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SPRING
Strengthening Partnerships, Results,
and Innovations in Nutrition Globally

Endline Nutrition Survey in the Kyrgyz Republic

Analytical Report



May 2018

ABOUT SPRING

The Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) project is a seven-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.

DISCLAIMER

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Acronyms

| | |
|--------|---|
| ANC | antenatal care |
| BFHI | Baby-Friendly Hospital Initiative |
| BL | baseline |
| DHS | Demographic and Health Survey |
| EL | endline |
| FGD | focus group discussion |
| IFA | iron-folic acid |
| IYCF | infant and young child feeding |
| MAD | minimum acceptable diet |
| MDD-W | minimum dietary diversity for women of reproductive age |
| MFF | minimum feeding frequency |
| PPS | probability proportional to size |
| PSU | primary sampling unit |
| SPRING | Strengthening Partnerships, Results and Innovations in Nutrition Globally Project |
| UNICEF | United Nations Children’s Fund |
| USAID | U.S. Agency for International Development |
| WASH | water, sanitation and hygiene |
| WDD1 | women’s dietary diversity survey #1 |
| WDD2 | women’s dietary diversity survey #2 |
| WDDS | women’s dietary diversity score |
| WHO | World Health Organization |
| WRA | women of reproductive age |

1. Executive Summary

The Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) project operated in the Kyrgyz Republic from 2014 to 2018. The project sought to improve women’s and children’s nutrition in the Kyrgyz Republic through a range of interventions at the household, community, regional, and national levels. SPRING’s focus was on improving the nutritional status of children under two years old and women of reproductive age through the uptake of 11 evidence-based practices:

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 6–23 months, with emphasis on food sources of iron and vitamin A and foods that enhance iron absorption
4. Optimal meal frequency for children 6–23 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 helminths 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 winter¹

SPRING operated primarily in four rayons (districts) and seven townships of Jalalabad oblast (province), five rayons and one township of Naryn oblast, and health facilities in Bishkek. SPRING’s approach focused on building capacity in nutrition among health workers in the above areas; community outreach through a network of community activists to reach households through household visits and community events; support to the Baby-Friendly Hospital Initiative (BFHI) in 16 hospitals and 11 Family Medicine Centers; promoting better nutrition through mass media and social media; and national-level policy work.

This report summarizes findings from an endline survey carried out in February–March 2017, among 1,359 women in Jumgal district in Naryn oblast, parts of Jalalabad oblast, and Uzgen in Osh oblast. Results are compared against those of a baseline survey carried out in October–November 2014, and two streamlined surveys on dietary diversity that were carried out in late winter/early spring of 2015 and 2016. SPRING also carried out two rounds of qualitative research to complement the four surveys. The first was in 2016, conducted to explore reasons for unexpected increases in consumption of certain fresh fruits and vegetables during winter months, and the second was in 2018, and aimed to investigate causes of low

¹ USAID/SPRING. No date. “SPRING/Kyrgyz Republic.” https://www.spring-nutrition.org/sites/default/files/countries/factsheets/spring_kyrgyz_republic_fact_sheet.pdf

levels of handwashing and child feeding that were seen in the endline survey. Select results from the qualitative research are provided where appropriate.

Overall, results of the endline survey showed that many key nutrition practices improved significantly between baseline and endline. Notable results included the following.

Iron during pregnancy. Many indicators related to anemia prevention and iron supplementation during pregnancy improved significantly between surveys. Women in intervention areas reported making more antenatal clinic (ANC) visits during their most recent pregnancy and made the visits earlier in the pregnancy. The percentage of women who said they discussed iron during pregnancy during their visits increased from 55 percent to 78 percent in Jalalabad; 20 percent to 73 percent in Naryn; and 49 percent to 59 percent in Uzgen. The increase in both intervention areas was significantly greater than in the comparison region. More women reported receiving and taking iron during pregnancy, and a greater percentage said that the formulation was iron–folic acid (IFA), which is the formulation of iron supplementation promoted by SPRING. Most importantly, the percentage of women who reported taking iron for 90 or more days almost doubled, rising from 16 percent to 31 percent in intervention areas, compared to a smaller increase in Uzgen. These positive results suggest that SPRING interventions likely had a positive effect on this important nutrition practice.

Women’s dietary diversity. Several aspects of women’s diet also improved significantly between surveys. Of note, the percentage of women consuming foods from five or more food groups in the previous 24 hours increased from 38 percent at baseline to 71 percent at endline. Especially encouraging was that the increase was driven by greater consumption of the most nutrient-rich food groups, especially dark green leafy vegetables, vitamin A–rich fruits and vegetables, and legumes, seeds, and nuts. The results are impressive because the baseline took place soon after the harvest season of October–November, while the endline took place in the middle of winter, in February–March. Interestingly, dietary diversity improved almost as much in Uzgen as in the intervention areas. Qualitative research provided some insights as to why dietary diversity increased even during winter months, including better awareness of the importance of nutritious foods throughout the year, storing a wider variety of foods, and the fact that foods are widely available in local markets, even in winter. The magnitude of the improvements suggests that SPRING probably had some impact in this area, perhaps with spillover to Uzgen from nearby Jalalabad or due to national efforts. However, because of substantial improvements in the comparison area, it is not possible to attribute all of the improvements to SPRING. In any case, the strong improvement seen in this nutrition practice is a positive and welcome result for women in all three regions.

Infant and young child feeding—breastfeeding. SPRING measured several infant and young child feeding (IYCF) indicators in this survey, including early initiation of breastfeeding and provision of colostrum, current breastfeeding and continued breastfeeding at two years, and exclusive breastfeeding for children 0–5 months. Breastfeeding is very widely practiced in the Kyrgyz Republic, so most indicators were at high levels at baseline and remained high at endline. The most notable improvement came with exclusive breastfeeding. In intervention areas, the percentage of babies being exclusively breastfed increased from 29 percent to 63 percent between surveys, significantly more than the improvement in Uzgen (which rose from 37 percent to 51 percent). This is a notable result where SPRING appears to have had positive impact on an important nutrition practice.

Infant and young child feeding—diet of children aged 6–23 months. Other IYCF indicators measured included appropriate introduction of complementary foods for children aged 6–8 months, and dietary diversity, feeding frequency, and minimum acceptable diet (MAD) for children aged 6–23 months. Results were mixed with these indicators. With regard to the appropriate introduction of complementary foods, levels were very high at baseline and experienced mostly small improvements between baseline and endline. The main aspect that changed was that premature introduction of complementary foods (before six months) decreased dramatically in both SPRING intervention areas, falling from 67 percent down to 18 percent in Naryn, and from 35 percent to 14 percent in Jalalabad. In Uzgen, the percentage declined only slightly, dropping from 32 percent to 28 percent, suggesting that SPRING interventions may have influenced mothers to delay introducing solid and semi-solid foods until their child reaches six months.

Changes in diet for children aged 6–23 months painted a mixed picture. Overall, SPRING appears to have had a positive effect on children’s dietary diversity, which increased significantly, from 42 percent to 54 percent, between surveys, whereas it decreased slightly in Uzgen. However, improvement in the SPRING intervention areas was due almost entirely to improvements among non-breastfed children in Naryn. Dietary diversity actually declined in Jalalabad (figures not shown separately in table 1). Feeding frequency declined between surveys in all three regions. Qualitative research carried out after the endline survey established some possible reasons for declines; some were due to seasonality and cold climate. Some focus group discussion (FGD) participants mentioned that the composition of children’s diets changes in the winter, with larger portions and foods such as meats and pasta that are more filling, resulting in fewer needed feedings. Because of these mixed results the composite indicator of MAD was nearly unchanged in intervention areas, and declined from 32 percent to 26 percent in Uzgen.

One positive note is that SPRING seems to have had an impact on consumption of junk food (sweet/sugary and processed foods) among the youngest children (0–5 months). In intervention areas, junk food consumption declined from 15 percent to 8 percent among that age group, a significantly better performance than in the comparison area, where it increased from 6 percent to 10 percent. Results suggest that SPRING may be making some gains in getting mothers to avoid feeding very young children non-nutritious foods, in the face of trends going the opposite way in the Kyrgyz Republic and in many parts of the world.

Source of foods. The study looked at where women obtained the foods that they ate. Because of different climate and topography, there were some regional differences in the kinds of foods grown on farms and available in local markets. Over 20 different fruits and vegetables were mentioned as being grown on farms at some point during the year. In Jalalabad, potatoes, tomatoes, apples, carrot, cabbage, and dark green leafy vegetables were reported most often as grown on farms (30–38 percent of responses), while in Naryn, the main crops grown were potatoes, carrots, cabbage, jusai, and other dark green leafy vegetables (34–62 percent of responses). Respondents reported that a wide variety of foods was available in local markets, even in winter. In Naryn, 11 foods were mentioned by at least 50 percent of respondents as being currently available if they needed them, while in Jalalabad, 15 foods were mentioned by at least 50 percent. Most foods were more apt to be available in Jalalabad than in either Naryn or Uzgen. Some of these results (fewer women saying they grew foods on farms and more market availability) were likely influenced by the fact that the Jalalabad sample was more urban.

Food storage and preservation. Results were mixed with regard to these practices. For the most part, the percentage of households storing and preserving foods was quite high across all surveys, in most cases decreasing slightly between baseline and endline. Encouragingly, the mean number of foods that people store or preserve increased in most regions across surveys. A large majority of women reported still having at least some stored/preserved foods left at the time of the endline survey.

WASH (water, sanitation, and hygiene). SPRING's scope of work did not include infrastructure improvements related to drinking water and sanitation. Little or no change was seen in those indicators between surveys. Reported practice of handwashing unfortunately declined significantly in all three regions. Qualitative research revealed that there are many reasons why people wash hands less often during the winter (endline) compared with warmer months (baseline). Among the main reasons were that outside water freezes, and also that people spend less time outside with animals during winter, there is less outside employment, and washing hands in cold water causes them to get dry and have cracked skin. Declines in reported practices in SPRING areas were not as severe as declines in Uzgen, so SPRING may have had some positive effect on the practice, though because the baseline and endline seasons were different, it is not possible to say with certainty.

Exposure to SPRING messages. The survey asked what nutrition messages respondents had heard, and from where. It also asked a series of knowledge questions to see how well people understood select basic nutrition concepts. One interesting finding was that 39 percent of women in the comparison area of Uzgen reported that they had heard of SPRING, which could indicate some benefits from regional and national-level work through mass media, social media, and policy work through the health system, or possibly spillover from SPRING's work in nearby Jalalabad. Large majorities of respondents said they had heard nutrition messages on various topics, and the main source for most messages was health facilities.

In terms of basic knowledge of nutrition concepts, most respondents answered correctly about correct timing for exclusive breastfeeding and complementary feeding, with a greater degree of correct knowledge on exclusive breastfeeding in Jalalabad and Naryn than in Uzgen. Knowledge of vitamin-A rich foods was low (19–38 percent) in all three regions, especially in Naryn (19 percent). Question wording asked for more specificity in the response on the vitamin A question and could therefore have caused high levels of “don't know” responses (23–41 percent). Significantly more women had heard of anemia in SPRING intervention areas than in Uzgen, and women's knowledge of both anemia and hygiene was also higher in SPRING areas than in Uzgen. Knowledge of women's nutrition during pregnancy was low in all regions but was lower in intervention areas than in the comparison zone.

Overall, results of the endline survey were very positive, showing improvements in many key nutrition practices over the course of SPRING's work. Of note, results suggest that SPRING had significant positive impact on iron supplementation during pregnancy, women's diet, exclusive breastfeeding, and junk food consumption among young children. Results on children's diet, food storage and preservation, and WASH were mixed, with both positive and negative or neutral results. Finally, even for those indicators where results improved significantly, in some cases the percentage of women reporting healthy practices was low. For example, despite significant improvements in women taking iron during pregnancy, with the percentage of women who took iron for at least 90 days nearly doubling, only 31 percent at endline reported taking it for 90-plus days, so there is still substantial room for improvement. Similarly, although

women's dietary diversity improved significantly, reported absolute consumption levels of several nutrient-rich foods remains low.

In sum, results show many impressive nutrition outcomes in the areas where SPRING worked, but there still areas for further improvement. Key indicators across all surveys are shown in Table 1.1 below.

Recommendations

The positive results from this survey suggest that SPRING's overall approach was successful and should be continued in future programs and expanded to other oblasts as feasible. This includes building capacity in the health system, using community outreach, advocating for improved nutrition policies, and using various types of media, including social media, to widen the reach of nutrition messaging. The first recommendation, therefore, suggests continuity, while the ones that follow seek to make improvements in areas that did not experience improvement in this series of surveys.

- Explore ways to continue SPRING activities in project areas, and where possible expand to new areas. This is especially true for topical areas such as iron supplementation and women's diet where, despite improvements, levels of good practice remain low.
- Continue existing interventions and develop new and innovative ones to address areas that did not improve and where levels of good practices are low. These include handwashing, feeding frequency, introducing complementary foods only after six months, continued breastfeeding among children older than 16 months, nutrition during pregnancy, and certain aspects of WASH and food storage/ preservation.
- Consider the role of seasons in future programs. SPRING initially thought that the winter season would mainly affect dietary diversity (and affect it negatively), but these surveys suggest something very different—that women's dietary diversity may actually rise under some circumstances during winter, and winter may have a greater effect on aspects such as handwashing and possibly feeding frequency. Future programs could explore ways to overcome barriers to improving certain practices, especially by giving consideration to how changes in the practice could vary in different seasons throughout the year.

Table 1.1. SPRING/Kyrgyz Republic Core Indicators for Target Areas in Naryn, Jalalabad, and Uzgen—All Surveys

| Core Indicators | | Baseline (Fall 2014) | | | WDD1 (April 2015) | | WDD2 (April 2016) | | Endline (Feb–March 2017) | | |
|--|-----------------|----------------------|-----------|-------|----------------------|-----------|----------------------|-----------|-----------------------------|-----------|-------|
| | | Naryn | Jalalabad | Uzgen | Naryn | Jalalabad | Naryn | Jalalabad | Naryn | Jalalabad | Uzgen |
| 1. Iron consumption during most recent pregnancy | | | | | | | | | | | |
| Percentage of mothers of children <2 who took iron supplements for 90 days or more during their last pregnancy | Percentage | 14% | 17% | 16% | 22% | 17% | 22% | 28% | 30% | 31% | 26% |
| | Numerator, n: | 43 | 52 | 47 | 65 | 52 | 65 | 83 | 138 | 142 | 118 |
| | Denominator, N: | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 455 | 453 | 451 |
| 2. Dietary diversity for women with emphasis on food sources of iron | | | | | | | | | | | |
| Percentage of mothers of children <2 who ate foods from 5 or more of 9 food groups in the previous 24 hours | Percentage | 24% | 46% | 31% | 36% | 35% | 57% | 71% | 62% | 77% | 68% |
| | Numerator, n: | 73 | 138 | 94 | 107 | 104 | 171 | 213 | 281 | 350 | 307 |
| Percentage of mothers of children <2 who ate iron-rich foods (<i>liver, kidney, heart, other organ meats, beef, pork, lamb, goat, chicken, duck, eggs, dried fish, shellfish</i>) | Percentage | 94% | 97% | 85% | 93% | 94% | 87% | 92% | 92% | 96% | 94% |
| | Numerator, n: | 283 | 292 | 256 | 279 | 283 | 261 | 276 | 419 | 438 | 426 |
| Percentage of mothers of children <2 who ate vitamin A-rich foods (<i>pumpkin, carrots, squash, sweet potatoes yellow or orange inside, spinach, chard, apricot, peaches, yellow melon, persimmon, tomatoes, eggs</i>) | Percentage | 21% | 64% | 61% | 37% | 38% | 57% | 85% | 67% | 82% | 75% |
| | Numerator, n: | 64 | 193 | 182 | 111 | 113 | 171 | 256 | 302 | 374 | 339 |
| | Denominator, N: | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 455 | 453 | 451 |

