-23 months) ate fewer times on average than children from Jalalabad and Uzgen. Children from Jumgal ate 2.4 times per day which is one time less than children in the other regions.



According to the WHO, the minimum required frequency of feeding for breastfed children aged 6-8 months is twice per day, and three times per day for children aged 9-23 months. An index was created in order to see what percentage of breastfed children aged 6-23 months were fed the recommended number of times daily.

Minimum Frequency of Feeding for Breastfed Children Aged 6-23 Months	
# Breastfed children aged 6-8 months who ate solid, semi-solid foods at least two times a day in 24 hours preceding survey	# Breastfed children aged 9-23 months who ate solid, semi-solid foods at least 3 times a day in 24 hours preceding survey
+	
-----	
# Breastfed children 6-23 months of age	

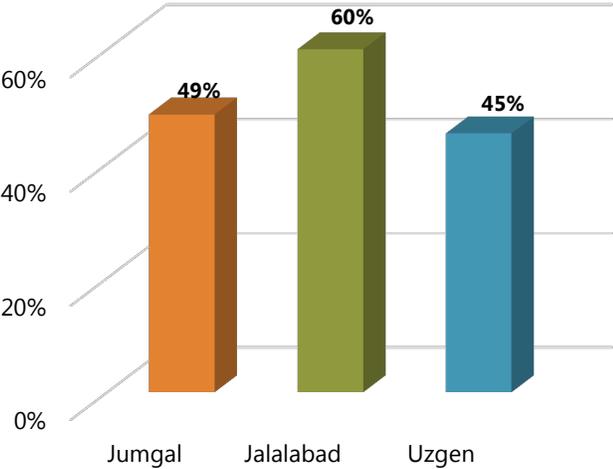
Minimum Frequency of Feeding for Non-Breastfed Children Aged 6-23 Months
# Non-breastfed children 6-23 months of age who ate solid, semi-solid foods or milk feeds (powdered milk or animal milk) at total of at least 4 times a day in 24 hours preceding survey
-----
# Non-breastfed children 6-23 months of age

The results (Graph 3.1.17) showed that 60 percent of breastfed children in Jalalabad aged 6-23 months, 49 percent of breastfed children in Jumgal, and 45 percent of breastfed children in Uzgen were fed in compliance with the WHO minimum frequency of feeding.

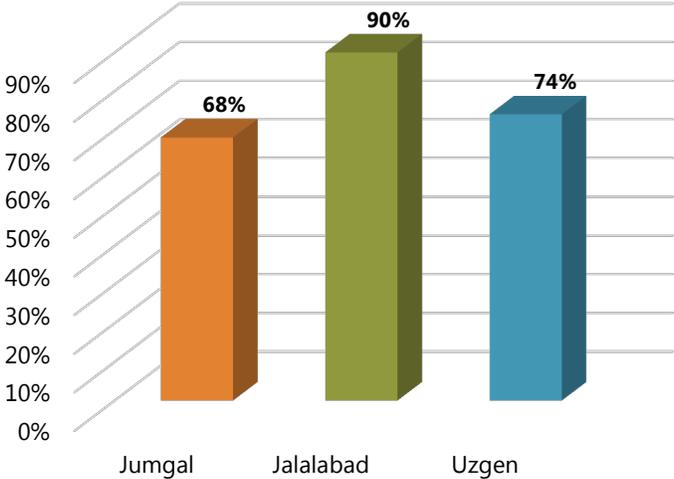
A similar index was calculated for children who were not breastfed (Graph 3.1.18). According to the WHO, the minimum required frequency of feeding for non-breastfed children aged 6-23 months is four times a day, including either solid and semi-solid foods and/or milk products (tinned or powdered milk, or animal milk).

Results of this study showed that a large majority of non-breastfed children in all three regions met the minimum requirements (68 percent in Jumgal; 90 percent in Jalalabad; 74 percent in Uzgen).

**Graph 3.1.17. Breastfed children aged 6-23 months with at least minimum frequency of feeding** (N<sub>Jm</sub>=142, N<sub>Jl</sub>=140, N<sub>U</sub>=137)



**Graph 3.1.18. Non-breastfed children aged 6-23 months with at least minimum frequency of feeding** (N<sub>Jm</sub>=79, N<sub>Jl</sub>=60, N<sub>U</sub>=46)



**8. Minimum Dietary Diversity**

The WHO reports that dietary diversity reflects nutrient adequacy (coverage of basic needs in terms of macro and micro nutrients) and diet variety/balance, which are two of the main components of a quality diet.

Dietary diversity implies that children aged 6-23 months eat food from at least three food groups if they are breastfed, and at least four food groups if they are not. There are seven main groups identified by the WHO: 1) grains, roots, and tubers, 2) legumes and nuts, 3) dairy products (milk, yogurt, or cheese), 4) flesh foods (meat, fish, poultry, and liver/organ meats), 5) eggs, 6) vitamin-A rich fruits and vegetables, and 7) other fruits and vegetables.

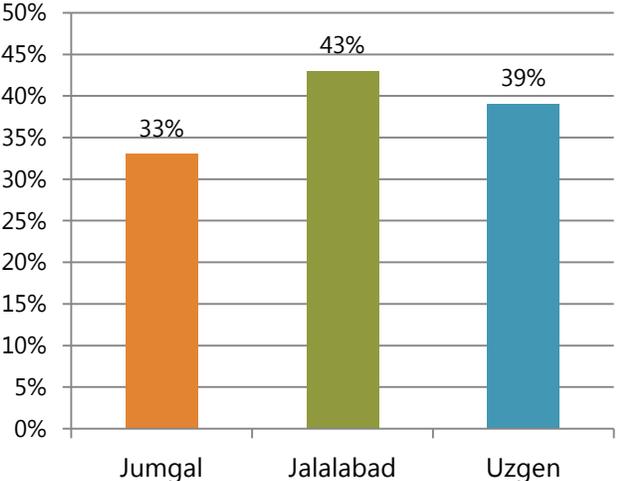
An index was constructed to identify the percentage of breastfed and non-breastfed children aged 6-23 months who ate food from at least the minimum number of food groups.

Minimum Dietary (Food Group) Diversity for Breastfed Children 6-23 months
# Breastfed children aged 6-23 months who received minimum dietary diversity of 3 or more food groups in 24 hours preceding survey
-----
# Breastfed children aged 6-23 months

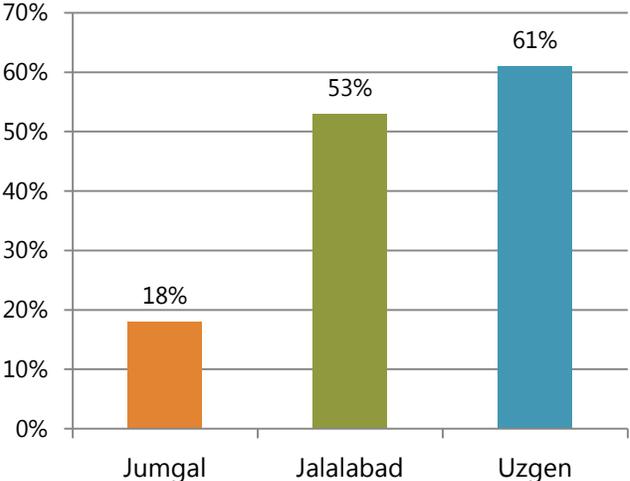
Minimum Dietary (Food Group) Diversity for Non-Breastfed Children 6-23 Months
# Non-breastfed children 6-23 months of age who received minimum dietary diversity of 4 or more food groups in 24 hours preceding survey
-----
# Non-breastfed children 6-23 months of age

The calculated index (see Graphs 3.1.19 and 3.1.20) shows that fewer than half of breastfed children aged 6-23 months were being fed in accordance with the WHO minimum dietary diversity practice: 33 percent in Jumgal, 43 percent in Jalalabad, and 39 percent in Uzgen. For non-breastfed children, the index showed that 18 percent of children in Jumgal 53 percent in Jalalabad, and 61 percent in Uzgen, and were fed in accordance with the minimum dietary diversity guidelines.

**Graph 3.1.19. Breastfed children aged 6-23 months with at least minimum dietary diversity** (N<sub>Jm</sub>=142, N<sub>Jl</sub>=140, N<sub>U</sub>=137)



**Graph 3.1.20. Non-breastfed children aged 6-23 months with at least minimum dietary diversity** (N<sub>Jm</sub>=79, N<sub>Jl</sub>=60, N<sub>U</sub>=46)



**9. Minimum Acceptable Diet**

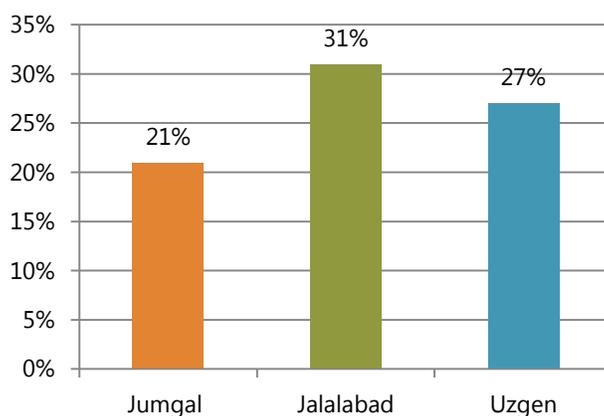
Based on the two indices calculated above (“minimum frequency of feeding” and “minimum dietary diversity”) the minimum acceptable diet (MAD) indicator was created to evaluate the general quality of nutrition among children aged 6-23 months.

MAD calculates the percentage of children aged 6-23 months who were fed according to the minimum appropriate feeding practices. Children aged 6-23 months were considered to have been fed according to the minimum appropriate feeding practices if: 1) they ate solid, semi-solid, or soft foods at least the minimum recommended number of times in the 24 hours preceding the survey; and 2) if they received minimum dietary (food group) diversity in the 24 hours preceding the survey.

The percentage of children who met the MAD criteria was estimated to be 31 percent in Jalalabad, 21 percent in Jumgal, and 27 percent in Uzgen (Graph 3.1.21). Thus, fewer than one-third of children aged 0-23 months in all regions were fed according to a minimum acceptable diet, with particularly low levels recorded in Jumgal.

The MAD was also calculated for different groups of children and their mothers based on various factors (data not shown). These factors included socio-demographic characteristics (age of child, age of mother, ethnicity of mother, education of mother, work status of parents), average number of adults per child in the household, level of prenatal care (number of visited consultations, visit of consultation on breastfeeding), and welfare characteristics (number of assets in the house, heads of livestock). In general, MAD was similar across groups with different characteristics (data not shown).

**Graph 3.1.21. Minimal Acceptable Diet (MAD)** (N<sub>Jm</sub>=221, N<sub>Jl</sub>=200 N<sub>U</sub>=183)



### 3.2. Maternal Nutrition

Maternal nutrition is crucial for safeguarding women's health and for ensuring good nutrition in the infant.<sup>11</sup> This section assesses the quality of the daily dietary intake by mothers with children aged 0-23 months.

As shown in Graph 3.2.1, tea and coffee were the most commonly consumed beverages by mothers with children aged 0-23 months. Tea and coffee were consumed by almost all mothers in all regions (97 percent overall).

Mothers and children consumed the same types of food as children aged 11-23 months: eight percent of women ate bread, rice, noodles, and other foods made of grains, as well as meat (such as beef, pork, lamb, goat, chicken, or duck); foods containing oil, fats, butter; and potatoes.

Mothers' diets varied across regions. For instance, fruits and vegetables were commonly eaten in the southern regions: 76 percent of mothers in Jalalabad and 60 percent of mothers in Uzgen ate produce on a regular basis. Fruits and vegetables were only eaten by 18 percent of mothers from Jumgal. The rate was similar for orange vegetables such as pumpkin, carrots, squash, and sweet potatoes that are yellow or orange inside.

The level of consumption of animal source food, especially milk, was far higher in Jumgal (the region where almost all mothers kept livestock). Almost all (92 percent) mothers from Jumgal drank milk (animal, tinned, or powdered), whereas only about half (46 percent) of mothers from Jalalabad and a third (32 percent) of mothers from Uzgen drank milk. This situation was similar when it came to eggs and other dairy products.

Sugary food ("junk food") is the sixth most commonly consumed food by mothers. Jumgal is the region with the highest consumption rate of sugary food (59 percent of mothers). The rate is 53 percent in Jalalabad, and 34 percent in Uzgen. Processed snacks such as potato chips, other chips, and crackers were only consumed by about five percent of mothers.

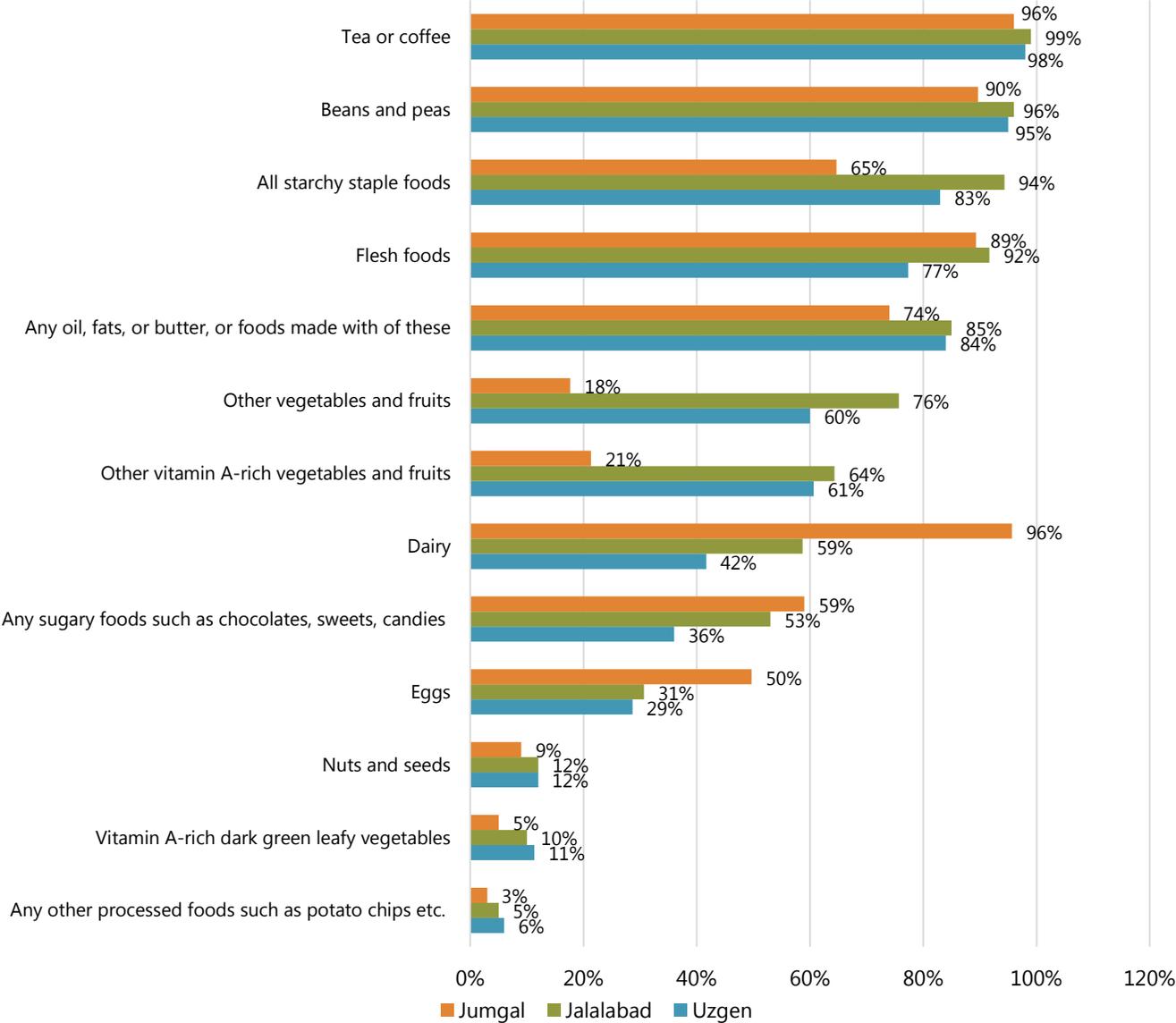
Nutrient-rich foods such organ meats (for example: liver, kidneys, and hearts), dark green leafy vegetables (such as spinach or chard), and fresh or dried fish and shellfish were the least commonly consumed foods for mothers in all regions.