| Core Indicators | | Baseline (Fall 2014) | | | WDD1 (April 2015) | | WDD2 (April 2016) | | Endline (Feb–March 2017) | | |
|--|-----------------|----------------------|-----------|-------|----------------------|-----------|----------------------|-----------|-----------------------------|-----------|-------|
| | | Naryn | Jalalabad | Uzgen | Naryn | Jalalabad | Naryn | Jalalabad | Naryn | Jalalabad | Uzgen |
| 3. Dietary diversity for children 6 to 23 months | | | | | | | | | | | |
| Percentage of children 6–23 months who ate foods from 4 or more food groups in the previous 24 hours (Invention areas, Naryn and Jalalabad, combined) | Percentage | 42% | 46% | - | - | - | - | - | 54% | 41% | |
| | Numerator, n: | 176 | 84 | - | - | - | - | - | 347 | 122 | |
| | Denominator, N: | 422 | 183 | - | - | - | - | - | 645 | 295 | |
| 4. Optimal meal frequency for children 6 to 23 months of age | | | | | | | | | | | |
| Percentage of children 6–23 months who were offered food the appropriate number of times for their age and breastfeeding status | Percentage | 52% | 68% | 52% | - | - | - | - | 45% | 43% | 41% |
| | Numerator, n: | 116 | 135 | 96 | - | - | - | - | 144 | 139 | 120 |
| | Denominator, N: | 222 | 200 | 183 | - | - | - | - | 322 | 323 | 295 |
| 5. Minimum acceptable diet for children 6 to 23 months of age | | | | | | | | | | | |
| Percentage of children 6–23 months who had a minimum acceptable diet for their age and breastfeeding status (Invention areas, Naryn and Jalalabad, combined) | Percentage | 34% | 32% | - | - | - | - | - | 33% | 26% | |
| | Numerator, n: | 144 | 58 | - | - | - | - | - | 208 | 74 | |
| | Denominator, N: | 420 | 183 | - | - | - | - | - | 622 | 288 | |
| 6. Early initiation of breastfeeding | | | | | | | | | | | |
| Percentage of children who were put to the breast within 1 hour of birth | Percentage | 84% | 77% | 65% | - | - | - | - | 79% | 78% | 58% |
| | Numerator, n: | 248 | 228 | 192 | - | - | - | - | 291 | 332 | 236 |
| | Denominator, N: | 295 | 297 | 297 | - | - | - | - | 422 | 450 | 449 |
| 7. Exclusive breastfeeding from birth through the first 6 months | | | | | | | | | | | |
| Percentage of children 0–5 months of age who received only breastmilk during the previous 24 hours | % | 15% | 40% | 37% | - | - | - | - | 63% | 63% | 51% |
| | Numerator, n: | 12 | 40 | 43 | - | - | - | - | 83 | 83 | 80 |
| | Denominator, N: | 78 | 100 | 117 | - | - | - | - | 131 | 132 | 156 |

| Core Indicators | | Baseline (Fall 2014) | | | WDD1 (April 2015) | | WDD2 (April 2016) | | Endline (Feb–March 2017) | | |
|---|------------------------|----------------------|-----------|-------|----------------------|-----------|----------------------|-----------|-----------------------------|-----------|-------|
| | | Naryn | Jalalabad | Uzgen | Naryn | Jalalabad | Naryn | Jalalabad | Naryn | Jalalabad | Uzgen |
| 8. Timely introduction of appropriate complementary foods | | | | | | | | | | | |
| Percentage of children 6–8 months who received semi-solid or solid food during the previous 24 hours | Percentage | 85% | 85% | 91% | - | - | - | - | 89% | 75% | 88% |
| | <i>Numerator, n:</i> | 29 | 35 | 52 | - | - | - | - | 55 | 42 | 60 |
| | <i>Denominator, N:</i> | 34 | 41 | 57 | - | - | - | - | 62 | 56 | 68 |
| 9. Reduction in the consumption of foods of low nutrient value (“junk” food) | | | | | | | | | | | |
| Percentage of children >6 months who consumed sugary food in the previous 24 hours | % | 19% | 12% | 6% | - | - | - | - | 8% | 8% | 10% |
| | <i>Numerator, n:</i> | 15 | 12 | 7 | - | - | - | - | 11 | 10 | 16 |
| | <i>Denominator, N:</i> | 78 | 100 | 118 | - | - | - | - | 131 | 132 | 156 |
| Percentage of children 6–23 months who consumed sugary or processed food during the previous 24 hours | % | 57% | 69% | 51% | - | - | - | - | 61% | 64% | 66% |
| | <i>Numerator, n:</i> | 126 | 138 | 93 | - | - | - | - | 198 | 206 | 195 |
| | <i>Denominator, N:</i> | 222 | 200 | 183 | - | - | - | - | 322 | 323 | 295 |
| Average number of times per day children 6–23 months ate junk food (sugary or processed) | <i>Mean:</i> | 1,6 | 1,7 | 1,5 | - | - | - | - | 0,5 | 0,4 | 0,5 |
| 10. Presumptive treatment for helminths for pregnant women and young children | | | | | | | | | | | |
| Percentage of women who received advice to take deworming medicine during pregnancy (Q12) | % | 7% | 12% | 5% | - | - | - | - | 37% | 33% | 23% |
| | <i>Numerator, n:</i> | 21 | 37 | 14 | - | - | - | - | 169 | 148 | 103 |
| | <i>Denominator, N:</i> | 300 | 300 | 300 | - | - | - | - | 453 | 455 | 451 |
| Percentage of children 0–23 months who received deworming medicine | % | 19% | 10% | 12% | - | - | - | - | 4% | 3% | 3% |
| | <i>Numerator, n:</i> | 58 | 31 | 37 | - | - | - | - | 19 | 15 | 14 |
| | <i>Denominator, N:</i> | 300 | 300 | 300 | - | - | - | - | 453 | 455 | 451 |

| Core Indicators | | Baseline (Fall 2014) | | | WDD1 (April 2015) | | WDD2 (April 2016) | | Endline (Feb–March 2017) | | |
|--|------------------------|----------------------|-----------|-------|----------------------|-----------|----------------------|-----------|-----------------------------|-----------|-------|
| | | Naryn | Jalalabad | Uzgen | Naryn | Jalalabad | Naryn | Jalalabad | Naryn | Jalalabad | Uzgen |
| 11. Handwashing practices indicator | | | | | | | | | | | |
| Percentage of women who usually wash hands 3 out of 5 critical times | % | 48% | 92% | 89% | - | - | - | - | 37% | 54% | 37% |
| | <i>Numerator, n:</i> | 143 | 277 | 268 | - | - | - | - | 167 | 244 | 168 |
| | <i>Denominator, N:</i> | 300 | 300 | 300 | - | - | - | - | 453 | 455 | 451 |
| 12. Storage/preservation practices | | | | | | | | | | | |
| Percentage of women who stored any products last fall | % | 71% | 95% | 96% | 95% | 91% | 90% | 80% | 78% | 65% | 69% |
| | <i>Numerator, n:</i> | 214 | 286 | 289 | 284 | 273 | 269 | 241 | 354 | 296 | 311 |
| | <i>Denominator, N:</i> | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 453 | 455 | 451 |
| Percentage of women who preserved any products last fall | % | 71% | 95% | 96% | 90% | 93% | 91% | 93% | 77% | 70% | 82% |
| | <i>Numerator, n:</i> | 214 | 286 | 289 | 271 | 280 | 274 | 280 | 351 | 318 | 372 |
| | <i>Denominator, N:</i> | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 453 | 455 | 451 |

2. Introduction

The most recent Demographic and Health Survey (DHS 2012) in the Kyrgyz Republic found that 18 percent of children under five were stunted, and that 43 percent of children under five and 35 percent of women of reproductive age (15–49) had some degree of anemia. According to the joint report from the United Nations Children’s Fund (UNICEF)² and the World Bank, nearly one in every four deaths of young children in the Kyrgyz Republic is caused by underlying undernutrition. Thus, 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.³

The Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) project sought to improve women’s and children’s nutrition in the Kyrgyz Republic through a range of interventions at the household, community, and state levels. SPRING was a 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 built on past USAID investments and partners’ expertise to deliver high impact nutrition interventions, such as infant and young child feeding (IYCF), micronutrient supplementation, maternal nutrition, nutrition-sensitive agriculture, and water, sanitation and hygiene (WASH). SPRING’s focus was the 1,000-day period between conception and a child’s second birthday. SPRING operated from 2014 to 2018 in the Kyrgyz Republic, in four rayons (districts) and seven townships of Jalalabad *oblast* (province), and five rayons and one township of Naryn *oblast*. The project also supported primary health facilities in Bishkek, and policy work at the national level (Figure 2.1).

Figure 2.1 SPRING Activities Mapping



² World Bank and UNICEF. 2011. *Situational Analysis: Improving Economic Outcomes by Expanding Nutrition Programming in the Kyrgyz Republic*. Bishkek: World Bank and UNICEF. <http://documents.worldbank.org/curated/en/660271468015004550/Situational-analysis-improving-economic-outcomes-by-expanding-nutrition-programming-in-the-Kyrgyz-Republic>

³ UN News. 2011. “Lack of Nutrition Having a Crippling Effect on Kyrgyz Children: UN Report.” <http://www.un.org/apps/news/story.asp?NewsID=38906#.VH1bFjSsXp4>

SPRING worked through strategic partnerships in health, agriculture, and education to improve health providers' capacity, and nutrition practices among households, with a focus on women with children under two years of age. Partners included local government, village health committees, district health centers, local and international nongovernmental organizations (NGOs), and other USAID projects such as AgroHorizon. The project worked through three main objectives:

12. Increase access to quality nutrition services
13. Increase demand for priority nutrition practices and services
14. Enhance access to a diverse diet

Under objective 1, SPRING conducted trainings for health care providers at the national level and in its implementation areas to deliver high-quality nutrition services and counseling, with over 5,600 health workers trained since 2015. SPRING also supported 27 health facilities through training and supportive supervision monitoring to help them achieve Baby-Friendly Hospital Initiative (BFHI) accreditation. At the national level, SPRING supported the finalization of the national anemia technical guidelines and protocol, which includes iron-folic acid (IFA) supplementation and presumptive deworming provisions for pregnant women. The project also advocated for the inclusion of nutrition content in preservice clinical training for doctors and nurses and is at the helm of establishing a deworming working group.



Under objective 2, SPRING trained over 2,000 community activists in seven modules related to a range of nutrition topics. Those activists in turn typically made over 20,000 contacts per month with people in their communities, through household visits and community events. Under objective 3, the project promoted nutrition-sensitive agriculture, and consumption of a wider variety of nutrient-rich foods. Because of the long Kyrgyz winters, SPRING also promoted storage and preservation of more nutrient-rich foods.

The above objectives and interventions were intended to reduce stunting and anemia by positively influencing 11 key nutrition-related practices, shown in Table 2.1. To track progress toward those 11 nutrition practices, SPRING carried out four surveys between 2014 and 2017. The baseline survey was conducted in October–November 2014, prior to the initiation of SPRING interventions. The baseline collected information on all 11 practices in both intervention and comparison areas. Two follow-up surveys were conducted in late winter 2015/early spring 2016, with a focus on women's diet in winter and iron during pregnancy. Those "winter dietary diversity surveys" took place in SPRING intervention areas only. The final endline survey was conducted in February–March 2017 with the same questions as the baseline for most questions related to the 11 practices, plus some additional questions for added detail. The endline survey included both intervention and comparison areas.

Because the surveys took place in different seasons, the reader should note that seasonality could affect some indicators; therefore, changes observed in some indicators could be at least partly due to forces beyond the project.

The categories of indicators collected in each survey are shown in Table 2.1.

Table 2.1 SPRING/Kyrgyz Republic Results Framework

| Goal: To improve nutritional status of children under two and women of reproductive age in the Kyrgyz Republic | | | | |
|---|--------------------------------|--------------------------|--------------------------|--------------------------------|
| 11 Key Practices with the Potential to Reduce Stunting and Anemia | Baseline (October 2014) | WDD1 (April 2015) | WDD2 (April 2016) | Endline (February 2017) |
| 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 6–23 months with emphasis on food sources of iron and vitamin A, and foods that enhance iron absorption | | | | |
| 4. Optimal meal frequency for children 6–23 months | | | | |
| 5. Early initiation of breastfeeding | | | | |
| 6. Exclusive breastfeeding from birth through the first 6 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 (worms) 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 | | | | |

All surveys were conducted by the independent research and consulting agency M-Vector.

3. Regions Covered

Jalalabad oblast is one of the seven *oblasts* of the Kyrgyz Republic. The capital is Jalalabad City. There are eight districts, eight towns, five urban settlements, and about 400 villages in the *oblast*. SPRING programs covered approximately two-thirds of the *oblast*, and the survey sample focused on those areas. In 2015, the total population of the *oblast*, according to the National Statistics Committee, was 1,146,520 people, 78 percent of whom lived in rural areas. The ethnic composition is approximately 70 percent Kyrgyz, 25 percent Uzbek, and 5 percent other nationalities.



Naryn oblast is in central Kyrgyz Republic. The survey took place specifically in the Jumgal district, which 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 was 43,040 in 2015, which is 16 percent of the entire population of the *oblast*. The entire area is rural, and the main ethnicity is Kyrgyz. All four survey samples were taken within Jumgal, because that is where SPRING began its work, though the project later expanded to cover all of Naryn *oblast*.



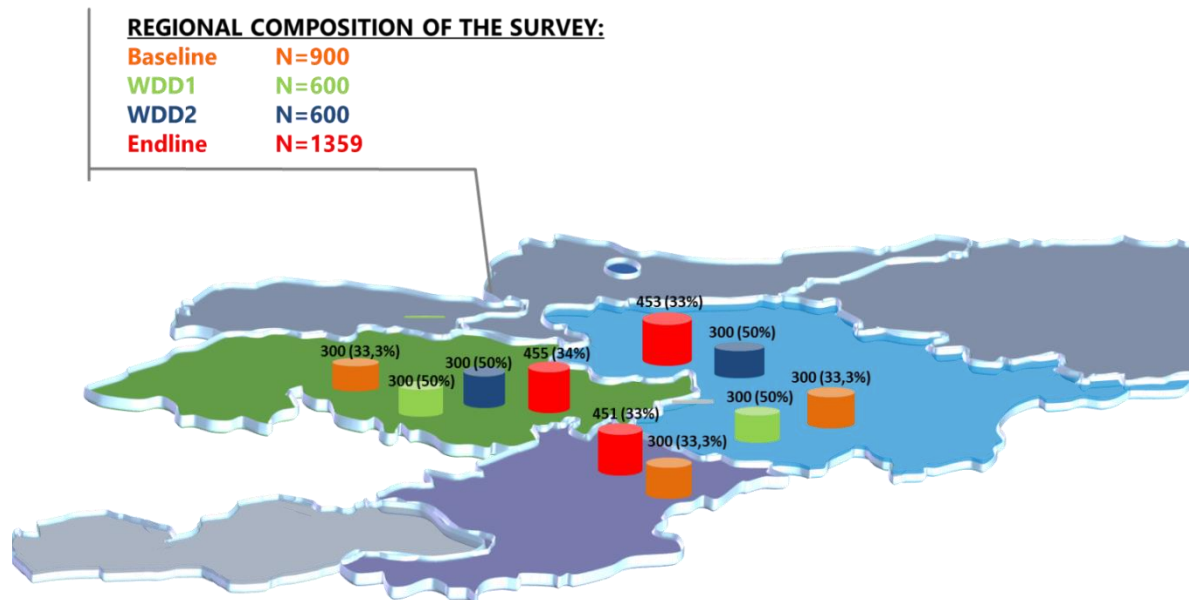
Uzgen district is a part of Osh *oblast* in the southern part of the Kyrgyz Republic. The capital of the region is the town of Uzgen. In 2015, according to the National Statistics Committee, the total population of the Uzgen region was 256,800, about 20 percent of the population of Osh *oblast*. In all, 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 one-fifth of the population is of Uzbek origin.



4. Methodology

For each of the four surveys in this study (Figure 4.1), a longitudinal design was used, with the intervention areas covered in all four surveys and comparison areas in the baseline and endline.

Figure 4.1 SPRING Survey Regional Composition



The target population of the surveys was women with at least one child 0–23 months of age living in villages and towns in Jalalabad *oblast*, Naryn *oblast*, or Uzgen region (Osh *oblast*). The sample size for the baseline was 900, with 300 respondents in each region. The sample size for the endline was increased by 50 percent to reduce sample error and improve precision. The overall samples in the four surveys are presented in Table 4.1. Additional notes on sampling are provided in Annex 2.