The study also compared the diets of mothers with children of different ages. The results revealed that the diets of mothers with children of different ages were similar, except for the level of sugary food consumption in Jalalabad (data not shown). Mothers from Jalalabad with younger children (0-5 months) were less likely to eat sugary foods (38 percent) than mothers with children aged 7-23 months, among whom 64 percent said they ate sugary foods.

<sup>11</sup> UNICEF [http://www.unicef.org/nutrition/index\\_24824.html](http://www.unicef.org/nutrition/index_24824.html)

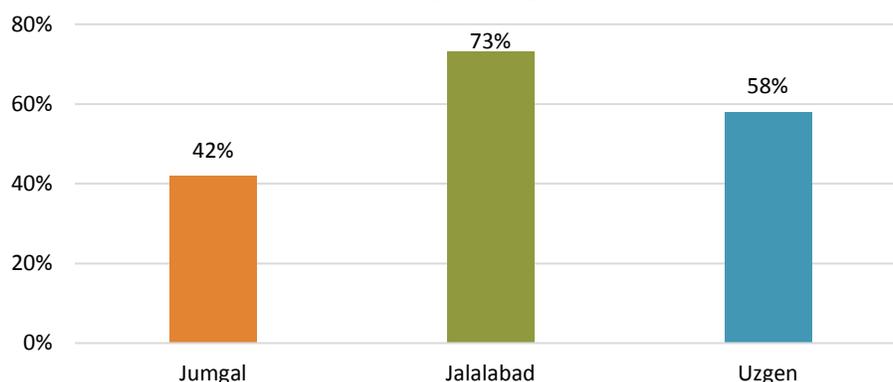
When the diets of breastfeeding and non-breastfeeding mothers were compared, the results indicated that they were almost the same, except for the consumption of sugary foods in Jalalabad. The difference in the consumption rate of sugary foods in Jalalabad was 49 percent for breastfeeding mothers and 69 percent for non-breastfeeding mothers. The diets of mothers from different age groups were found to be very similar (no statistical differences).

**Graph 3.2.1. Foods and beverages consumed by respondent women during the previous 24 hours** (N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>U</sub>=300)



Finally, the level of food diversity among mothers was evaluated. Feed the Future measured the dietary diversity essential for women for the purpose of health maintenance with nine food groups. The main food groups for minimum dietary diversity for women (MDD-W) are: 1) all starchy staple foods, 2) eggs, 3) beans and peas, 4) vitamin A-rich dark green leafy vegetables, 5) nuts and seeds, 6) other vitamin A-rich vegetables and fruits, 7) dairy, 8) other vegetables and fruits, and 9) meat.

**Graph 3.2.2. Percent of mothers who ate food from at least 5 out of 9 food groups (in the 24 hours preceding the survey)**  
( $N_{Jm}=221$ ,  $N_{Jl}=200$ ,  $N_U=183$ )



The average number of food groups consumed by mothers on a daily basis was 4.4 in Jumgal, 4.7 in Uzgen, and 5.3 in Jalalabad. In Jalalabad, the majority (73 percent) of women ate food from five or more food groups, as did slightly more than half (58 percent) of Uzgen mothers. Mothers in Jumgal had the lowest percentage of women who ate from at least four food groups, but almost all ate from at least three food groups (Graph 3.2.2).

### 3.3. Children's Nutrition, Supplements, and Medicine

According to the WHO, vitamin A is essential for supporting rapid growth and helping to combat infections. Other vitamins, especially iron, are required in order for children to avoid anemia. When local foods cannot supply children aged six-months and older with the required vitamins, supplements are recommended.<sup>12</sup>

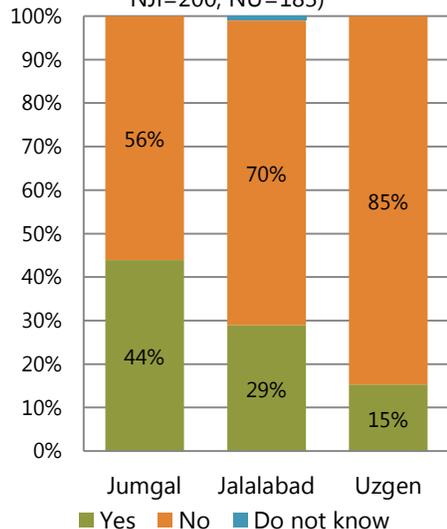
This study observed the percentage of children who received vitamin A and other supplements and medicines. Graph 3.3.1 shows that close to half of children in Jumgal aged 6-23 months took vitamin A supplements within the last six months. Fewer children from Jalalabad (29 percent) and Uzgen (15 percent) received these supplements within the last six months. Even fewer children aged 6-23 months received other vitamin supplements (like iron tables, IFA tablets, multi-nutrient supplements, sprinkles): 21 percent of children from Jumgal, 19 percent of children from Jalalabad, and 10 percent of children from Uzgen (Graph 3.3.2). The most common types of supplements taken by these children were "Orofer" in Jumgal, "Calcium Nikomed D3", Nestle" in Jalalabad, and other types of supplements for all three regions.

Drugs for intestinal worms (presumptive treatment of helminths)<sup>12</sup> were given to only 18 percent of children aged 6-23 months (Graph 3.3.3).

For infants younger than six months of age, studies indicate that vitamin A supplements provide no benefit in terms of reducing risk of illness and death. Therefore, vitamin A supplements are not recommended for very young infants.<sup>12</sup> However, 29 percent of infants aged 0-5 months from Jumgal, 13 percent of infants from Jalalabad, and 10 percent of infants from Uzgen received vitamin A supplements according to testimony from the mothers.

<sup>12</sup> World Health Organization [http://www.who.int/elena/titles/iron\\_supplementation\\_children/en/](http://www.who.int/elena/titles/iron_supplementation_children/en/)

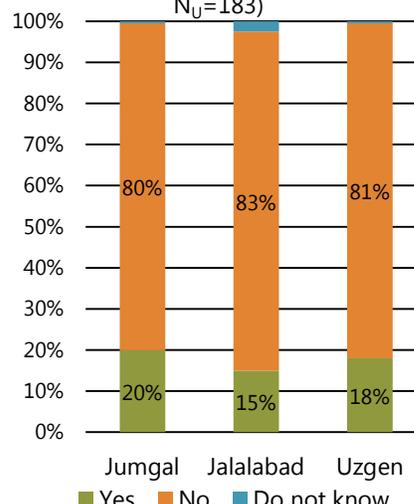
**Graph 3.3.1. Received vitamin A within last 6 months (age 6-23 months)** (N<sub>Jm</sub>=221, N<sub>Jl</sub>=200, N<sub>U</sub>=183)



**Graph 3.3.2. Received other vitamin supplements within last 7 days (age 6-23 months)** (N<sub>Jm</sub>=221, N<sub>Jl</sub>=200, N<sub>U</sub>=183)



**Graph 3.3.3. Received drugs for intestinal worms within last 6 months (age 6-23 months)** (N<sub>Jm</sub>=221, N<sub>Jl</sub>=200, N<sub>U</sub>=183)



**Table 3.3.1. Vitamin supplements received within the last 7 days by children aged 6-23 months (N<sub>Jm</sub>=54, N<sub>Jl</sub>=43, N<sub>U</sub>=30)**

Name of the Supplement	Region			Total
	Jumgal	Jalalabad	Uzgen	
	Column N%			
Orofer	33%	9%	0%	17%
Calcium D3 Nikomed	6%	30%	10%	15%
NAN	9%	21%	10%	13%
Ferrus-C	4%	5%	13%	6%
Nestle	11%	2%	0%	6%
Vitamin D	0%	9%	7%	5%
Pikovit	0%	7%	10%	5%
Tardiferon	2%	0%	13%	4%
Other	36%	44%	46%	46%

## Summary of Chapter Three

**Children's Nutrition:** Almost all children aged 0-23 months in all regions were ever breastfed. Seventy-nine percent of mothers in Jumgal, 67 percent of mothers in Jalalabad, and 54 percent of mothers in Uzgen put their children to breast within one hour after birth. Other infants were mostly put to breast within two or three hours after birth, and thus, all received colostrum from the first day of birth.

Almost all infants aged 0 to 8 months were breastfed. By the ninth month breastfeeding rates decreased significantly: 64 percent of children aged 3-17 months were breastfed, and only 49 percent of children aged 18-23 months. The majority of infants aged 0-1 months in Jalalabad and Uzgen were exclusively breastfed. From the ages of two or three months, the exclusive breastfeeding rate dropped to around 30 percent, and infants began to receive other liquids in addition to breast milk. By the age of four months, most infants had been actively

introduced to other foods. In Jumgal, complementary feeding started by the age of two months for 59 percent of infants.

Consumption of processed snack food was very low for children of all ages, whereas sugary food was consumed early in infancy, especially in Jumgal, where 20 percent of children aged 0-5 months consumed sugary food. The level of sugary food consumption rose with the child's age and reached 65 percent for children aged 12-23 months. The majority of children aged 6-23 months in all regions received vitamin A-rich food and iron-rich food, mostly through meat. The consumption level of vitamin A-rich vegetables and fruit was the lowest in Jumgal (6 percent) and highest in Jalalabad (33 percent).

On average, children from Jalalabad and Uzgen aged 6-11 months consumed food twice daily, and children aged 12-23 months consumed food 3.1 times daily. Children in Jumgal in the same age group consumed food one time less than their counterparts. Only about one-third of children in Jalalabad and one-fifth of children in Jumgal and Uzgen aged 0-23 months were fed according to a minimum of appropriate feeding practices (with at least the minimum frequency of feeding and minimum dietary diversity). MAD was found to be similar across groups with different characteristics.

**Mother's Nutrition:** The dietary diversity of mothers was similar to that of children aged 12-23 months. Similar to children, consumption of fruits and vegetables was quite common in the southern regions (70 percent in Jalalabad and 64 percent in Uzgen), and lower in Jumgal (18 percent). The level of milk consumption was far higher in Jumgal (92 percent), the region where almost all households keep livestock, in comparison to Jalalabad (46 percent) and Uzgen (32 percent). The diets of mothers with children of different ages and breastfeeding status were identical except for the level of sugary food consumption in Jalalabad: 38 percent of mothers with younger children consumed sugary food (as opposed to 60 percent of mothers with older children), and about half of breastfeeding mothers consumed sugary foods (44 percent). The average number of food groups consumed by mothers daily was 4.4 in Jumgal, 4.7 in Uzgen, and 5.3 in Jalalabad.

**Vitamin Supplements:** Only half of children in Jumgal, 29 percent of children in Jalalabad, and 15 percent of children in Uzgen aged 6-23 months took vitamin A supplements within the last six months. Even fewer children received other vitamin supplements within the last seven days. Although the WHO does not recommend vitamin A supplements very young infants, 29 percent of children from Jumgal aged 0-5 months, 13 percent of infants from Jalalabad, and 10 percent of infants from Uzgen ever received a vitamin A dose.

## 4. Water Sources, Hygiene, and Toilet Facilities

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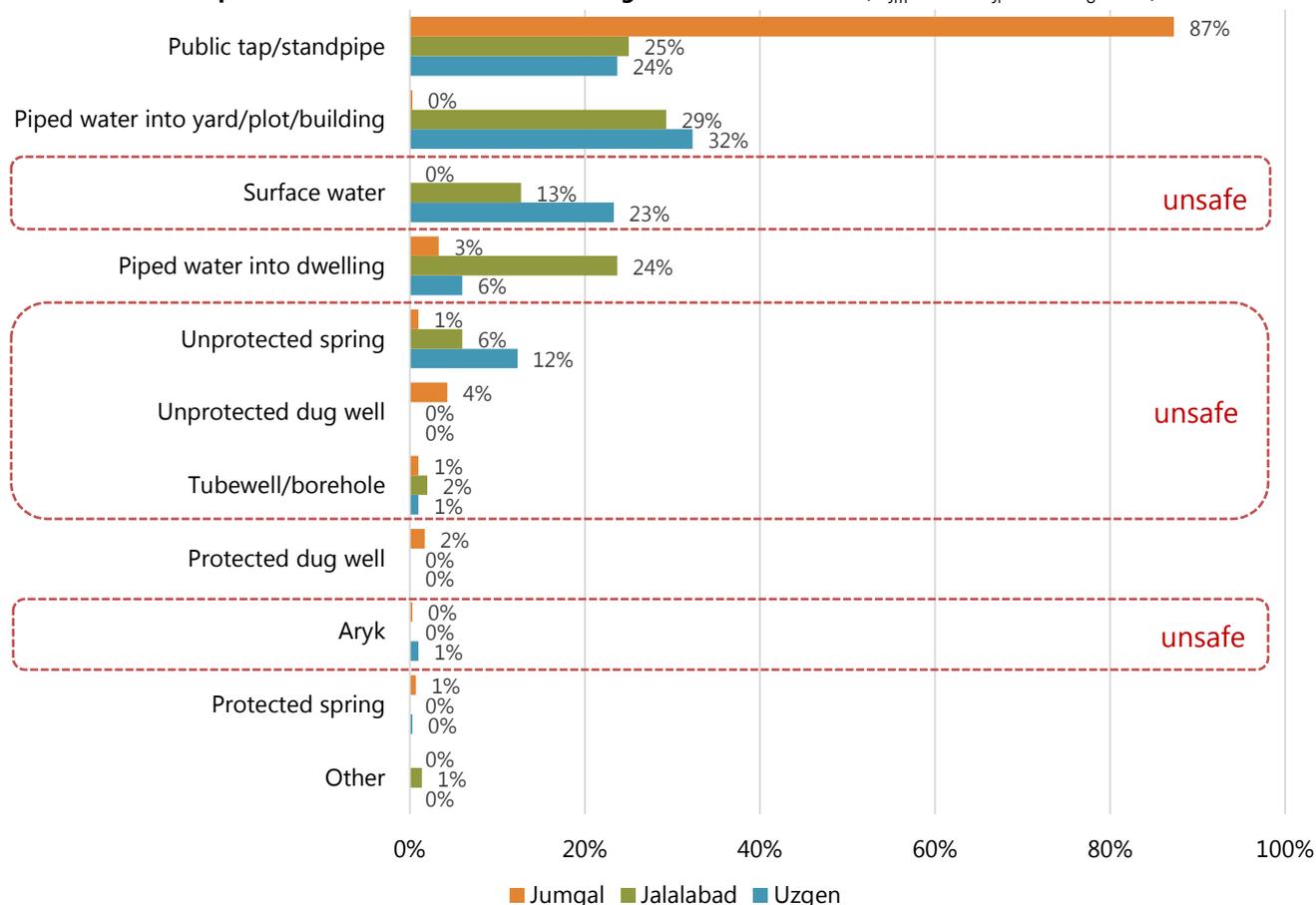
Proper sanitation and hygiene have a major impact on health of mothers and their children. According to the World Health Organization, lack of safe drinking water, adequate sanitation, and hygiene causes diarrhea, which contributes to nutritional deficiencies, reduced resistance to infections, and impaired growth and development. This chapter examines the level of hygiene maintenance, safety of water sources, and toilets facilities in houses of mothers with children aged 0-23 months in Jumgal, Jalalabad, and Uzgen.

### 4.1. Drinking Water Sources

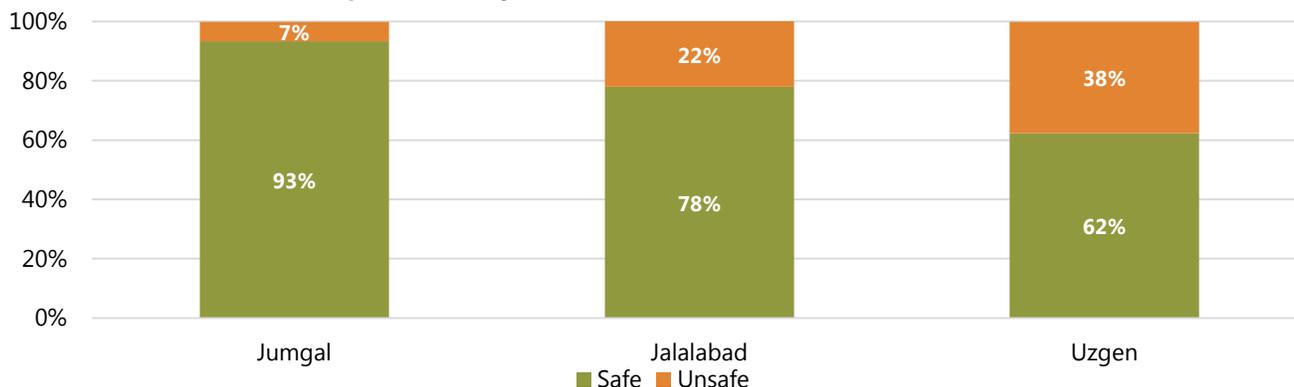
According to Graph 4.1.1, most mothers (87 percent) from Jumgal used a public tap or standpipe as their main source of water supply. The remaining 13 percent used other water sources such as water piped into their dwelling, an unprotected spring, or unprotected and protected dug wells and boreholes. In Jalalabad and Uzgen, public taps, and standpipes were used by only one-quarter of mothers. Other commonly used water sources in Jalalabad and Uzgen include piped water into yard, plot, or building (29 percent in Jalalabad and 32 percent in Uzgen), surface water (13 percent in Jalalabad, 23 percent in Uzgen), piped water into dwelling (24 percent in Jalalabad, 6 percent in Uzgen), and unprotected spring (6 percent in Jalalabad and 12 percent in Uzgen).

Surface water, unprotected springs, dug wells, boreholes and *aryk* (small aqueducts or irrigation channels used for agriculture) are considered unsafe water sources that may be harmful to the health of the child and mother (according to SPRING). As Graph 4.1.2 reveals, an absolute majority of mothers (93 percent) from Jumgal use safe water sources, mostly a public tap or standpipe. In Jalalabad, 22 percent of women obtain water from unsafe sources, and in Uzgen 38 percent obtain water from unsafe sources. The main unsafe water sources in Uzgen and Jalalabad are surface water and unprotected springs.

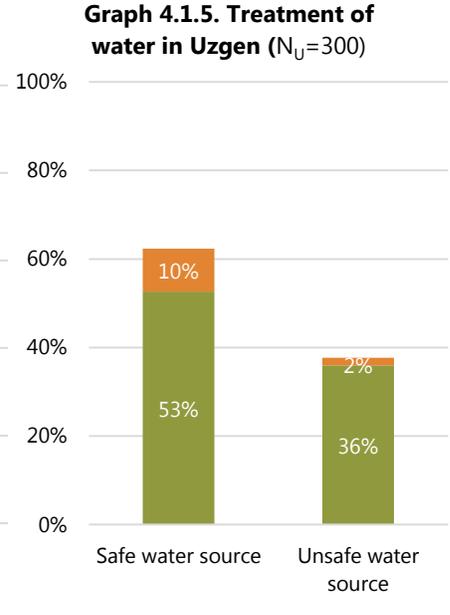
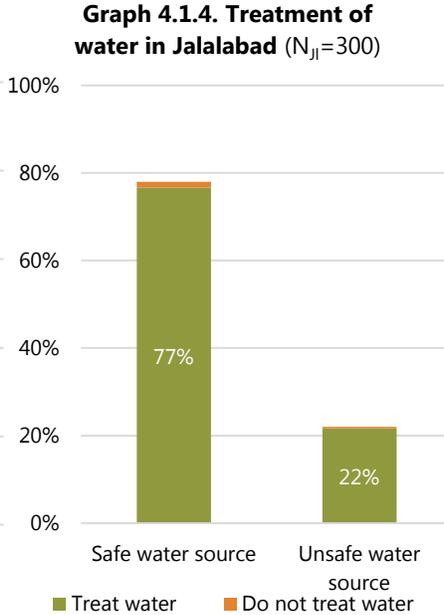
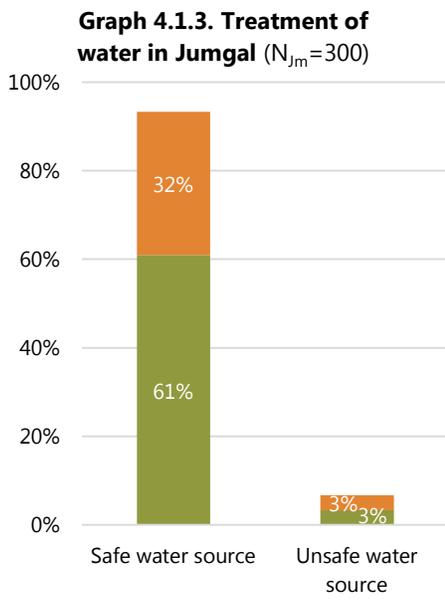
**Graph 4.1.1. The main source of drinking water in the house** (N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>U</sub>=300)



**Graph 4.1.2. Safety of used water sources** (N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>U</sub>=300)



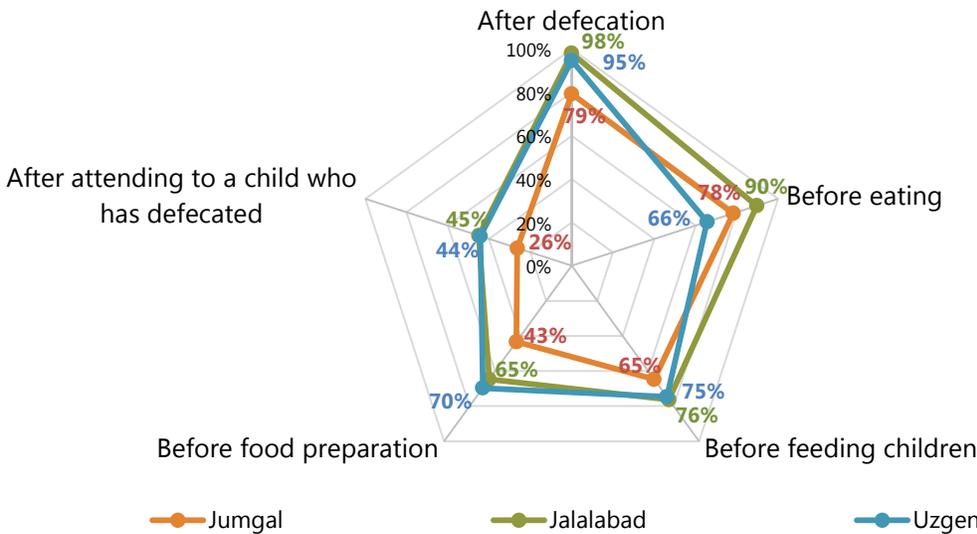
To make water safer for drinking and cooking, some people use water treatment techniques to remove pathogens. Almost all mothers in Jalalabad (98 percent) and Uzgen (89 percent) treated their water before consumption. In Jumgal, 36 percent of mothers did not treat their water. However, as Graph 4.1.3 shows, this untreated water was supplied mostly by safe sources. Hence, only a small percentage of mothers who consumed water from unsafe sources did not treat it: three percent in Jumgal, and two percent in Jalalabad and Uzgen. The main single water treatment technique is boiling (99 percent). Only one percent of respondents use special home filters.



## 4.2. Handwashing Practices

In order to assess the level of basic hygiene, mothers were asked when they usually washed their hands. Mothers in all three regions mostly washed their hands after defecation (91 percent overall). A slightly lower percentage of mothers washed their hands before eating (78 percent overall). Other situations included before feeding children (72 percent overall), before food preparation (59 percent overall), and after attending to a child who had defecated (39 percent). In Graph 4.2.1 (below), the orange line illustrates handwashing practices in Jumgal, and lies mostly inside the other two lines which represent Jalalabad and Uzgen. This shows that mothers from Jumgal were less likely to engage in basic handwashing practices and were less likely to maintain hygiene than mothers other regions. In Jalalabad, mothers washed their hands in an average of 3.7 junctures. Mothers in Uzgen washed their hands in 3.5 situations, and mothers in Jumgal washed their hands in only 2.7 situations (Graph 4.2.2).

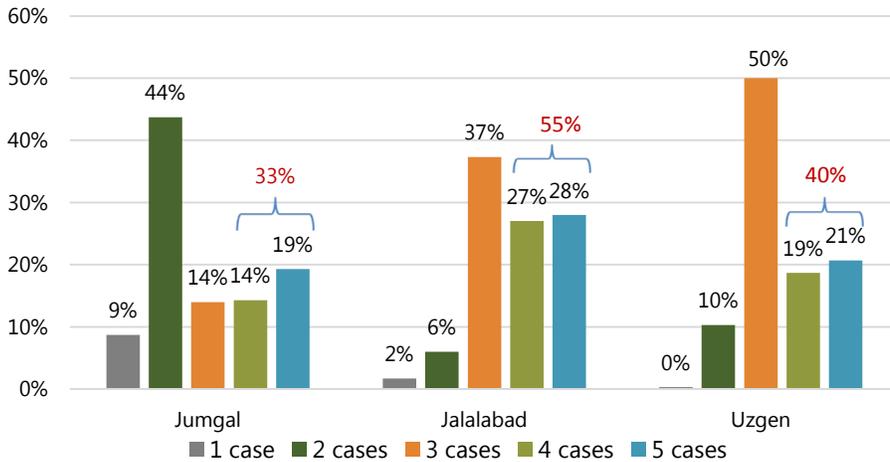
**Graph 4.2.1. Cases when mothers wash hands (N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>U</sub>=300)**



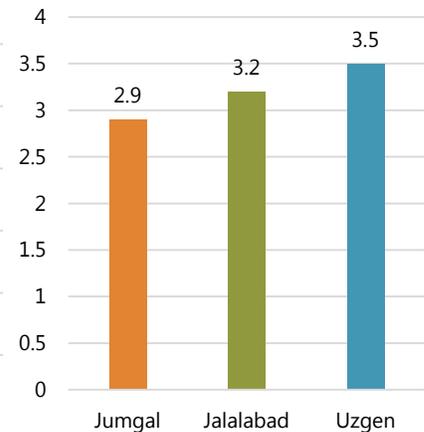
Next, mothers were divided into two groups based on their handwashing practices: 1) mothers who washed their hands at least at four critical times, and 2) mothers who washed their hands less than four critical times. The first group included mothers who followed the minimum hygiene rules to maintain health safety. According to Graph

4.2.2, a little over half of women (55 percent) from Jalalabad, 40 percent of women from Uzgen, and a third of women (33 percent) from Jumgal applied proper handwashing practices.

**Graph 4.2.2. Number of critical times in which mother washes hands** ( $N_{Jm}=300, N_{Jl}=300, N_U=300$ )



**Graph 4.2.3. Mean number of critical times mother washes hands**



Other data revealed that women in regions with better hygiene practices (Jalalabad and Uzgen) were more likely to use soap while handwashing (data not shown). Half of respondents (55 percent) from those regions responded that they always or nearly always use soap when washing their hands, and close to one-third (29-32 percent) used soap on a regular basis. The opposite situation occurred in Jumgal, where approximately two out of three mothers (64 percent) responded that they usually use soap, but only 28 percent always or nearly always used soap.

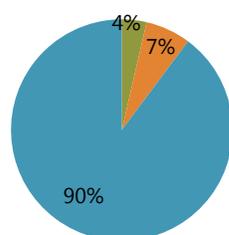
### 4.3. Toilet Facilities

Residents in the areas surveyed reported using several different types of toilet facilities which varied from one town or village to another (Graphs 4.3.1-4.3.3). In all regions, the pit latrine was the main type of toilet facility. There are two types of pit latrines: those with a slab and those without a slab. In Jumgal, the main type of toilet facility was the pit latrine without a slab/ open pit (90 percent). The remaining 10 percent of residents used a pit latrine with a slab and flush. On the contrary, in Jalalabad, 69 percent of mothers used pit latrines with a slab, 26 percent used a flush to pipe sewer system, and only six percent used a pit latrine without a slab. In Uzgen, the situation was even more extreme, with 98 percent of households using pit latrines with a slab, and two percent using pit latrines without slabs.

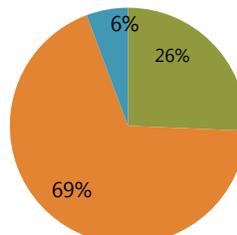
A pit latrine without a slab is considered to be an unimproved toilet facility. Hence, the large majority of mothers in Jumgal (90 percent) used unimproved toilets. Thirty-one percent of mothers in Jalalabad used unimproved toilet facilities. However, it should be noted that formative research subsequently carried out by SPRING revealed that even pit latrines with slabs were often filthy and so even if technically “improved”, would not be considered sanitary.