Table 4.1 Sample Size by Town or Village, by Survey

| Region | Settlement (Village or Town) | Baseline | WDD1 | WDD2 | Endline |
|---------------------------|-------------------------------|------------|------------|------------|------------|
| Jalalabad | Jalal-Abad town (Jalal-Abad) | 75 | 75 | 75 | 115 |
| | Kara-Kul town (Jalal-Abad) | 15 | 15 | 15 | 17 |
| | Kok-Jangak town (Jalal-Abad) | 15 | 15 | 15 | 18 |
| | Mailuu-Suu town (Jalal-Abad) | 15 | 15 | 15 | 16 |
| | Tash-Kumyr town (Jalal-Abad) | 15 | 15 | 15 | 16 |
| | Ak-Korgon (Jalal-Abad) | 15 | 15 | 15 | 16 |
| | Dostuk (Jalal-Abad) | 15 | 15 | 15 | 16 |
| | Kazarman (Jalal-Abad) | 15 | 15 | 15 | 17 |
| | Kyzyl-Tuu (Jalal-Abad) | 15 | 15 | 15 | 16 |
| | Toktogul (Jalal-Abad) | 15 | 15 | 15 | 16 |
| | Jany-Shaar (Jalal-Abad) | - | 15 | 15 | 16 |
| | Kyzyl-Ata (Jalal-Abad) | - | 15 | 15 | 16 |
| | Sary-Taala (Jalal-Abad) | - | 15 | 15 | 16 |
| | Kochkor-Ata town (Jalal-Abad) | - | 15 | 15 | 16 |
| | Komsomol (Jalal-Abad) | - | 15 | 15 | 16 |
| | Sumsar (Jalal-Abad) | - | 15 | 15 | 16 |
| | Airy-Tam (Jalal-Abad) | 15 | - | - | 16 |
| | Ak-Tam (Jalal-Abad) | 15 | - | - | 16 |
| | Kosh-Terek (Jalal-Abad) | 15 | - | - | 16 |
| | Torkent (Jalal-Abad) | 15 | - | - | 16 |
| Chon-Aryk (Jalal-Abad) | 15 | - | - | 16 | |
| Kanysh-Kyaya (Jalal-Abad) | 15 | - | - | 16 | |
| Total | | 300 | 300 | 300 | 455 |
| Naryn oblast | Baizak | 30 | 30 | 30 | 60 |
| | Bash-Kuugandy / Dyikhan | 30 | 30 | 30 | 30 |
| | Bazar-Turuk | 30 | 30 | 30 | 30 |
| | Chaek | 30 | 30 | 30 | 61 |
| | Jungal | 30 | 30 | 30 | 30 |
| | Kek-Oi | 30 | 30 | 30 | 30 |
| | Kuuruchuk | 30 | 30 | 30 | 30 |
| | Kyzyl-Jyldyz | 30 | 30 | 30 | 30 |
| | Tash-Dobo | 30 | 30 | 30 | 30 |
| | Tugol-Sai | 30 | 30 | 30 | 30 |
| | Kyzart | - | - | - | 32 |
| | Aral | - | - | - | 30 |
| | Chon-Dobo | - | - | - | 30 |
| | Total | | 300 | 300 | 300 |

| Region | Settlement (Village or Town) | Baseline | WDD1 | WDD2 | Endline |
|--------------------|------------------------------|------------|------------|------------|-------------|
| Uzgen (Osh oblast) | Alga | 30 | - | - | 30 |
| | Bakmal | 30 | - | - | 30 |
| | Djiide | 30 | - | - | 30 |
| | Kairat | 30 | - | - | 30 |
| | Kakyr | 30 | - | - | 30 |
| | Kara-Dyikan | 30 | - | - | 30 |
| | Karool | 30 | - | - | 31 |
| | Kurбу-Tash | 30 | - | - | 30 |
| | Kyzyl-Too | 30 | - | - | 30 |
| | Osturuu | 30 | - | - | - |
| | Jalaldy | - | - | - | 30 |
| | Ozgerush | - | - | - | 30 |
| | Chimbay | - | - | - | 30 |
| | Jangakty | - | - | - | 30 |
| | Jeerenchy | - | - | - | 30 |
| | Sheraly | - | - | - | 30 |
| | Total | 300 | 0 | 0 | 451 |
| Total | | 900 | 600 | 600 | 1359 |

Organization of Fieldwork

Fieldwork for the endline survey was conducted by 37 interviewers: 11 in Naryn, 13 in Jalalabad, and 13 in Uzgen. They used a questionnaire developed by SPRING to interview mothers with children 0–23 months of age. The questionnaire contained 53 closed-ended questions on maternal and child nutrition practices and other factors related to nutrition. Prior to the fieldwork, all interviewers were provided with instructions on the goals, methodology, and rules of the survey. The instrument was pretested in Kyrgyz and Russian in Bishkek and Osh cities, and improvements were made based on the pretest experience. 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 Uzgen). The interviewers’ work was coordinated and monitored by three supervisors (one per region).

The majority of interviews were conducted between 10 a.m. and 6 p.m. The average length of each interview was 43.5 minutes for the baseline and endline, under 20 minutes for the first winter dietary diversity survey (WDD1) and 29 minutes for the second winter dietary diversity survey (WDD2). Interviews were conducted mostly in Kyrgyz. In Jalalabad, 21 percent of endline interviews were conducted in Uzbek, 78 percent in Kyrgyz, and 1 percent in Russian (language distribution shown in table 4.2).

Table 4.2 Language of Survey

| Language | Baseline | | | WDD1 | | WDD2 | | Endline | | |
|----------|-----------|-------|-------|-----------|-------|-----------|-------|-----------|-------|-------|
| | Jalalabad | Naryn | Uzgen | Jalalabad | Naryn | Jalalabad | Naryn | Jalalabad | Naryn | Uzgen |
| | N=300 | N=300 | N=300 | N=300 | N=300 | N=300 | N=300 | N=455 | N=453 | N=451 |
| Kyrgyz | 74% | 100% | 92% | 90% | 100% | 74% | 97% | 80% | 99% | 83% |
| Uzbek | 24% | 0% | 2% | 10% | 0% | 22% | 2% | 19% | 0% | 4% |
| Russian | 2% | 0% | 6% | 0% | 0% | 4% | 1% | 1% | 1% | 14% |

During each survey, 20 percent of all completed questionnaires from each interviewer were checked for completeness, logic, and reliability by three supervisors. Questionnaires were randomly selected for quality control.

Quality Control Measures

Stage 1. M-Vector carried out a thorough training of enumerators before beginning the fieldwork. The training included standard survey techniques and principles such as informed consent, protecting personal data, and other aspects of ethical behavior (not doing anything that might harm a data subject or damage the reputation of social research).⁴

Stage 2. The interviewer who completed work in each settlement was trained to thoroughly inspect completed interviews and to submit completed questionnaires to the supervisor. During receipt and inspection of questionnaires, attention was paid to conformity to the transition between questions, presence of logic in responses of interviewees, whether all questions were answered, and overall compliance with survey practices.

If a need arose to clarify responses, a repeat call would be made to interviewees.

Stage 3. Supervisors selectively visited villages and accompanied interviewers, to ensure quality interviewing processes, identify any noncompliance, and assess the reaction of interviewees.

Stage 4. Follow-up quality checks were conducted on 20 percent of interviews, by making repeat visits or telephone calls to respondents. For this purpose, controllers from outside the survey used a special form with verification questions to ensure that interviews had been carried out faithfully.

The quality control measures revealed no gross violations.

Ethical Considerations

Before and during fieldwork the following ethical norms were followed:

⁴ International Chamber of Commerce (ICC) and Esomar World Research. 2016. *ICC/Esomar International Code on Market, Opinion and Social Research and Data Analytics*. Paris: ICC/Esomar. https://www.esomar.org/uploads/public/knowledge-and-standards/codes-and-guidelines/ICCESOMAR_Code_English_.pdf

- 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.
- Women under 18 years old were not included in the survey.
- No biologic samples were taken.
- The pregnancy status of surveyed women was not assessed.
- The study protocol was submitted to the JSI's Institutional Review Board (IRB), and was declared to be exempt from IRB approval.

Data Processing

M-Vector used the Statistical Package for the Social Sciences (SPSS) program for data analysis. Simple cross-tabulations were carried out to assess most variables by region, age composition, rural/urban, and other specifications. Column proportion z-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. The z-test was also used to measure significance when comparing proportions of columns. Column mean tests were applied to tables in which scale variables existed in the rows and categorical variables existed in the columns. 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.

Limitations

The survey limitations were similar to those of the baseline and WDD surveys, including the following issues.

Some villages were difficult to reach due to snowfall and road blockage. In such cases, a different village within the same district was randomly selected. Five villages in total (one in Uzgen and four in Naryn) were replaced in accordance with the random walk guidelines (please see Annex 1 for more details).

Seasonal differences could also have affected results. With the baseline in October–November 2014, the two WDD surveys in late winter 2015/early spring 2016, and the endline in winter 2017, seasonal differences could have affected results. It should be noted, however, that most dietary variables would be expected to be lower during winter than in the baseline period, so if anything the timing of the endline would be expected to bias results downward.

Another issue was the different baseline questionnaire structure on food grouping for women's dietary diversity. The baseline questionnaire used 19 food groups, while the endline used 40. The baseline had a generalized list of products, combining different products by food group, for example: "Any fruit: apricots, peaches, yellow melon, persimmon, tomatoes," while the endline reported on each fruit separately:

"Apple," "Peaches," and so on. It may be that asking respondents about particular items rather than groups of items may facilitate recall and result in more items being reported. Children's dietary diversity questions were the same in all four surveys.

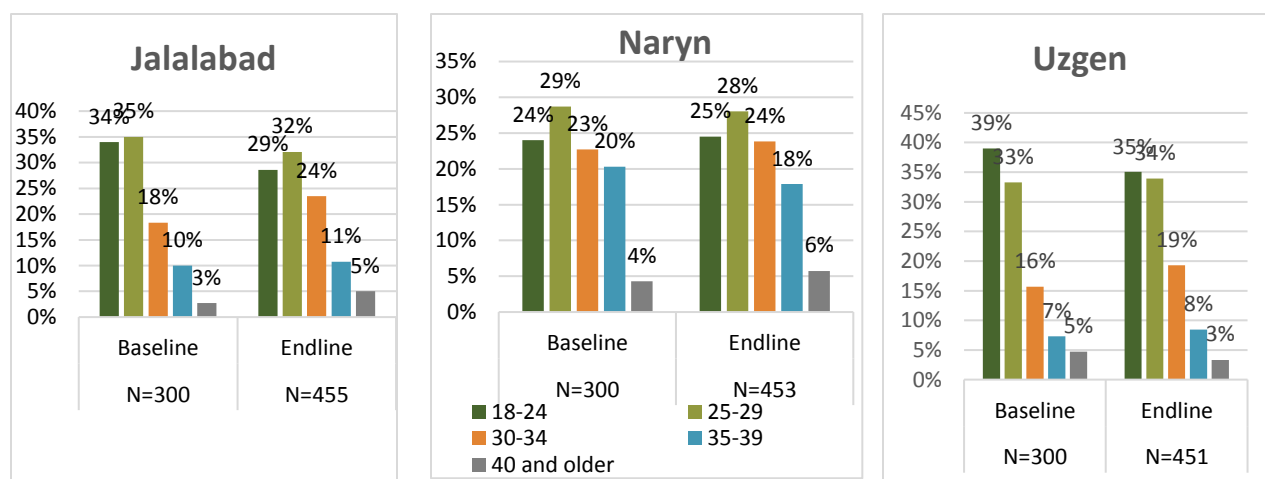
Presentation of Results

Although the surveys only sampled from Jumgal district in Naryn, and parts of Jalalabad, in most cases when we present results, they are shown as Jalalabad, Naryn, and Uzgen. In some cases, we merge the Naryn and Jalalabad samples and present the results as the "intervention" areas versus the comparison area.

5. Sociodemographic Information

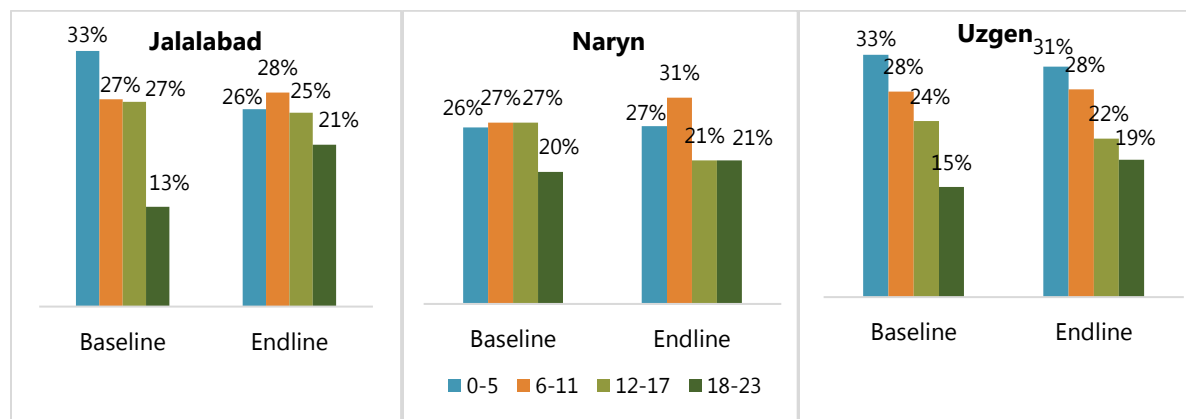
Figure 5.1 shows the distribution of mothers by age across the three survey regions. In the baseline survey, the majority of the sample was young women 18–29 years of age in all three regions, especially in Uzgen and Jalalabad, where 69 percent of the sample was 29 years of age or younger. The numbers were slightly lower in Naryn, where the proportion of young women was at just over one-half (53 percent) of the conducted sample. The age structures were older in the endline samples, but only slightly so, with the most noticeable change in Jalalabad.

Figure 5.1 Respondent’s (Mother’s) Age, by Region and Survey



Similarly, Figure 5.2 shows the distribution of children by age across regions and by survey. In the baseline survey, Jalalabad and Uzgen had younger age structures than in Naryn, with ages 0–5 months old constituting 33 percent of the total in Uzgen and Jalalabad. In Naryn, ages 0–5 months made up 26 percent of the total. There were some interesting changes between the baseline and endline with regard to age samples. In Naryn, the endline age structure was slightly younger at endline, with an increase of children in the 6–11-month category, while in Jalalabad, the sample of children was markedly older. In Uzgen, the age structure did not change, but remained heavily weighted toward the youngest age categories. These differences, both across regions and over time, could potentially have influenced results and may need to be considered when interpreting the findings.

Figure 5.2 Children's Age, by Region and Survey



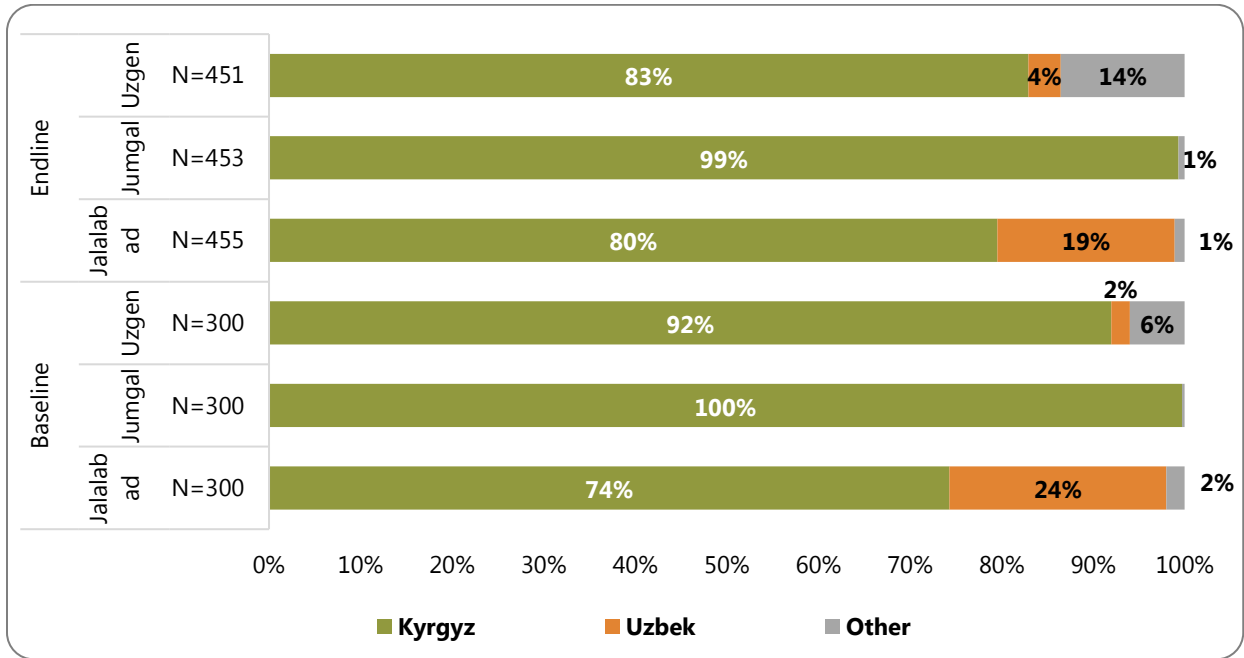
The mean number of children (all ages) per household was slightly higher at endline (3.0) than at baseline (2.6), while the mean number of adults was slightly lower, dropping from 3.3 to 3.0 (Table 5.1). Differences were not significant.

Table 5.1 Mean Number of Children (All Ages) and Adults per Household, by Region at Endline

| Means | Jalalabad | Naryn | Uzgen | Total |
|--|-----------|-------|-------|--------|
| | N=455 | N=453 | N=451 | N=1359 |
| Mean number of children (all ages) living in household | 2.8 | 3.2 | 3.1 | 3.0 |
| Mean number of adults living in household | 2.9 | 3.0 | 3.2 | 3.0 |
| Mean number of people living in household | 5.7 | 6.2 | 6.3 | 6.1 |
| Mean number of children ages 0–23 months | 1.09 | 1.06 | 1.08 | 1.08 |

Figure 5.3 shows the ethnicity of respondents by region and by survey. The large majority of respondents were Kyrgyz, especially in Naryn (99–100 percent Kyrgyz). In Jalalabad, 24 percent of women were Uzbek in the baseline and 19 percent in the endline. Uzgen had a small percentage of other ethnic groups, 6 percent at baseline and to 14 percent at endline.

Figure 5.3 Mother’s Ethnicity, by Region and Survey



All women interviewed had attended school, although a small percentage had not completed ninth grade. Results were similar across regions and surveys (differences not significant), though in Naryn the endline sample had substantially higher levels of women with vocational training and incomplete higher education, and Uzgen had substantially higher levels of women with completed higher education. Education levels of the survey samples are shown in Figure 5.4.

Figure 5.4 Mother’s Education, by Region and Survey

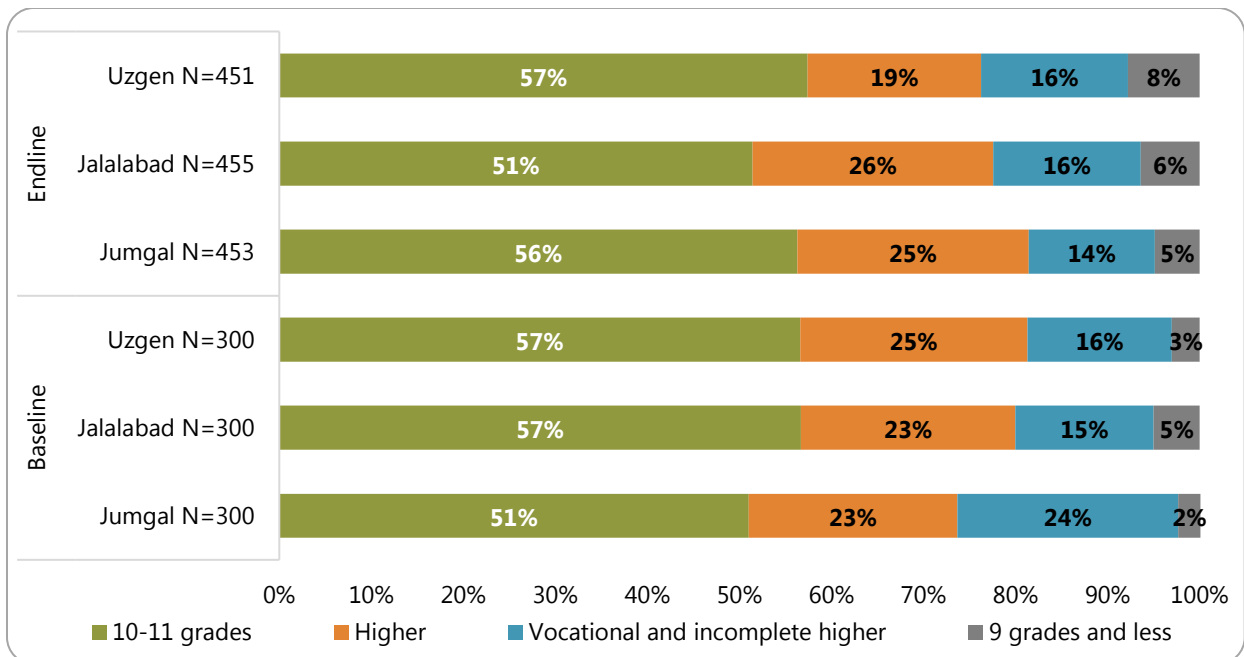
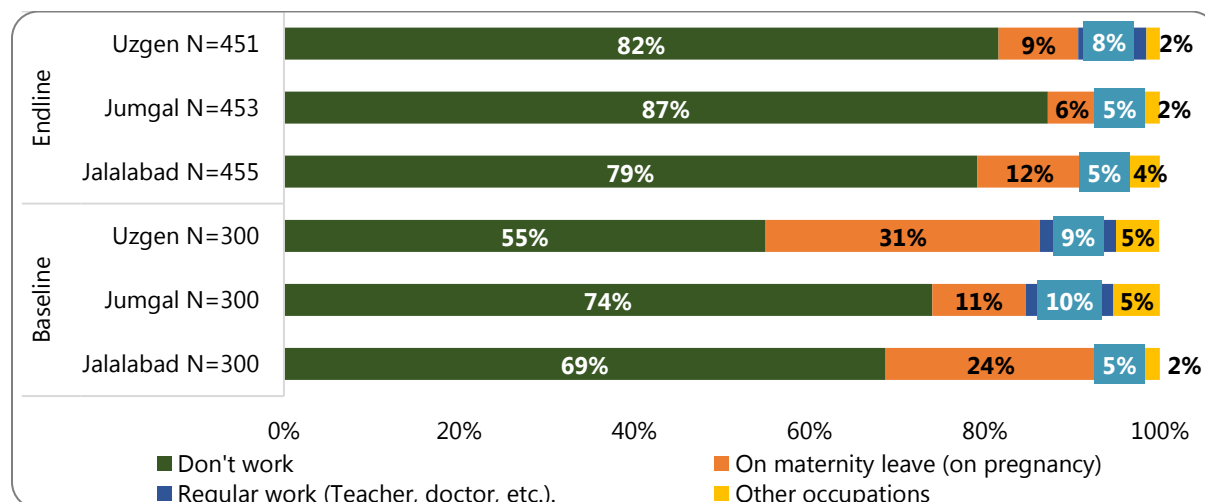


Figure 5.5 shows the occupation status of respondents, by region and survey. Of note, far more women in all regions reported being on maternity leave in the baseline, and more women reported not working in the endline.

Figure 5.5 Mother’s Work Status (Baseline vs. Endline)



Respondents were asked to name the top three sources of household income, and then the main source. Table 5.2 shows the percentage distribution for the endline survey sample. There were some interesting differences in the three regions. Raising livestock was much more common in Naryn and Uzgen than in Jalalabad, and being a salaried worker/salaried labor was much more common in Jalalabad. This may be due at least in part to the Jalalabad sample being more urban. Raising and selling crops was far more common in Uzgen, and being a shopkeeper or being a migrant worker was more common in Jalalabad and Uzgen than in Naryn. Women in Naryn were more likely to report that receipt of a pension was an important source of income than in the other regions. The source mentioned most often as the main income source in each region is highlighted in red font.

Table 5.2. Sources of Household Income (Top Three Sources and Main Sources), Endline Only

| Income Sources | Mentioned | | | Main Source | | |
|---|-----------|-------|-------|-------------|-------|-------|
| | Jalalabad | Naryn | Uzgen | Jalalabad | Naryn | Uzgen |
| | N=455 | N=431 | N=449 | N=455 | N=431 | N=449 |
| Raising livestock | 17% | 36% | 48% | 11% | 21% | 23% |
| Pension | 22% | 43% | 31% | 8% | 28% | 10% |
| Salaried worker (teacher, doctor etc.) | 25% | 22% | 19% | 22% | 13% | 10% |
| Salaried labor (construction, mining, etc.) | 18% | 17% | 13% | 12% | 7% | 8% |

| Income Sources | Mentioned | | | Main Source | | |
|-----------------------------------|-----------|-------|-------|-------------|-------|-------|
| | Jalalabad | Naryn | Uzgen | Jalalabad | Naryn | Uzgen |
| | N=455 | N=431 | N=449 | N=455 | N=431 | N=449 |
| Raising and selling crops | 13% | 4% | 41% | 7% | 1% | 18% |
| Incomes of migrant workers | 13% | 0,4% | 21% | 10% | 0,4% | 13% |
| Shopkeeper/street vendor/commerce | 12% | 3% | 8% | 11% | 2% | 6% |
| Temporary farmwork | 0,7% | 0,2% | 0,4% | 0,2% | 0,0% | 0,4% |
| Other | 23% | 28% | 11% | 19% | 28% | 11% |

The surveys collected data on household assets, particularly durable goods such as electronic home appliances, communications, bathrooms inside the house, and automobiles. Table 5.3 shows the percentage of women in both the baseline and endline with each type of asset. The pattern is similar across the different regions, but there are some notable changes from baseline to endline. For example, in all regions, possession of refrigerators, gas stoves, and water heaters declined, while ownership of almost all other assets increased markedly. This is likely a reflection of overall advances in the Kyrgyz economy and more ownership of desirable products, though it could indicate that the endline population may have been somewhat better off from a socioeconomic perspective than at baseline. However, note that other data such as women's employment (Figure 5.5) suggested the opposite. Highlights show where endline values were statistically higher (blue) or lower (purple) than in the baseline.

Table 5.3 Assets and Appliances Available in the Household, by Region and Survey

| Asset | Baseline | | | Total N=900 | Endline | | | Total N=1,359 |
|-----------------------|--------------------|----------------|----------------|----------------|--------------------|----------------|----------------|------------------|
| | Jalalabad N=300 | Naryn N=300 | Uzgen N=300 | | Jalalabad N=455 | Naryn N=453 | Uzgen N=451 | |
| Refrigerator | 91% | 72% | 90% | 85% | 66% | 60% | 60% | 62% |
| Electric or gas stove | 89% | 88% | 66% | 81% | 66% | 51% | 53% | 57% |
| Automobile | 55% | 47% | 50% | 51% | 62% | 64% | 40% | 55% |
| Telephone | 22% | 1% | 3% | 9% | 43% | 57% | 30% | 43% |
| Toilet in the house | 22% | 1% | 3% | 9% | 50% | 45% | 25% | 40% |
| Washing machine | 22% | 1% | 3% | 9% | 45% | 27% | 26% | 33% |
| Computer | 15% | 6% | 17% | 13% | 22% | 34% | 18% | 25% |
| Internet | 6% | 1% | 8% | 5% | 25% | 23% | 25% | 24% |
| Bath/bathroom/sauna | 28% | 10% | 18% | 19% | 34% | 15% | 11% | 20% |
| Water heater | 45% | 4% | 17% | 22% | 20% | 3% | 14% | 12% |
| Air-conditioner | 9% | 1% | 1% | 3% | 11% | 5% | 2% | 6% |

Finally, Table 5.4 shows the percentage of households in each region with different kinds of livestock in the endline survey. Overall, over one-third of households owned sheep, cows, or chickens, with sheep

being the animal most commonly owned. Respondents in Naryn were more apt to own livestock and to own more of each type of livestock, except horses, which were more common in Jalalabad and Uzgen.

Table 5.4 Percentage and Numbers of Mothers Who Reported That the Household Possessed Domestic Animals, by Region and Type of Animal Owned at Endline

| Livestock | Region | | | | | | Total | |
|-----------|-----------------|-------------|-------------|-------------|-------------|-------------|-------|-------------|
| | Jalalabad N=455 | | Naryn N=453 | | Uzgen N=451 | | % | Mean Number |
| | % | Mean Number | % | Mean Number | % | Mean Number | | |
| Sheeps | 42% | 4.5 | 67% | 9.4 | 67% | 6.8 | 59% | 6.9 |
| Cows | 37% | 1.7 | 57% | 4.9 | 45% | 4.0 | 46% | 3.5 |
| Chickens | 33% | 3.3 | 43% | 3.5 | 31% | 3.9 | 36% | 3.5 |
| Horses | 33% | 2.1 | 8% | 0.6 | 20% | 1.5 | 20% | 1.4 |
| Goats | 16% | 1.2 | 20% | 1.5 | 11% | 1.1 | 16% | 1.3 |

In summary, there were some notable differences in sociodemographic characteristics of the survey population that could potentially impact nutrition outcomes, and these warrant consideration. However, except in those few cases, as noted, the differences were not significant. The remainder of this section presents findings on nutrition outcomes, with endline results compared to those of earlier surveys where available and meaningful. In some cases, results are shown for Jalalabad and Naryn oblasts together as the "intervention" area; in other cases, where meaningful, results from the two oblasts are shown separately.

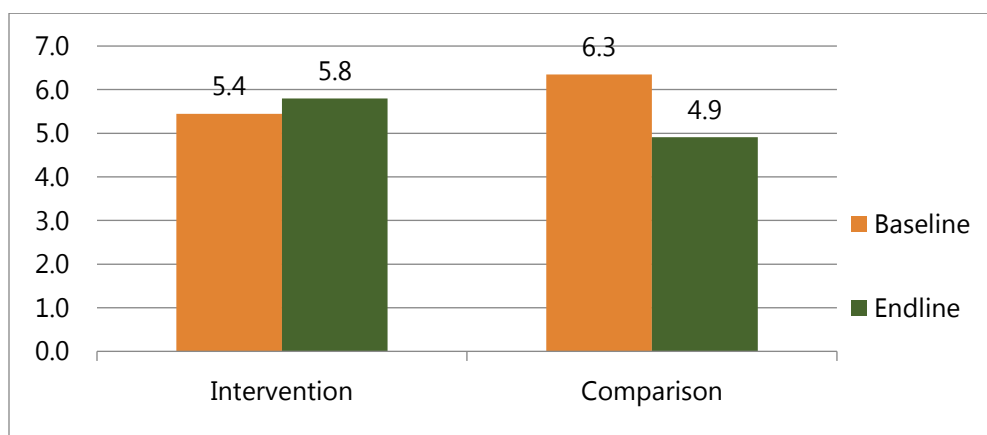
Survey Results

6. Maternal Nutrition and Antenatal Care

Antenatal care (ANC) remains critical in reducing maternal mortality as it can assist in the prevention, identification, and treatment of many health problems during pregnancy. The World Health Organization (WHO) recommends a minimum of four ANC visits during a woman’s pregnancy. The timing of the first ANC visit is also an important determinant of whether the woman will receive the recommended number of four visits. ANC should include the testing, prevention, and management of anemia and sexually transmitted infections, micronutrient supplementation, tetanus immunization, and monitoring of certain vital signs to assist in the detection and management of potential pregnancy-related complications. ANC visits are also an important way to provide advice to mothers about birth preparedness and the importance of delivering in a facility with a trained health care provider, as well as to refer mothers with potential complications to appropriate providers. For all of these reasons, it is very important to start prenatal care as early as possible.

The endline survey found that a large majority of women went to a health facility during their pregnancy at least once. The mean number of ANC visits increased slightly between surveys in Jalalabad and Naryn (combined as SPRING’s “intervention” area), and declined in the comparison area of Uzgen (Figure 6.1).

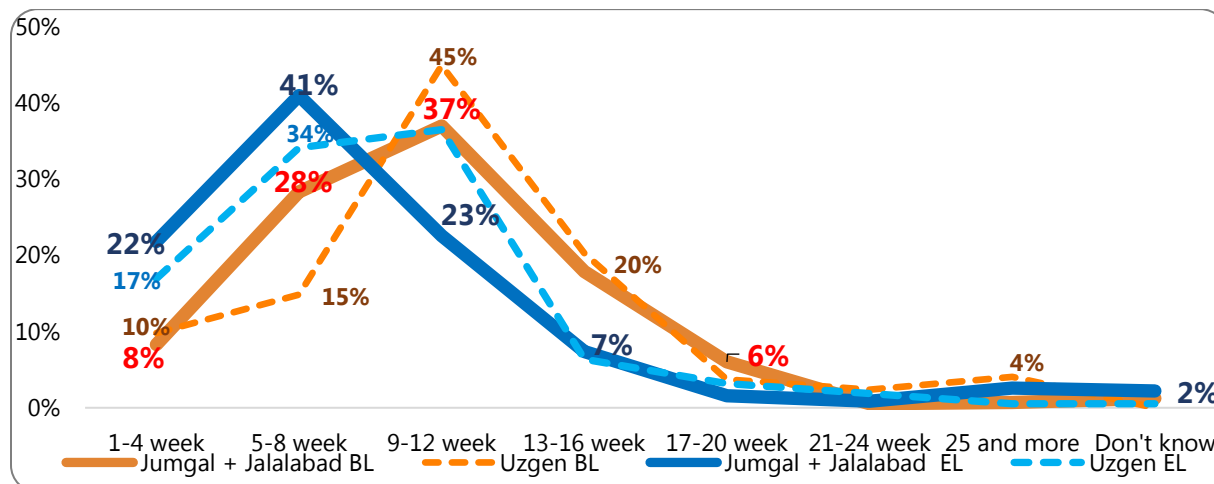
Figure 6.1 Mean Number of ANC Visits during Most Recent Pregnancy



Women also reported making visits earlier during their pregnancy which, as mentioned above, is critical to addressing any issues early and achieving the recommended number of visits. Figure 6.2 shows that timing of the first visit improved between baseline and endline, as seen by the shift of the orange lines (baseline) to the left (blue lines showing endline). Over 60 percent of women in the intervention area at endline reported visiting a health facility within the first eight weeks of pregnancy, compared with 36 percent at baseline. The lines shifted approximately two weeks to the left, suggesting that most women were going for their first visit approximately two weeks earlier than in the baseline. Women in Jalalabad made their first visit somewhat earlier than those in Naryn. In the comparison area of Uzgen, women also reported making their first visit earlier than in the baseline, but the change from baseline to endline was not as great as in the intervention areas. Furthermore, endline results showed that approximately 10

percent of women in the intervention areas still made their first ANC visit during the second trimester of their pregnancy (after the 12th week), down from 27 percent at baseline.