- Flush
- Pit latrine with slab, ventilated
- Pit latrine without slab / Open pit

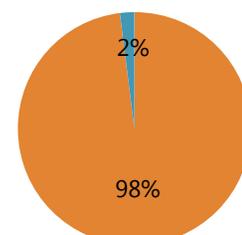
**Graph 4.3.1. Type of toilet facility used in Jumgal** ( $N_{Jm}=300$ )



**Graph 4.3.2. Type of toilet facility used in Jalalabad** ( $N_{Jl}=300$ )



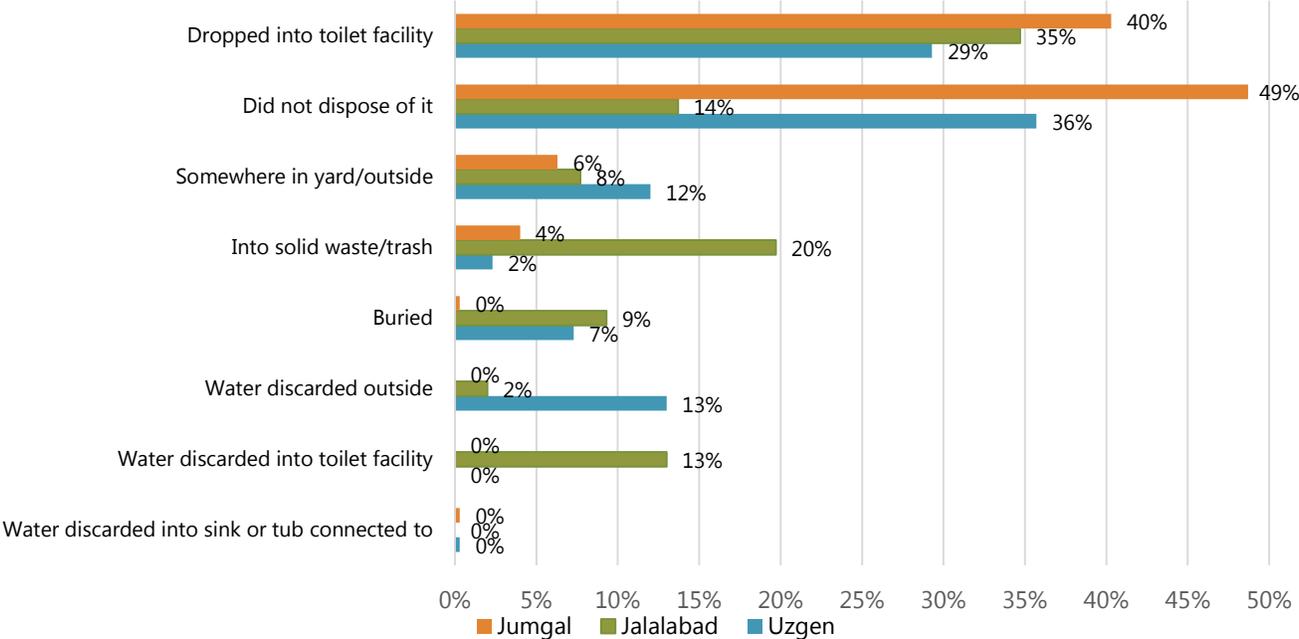
**Graph 4.3.3. Type of toilet facility used in Uzgen** ( $N_U=300$ )



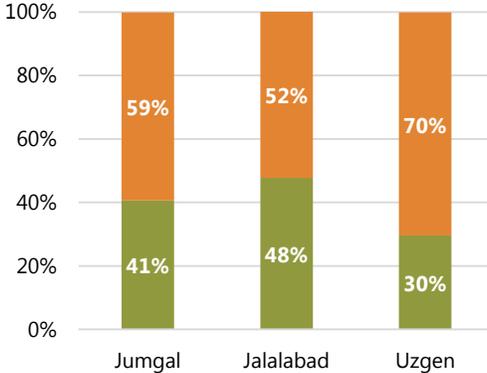
Mothers were asked where they disposed of feces the last time their child passed stools. In Jumgal, mothers either did not dispose of feces at all (49 percent) or they dropped feces into a toilet (40 percent). In Uzgen, 36 percent did not dispose of feces at all, 29 percent put them into a toilet, and the rest disposed of them in water outside, put them in the yard, or buried them. In Jalalabad, 35 percent of women put feces into a toilet, 20 percent put them into solid trash, and 14 percent did not dispose of feces, 13 percent put them into a toilet, nine percent buried them, and eight percent put them somewhere in the yard.

Graphs 4.3.4 through 4.3.6 summarize these reported results. More than half of respondents (61 percent overall) did not dispose child’s feces into a toilet. This indicator is the highest in Uzgen (70 percent).

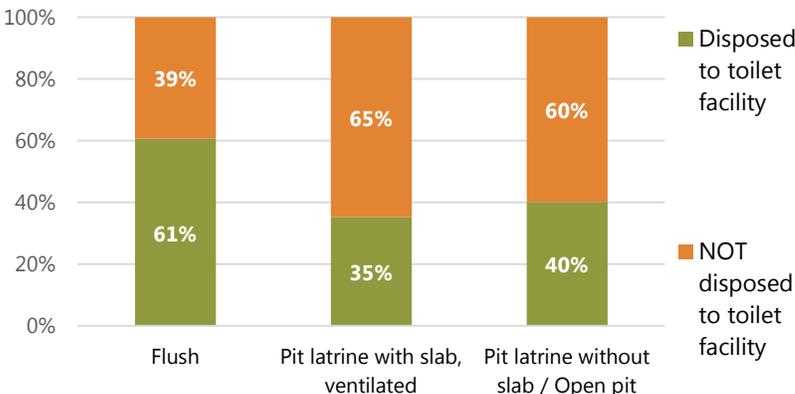
**Graph 4.3.4. What mother did with feces the last time child passed stools** (N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>Ju</sub>=300)



**Graph 4.3.5. Disposal of child’s feces the last time he/she passed stools** (N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>Ju</sub>=300)



**Graph 4.3.6. Disposal of child’s feces the last time he / she passed stools by type of toilet facility in household** (N<sub>flush</sub>=89, N<sub>pit latrine with slab</sub>=519, N<sub>open pit</sub>=292)



## Summary of Chapter Four

Most mothers from Jumgal obtained water from a public tap, which is a safe source. In Jalalabad, a quarter of the women obtained water from unsafe sources and in Uzgen, 38 percent relied on unsafe water sources. The main unsafe water sources were surface water and unprotected springs. Almost all mothers from regions with wider usage of unsafe sources (Jalalabad and Uzgen) boiled water before they used it.

Over half (55 percent) of women from Jalalabad, 40 percent from Uzgen, and 33 percent from Jumgal practiced proper handwashing. In regions with better hygiene maintenance (Jalalabad, Uzgen) mothers reported using soap more often when they washed their hands.

An absolute majority of mothers in Jumgal used unimproved toilets. In Uzgen, nearly half used unimproved toilets. On the contrary, the majority of mothers in Jalalabad used safe toilets. More than half of respondents (61 percent overall) did not dispose of child's feces into toilets facility. This indicator was the highest in Uzgen (70 percent).

## 5. Food Storage and Preservation

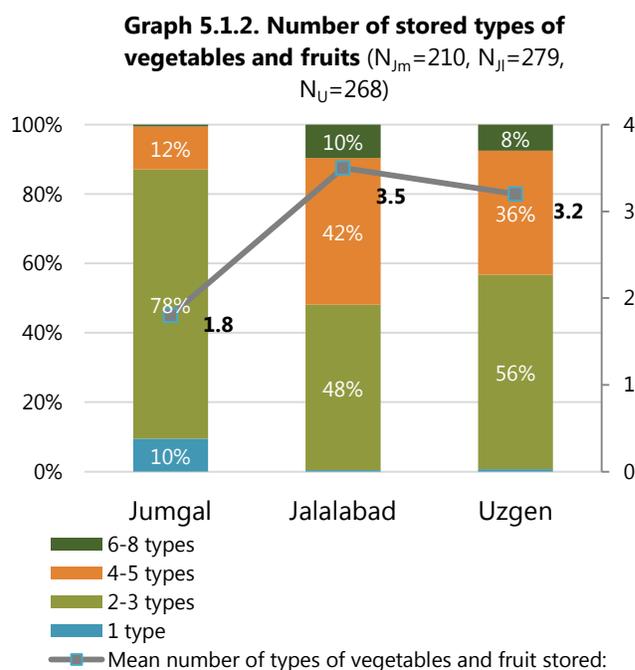
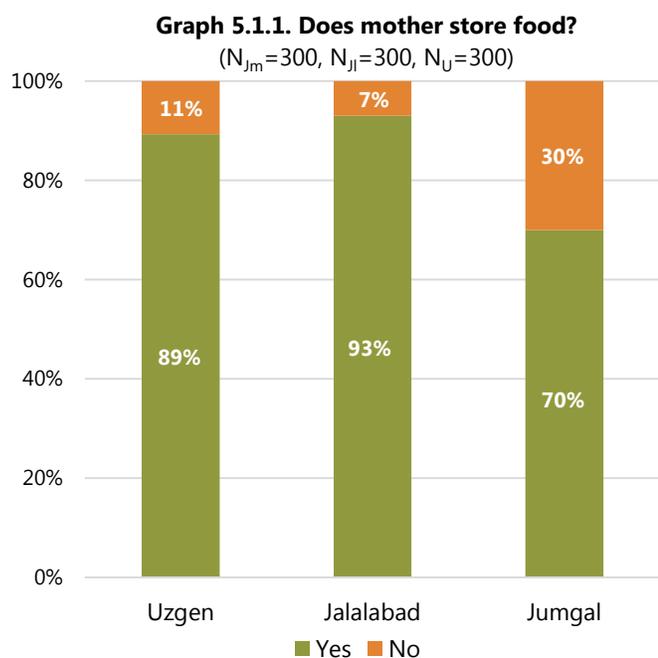
Storage and preservation of vegetables and fruit can provide mothers and their children with better dietary diversity, particularly in the winter when vegetables and fruit are less available (or more expensive so that not all mothers can afford them). Food preservation stops or slows down spoilage, preserves the quality, and sometimes the nutritional value. In addition, preservation helps prevent the growth of bacteria, yeasts, fungi, and other microorganisms.<sup>13</sup>

### 5.1. Food Storage

The results of this study show that almost all mothers in Jalalabad and Uzgen stored vegetables and fruits for consumption in the winter. Only 70 percent of mothers in the northern region of Jumgal stored food (Graph 5.1.1).

*\*From here onwards, percentages are calculated using the number of women storing food.\**

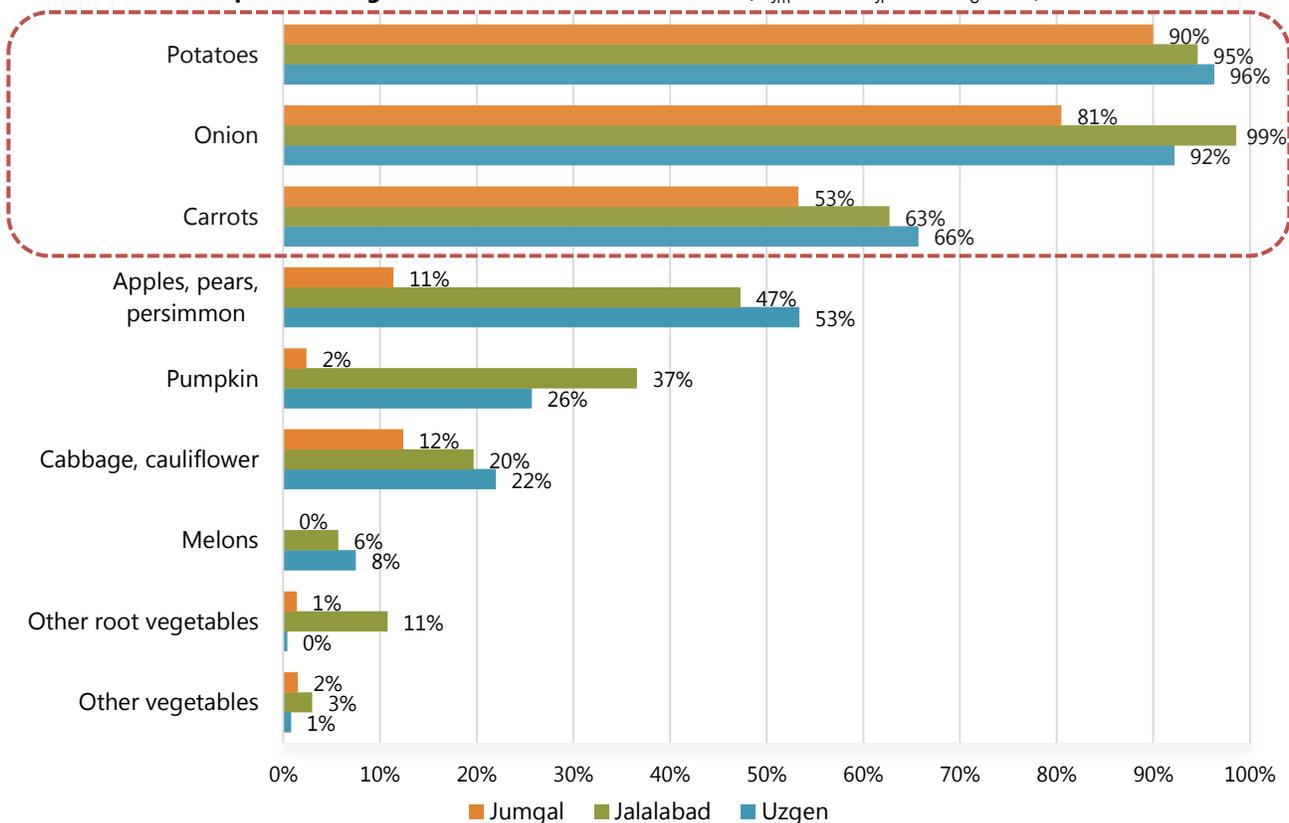
Graph 5.1.2 shows that in Jalalabad and Uzgen, southern regions with a rich variety of different vegetables and fruits, families also stored other types of vegetables and fruit, including apples, pears, persimmons, pumpkins, cabbages, and cauliflower. In Jumgal, families stored an average of 1.8 types of vegetables (mostly potatoes and onions), while in Jalalabad they stored an average of 3.5 types, and in Uzgen they stored an average 3.2 types. Most families in Jumgal stored vegetables and fruits in the cellar under the house. Mothers from the southern regions used the cellar or a cold room. Some mothers (16 percent in Jalalabad and 25 percent in Uzgen) stored vegetables and fruit by burying them under dirt.



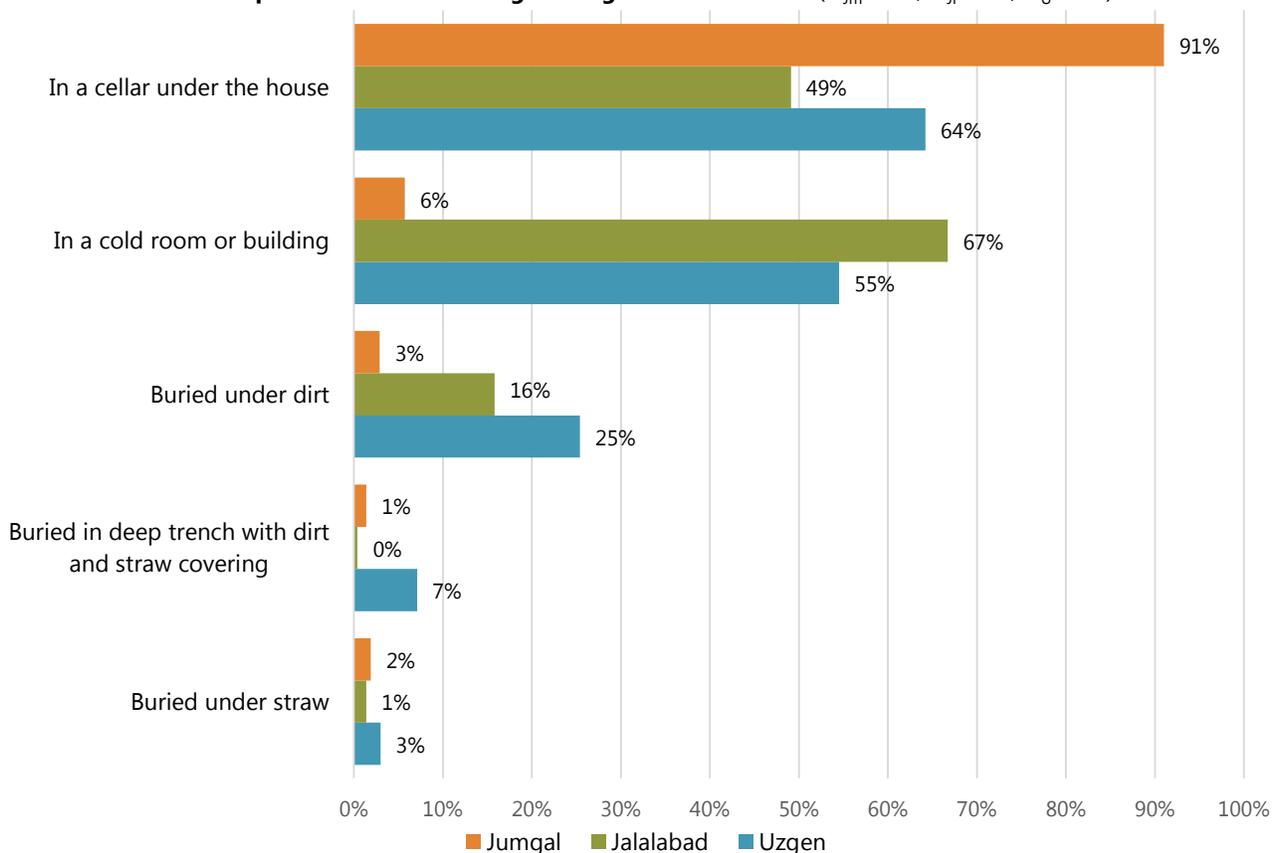
As shown in Graph 5.1.3, the most commonly stored vegetables in all regions were potatoes (94 percent overall), onions (91 percent overall), and carrots (61 percent).