Figure 6.2 Week of Pregnancy When Mother First Visited a Health Facility for ANC



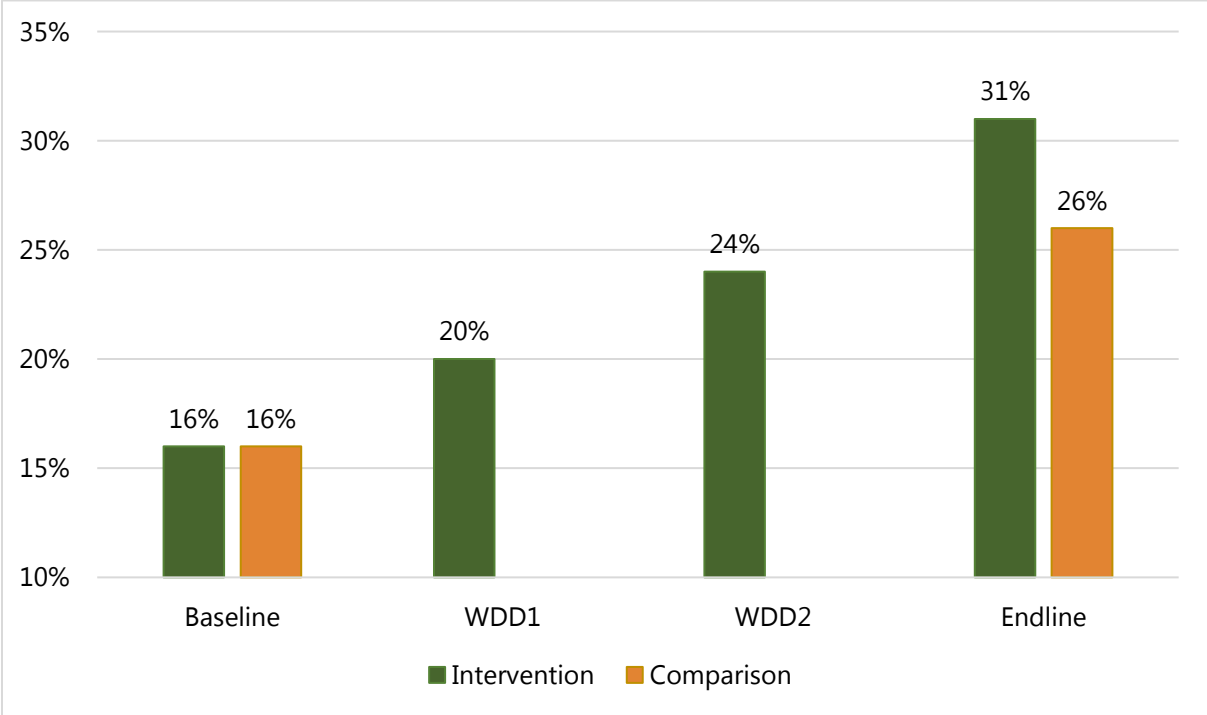
The main maternal health indicators assessed in all four surveys included the percentage of women taking iron tablets or syrup for at least 90 days during the most recent pregnancy and the mean number of days on which iron tablets/syrup was taken. In the Kyrgyz Republic, 35 percent of women age 15–49 are anemic,⁵ and ANC visits are considered an opportune time to encourage preventive measures for iron-deficiency anemia, such as taking iron on a daily basis. The WHO recommends daily oral iron–folic acid (IFA) supplementation as part of a standardized ANC regimen to reduce the risk of maternal anemia, and iron deficiency. Not only does this protect the mother, but can also reduce the risk of low-birthweight infants and preterm birth.

Over 70 percent of women in the baseline and over 80 percent of women in the endline took iron in some form, including tablets, IFA tablets, multiple micronutrients, or iron syrup preparations. The percentages increased in both the intervention and control areas but the increases were greater in the intervention areas (Figure 6.3). The percentage of women taking iron at endline was 84 percent in both Naryn and Jalalabad, up from a mean of 75 percent at baseline. In Uzgen, the percentage increased only slightly, from 75 percent to 77 percent. The increase in Jalalabad was statistically significant. There were no statistically significant differences by age, settlement type (urban/rural), occupation, or ethnicity.

⁵ National Statistical Committee of the Kyrgyz Republic (NSC), Ministry of Health [Kyrgyz Republic] (MOH), and ICF International. 2013. *Kyrgyz Republic Demographic and Health Survey 2012*. Bishkek, Kyrgyz Republic, and Calverton, MD, USA: NSC, MOH, and ICF International.

It is not enough, however, to receive and consume iron at some point during pregnancy. Women are encouraged to take iron (preferably IFA) on a daily basis, beginning as early as possible in pregnancy. A commonly used indicator to determine the extent to which women are getting appropriate levels of iron is the percentage who take it for at least 90 days. Here again, encouragingly, we see that SPRING intervention areas improved significantly in this regard, while the comparison area of Uzgen trailed (though the percentage of women consuming for at least 90 days also did increase there). As seen in Figure 6.3, the percentage taking iron for at least 90 days was 16 percent at baseline in both the intervention and comparison groups. In the intervention groups, the figure increased steadily each year as seen by the increases in the WDD surveys, reaching 31 percent by the endline. In the comparison area, the endline value (26 percent) was substantially higher than at baseline, but less than the endline level for the intervention area (Uzgen was not included in the WDD surveys).

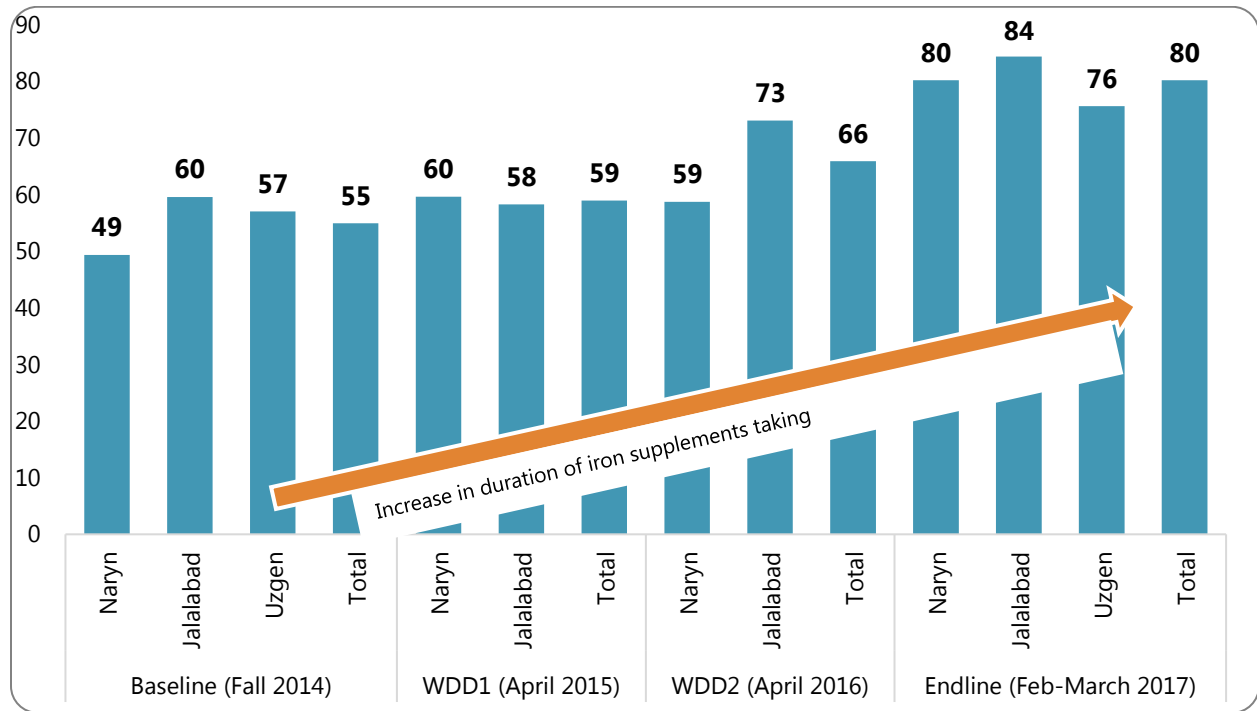
Figure 6.3 Percentage of Women Consuming Iron (Any Format) for at Least 90 Days, by Survey



Results shown in Figure 6.3 are among all women in the survey. If we look at the indicator among those who received any iron, the percentages are higher, but the pattern is similar. The percentage of women taking iron for 90-plus days among those who received any iron at all increased in intervention areas from 22 percent to 40 percent, and in Uzgen from 22 percent to 35 percent.

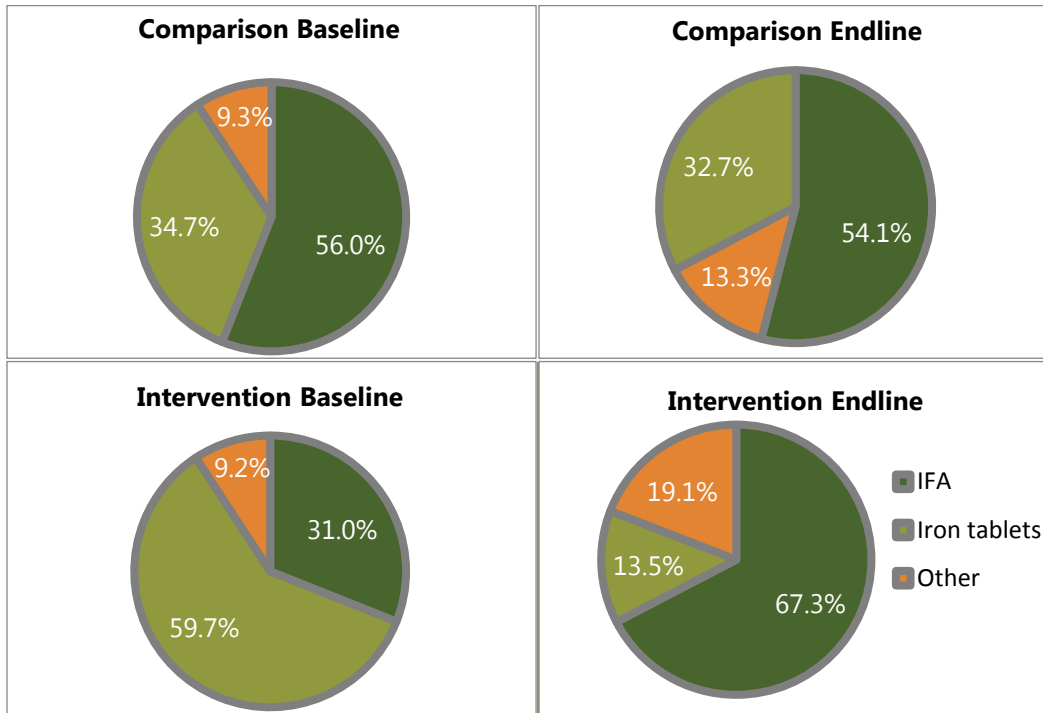
Figure 6.4 shows similar information but with more detail, showing the mean number of days that women took iron, by region in all surveys.

Figure 6.4 Mean Number of Days Mother Took Iron (Any Formulation) by Region and Survey



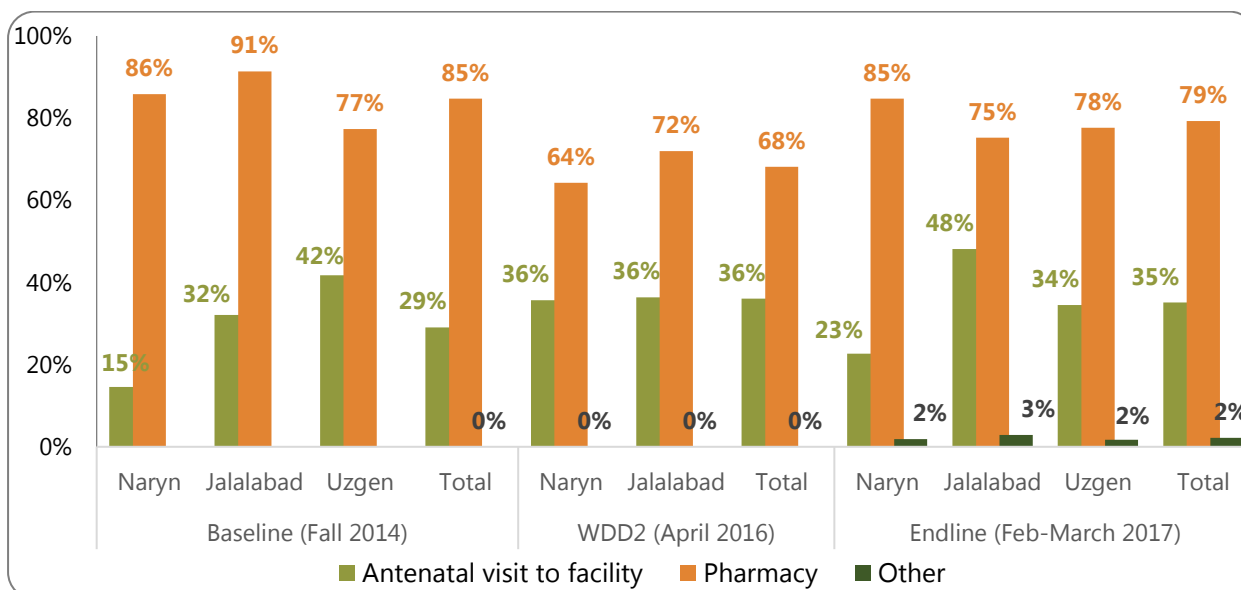
There were significant differences by type of iron received, among the four kinds of iron supplements most widely used for reducing anemia—iron tablets, IFA tablets, multiple micronutrients, and iron syrup preparations. Encouragingly, as shown in Figure 6.5, there was a shift toward greater use of IFA tablets in the endline compared to the baseline, especially in the combined intervention area of Jalalabad and Naryn. IFA is the formulation recommended by WHO and promoted by SPRING. IFA prevalence increased from 31 percent to over 67 percent, while in Uzgen it remained essentially the same between surveys.

Figure 6.5 Which Form of Iron Supplement Did You Receive or Purchase the Most Of? (Percentage of Women Reporting Consuming Each Iron Type)



Also encouragingly, women at endline were more likely to obtain iron during ANC visits at health facilities (where SPRING was training service providers to offer it), and somewhat less likely to obtain it at pharmacies. Figure 6.6 shows the source of where iron supplements were obtained by region and survey, including the baseline, WDD2, and endline. As evident in the figure, the percentage of women obtaining iron at health facilities increased substantially in both Naryn and Jalalabad between baseline and endline (though it fell in Naryn between WDD2 and endline), but the percentage actually declined in Uzgen.

Figure 6.6 Where Did You Get Your Iron/IFA Tablets, Iron Syrup, or Multinutrient Powders during Your Pregnancy? (Baseline, WDD2, and Endline)



In the baseline and endline surveys, interviewers also asked what topics women received information on during ANC counseling, and then tried to determine whether the answers correlated with more women receiving iron. Table 6.1 shows some of the main results. Of note, all the significant increases took place in Jalalabad and Naryn, and some of the most impressive increases took place with regard to information about iron.

Table 6.1 Topics on Which Mothers Received Information during ANC Consultations (Percentage Reporting Hearing Information on Each Topic)

| Consultation Topics | Baseline | | | Endline | | |
|---|----------------|--------------------|----------------|----------------|--------------------|----------------|
| | Naryn N=300 | Jalalabad N=300 | Uzgen N=300 | Naryn N=453 | Jalalabad N=455 | Uzgen N=451 |
| Danger signs during pregnancy | 27% | 57% | 43% | 69% | 56% | 65% |
| Nutritious diet during pregnancy | 18% | 47% | 52% | 61% | 58% | 65% |
| Rest during pregnancy | 17% | 24% | 29% | 64% | 58% | 61% |
| Self-care during pregnancy | 37% | 47% | 41% | 69% | 60% | 65% |
| Taking iron supplements during pregnancy | 20% | 55% | 49% | 73% | 78% | 59% |
| Taking drugs to prevent intestinal worms during pregnancy | 7% | 12% | 5% | 37% | 33% | 23% |

| Consultation Topics | Baseline | | | Endline | | |
|------------------------------------|----------------|--------------------|----------------|----------------|--------------------|----------------|
| | Naryn N=300 | Jalalabad N=300 | Uzgen N=300 | Naryn N=453 | Jalalabad N=455 | Uzgen N=451 |
| Birth preparedness | 54% | 47% | 47% | 75% | 75% | 77% |
| Postpartum family planning | 11% | 23% | 20% | 55% | 60% | 49% |
| Postpartum danger signs for mother | 8% | 37% | 39% | 63% | 60% | 57% |
| Danger signs for the newborn | 4% | 45% | 28% | 72% | 65% | 68% |
| Breastfeeding | 13% | 53% | 30% | 84% | 89% | 82% |
| Other themes | 0% | 0% | 0% | 8% | 4% | 7% |

* Marked in red if endline was statistically different from baseline (comparison of column proportions [z-test]).

Table 6.2 shows associations between receiving information on iron during pregnancy, and whether women obtained iron. As seen in the table, even at baseline, there was a clear relationship, with women who received counseling on iron more likely to obtain iron supplements than those who did not. The relation was much stronger at endline, however, with 92 percent of women who received counseling in all three regions reporting that they obtained iron, while only 55–63 percent who did not receive information were able to obtain iron. This strongly suggests a relation between counseling and obtaining iron, and supports the use of health facilities as a platform and entry point for promoting this important product.

Table 6.2 Effect of Counseling on Whether Women Obtained Iron Supplementation

| Survey Wave | Region | Received Counseling on Iron Supplements? | Obtained Iron Supplements | N |
|-------------|-----------|--|---------------------------|-----|
| Baseline | Naryn | Received counseling on iron | 83% | 60 |
| | | Did not receive counseling on iron | 79% | 240 |
| | Jalalabad | Received counseling on iron | 82% | 164 |
| | | Did not receive counseling on iron | 55% | 135 |
| | Uzgen | Received counseling on iron | 95% | 147 |
| | | Did not receive counseling on iron | 56% | 152 |
| Endline | Naryn | Received counseling on iron | 92% | 327 |
| | | Did not receive counseling on iron | 63% | 123 |
| | Jalalabad | Received counseling on iron | 92% | 354 |
| | | Did not receive counseling on iron | 55% | 100 |
| | Uzgen | Received counseling on iron | 92% | 265 |
| | | Did not receive counseling on iron | 55% | 184 |

Overall, results in terms of women’s nutrition as promoted through ANC were very positive. More women in intervention areas at endline reported having more ANC visits and beginning them earlier, obtaining and consuming iron, and consuming more IFA. This likewise suggests that the SPRING interventions related to building health provider capacity in those areas have had some success. Despite this encouraging progress, the percentage of women who took iron for at least 90 days still remains low—only 40 percent of women in the intervention area of Naryn and Jalalabad took iron supplements for at least 90 days—so there are still areas for improvement. Further, although most indicators increased more in the intervention areas than in Uzgen (in some cases significantly more), there were indicators such as the percentage of women taking iron for 90-plus days, where the situation in Uzgen improved almost as much as in the comparison areas, suggesting that some of the improvements could be due to national level trends and not only attributable to SPRING.

7. Women's Dietary Diversity

Another aspect of women's nutrition that SPRING worked to promote was dietary diversity. Women of reproductive age (WRA) are nutritionally vulnerable because of the physiological demands of pregnancy and lactation. Because women may be smaller and eat less (fewer calories), they require a more nutrient-dense diet than adult men.⁶ Insufficient nutrient intakes before and during pregnancy and lactation can affect both women and their infants. Yet in many resource-poor environments, women's diet quality is poor, with gaps between intakes and requirements for a range of micronutrients. These vulnerabilities and gaps in diet quality have been recognized for a long time. However, despite decades of appeals to improve women's diet quality and nutrition, there has been little programmatic action. Historically, one major impediment has been a lack of effective platforms and programs reaching adolescent girls and WRA outside of prenatal care.

The current standard for measuring women's dietary diversity is the Minimum Dietary Diversity for Women (MDD-W) indicator,⁷ which uses ten different food groups and has a cut-off of five as a minimum to indicate a sufficiently diverse diet. SPRING's baseline survey predated that indicator, however, so we used the Women's Dietary Diversity Score (WDDS)⁸ methodology, which was the standard at the time. The WDDS indicator was based on nine food groups. For the sake of comparability across time, we used the WDDS nine-food-group scale for all four surveys. A list based recall method was used to ask women the foods they ate in the previous 24 hours, and answers of "yes" were consolidated into the nine groups. The same methods were used for each survey, except that in the WDD2 and endline, we asked about food products in greater detail. The nine food groups were as follows:

1. Starchy staple foods (bread, potato)
2. Dark green leafy vegetables (cabbage, turnips, *jusai*, sorrel/dock, Chinese cabbage, any other dark green leafy vegetables such as spinach, *jandoo*, chard, etc.)
3. Other vitamin A-rich fruits and vegetables (pumpkin, carrots, sweet potatoes that are yellow or orange inside, apricots, peaches, yellow melon, persimmon, tomatoes)
4. Other fruits and vegetables (apples, any other fruits, any other vegetables)
5. Eggs
6. Milk and milk products (milk, tinned, powdered, animal milk, cheese, yogurt/airan, cottage cheese, sour cream, other milk products as *kymyz*, etc.)
7. Meat and fish products (beef, horse, pork, lamb, chicken, goat, horse, duck, fresh or dried fish or shellfish, etc.)
8. Organ meats (liver, kidney, heart or other organ meat)
9. Legumes, nuts, and seeds (beans, peas, lentils, nuts)

⁶ "Nutrient density" refers to the ratio of nutrients (such as vitamins and minerals) to the energy content of foods.

⁷ FAO and FHI 360. 2016. *Minimum Dietary Diversity for Women: A Guide for Measurement*. Rome: FAO.

⁸ FAO. 2010. *Guidelines for Measuring Household and Individual Dietary Diversity*. Rome: FAO. <http://www.fao.org/3/a-i5486e.pdf>

Increasing dietary diversity for women, with an emphasis on consumption of food sources rich in iron and vitamin A, and foods that enhance nutrient absorption, was among the practices promoted by SPRING. Methods used included household visits and community events carried out by SPRING-trained community activists, development of a Kyrgyz- and Russian-language cookbook to encourage nutritious eating habits for families, and use of social and traditional media. SPRING’s baseline found low percentages of women consuming nutrient-rich foods, even soon after harvest time, especially in Naryn (Table 7.1). SPRING’s efforts focused on nutrient-rich food groups that were least consumed by the target population.

Table 7.1 Women’s Consumption at the Time of the Baseline (October 2014), by Region and by the 9 WDDS Food Groups (Foods Consumed by Less than 2% of Women Are Shaded Orange)

| Food Groups | Jalalabad | Naryn |
|--|-----------|-------|
| Starchy staple foods | 99% | 93% |
| Dark green leafy vegetables | 10% | 5% |
| Other Vitamin A-rich fruits & vegetables | 64% | 21% |
| Other fruits and vegetables | 76% | 18% |
| Eggs | 31% | 50% |
| Milk products | 59% | 96% |
| Meat and fish products | 90% | 86% |
| Organ meats | 10% | 12% |
| Legumes, nuts and seeds | 12% | 9% |

Figures 7.1 and 7.2 show detailed findings related to women’s dietary diversity from the baseline and endline surveys. The number of foods shown in the WDD2 and the endline is higher than in the baseline and WDD1, because we asked for more detail in the last two surveys. The most consumed foods in most of the surveys were bread and noodles, tea or coffee, potatoes, meat products and oils/fats. The percentage of women reporting meats is lower in the last two surveys, but only because in those surveys, meat types are reported separately. There are some notable differences in food patterns between the regions, with respondents in Naryn consuming more milk and some meats, and eggs at baseline, while women in Jalalabad consumed more of most kinds of fruits and vegetables, some meats, and eggs at the endline.

Detailed results for all foods and all surveys are also provided in Annex 3.

Figure 7.1 Women’s Diet Structure—Foods Consumed in Most Recent 24 Hours (Baseline)

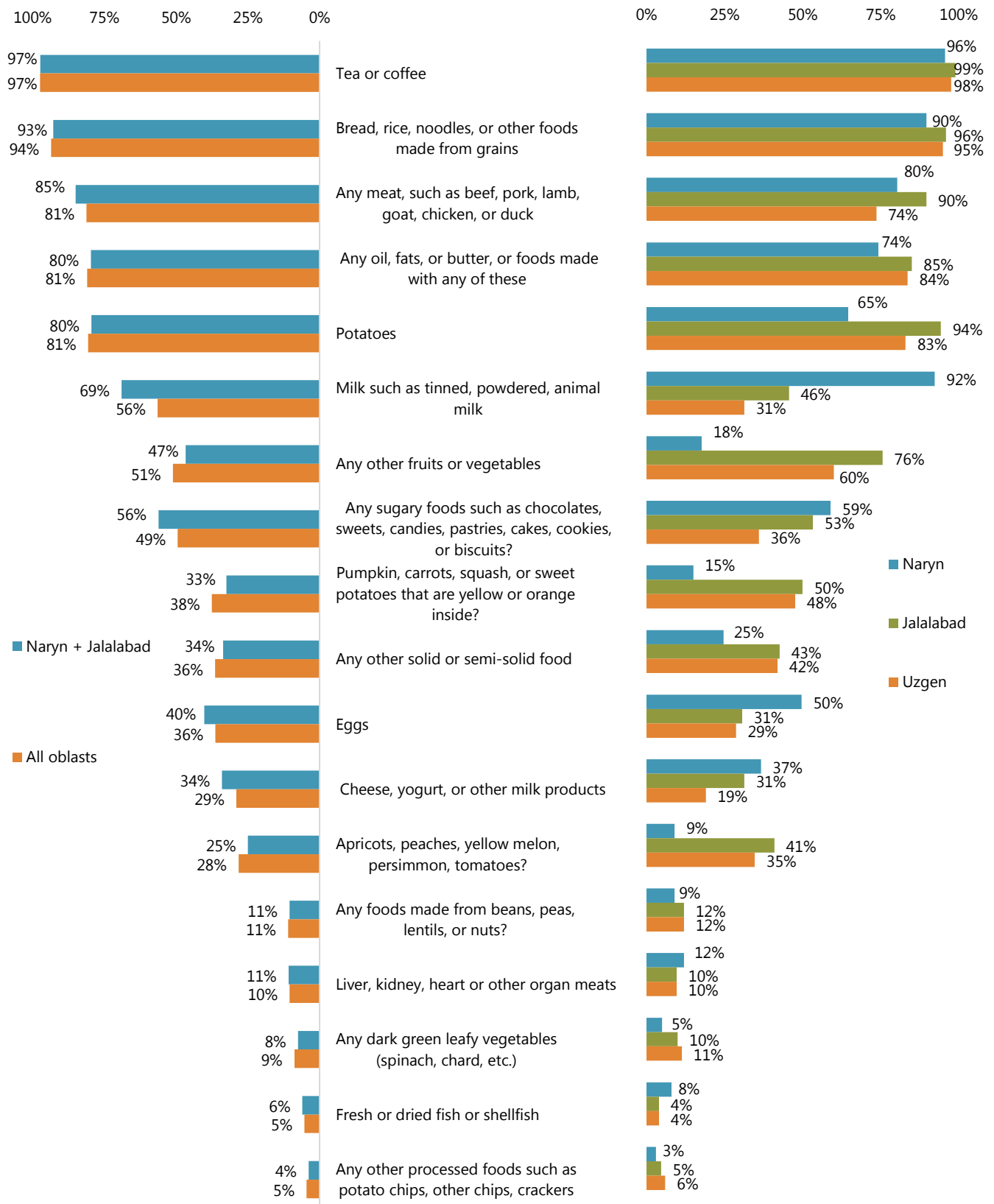


Figure 7.2 Women’s Diet Structure—Foods Consumed in Most Recent 24 Hours (Endline)

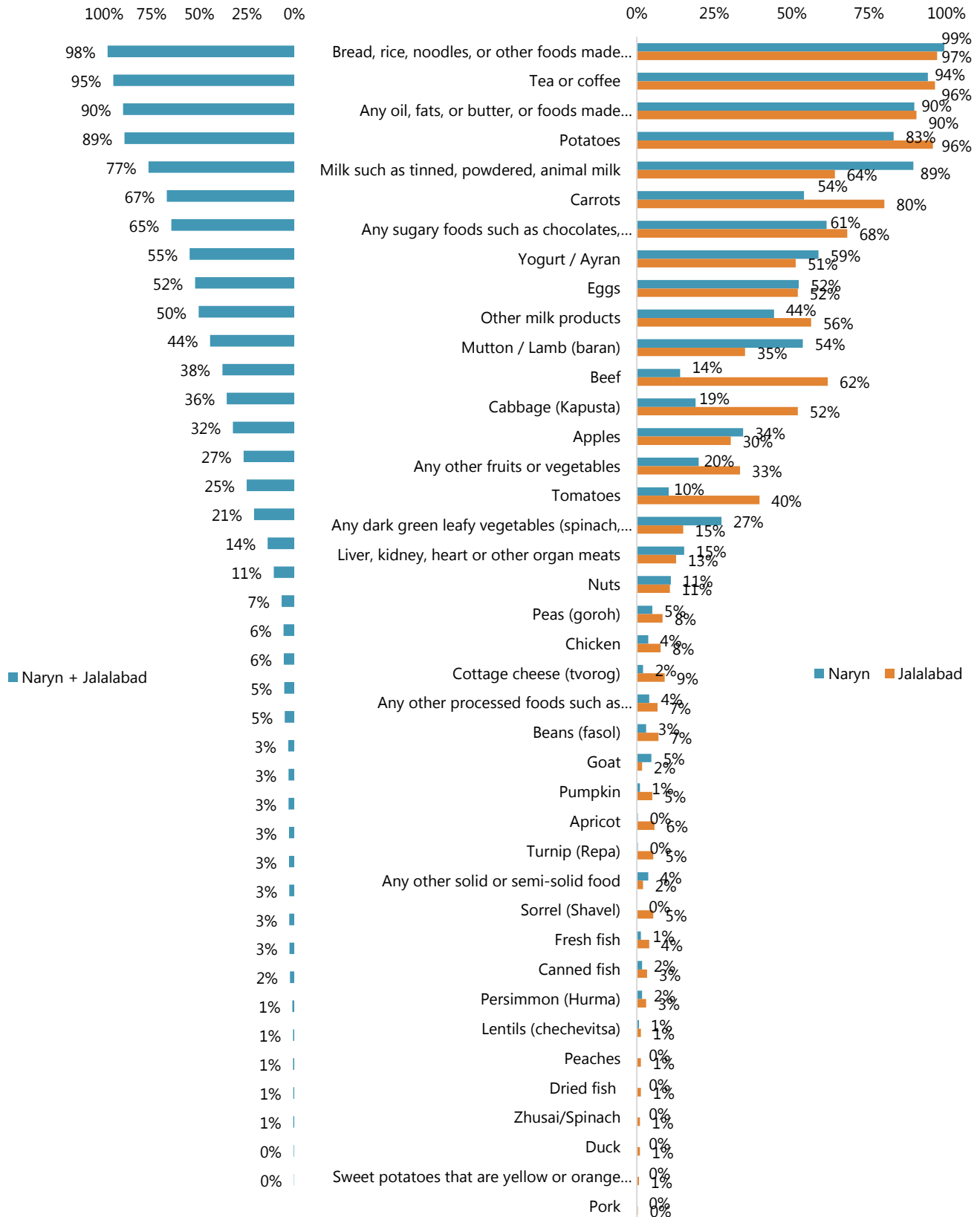


Figure 7.3 shows a summary of how women’s dietary diversity changed over time across the four surveys and by region, as measured by the overall percentage of women consuming five or more out of nine groups. Jalalabad showed the expected pattern, at least at first, with diet diversity declining from 46 percent in the baseline (right after harvest time), to 34.7 percent in the WDD1, which took place in late winter. That decline was expected, in that that we hypothesized that some foods would be hard to obtain in winter periods. Encouragingly, the last two surveys, in late winter and midwinter, respectively, showed strong improvements, indicating that women were eating more varieties of foods, even during winter periods, compared to our baseline. Naryn showed a somewhat different pattern, with dietary diversity surprisingly increasing even in the WDD1, and then continuing to increase in the last two surveys. Figure 7.3 also shows results for the comparison area of Uzgen, which was only included in the baseline and endline surveys. Perhaps surprisingly, dietary diversity increased by almost as much in Uzgen as in the intervention areas. This may have been due to national level efforts by SPRING and potentially other organizations, other nutrition programs such as UNICEF operating in Osh oblast (where Uzgen is located), spillover effects of SPRING’s interventions in nearby Jalalabad, or other unknown factors. SPRING is currently investigating possible reasons for the improvements outside of the SPRING zone of influence, but further research may be needed to know the reasons with certainty.