<sup>13</sup> <http://www.princeton.edu>

**Graph 5.1.3. Vegetables and fruits mothers store** (N<sub>Jm</sub>=210, N<sub>Jl</sub>=279, N<sub>U</sub>=268)



**Graph 5.1.4. Place of storage of vegetables and fruits** (N<sub>Jm</sub>=210, N<sub>Jl</sub>=279, N<sub>U</sub>=268)



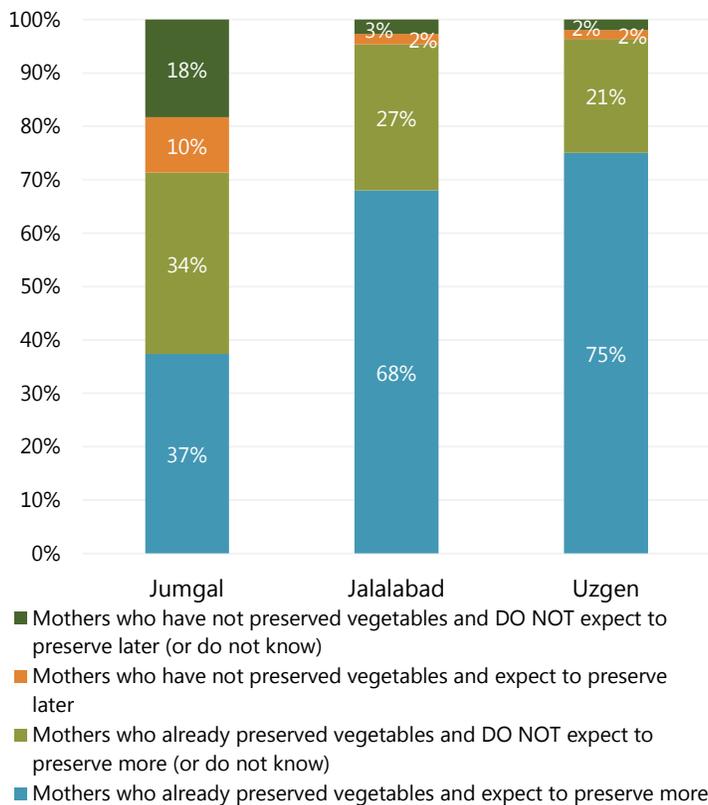
## 5.2. Food Preservation

Almost all (97 percent) women from Jalalabad and Uzgen preserved foods for consumption in the winter. In Jumgal, 28 percent of women did not preserve fruits and vegetables at all (Graph 5.2.1). Moreover, 12.3 percent of mothers from Jumgal neither stored nor preserved food.

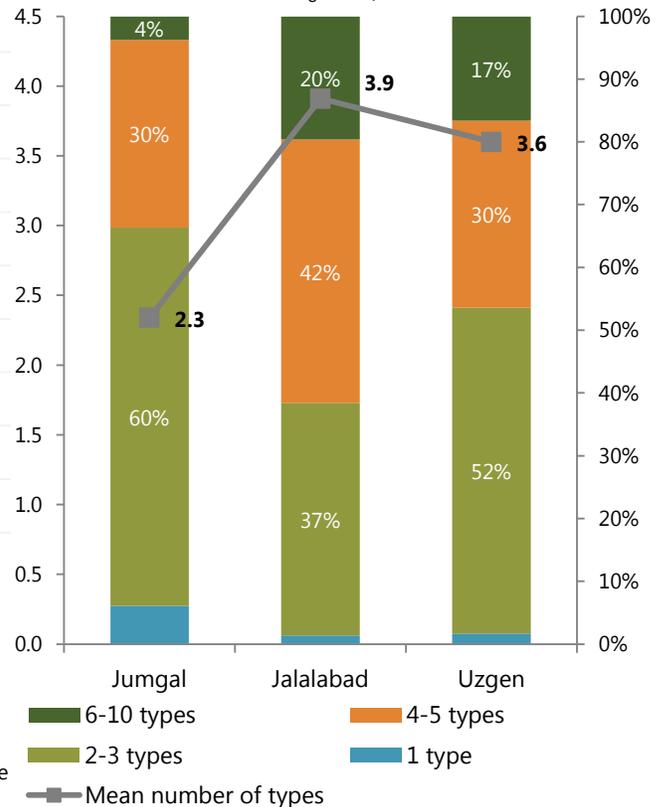
Mothers in Jumgal preserved an average of 2.3 types of food, whereas in Jalalabad, women stored an average of 3.9 types. In Uzgen, the average was 3.6 types (Graph 5.2.2).

The types of vegetables and fruit that were most frequently preserved in Jumgal were tomatoes (80 percent), peppers (66 percent), cabbage (63 percent), carrots, pumpkins (44 percent), and fruit as jam (42 percent). In Jalalabad and Uzgen, where there is a richer harvest of fruits, women mostly preserved fruit as jam (93 percent), fruit as compote (81 percent), and tomatoes (71 percent). The other vegetables and fruits listed in Graph 5.2.3 were less likely to be preserved.

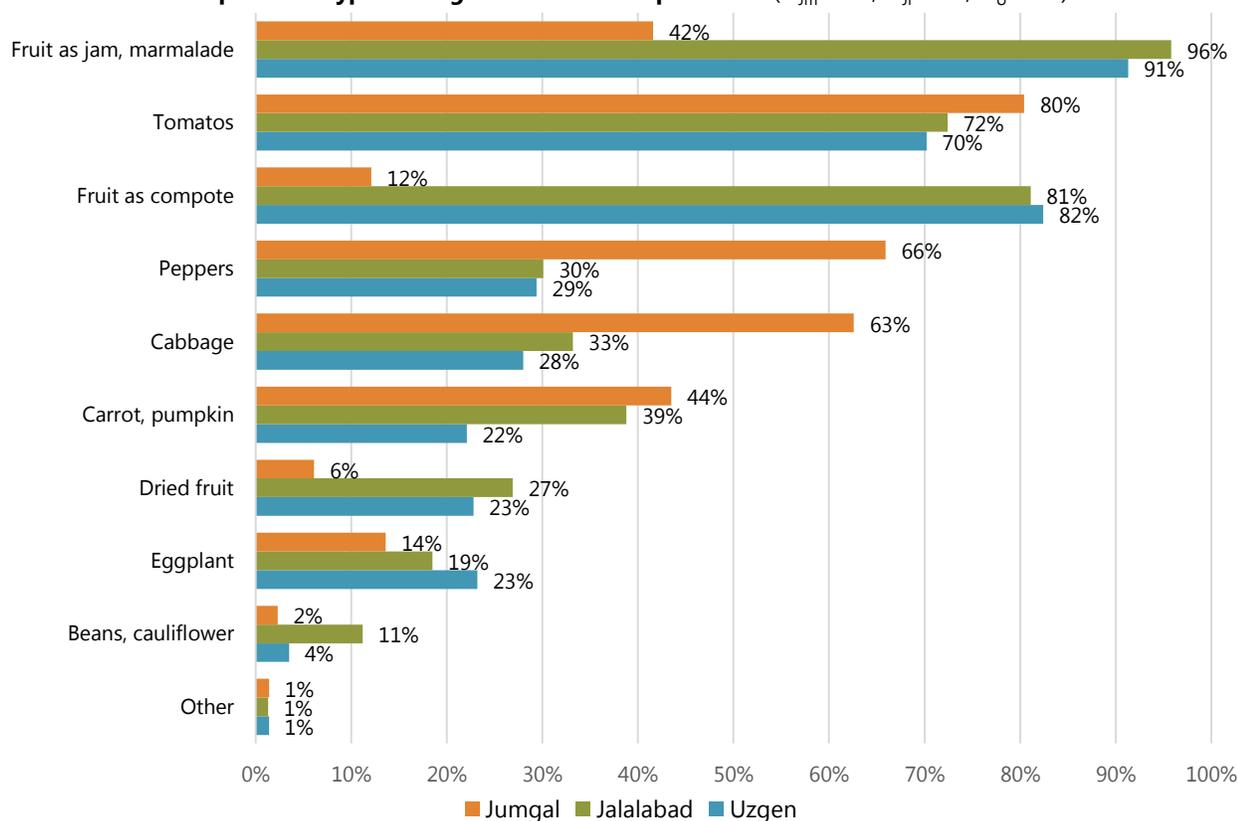
**Graph 5.2.1. Preservation of vegetables and fruits** (N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>U</sub>=300)



**Graph 5.2.2. Number of preserved types of vegetables and fruits** (N<sub>Jm</sub>=214, N<sub>Jl</sub>=286, N<sub>U</sub>=289)



**Graph 5.2.3. Types of vegetables and fruit preserved** (N<sub>Jm</sub>=214, N<sub>Jl</sub>=286, N<sub>Ju</sub>=289)



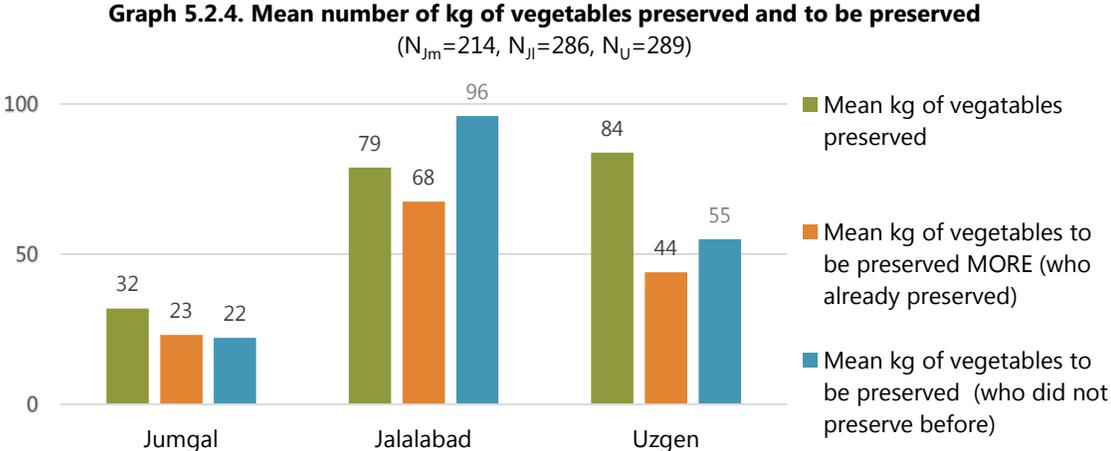
In addition to having a lower rate of food preservation and preserving fewer types of food, mothers in Jumgal also preserved fewer kilograms of vegetables and fruits in comparison to mothers in the southern regions. The mean number of kilograms of food preserved in Jumgal was 3 kg, but it was 79 kg in Jalalabad, and 84 kg in Uzgen, approximately 25 times more than Jumgal. The amount of food preserved for consumption may be dependent on family size, but as Table 5.2.1 demonstrates, there was no significant difference in quantity based on how many people lived in the household.

**Table 5.2.1. Amount of food varieties preserved by number of people in the household**

Number Of People Living In The Household	Region					
	Jumgal		Jalalabad		Uzgen	
	Amount (Kilos) Preserved Of Food Varieties					
	Mean	Unweighted Count	Mean	Unweighted Count	Mean	Unweighted Count
2	90	1	40	1	-	0
3-4	26	55	51	70	75	72
5-6	34	145	71	144	87	142
7-8	29	73	91	62	81	65
9-10	36	24	182	18	101	19
11-15	30	2	133	5	45	2

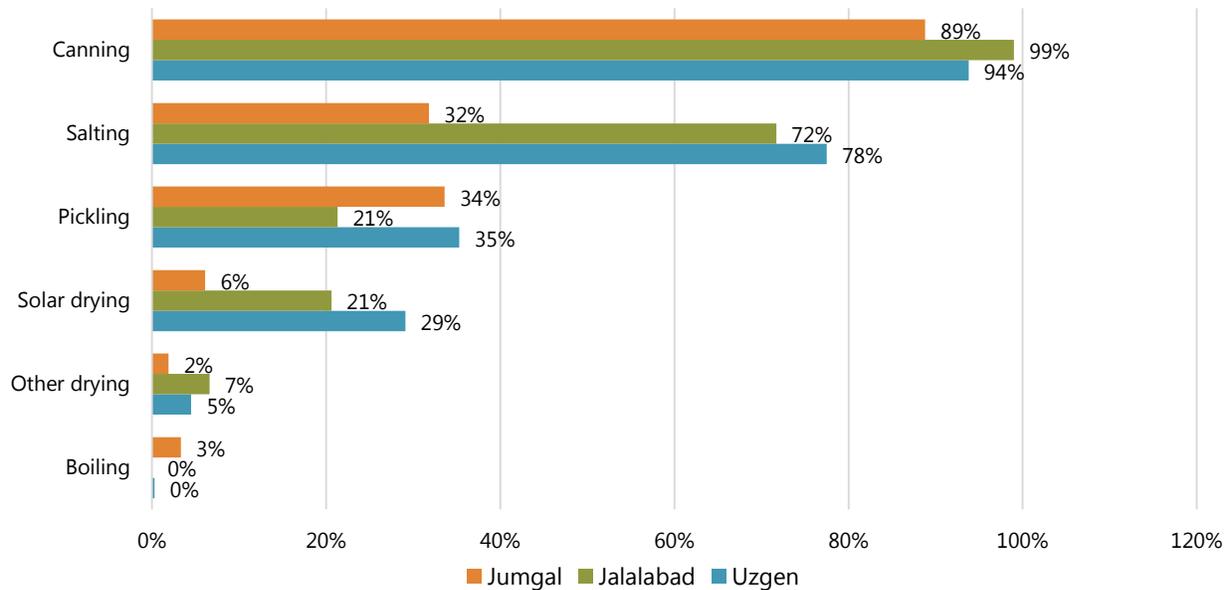
Seventy-seven percent of mothers in Uzgen, 70 percent of mothers in Jalalabad, and 52 percent of mothers in Jumgal (who already preserved foods) said they were going to preserve more food in the future. Sixty-four percent of those who had not preserved anything (mostly mothers in Jumgal) said that they had no intention of preserving any food. A summary of these results is shown in Graph 5.2.1. The majority of mothers in the southern region had already preserved foods and intended to preserve more (75 percent in Uzgen and 71 percent in Jalalabad). The situation in Jumgal was rather different: almost one-fifth (18 percent) of all mothers neither preserved food nor planned on preserving food in the future. Ten percent of mothers in Jumgal had not preserved any vegetables and fruits, but planned on doing so in the future.

The mothers who intended to preserve foods in the future were asked about how many kilograms of food they planned to preserve. Graph 5.2.4 shows that regardless of the amount of food they had already preserved, most wanted to preserve a smaller amount of food in the future (23 kg in Jumgal, 68 kg in Jalalabad, and 44kg Uzgen). Mothers in Uzgen wanted to preserve almost two times less food than the average. Mothers who had not preserved any food intended to preserve about the same amount in as mothers who already preserved some varieties. This relates mostly to mothers from Jumgal, where 28 percent of all mothers had not preserved any food (see Graph 5.2.4).



As seen in Graph 5.2.5, the main method of food preservation in Jumgal was canning (89 percent). One-third of mothers in Jumgal also preserved food using salting and pickling. Canning was also the main method of food preservation in the south, but salting was used by more women in this region (75 percent) than in Jumgal. Mothers from the southern region (21 percent in Jalalabad and 29 percent in Uzgen) also used solar drying, probably because of the sunny climate and the fact that there were more fruit varieties available.

**Graph 5.2.5. Methods of food preservation** (N<sub>Jm</sub>=214, N<sub>Jl</sub>=286, N<sub>U</sub>=289)



### Summary of Chapter Five

The majority of mothers from the southern region not only preserved and stored food, but also intended to preserve more food later. About one-fifth of mothers in Jumgal neither preserved food nor had any plans to do it later. A small percentage of mothers in Jumgal did not preserve any vegetables or fruits, but planned on doing so in the future. The average variety of fruits and vegetables preserved and stored was lower in Jumgal as compared to the southern region. In addition, mothers in Jumgal preserved 2.5 fewer kilograms of vegetables and fruits on average in comparison to their counterparts in the south.

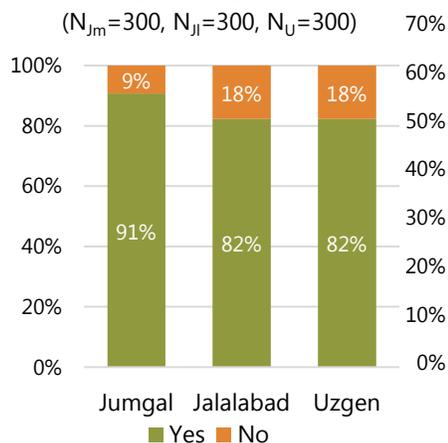
The most commonly stored foods for all regions were potatoes, onions, and carrots. Some mothers from the south also stored other types of foods. Most mothers stored food in a cellar under the house or a cold room. Women in Jumgal mostly preserved tomatoes. Since Jalalabad and Uzgen had a richer harvest of fruits, mothers were more likely to preserve fruit as jam, fruit as compote, and tomatoes. The main method of food preservation for regions was canning. A majority of mothers from the south also used salting.

## 6. Television and Preferences in Television Programs

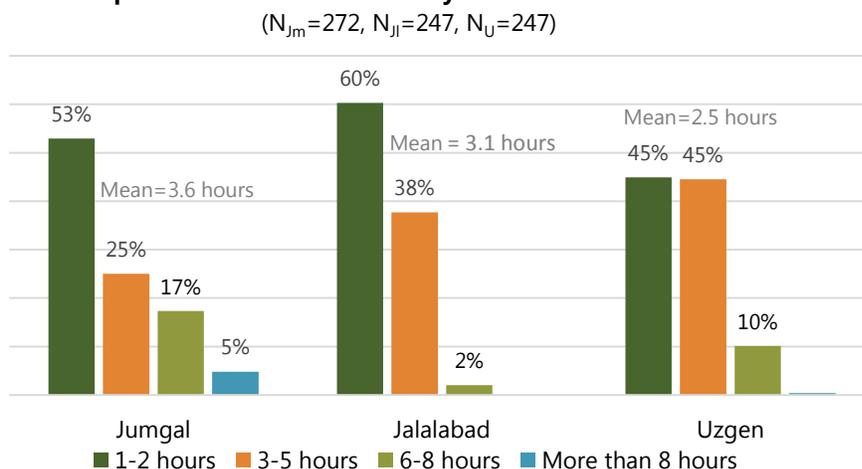
According to media research conducted in 2012,<sup>14</sup> television has the greatest coverage of all mass media sources in the Kyrgyz Republic. Television is a major source of information for audiences ages 14 and older. Unlike previous media research, the current baseline survey revealed the basic television preferences of a narrower target audience: mothers with children aged 0-23 months, living in Jalalabad *oblast*, Jumgal, and Uzgen regions. Knowing which television channels and programs mothers prefer can help SPRING spread their programs directed at the improvement of women's and child's nutrition.

The results of the survey showed that a large majority of mothers watched television: 91 percent in Jumgal and 82 percent in Jalalabad and Uzgen. The presented percentages and indicators in the current chapter are calculated from the number (N=766) of women who watch television. Half of mothers (53 percent) watched one or two hours a day. One third (35 percent) watched television for three to five hours a day, while the rest (12 percent) watched more than six hours of television every day. Graphs 6.1 and 6.2 showed that in Jumgal, not only do more women watch television but they also watched more hours of television per day. In Jumgal, the mean hours of television watched per day were 3.6 hours. In Uzgen, the mean was 3.1 hours and in Jalalabad the mean was 2.5 hours. Almost a quarter of Jumgal respondents (22 percent) watched television for six and more hours a day, while only 10 percent and two percent of respondents watched that much television in Uzgen and Jalalabad, respectively.

**Graph 6.1. Do mothers watch television?**



**Graph 6.2. Number of hours a day mothers watch television**



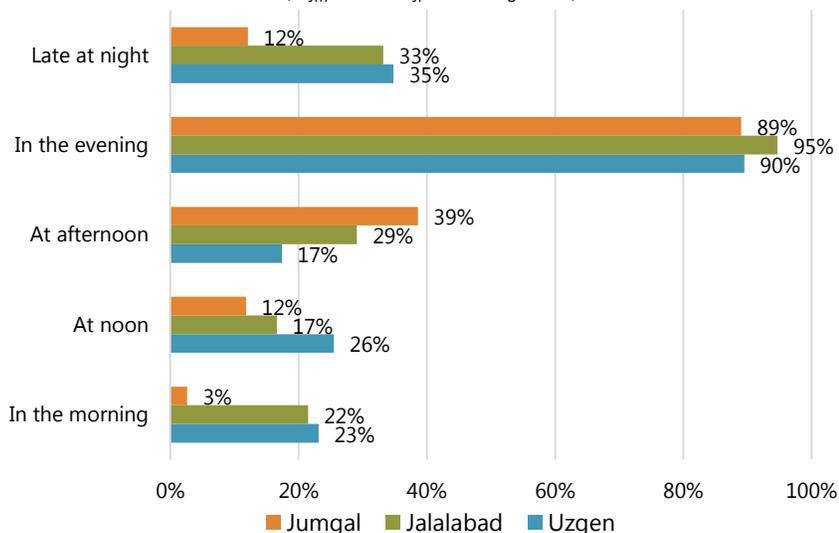
According to Graphs 6.3 and 6.4, a large majority of mothers in all observed regions (91 percent) watched television in the evening. In Jumgal, a significant portion of respondents (39 percent) also watched television in the afternoon. Approximately one-third of respondents from Uzgen and Jalalabad watched television late at night, and 17-26 percent watched television in the afternoon. A smaller percentage of respondents most frequently watched television late at night: 10 percent in Jumgal, 19 percent in Jalalabad, and 26 percent in Uzgen.

These results and others reported later in the chapter were found to be independent of mothers' age, ethnicity, level of education, and the number of children and adults living in the household, which means that these results were similar for all listed socioeconomic groups.

<sup>14</sup> M-Vector media research <http://www.m-vector.com/ru/news/?id=307>

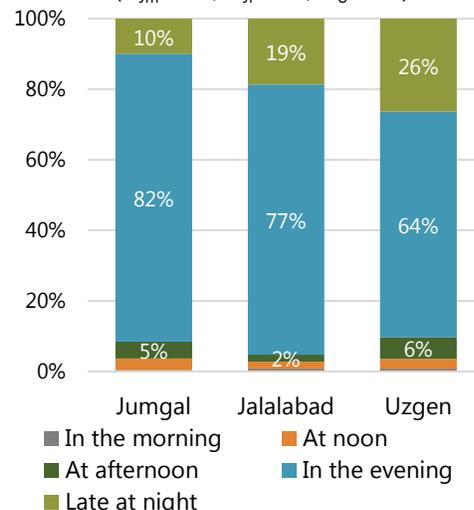
**Graph 6.3. Times of day mothers watch TV**

(N<sub>Jm</sub>=272, N<sub>Jl</sub>=247, N<sub>U</sub>=247)



**Graph 6.4. Time of day mothers watch television most often**

(N<sub>Jm</sub>=272, N<sub>Jl</sub>=247, N<sub>U</sub>=247)



Data were also collected about the number of channels mothers watched. In spite of the fact that mothers from Jumgal watched more television than mothers from other observed regions, they watched an average of only 1.9 channels. This is significantly lower than the number of channels watched by women in Jalalabad and Uzgen. In Jalalabad, women watched an average of 2.9 channels, while in Uzgen, they watched an average of 5.3 channels. As Graph 6.5 shows, 81 percent of mothers from Jumgal watched only one or two channels, while just half of mothers (50 percent) from Jalalabad watched one or two channels. In Uzgen almost half (47 percent) of respondents watched five or six channels and a just over a quarter (28 percent) watched seven or eight channels. The remaining quarter watched four or fewer channels. Table 6.1 shows that the daily number of hours mothers watched television was similar regardless of the number of channels watched.

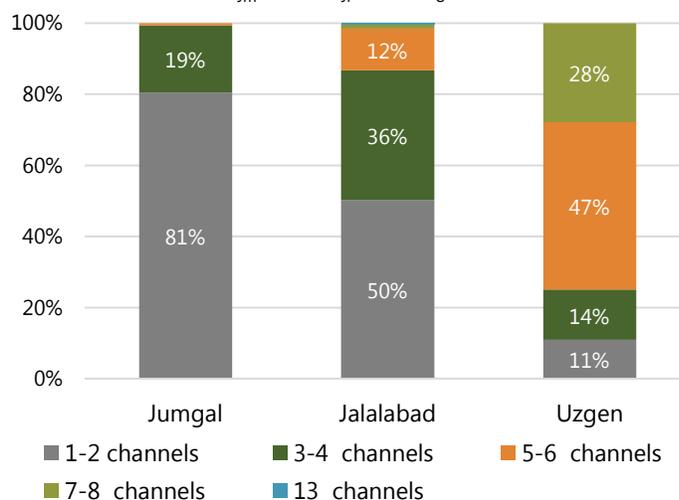
The top three most watched channels in all regions were OTRK (76 percent), 1st channel (60 percent), and ELTR (43 percent). As shown in Table 6.2, in Jumgal, these three channels are by far the most popular. Other channels were watched by only a small percentage of people. In Jalalabad and Uzgen, there were some other popular channels. In Jalalabad, about one quarter of respondents watched Oshlar and RTR-Russia. In Uzgen, other popular channels included Osh TV (40 percent), 7<sup>th</sup> channel, Piramida, Mir, and 5<sup>th</sup> channel (with about 30 percent each).

**Table 6.1. Mean number of hours of television mothers watched per day by number of channels (N<sub>Jm</sub>=272, N<sub>Jl</sub>=247, N<sub>U</sub>=247)**

# of Channels Mother Watches	Region			Total
	Jumgal	Jalalabad	Uzgen	
1-2	4	2	3	3
3-4	4	3	3	3
5-6	2	2	3	3
7-8	-	4	3	3
13	-	5	-	5

**Graph 6.5. Number of channels mothers watch**

(N<sub>Jm</sub>=272, N<sub>Jl</sub>=247, N<sub>U</sub>=247)

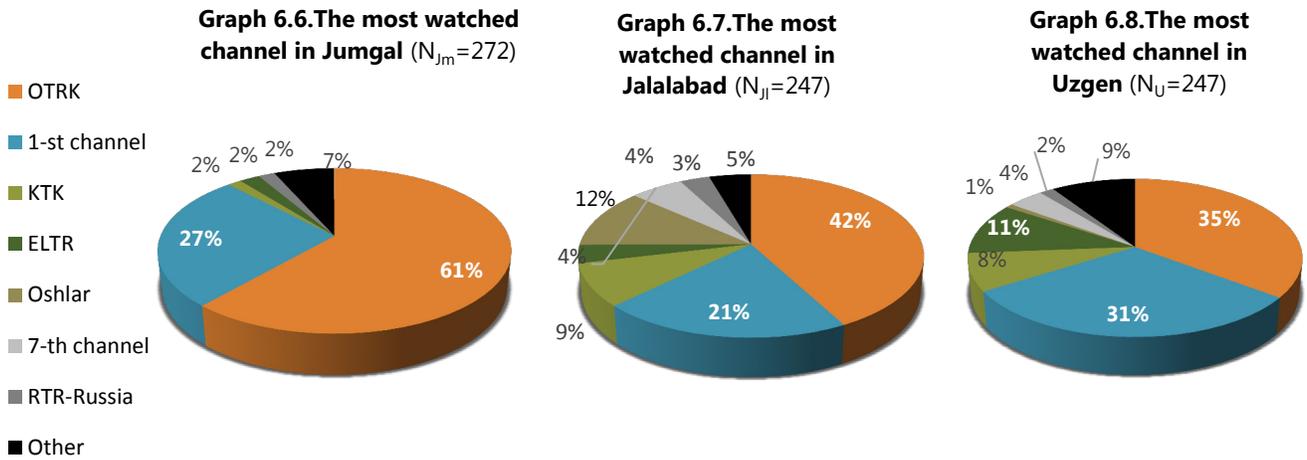


**Table 6.2. Channels mothers watch most often (N<sub>Jm</sub>=272, N<sub>Jl</sub>=247, N<sub>U</sub>=247)**

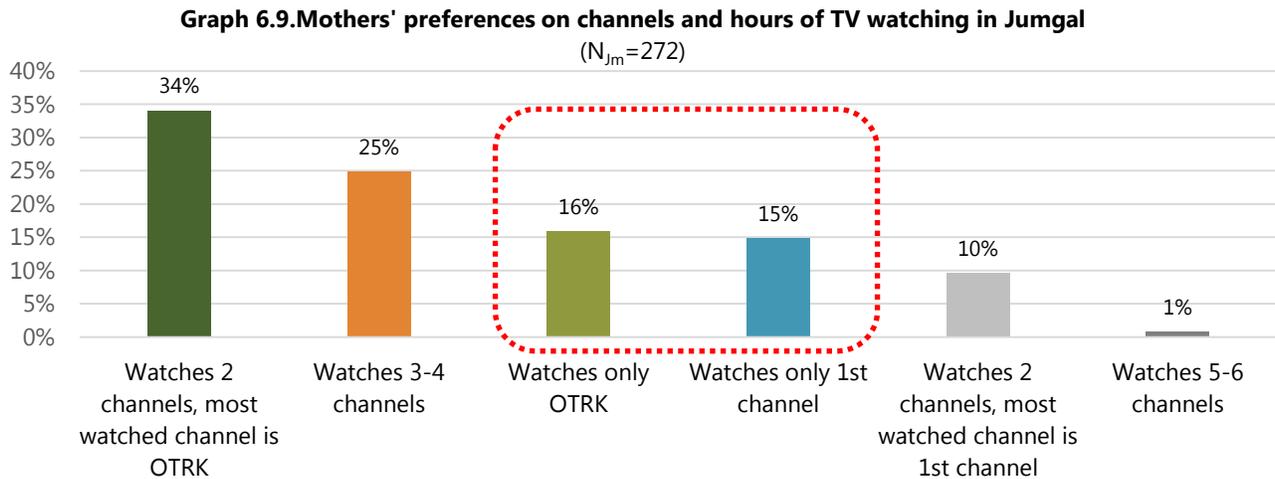
Channel	Region			Total
	Jumgal	Jalalabad	Uzgen	
<b>OTRK</b>	71%	77%	80%	76%
<b>1-st channel</b>	59%	44%	78%	60%
<b>ELTR</b>	20%	41%	70%	43%
<b>5-th channel</b>	12%	8%	28%	16%
<b>7-th channel</b>	0%	17%	31%	15%
<b>RTR-Russia</b>	6%	25%	17%	15%
<b>Osh TV</b>	0%	2%	40%	14%
<b>Oshlar</b>	0%	27%	11%	12%
<b>Mir</b>	1%	5%	30%	12%
<b>Piramida</b>	0%	2%	31%	11%
<b>NTS+NTV</b>	9%	9%	12%	10%
<b>Echo Manasa</b>	0%	1%	28%	9%
<b>KTK</b>	4%	12%	11%	9%
<b>Other</b>	10%	22%	65%	32%
<b>Total</b>	<b>193%</b>	<b>291%</b>	<b>531%</b>	<b>334%</b>

In addition to the list of the most watched channels, mothers were asked to name the single most watched channel. Graphs 6.6 through 6.8 illustrate the results. The absolute leader was OTRK (47 percent overall), and 1<sup>st</sup> channel took second place (26 percent overall). However, there were differences in mothers' choices depending where they lived. In Jumgal, only two channels stood out: OTRK (61 percent) and 1<sup>st</sup> channel (27 percent). In Jalalabad and Uzgen, the two most popular channels were the same as in Jumgal, but other channels were also chosen as the most watched. The highest shares among them belonged to Oshlar (12 percent) and KTK (9 percent) in Jalalabad, and ELTR (11 percent) and KTK (8 percent) in Uzgen.