Figure 7.3 Women’s Dietary Diversity (Percentage Consuming 5 or More Food Groups), by Survey and Region

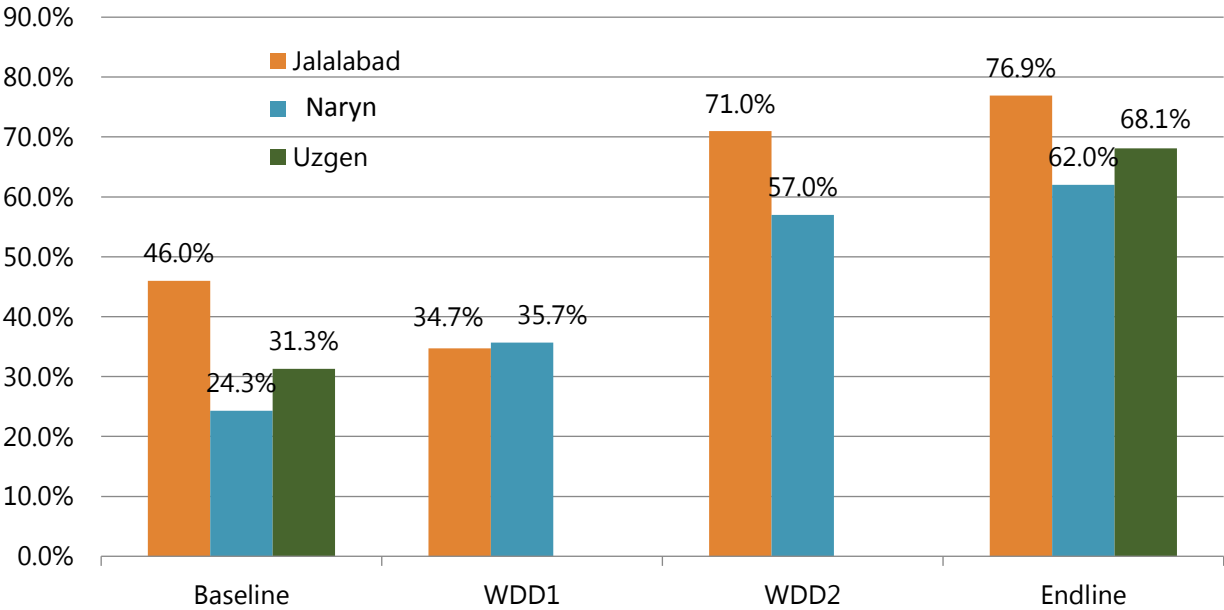


Table 7.2 provides similar information, but by food group. Figures in red indicate significant changes compared with the baseline. Overall, the picture is very encouraging, with consumption of six of nine food groups increasing significantly since baseline, and the mean number of food groups increasing from 4.1 at baseline to 5.4 at endline. Especially encouraging are the increases seen in some of the most nutrient-rich food groups, including dark green leafy vegetables, other vitamin A-rich fruits and vegetables, and

legumes, seeds, and nuts. Changes in consumption of those nutrient-rich groups are shown in Figure 7.4, by region. This suggests that overall improvement in women’s dietary diversity was driven largely by increased consumption of nutrient-rich foods. Consumption of sugary and processed foods (“junk food”) did not change significantly between surveys (see discussion later in this section), nor did consumption of tea/coffee (not shown).

Table 7.2 Women’s Food Consumption by Survey (Percentage)

| 9 Food Groups, Percentage Who Consumed | Baseline (Naryn and Jalalabad) | WDD1 (Naryn and Jalalabad) | WDD2 (Naryn and Jalalabad) | Endline (Naryn and Jalalabad) |
|---|---|---|---|--|
| 1. All starchy staple foods | 96% | 99% | 100% | 100% |
| 2. Dark green leafy vegetables | 8% | 27% | 50% | 41% |
| 3. Other vitamin A-rich fruits and vegetables | 33% | 32% | 67% | 72% |
| 4. Other fruits and vegetables | 47% | 33% | 46% | 75% |
| 5. Eggs | 40% | 54% | 52% | 32% |
| 6. Milk and milk products | 77% | 69% | 89% | 86% |
| 7. Meat and fish products | 88% | 79% | 79% | 92% |
| 8. Organ meat | 11% | 15% | 14% | 15% |
| 9. Legumes, nuts and seeds | 11% | 8% | 18% | 26% |
| Mean number of food groups | 4,1 | 4,1 | 5,1 | 5,4 |

*Numbers in red show statistically significant difference (p<0.05).

Figure 7.4 Women’s Consumption of Select Nutrient-Rich Food Groups, by Survey and Region

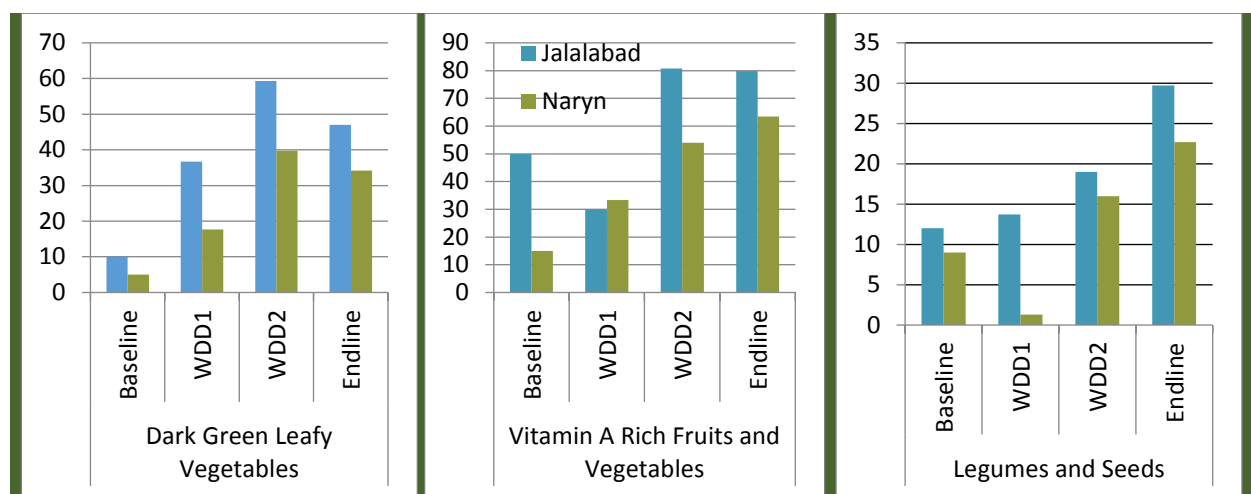


Table 7.3 shows consumption of each food group broken out by rural/urban residence. In general, urban residents tended to have somewhat more varied diets than their rural counterparts, mainly because they consume more vegetables, fruits, legumes, and seeds. In most surveys, rural respondents reported consuming eggs, milk products, and organ meats. The higher consumption of fruits and vegetables in urban areas could be a sign that urban residents are able to gain access to fresh produce through markets, especially during winter periods.

Table 7.3 Women’s Food Consumption, by Urban/Rural Residence (Uzgen Excluded)

| Food Groups | Baseline (Fall 2014) | | WDD1 (April 2015) | | WDD2 (April 2016) | | Endline (February–March 2017) | |
|--|----------------------|-------|-------------------|-------|-------------------|-------|-------------------------------|-------|
| | Urban (City/Town) | Rural | Urban (City/Town) | Rural | Urban (City/Town) | Rural | Urban (City/Town) | Rural |
| All starchy staple foods | 98% | 96% | 98% | 99% | 100% | 100% | 100% | 100% |
| Dark green leafy vegetables | 12% | 8% | 35% | 24% | 60% | 46% | 56% | 39% |
| Other vitamin A-rich fruits and vegetables | 47% | 36% | 27% | 33% | 83% | 61% | 78% | 71% |
| Other fruits and vegetables | 77% | 46% | 50% | 26% | 64% | 40% | 76% | 72% |
| Eggs | 30% | 38% | 35% | 61% | 51% | 53% | 50% | 33% |
| Milk and milk products | 55% | 67% | 52% | 75% | 87% | 90% | 76% | 82% |

| Food Groups | Baseline (Fall 2014) | | WDD1 (April 2015) | | WDD2 (April 2016) | | Endline (February–March 2017) | |
|--|-------------------------|------------|----------------------|------------|----------------------|------------|-------------------------------------|------------|
| | Urban (City/Town) | Rural | Urban (City/Town) | Rural | Urban (City/Town) | Rural | Urban (City/Town) | Rural |
| Meat and fish products | 89% | 82% | 78% | 79% | 87% | 75% | 96% | 91% |
| Organ meat | 9% | 11% | 5% | 19% | 12% | 15% | 8% | 14% |
| Legumes, nuts and seeds | 15% | 10% | 11% | 6% | 21% | 16% | 26% | 27% |
| Mean number of food groups consumed | 4.3 | 3.9 | 3.9 | 4.2 | 5.7 | 5.0 | 5.7 | 5.3 |

Overall, most indicators related to women’s diet improved over the period between the baseline and endline surveys, despite the fact that the endline was carried out in the middle of winter. Improvements were greatest with regard to consumption of the most nutrient-rich food groups. Improvements occurred in both intervention oblasts, but also in the comparison region of Uzgen, a fact which will require more research to fully understand.

8. Children's Nutrition

Breastfeeding

Feeding practices during infancy are critical in determining the nutritional status, development trajectory, and survival of children. Breastfeeding has many health benefits for infants as breastmilk contains all nutrients an infant requires for the first six months of life. WHO and UNICEF recommend early initiation of breastfeeding within one hour of birth, exclusive breastfeeding for the first six months of life, and the introduction of nutritionally adequate and safe complementary feeding at six months, combined with continued breastfeeding for up to two years of age or beyond.

SPRING promoted breastfeeding both through health facilities and community outreach. In the health system, the project trained staff in over 200 health facilities in breastfeeding, complementary feeding and other nutrition topics. SPRING also worked with 16 hospitals and 11 family medicine centers to implement and strengthen policies and practices required to achieve "baby-friendly" certification. Launched in 1991, the Baby-Friendly Hospital Initiative (BFHI)⁹ is a global effort by WHO and UNICEF to implement practices that protect, promote, and support breastfeeding in health facilities to foster mother and child bonding. A maternity facility can be designated "baby-friendly" when it does not accept free or low-cost breastmilk substitutes, feeding bottles or teats, and has implemented 10 specific steps to support successful breastfeeding.

Early Initiation of Breastfeeding

The early initiation of breastfeeding indicator is defined as the proportion of living and deceased children born in the last 24 months who were put to the breast within one hour of birth, and is based on historical recall. The denominator and numerator include living children and deceased children who were born within the past 24 months. Early initiation of breastfeeding is critical since the first milk produced by the mother after giving birth, colostrum, is rich in antibodies that protect the newborn from illness. However, in many cultures, this milk is discarded. Thus, in addition to early initiation, it is important to know whether colostrum was given. According to the 2012 DHS in the Kyrgyz Republic, a high proportion of last-born children were breastfed within one hour after birth (84 percent), and within one day after birth (95 percent).¹⁰

Table 8.1 presents findings on key breastfeeding practices of women by survey and by region. Most indicators suggest that breastfeeding practices in general were good. Nearly all respondents said they had breastfed their children at some point (96 percent or more in all surveys). The percentage put to breast within the first hour after birth was similar to the DHS findings reported above, though slightly lower. Over 94 percent of mothers reported giving colostrum. A very small proportion of children were given anything other than breast milk during the first three days after birth. The mean number of months that women reported breastfeeding their babies increased from 8.7 to 10.0 between surveys in the intervention areas.

⁹ UNICEF. 2016. "The Baby-Friendly Hospital Initiative." <https://www.unicef.org/programme/breastfeeding/baby.htm>

¹⁰ National Statistical Committee of the Kyrgyz Republic (NSC), Ministry of Health [Kyrgyz Republic] (MOH), and ICF International. 2013. *Kyrgyz Republic Demographic and Health Survey 2012*. Bishkek, Kyrgyz Republic, and Calverton, MD, USA: NSC, MOH, and ICF International.

One negative result was that the percentage of women who reported bottle-feeding their children increased between surveys in the intervention areas, while decreasing in Uzgen. None of the changes shown was statistically significant.

Table 8.1 Breastfeeding Practices for Children (Percentage)

| Child Nutrition Practices (Percentage, Mean) | Intervention | | | | Comparison | | | |
|--|--------------|-----|---------|-----|------------|-----|---------|-----|
| | Baseline | | Endline | | Baseline | | Endline | |
| | % | N | % | N | % | N | % | N |
| Ever breastfed | 99 | 592 | 96 | 872 | 99 | 297 | 100 | 449 |
| Breastfed within 1 hour after birth (out of mothers who ever breastfed) | 80 | 476 | 79 | 623 | 65 | 192 | 58 | 236 |
| Breastfed within 2–3 hours after birth | 12 | 72 | 16 | 128 | 28 | 83 | 36 | 146 |
| Breastfed later than 3 hours after birth | 7 | 44 | 5 | 40 | 7 | 22 | 6 | 23 |
| Received colostrum | 96 | 571 | 94 | 855 | 96 | 285 | 98 | 439 |
| Received a prelacteal feeding (anything other than breastmilk) within 3 days of delivery | 9 | 56 | 9 | 81 | 7 | 22 | 11 | 48 |
| Children 6–23 months who are still breastfeeding | 68 | 283 | 72 | 436 | 81 | 137 | 82 | 219 |
| Mean months of breastfeeding | 8.7 | 592 | 10.0 | 872 | 8.3 | 297 | 9.2 | 449 |
| Bottle use in previous 24 hours | 24 | 148 | 27 | 246 | 36 | 109 | 32 | 146 |

Prelacteal feeds, which are fluids, and/or semi-solids given to infants in the first few days after delivery, were only given to 9 percent of infants in implementation areas in both the baseline and endline surveys. Prelacteal feeds are not recommended, since they may introduce pathogens that cause diarrhea and other diseases and replace the important colostrum.¹¹ Table 8.2 shows the breakdown of prelacteal feeds

¹¹ UNICEF. 2018. "Improving Breastfeeding, complementary foods and feeding practices."
http://www.unicef.org/nutrition/index_breastfeeding.html

among mothers who gave such feeds. The most common type of prelacteal feeds was infant formula (59 percent or more in each region and survey), though the sample size was small in all cases.

Table 8.2 Prelacteal Deeds Received within 3 Days after Birth, among Those Who Reported Giving Prelacteal Feeds

| Prelacteal Feeds | Baseline | | | | | | Endline | | | | | |
|--|----------|-----|-----------|-----|-------|-----|---------|-----|-----------|-----|-------|-----|
| | Naryn | | Jalalabad | | Uzgen | | Naryn | | Jalalabad | | Uzgen | |
| | N | %* | N | %* | N | %* | N | %* | N | %* | N | %* |
| Milk (not breastmilk) | 1 | 5% | 0 | 0% | 12 | 55% | 11 | 24% | 6 | 17% | 3 | 6% |
| Plain water | 8 | 36% | 4 | 12% | 2 | 9% | 4 | 9% | 8 | 22% | 6 | 13% |
| Sugar or glucose water | 0 | 0% | 11 | 32% | 1 | 5% | 1 | 2% | 7 | 19% | 11 | 23% |
| Infant formula ("malysh," "malutka," etc.) | 13 | 59% | 20 | 59% | 19 | 86% | 34 | 76% | 22 | 61% | 28 | 58% |
| Other | 0 | 0% | 1 | 3% | 0 | 0% | 6 | 13% | 1 | 3% | 9 | 19% |

* Percentages may sum to more than 100 percent because multiple answers were allowed.

Exclusive Breastfeeding among Children 0–5 Months

WHO recommends exclusive breastfeeding for the first six months of life to achieve optimal growth and development.¹² During that age range, breastmilk provides all the nutrients required for healthy development, and anything else provided may be detrimental by exposing the child to diseases and potential infections. Exclusive breastfeeding means that the infant receives only breastmilk, and that no other liquids or solids are given. In the SPRING surveys, it was measured using standard methods,¹³ based on a mother's recall of all foods and liquids given to a child in the previous 24 hours. Using the previous day recall period may cause the prevalence of exclusive breastfeeding to be overestimated, as some infants who are given other liquids irregularly may not have received them in the day before the survey.

Figure 8.1 shows trends in exclusive breastfeeding between the baseline and endline surveys, by intervention and comparison areas. In SPRING-supported areas, exclusive breastfeeding practices more than doubled between baseline and endline surveys, from 29 percent to 63 percent. Rates also increased in the comparison area, but by a much smaller amount, from 37 percent to 51 percent. The increase in implementation areas was significantly greater than the increase in the comparison area, suggesting that SPRING had a strong and positive impact on this indicator.

¹² World Health Organization. No date. E-Library of Evidence for Nutrition Actions. <http://www.who.int/elena/titles/en/>

¹³ World Health Organization. 2010. *Indicators for Assessing Infant and Young Child Feeding Practices Part 2: Measurement*. Geneva: WHO.