It is also important to note that whereas OTRK is an absolute leader in Jumgal and Jalalabad, in Uzgen OTRK and 1<sup>st</sup> channel were equally popular. Eighty percent of mothers watched OTRK and 78 percent watched 1<sup>st</sup> channel. A similar proportion of mothers chose these channels as the ones they watched most often: 35 percent watched OTRK the most and 31 percent watched 1<sup>st</sup> channel the most. As mentioned above, the results were similar for mothers regardless of their socio-economic characteristics (age, ethnicity, level of education). 1st Channel and RTR are Russian language channels. The others are mostly broadcast in Kyrgyz with some programs in Russian or other languages.



These results show that in Jumgal, out of those who watched one or two channels (81 percent of all mothers), 62 percent of respondents chose OTRK as their most watched channel and 30 percent chose 1<sup>st</sup> channel. The diagram below shows that 16 percent of mothers from Jumgal only watched the OTRK channel for an average for three hours and 15 percent watched only 1<sup>st</sup> channel for an average of two hours.



**Table 6.3. Mean number of hours a mother watches TV a day by number of programs she watches (N<sub>Jm</sub>=272, N<sub>Jl</sub>=247, N<sub>U</sub>=247)**

# of Programs Mother Watches	Region			Total
	Jumgal	Jalalabad	Uzgen	
	Mean # of Hours Mother Watches TV Per Day			
1	2.4	2.1	1.8	2.2
2	4.7	2.4	3.0	3.4
3-4	3.5	2.6	3.6	3.2
5-8	2.3	3.3	3.0	3.1

As a next step, mothers named the television programs they usually watched (Table 6.4 and Graph 6.10). The mean number of programs watched was 2.7 in Jalalabad, 2.3 in Uzgen, and 1.9 in Jumgal. On average, in cases when mothers watched only one program, they watched television for two hours a day. If a mother watched more than one program, the mean number of hours increased to three hours a day. Women in all regions most often watched news, films, and serials. Other programs were watched by 17 percent or fewer of the respondents. Most programs were watched for entertainment. In Jumgal, 56 percent of mothers watched news, 40 percent watched films, and 16 percent watched serials. In Jalalabad, half of all respondents watched news and serials, and 21 percent watched films. In Uzgen, 38 percent of respondents watched news, 28 percent watched films, and 27 percent watched serials.

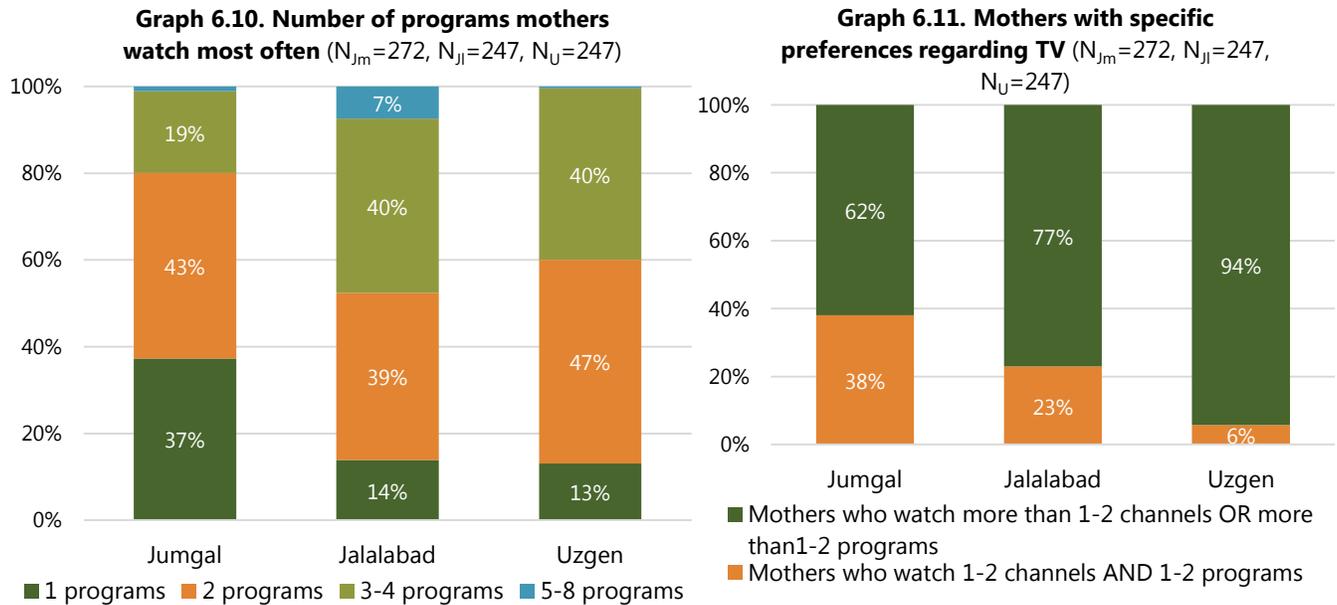
**Table 6.4. Programs mothers watch most often (N<sub>Jm</sub>=272, N<sub>Jl</sub>=247, N<sub>U</sub>=247)**

TV program	Region		
	Jumgal	Jalalabad	Uzgen
Novosti (news)	56%	51%	38%
Films	40%	21%	28%
Serials	16%	54%	27%
Ala-Too	12%	7%	6%
Concert programs	8%	15%	11%
"Pust' govorjat"	8%	10%	9%
"Davaj pozhenimsja"	4%	4%	4%
Mul'tfil'my	-	8%	-
"Ala-Too"	-	7%	6%
Zhanylyktar (news)	-	6%	17%
"Velikolepnyj vek"	-	6%	11%
"Pole chudes"	-	5%	4%
Arnoo concert	-	4%	
Sar Merden	-	4%	
Keremet Koch	-	4%	
Zdorovo Zhit'	-	4%	
Yr belek	-	4%	
Azattyk			4%
Danzaluu door			13%
"- " TV programs are watched by less than 3 % of respondents			

Finally, mothers were divided into two groups to establish specific preferences (see Graph 6.11). The first group was made up of mothers with very specific television preferences: these women watched one or two channels and one or two programs on these channels. The other group included mothers whose preferences were not that specific: these women usually watched a number of different channels and/or programs, more than two channels and/or more than two programs. The results show that every third mother (38 percent) in Jumgal possessed very

specific preferences. In Jalalabad and Uzgen this indicator was notably lower; 23 percent in Jalalabad and only six percent in Uzgen.

The most watched channels by mothers with specific preferences on television channels and programs were OTRK and 1<sup>st</sup> channel.



## Summary of Chapter Six

The vast majority of mothers in all three regions watched television. Mothers from Jumgal watched more hours per day on average (3.6 hours) than mothers in Uzgen (3.1 hours) and Jalalabad (2.5 hours). In spite of that fact, mothers in Jumgal watched only 1.9 channels on average, fewer than women in Jalalabad (2.9) and especially in Uzgen (5.3). Mothers mainly watched TV in the evening.

The top three most widely watched channels in all regions were OTRK, 1<sup>st</sup> channel, and ELTR. The single most watched channel was OTRK (47 percent overall), while second place belongs to 1<sup>st</sup> channel (26 percent overall). However, in Uzgen, OTRK and 1<sup>st</sup> channel were equally popular. The average number of programs watched was 2.7 in Jalalabad, 2.3 in Uzgen, and 1.9 in Jumgal. The television programs women watched most often were news, films and serials for all regions.

In Jumgal one-third of mothers had very specific preferences of TV channels and programs and watched only one or two channels and one or two programs on these channels. This indicator was notably lower in Jalalabad and especially in Uzgen. The most watched channels by mothers with specific preferences were OTRK and 1<sup>st</sup> channel.

## Conclusion

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The main objective of this survey was to establish baseline levels for indicators associated with 11 key practices related to women's and children's nutrition in Jumgal district and Jalalabad *oblast* in the Kyrgyz Republic. SPRING has also used the findings to plan program interventions that address areas most in need of improvement. The nutrition-related practices that SPRING is trying to influence are the following:

1. Consumption of iron supplements by pregnant women.
2. Dietary diversity for women, with emphasis on food sources of iron and foods that enhance iron absorption.
3. Early initiation of breastfeeding.
4. Exclusive breastfeeding from birth through the first six months.
5. Timely introduction of appropriate complementary foods.
6. Dietary diversity for children 6 to 23 months, with emphasis on food sources of iron and vitamin A and foods that enhance iron absorption.
7. Optimal meal frequency for children 6 to 23 months of age.
8. Reduction in the consumption of foods of low-nutrient value (junk food).
9. Presumptive treatment for helminthes for pregnant women and young children.
10. Handwashing at three out of five critical times (after using the latrine, after changing a baby's diaper/cleaning a child, before preparing food, before feeding a child, and before eating).
11. Adoption of methods for safe and prolonged storage of nutrient-dense produce for the winter.

It should be noted that anthropometric measurements were not taken, so nutrition status was not assessed. The reason for this is that it was felt to be unlikely that SPRING would influence long-term impact indicators such as stunting in the short (fewer than two years) period of project interventions.

Findings showed that some of the above practices were already widespread in the areas surveyed, while others were rare; in general, improvement is possible in many areas. Among the areas most in need of improvement were hygiene, sanitation, diet diversity, and other aspects of diet and feeding. There was substantial variation in many indicators by region, with levels often substantially worse in Jumgal than in Jalalabad. This is not entirely surprising, as Jumgal is a more rural district with relatively low socioeconomic levels. It is also characterized by long winters and short growing seasons, so consumption of nutrient-rich fruits and vegetables is an issue, especially in the winter. Indicators for the comparison area, Uzgen, typically fell somewhere between the levels in Jumgal and Jalalabad, though they were usually closer to Jalalabad levels. Major findings are discussed below.

In terms of sociodemographic and socioeconomic conditions, Jalalabad households had the most economic assets, followed closely by Uzgen. Households in Jumgal had substantially fewer assets such as refrigerators, washing machines, water heaters, cars, etc. Jumgal households, on the other hand, were much more likely to have livestock, and to have more kinds of livestock and in greater quantities. Family size in Jumgal was slightly larger than in Jalalabad and Uzgan, with an average of three children per sampled household in Jumgal compared with two in Jalalabad and Uzgan. Women in Jumgal also had fewer years of education, and household employment was more related to farm work than in the other two regions.

Antenatal care is well established in the Kyrgyz Republic, and women in all areas surveyed made numerous prenatal visits, beginning early in their most recent pregnancy. The large majority reported taking some form of iron during their last pregnancy, ranging from 70 percent in Jalalabad to 80 percent in Jumgal. However, the

percentage who took iron supplementation for at least 90 days was much lower in all regions (14-17 percent) and needs to be improved to reduce current high levels of anemia among pregnant women. SPRING is working with the Ministry of Health to develop a protocol for provision of IFA to all pregnant women, which should help address this issue when approved.

Findings on women's diet showed some positive characteristics, as well as areas for improvement, with some interesting differences by region. In all regions, tea/coffee was the item most commonly consumed in the previous 24 hours in all regions (96-99 percent of respondents). Other foods that were commonly consumed in all regions included beans/peas, starchy staple foods, meats, and oils/butter (over 65 percent for all these foods in all regions). Interesting regional variations were seen with dairy products, eggs, and fruits and vegetables. Consumption of dairy products and eggs was much higher in Jumgal than in either Jalalabad or Uzgen, while fruits and vegetables were much more likely to be consumed in Jalalabad and Uzgen. Vitamin A-rich vegetables and fruits were consumed by only 21 percent of women in Jumgal, even though the survey took place relatively soon after harvest and before the onset of winter.

Breastfeeding indicators were high in most regions with the exception of exclusive breastfeeding among 0-5 month old infants. Nearly 100 percent of children had been breastfed at one point in their lives, and over 95 percent of babies in all three regions were given colostrum. There was some variation in the percentage of babies who were put to breast within the first hour after birth (67 percent in Jalalabad, 79 percent in Jumgal, and 54 percent in Uzgen).

Prevalence of exclusive breastfeeding among 0-5 month old children was much lower in all regions and is an area in serious need of improvement. Rates were 40 percent in Jalalabad, 15 percent in Jumgal, and 37 percent in Uzgen. The low rates should be seen in conjunction with rates of complementary feeding among 0-5 month old and 6-8 month old infants. While the prevalence of appropriate introduction of complementary foods among 6-8 month olds is praiseworthy and high in all regions (85 percent in both Jalalabad and Jumgal), it appears that most mothers start complementary feeding before six months when breastmilk would be sufficient to provide all the nutrients needed by the child; complementary foods also can actually be detrimental before six months. Encouraging exclusive breastfeeding among the 0-5 month age group is a high priority of SPRING and will be promoted through several different platforms and channels.

Minimum diet diversity among 6-23 month olds was fairly high in Jalalabad (79 percent) and Uzgen (67 percent) but lower in Jumgal (54 percent). In looking at specific foods consumed, some interesting regional patterns emerge. Among most age groups and all regions, common food types included bread/rice/noodles/grains, meats/meat products, potatoes, porridge/gruel, and oils/fats/butter. At least 60 percent of older children (12-23 months) consumed some of these foods in the previous 24 hours, except porridge/gruel in Uzgen, with slightly lower percentages consuming these same foods among younger age groups. As with women's diet diversity, fruits and vegetables—especially those that are vitamin A rich—were much more commonly consumed in Jalalabad and Uzgen than in Jumgal. Unlike women's diet diversity, however, consumption of animal-sourced foods such as meat, dairy, and eggs was high in all regions and not notably higher in Jumgal (93 percent in both Jumgal and Jalalabad and 80 percent in Uzgen). Overall, the pattern that emerges is one where over two-thirds of children in Jalalabad and Uzgen consume a sufficiently diverse diet, while slightly more than half of Jumgal children do so, mainly because fewer children consume fruits and vegetables. The percentage of children receiving appropriate feeding frequency was higher than those receiving diet diversity, but MAD, which combines MAD with feeding frequency), was low, ranging from 21 percent in Jumgal to 31 percent in Jalalabad, and 27 percent in Uzgen. In sum, although there are some areas where diet diversity and feeding frequency are sufficient, there are many aspects of diet that can be improved; regional variations are important and need to be considered when planning interventions.

Sugary or “junk” foods were commonly consumed by both women and children in all three regions, even among the youngest age groups. More than half of women in both Jumgal (59 percent) and Jalalabad (53 percent) reported consuming sugary foods the previous day (36 percent in Uzgen); levels were even higher among children, especially among older children. Among children aged 18-23 months, for example, 74 percent consumed sugary or processed foods in Jalalabad, followed by Uzgen (65 percent) and Jumgal (64 percent). Even among the 0-5 month age group, “junk” food consumption was fairly common, especially in Jumgal (20 percent). Recall that exclusive breastfeeding rates in Jumgal were disturbingly low, and it is worrisome to know that some of the explanation for that is that babies are fed “junk” foods instead of breastmilk, even at the youngest ages.

Regarding helminth infections, very few children had received deworming medications in the most recent six months (15-20 percent in the three regions), and even fewer women reported receiving information on deworming during antenatal care visits (5-12 percent). SPRING’s ability to work to improve these levels will depend on whether a new deworming policy is approved by the Kyrgyz Republic Ministry of Health during the time remaining for SPRING assistance.

Hygiene and sanitation are key areas where baseline indicators paint a discouraging picture. Drinking water came from safe sources in the majority of cases (93 percent in Jumgal, 78 percent in Jalalabad, and 62 percent in Uzgen), but few households had piped water. Types of toilets varied markedly by region, with 90 percent of households in Jumgal using unimproved pit latrines, and the large majority in Jalalabad and Uzgen (69 percent and 98 percent, respectively) using “improved” pit latrines with slabs and ventilation. This is not to say that latrine conditions in Jalalabad and Uzgen were highly sanitary, however. Qualitative research carried out just after this baseline survey found that even the improved latrines were not well maintained or cleaned and were often very unsanitary.

Handwashing is fairly widely practiced and is an essential behavior to help avoid infections, which can diminish the body’s ability to absorb nutrients. The large majority of respondents in all regions reported washing hands after defecation (Jalalabad 98 percent, Uzgen 95 percent, and Jumgal 79 percent), while somewhat lower percentages reported washing at other critical moments. As with most other nutrition-related practices, handwashing was less commonly practiced in Jumgal than in the other regions. Fewer than half (47 percent) of respondents in Jumgal reported washing hands after three (or more) out of five critical junctures compared with 92 percent of respondents in Jalalabad and 90 percent in Uzgen. Proper handwashing will be another key message that SPRING will endeavor to promote through multiple channels, especially in Jumgal.

Because of long winters, preservation and storage of fruits and vegetables are keys to maintaining adequate nutrient intake during the period between growing seasons. This survey asked respondents which kinds of foods they had preserved or were planning to preserve at the time of the survey, with what methods and in what quantities, and which kinds of food they had stored after the most recent harvest. The large majority of respondents’ households preserved and stored at least one type of food. Respondents in Jumgal reported preserving slightly fewer varieties of crops than Jalalabad and Uzgen but in dramatically lower quantities. The mean amount preserved in Jumgal was three kg compared with a mean of 79 kg in Jalalabad and 84 kg in Uzgen. The main types of foods preserved in Jalalabad and Uzgen were fruit as jam or marmalade, tomatoes, and fruit as compote (at least 70 percent of households in each case); several other kinds of foods were preserved by 14 percent or more of households. Most commonly preserved foods in Jumgal were tomatoes (80 percent of households), peppers (66 percent), cabbages (63 percent), carrots/pumpkins (44 percent), and fruit as jam/marmalade (42 percent).

Approximately 90 percent of households in Jalalabad (93 percent) and Uzgen (89 percent) had stored some food for the winter at the time of the survey compared with only 70 percent in Jumgal. The main types of food stored in all three regions were potatoes, onions, and carrots (over half of households in all regions). Apples, pears, persimmons, pumpkins, cabbages, and cauliflower were also stored in substantial amounts in Jalalabad and Uzgen and in much smaller quantities in Jumgal. Given the especially long winters in Jumgal, that region could benefit

greatly from improvements in the quantity and variety of nutrient-rich foods that are preserved or stored or both for the winter. This will be an important area of emphasis for SPRING.

To encourage more women to adopt good nutrition-related practices, SPRING plans to develop and disseminate messages on healthy practices through a wide variety of channels, including health facilities, community volunteers, and mass media. The main component of the mass media campaign will be a series of four television spots. To better tailor the messages in the spots and to determine what channels, programs, and time slots to use, this baseline survey also asked mothers about what television channels and programs they watched, the frequency and amount of time watched, and favorite programs.

Results from this survey will be of vital importance to SPRING. They will provide the baseline against which SPRING will measure progress toward objectives. They also will help, when planning interventions, to focus on underutilized practices and on areas most in need of improvement. Findings will help when developing messages to be used in mass media or through other channels, such as health facilities or community volunteers. SPRING may also do some further analysis of the data to see if there are additional findings of interest derived from cross-tabulations of behaviors by socioeconomic and other explanatory variables. SPRING hopes that this report may contribute to improved program planning and messaging—and ultimately to better nutrition outcomes among women and children of the Kyrgyz Republic.

## Annex: Supplementary Data

**Table 1 (for Chapter 3.1). Liquids child drank yesterday during the day or night (N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>U</sub>=300)**

Liquids	Region			Total	
	Jumgal	Jalalabad	Uzgen	Count	Column N %
	Column N %				
<b>0-5 months (N<sub>Jm</sub>=79, (N<sub>Jl</sub>=100, N<sub>U</sub>=117)</b>					
Breast milk	85%	98%	93%	273	92%
Plain water	60%	38%	38%	129	44%
Tea	27%	28%	16%	68	23%
Commercially produced infant formula	15%	15%	14%	43	15%
Milk such as tinned, powdered or animal milk	8%	13%	17%	39	13%
Any other liquids	3%	13%	5%	21	7%
Fortified, commercially available young child food	5%	4%	8%	17	6%
<b>6-11 months (N<sub>Jm</sub>=81, (N<sub>Jl</sub>=81, N<sub>U</sub>=90)</b>					
Breast milk	69%	84%	89%	204	81%
Plain water	72%	78%	62%	177	70%
Tea	61%	64%	59%	154	61%
Milk such as tinned, powdered or animal milk	33%	27%	24%	71	28%
Any other liquids	5%	38%	18%	51	20%
Commercially produced infant formula	12%	15%	21%	41	16%
Fortified, commercially available infant and young child food	3%	16%	8%	22	9%
<b>12-17 months (N<sub>Jm</sub>=81, N<sub>Jl</sub>=80, N<sub>U</sub>=56)</b>					
Plain water	72%	86%	79%	171	79%
Tea	75%	76%	66%	159	73%
Breast milk	52%	60%	77%	136	63%
Milk such as tinned, powdered or animal milk	52%	55%	34%	105	48%
Any other liquids	6%	43%	41%	62	29%
Commercially produced infant formula	9%	33%	18%	43	20%
Fortified, commercially available infant and young child food	5%	11%	9%	18	8%
<b>18-23 months (N<sub>Jm</sub>=59, N<sub>Jl</sub>=39, N<sub>U</sub>=37)</b>					
Plain water	70%	87%	84%	106	79%

Liquids	Region			Total	
	Jumgal	Jalalabad	Uzgen	Count	Column N %
	Column N %				
Tea	73%	90%	65%	102	76%
Milk such as tinned, powdered or animal milk	58%	46%	51%	71	53%
Breast milk	48%	54%	41%	65	48%
Any other liquids	7%	49%	46%	40	30%
Commercially produced infant formula	17%	15%	27%	26	19%
Fortified, commercially available infant and young child food	3%	23%	11%	15	11%

**Table 2 (For Chapter 3). Solid, semi-solid, and soft foods child ate yesterday during the day or night (N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>U</sub>=300)**

	Region			Total	
	Jungal	Jalalabad	Uzgen	Count	Column N %
	Column N %				
<b>0-5 months (N<sub>Jm</sub>=79, (N<sub>Jl</sub>=100, N<sub>U</sub>=117)</b>					
Porridge or gruel	48%	27%	14%	81	27%
Bread, rice, noodles, or other food made from grains	33%	13%	13%	54	18%
Potatoes	18%	10%	13%	39	13%
Any sugary foods such as chocolates, sweets, candies, etc.	20%	12%	6%	35	12%
Any meat, such as beef, pork, lamb, goat, chicken, or duck	27%	7%	5%	34	12%
Cheese, yogurt, or other milk products	18%	7%	10%	33	11%
Any oil, fats, or butter, or foods made with any of these	22%	8%	7%	33	11%
Any other solid or semi-solid food	13%	12%	5%	28	10%
Eggs	17%	5%	5%	24	8%
Any other fruits or vegetables	3%	9%	7%	19	6%
Pumpkin, carrots, squash, or sweet potatoes	1%	4%	5%	11	4%
Apricots, peaches, yellow melon, persimmon, tomatoes	3%	3%	3%	9	3%
Liver, kidney, heart or other organ meats	1%	0%	3%	5	2%
Any dark green leafy vegetables (spinach, chard)	1%	1%	0%	2	1%
Any foods made from beans, peas, lentils, or nuts	0%	1%	0%	1	0%
Any other processed foods such as potato chips, etc.	0%	0%	1%	1	0%
<b>6-11 months (N<sub>Jm</sub>=81, (N<sub>Jl</sub>=81, N<sub>U</sub>=90)</b>					
Bread, rice, noodles, or other food made from grains	77%	80%	68%	188	75%
Porridge or gruel	61%	68%	61%	159	63%
Potatoes	57%	64%	54%	147	58%
Any oil, fats, or butter, or foods made with any of these	62%	57%	40%	132	52%
Any meat, such as beef, pork, lamb, goat, chicken, or duck	67%	42%	43%	127	50%

	Region			Total	
	Jumgal	Jalalabad	Uzgen	Count	Column N %
	Column N %				
Any sugary foods such as chocolates, sweets, candies, etc.	51%	58%	36%	120	48%
Any other fruits or vegetables	16%	49%	42%	91	36%
Cheese, yogurt, or other milk products	35%	44%	24%	86	34%
Eggs	42%	22%	27%	76	30%
Any other solid or semi-solid food	26%	33%	24%	70	28%
Pumpkin, carrots, squash, or sweet potatoes	4%	26%	27%	48	19%
Apricots, peaches, yellow melon, persimmon, tomatoes	4%	4%	12%	17	7%
Any dark green leafy vegetables (spinach, chard)	3%	5%	2%	8	3%
Any foods made from beans, peas, lentils, or nuts	1%	1%	7%	8	3%
Liver, kidney, heart or other organ meats	4%	1%	3%	7	3%
Any other processed foods such as potato chips, etc.	3%	3%	2%	6	2%
Fresh or dried fish or shellfish	0%	0%	2%	2	1%
<b>12-17 months (N<sub>Jm</sub>=81, N<sub>Jl</sub>=80, N<sub>U</sub>=56)</b>					
Bread, rice, noodles, or other food made from grains	82%	96%	84%	190	88%
Any meat, such as beef, pork, lamb, goat, chicken, etc.	73%	81%	66%	161	74%
Potatoes	61%	83%	77%	158	73%
Any oil, fats, or butter, or foods made with any of these	62%	76%	71%	151	70%
Porridge or gruel	79%	69%	50%	147	68%
Any sugary foods such as chocolates, sweets, candies, etc.	54%	78%	64%	142	65%
Cheese, yogurt, or other milk products	41%	60%	29%	97	45%
Any other fruits or vegetables	16%	69%	50%	96	44%
Any other solid or semi-solid food	17%	51%	59%	88	41%
Eggs	49%	34%	30%	84	39%
Pumpkin, carrots, squash, or sweet potatoes	7%	36%	48%	62	29%
Apricots, peaches, yellow melon, persimmon, tomatoes	3%	18%	23%	29	13%

	Region			Total	
	Jumgal	Jalalabad	Uzgen	Count	Column N %
	Column N %				
Liver, kidney, heart or other organ meats	9%	5%	5%	14	7%
Any dark green leafy vegetables (spinach, chard)	4%	4%	13%	13	6%
Fresh or dried fish or shellfish	3%	1%	5%	6	3%
Any foods made from beans, peas, lentils, or nuts	3%	3%	4%	6	3%
Any other processed foods such as potato chips, etc.	3%	3%	0%	4	2%
<b>18-23 months (N<sub>Jm</sub>=59, N<sub>Jl</sub>=39, N<sub>U</sub>=37)</b>					
Bread, rice, noodles, or other food made from grains	86%	100%	97%	126	93%
Any meat, such as beef, pork, lamb, goat, chicken, etc.	75%	77%	70%	100	74%
Potatoes	66%	72%	76%	95	70%
Any oil, fats, or butter, or foods made with any of these	63%	82%	70%	95	70%
Any sugary foods such as chocolates, sweets, candies, etc.	64%	74%	65%	91	67%
Porridge or gruel	66%	62%	51%	82	61%
Cheese, yogurt, or other milk products	41%	67%	32%	62	46%
Eggs	42%	46%	46%	60	44%
Any other solid or semi-solid food	25%	51%	65%	59	44%
Any other fruits or vegetables	5%	69%	62%	53	39%
Pumpkin, carrots, squash, or sweet potatoes	5%	41%	51%	38	28%
Apricots, peaches, yellow melon, persimmon, tomatoes	0%	18%	16%	13	10%
Any other processed foods such as potato chips, etc.	7%	3%	11%	9	7%
Any dark green leafy vegetables (spinach, chard)	2%	5%	14%	8	6%
Liver, kidney, heart or other organ meats	7%	5%	5%	8	6%
Any foods made from beans, peas, lentils, or nuts	5%	3%	5%	6	4%
Fresh or dried fish or shellfish	2%	3%	3%	3	2%

**Table 3 (For Chapter 3.2). Solid, semi-solid, and soft foods mother ate yesterday during the day or night (N<sub>Jm</sub>=300, N<sub>Jl</sub>=300, N<sub>U</sub>=300)**

Food/product	Region			Total	
	Jumgal	Jalalabad	Uzgen	Count	Column N %
	Column N %				
Tea or coffee	96%	99%	98%	877	97%
Bread, rice, noodles, or other foods made from grains	90%	96%	95%	842	94%
Any meat, such as beef, pork, lamb, goat, chicken, etc.	80%	90%	74%	731	81%
Any oil, fats, or butter, or foods made with of these	74%	85%	84%	729	81%
Potatoes	65%	94%	83%	726	81%
Milk such as tinned, powdered, animal milk	92%	46%	32%	509	57%
Any other liquids	59%	55%	40%	463	51%
Any other fruits or vegetables	18%	76%	60%	460	51%
Any sugary foods such as chocolates, sweets, candies	59%	53%	36%	445	49%
Pumpkin, carrots, squash, or sweet potatoes	15%	50%	48%	338	38%
Any other solid or semi-solid food	25%	43%	42%	328	36%
Eggs	50%	31%	29%	327	36%
Cheese, yogurt, or other milk products	37%	31%	19%	261	29%
Apricots, peaches, yellow melon, persimmon, tomatoes	9%	41%	35%	254	28%
Any foods made from beans, peas, lentils, or nuts	9%	12%	12%	99	11%
Liver, kidney, heart or other organ meats	12%	10%	10%	94	10%
Any dark green leafy vegetables (spinach, chard, etc.)	5%	10%	11%	79	9%
Fresh or dried fish or shellfish	8%	4%	4%	48	5%
Any other processed foods such as potato chips, etc.	3%	5%	6%	41	5%