Figure 8.1 Exclusive Breastfeeding among Children 0–5 Months, Intervention vs. Comparison Areas

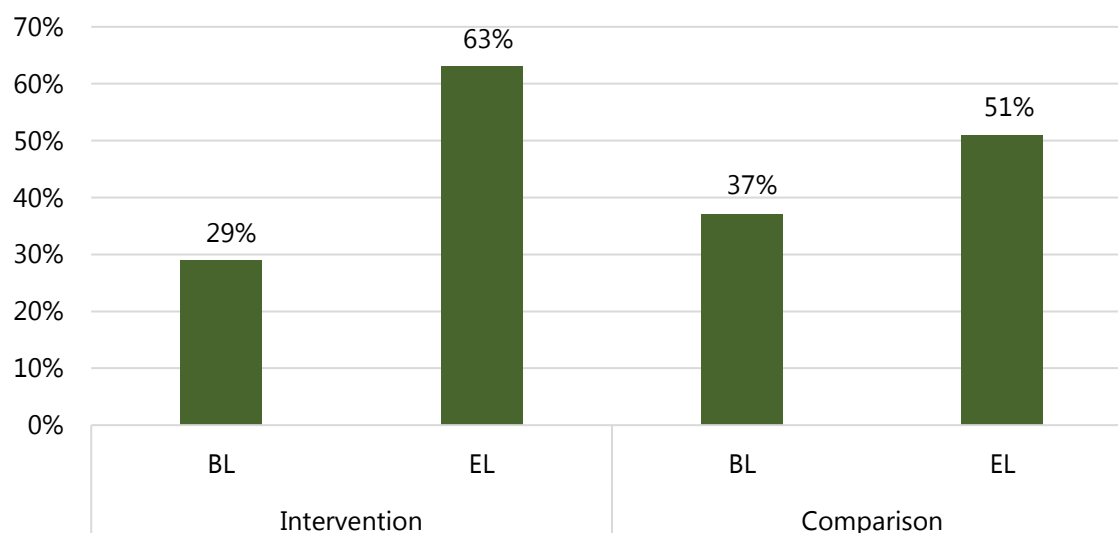


Table 8.3 provides more detail on breastfeeding, showing overall breastfeeding by age and by oblast, and exclusive breastfeeding by oblast. Over 90 percent of children less than six months of age were being breastfed, exclusively or otherwise, in all oblasts at the time of the survey. For older children, 6–23 months, the percentages were lower, as expected. Exclusive breastfeeding prevalence began much higher in Jalalabad than in Naryn (40 percent compared to 15 percent), but the increase over time was much greater in Naryn, so by the time of the endline, the rates were the same in each oblast. Thus, although exclusive breastfeeding increased significantly in both oblasts, most of the increase in the SPRING “intervention” area was provided by Naryn.

Table 8.3 Breastfeeding and Exclusive Breastfeeding Practices by Oblast, by Survey

| | Naryn | | Jalalabad | | Naryn + Jalalabad | | Uzgen | |
|---|-------|-----|-----------|-----|-------------------|-----|-------|-----|
| | BL | EL | BL | EL | BL | EL | BL | EL |
| Percentage breastfed at time of survey (0–5 months) | 92% | 94% | 99% | 99% | 96% | 97% | 91% | 97% |
| Percentage exclusively breastfed at time of survey (0–5 months) | 15% | 63% | 40% | 63% | 29% | 63% | 37% | 51% |
| Percentage breastfed at time of survey (6–23 months) | 66% | 69% | 71% | 73% | 68% | 71% | 76% | 74% |

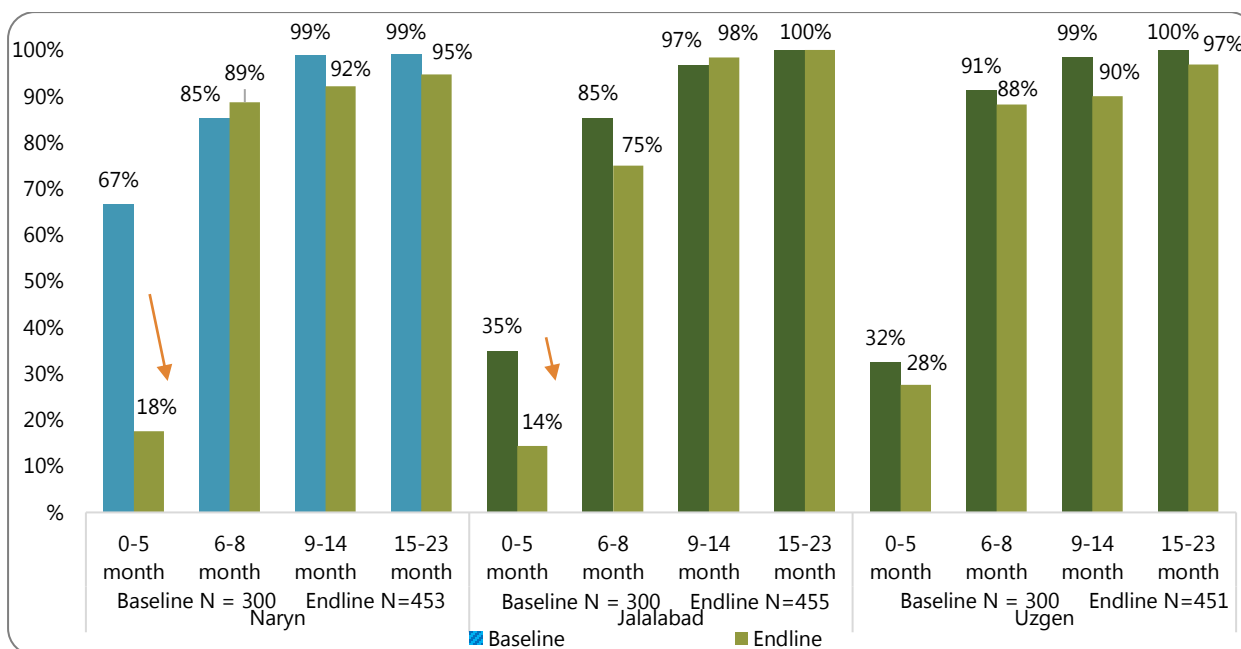
BL = baseline; EL = endline.

Introduction to Complementary Feeding

When infants reach six months of age, breastmilk alone is no longer sufficient to meet their nutritional requirements, so additional, nutrient-rich foods need to be added to children’s diets, complementing breastmilk, to meet these needs. The transition from exclusive breastfeeding to a wider variety of complementary foods should begin at six months of age, and breastfeeding should be continued to two years of age and beyond.¹⁴ The indicator of appropriate Introduction of complementary foods (solid, semi-solid, or soft foods) is calculated for infants 6–8 months of age. Because the indicator has a very narrow age range of three months, the sample size was small, and estimates have wide confidence intervals.

In general, all survey rounds found that the large majority of young children began complementary feeding at the correct age (see Figure 8.2). Even at baseline, 85 percent of respondents in both Naryn and Jalalabad said they introduced solid, semi-solid, or soft foods other than liquids to their child aged 6–8 months the day before the survey. Endline numbers increased slightly in Naryn, to 89 percent, but fell in Jalalabad to 75 percent. The percentage also declined slightly in Uzgen. Though there is still some slight room for improvement, especially in Jalalabad, the main issue with complementary feeding appears to be that mothers begin it too early. Therefore, it is encouraging to note that the percentage of women introducing complementary food before six months declined significantly in both Naryn and Jalalabad between surveys (red arrows in Figure 8.2).

Figure 8.2 Complementary Feeding: Those Who Consumed Solid, Semi-solid, or Soft Foods Other than Liquids Yesterday during the Day or at Night (by Region and Child’s Age)



¹⁴ UNICEF. 2018. “Improving Breastfeeding, Complementary Foods and Feeding Practices.” http://www.unicef.org/nutrition/index_breastfeeding.html

The next set of figures (Figures 8.3–8.6) present the structure of child feeding (breastfeeding and complementary foods) by month for ages 0–23 months, and types of food consumed. Each chart shows what broad classes of foods children were eating in each oblast and during each survey, including exclusive breastfeeding, breastfeeding plus water, breastfeeding plus other liquids, et cetera. Ideally, we would want to see the exclusive breastfeeding portion (dark gray) be at or close to 100 percent for the first six months of life, and then the blue section (breastmilk plus complementary foods) expand so that, for children 6–23 months old, the blue portion would occupy most of the chart. A quick comparison of baseline patterns (Figures 8.3 and 8.5) to those of the endline (Figures 8.4 and 8.6) shows that the exclusive breastfeeding portion did expand for both regions between surveys. The complementary foods portion also expanded for children from roughly 6 to 16 months of age. However, many foods besides breastmilk were still provided, even at endline, to children younger than six months. Furthermore, for children over 16 months, the endline patterns showed a narrowing of the blue portion, suggesting that only a small percentage of those older children in both oblasts were getting both breastmilk and complementary foods. And finally, the percentage of women who did not breastfeed their child at all in the previous days increased markedly in the endline figures for children over 17 months in Naryn and those over 20 months in Jalalabad (light gray portion of the graph). Liquids most commonly given to infants were plain water and tea. Waiting until six months to begin introducing complementary foods, and continued breastfeeding through at least two years may be areas of focus for future nutrition activities in Kyrgyz Republic.

Figure 8.3 Feeding Structure of Children by Age, by Type of Food—Naryn Baseline

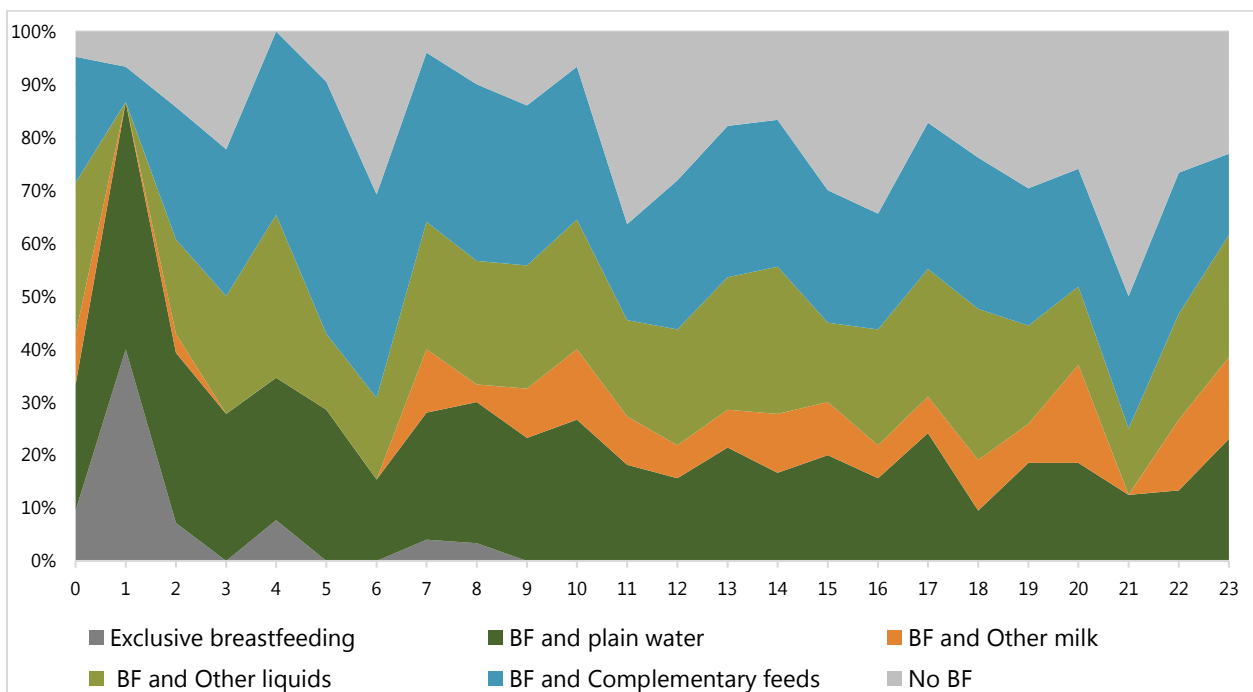


Figure 8.4 Feeding Structure of Children by Age, by Type of Food—Naryn Endline

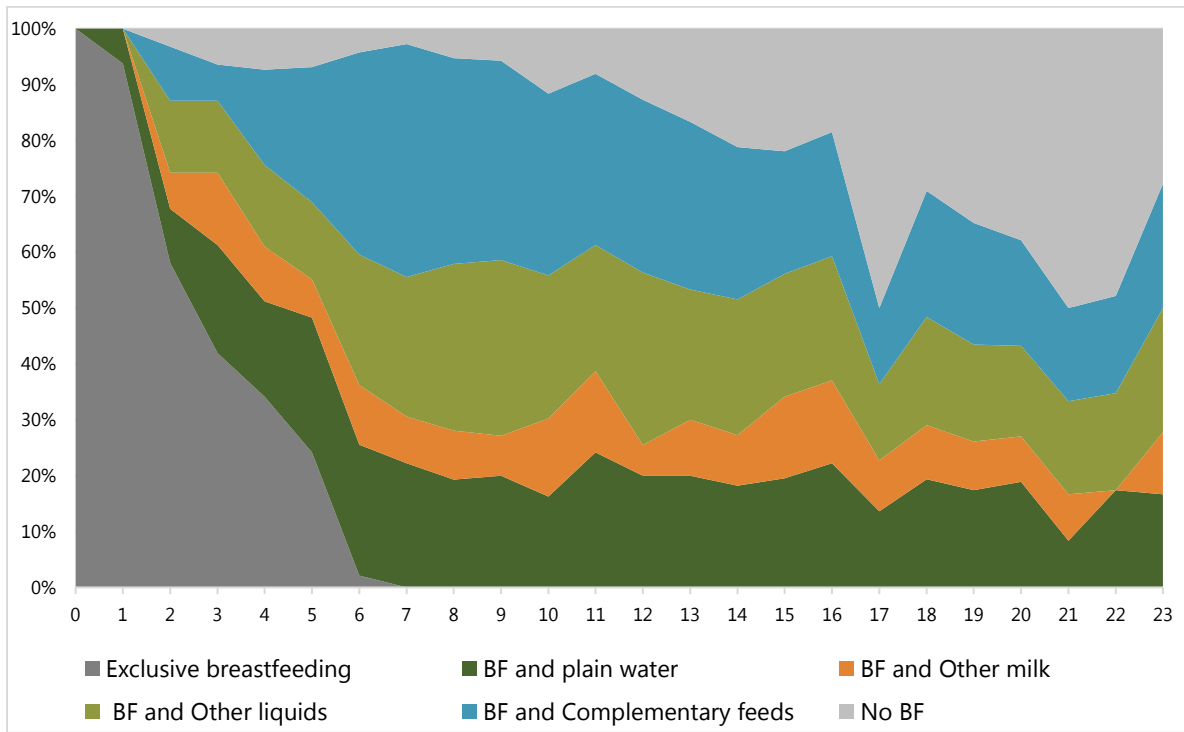


Figure 8.5 Feeding Structure of Children by Age, by Type of Food—Jalalabad Baseline

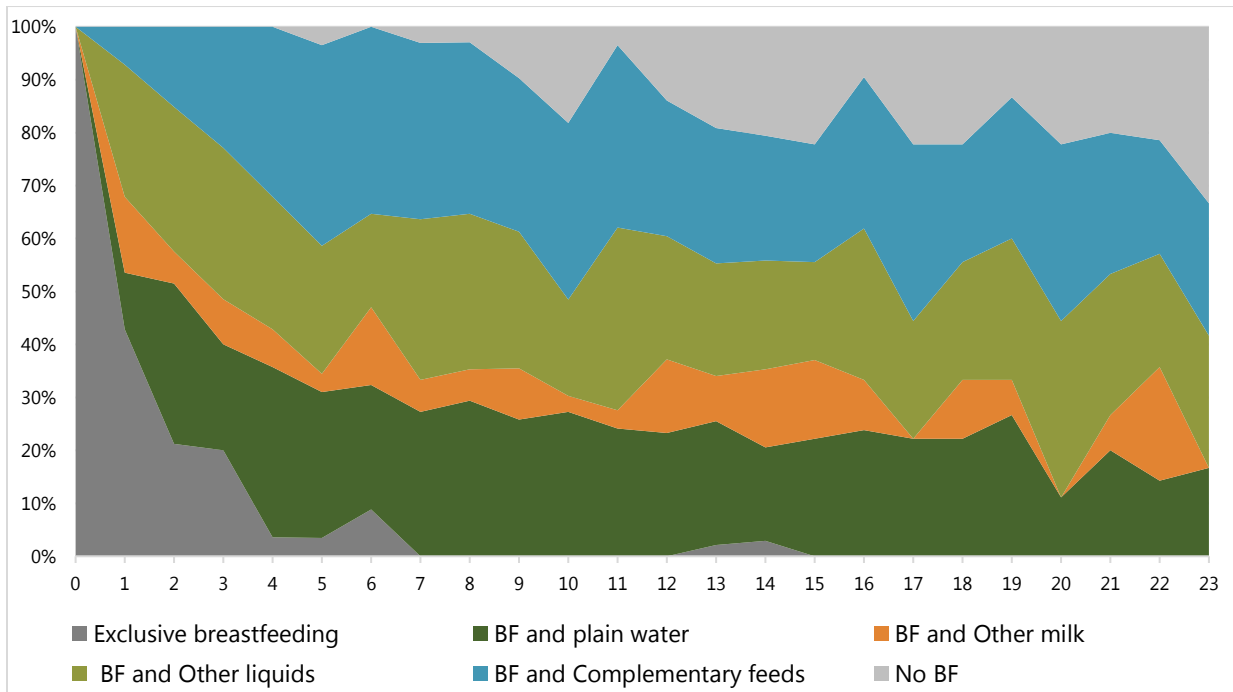
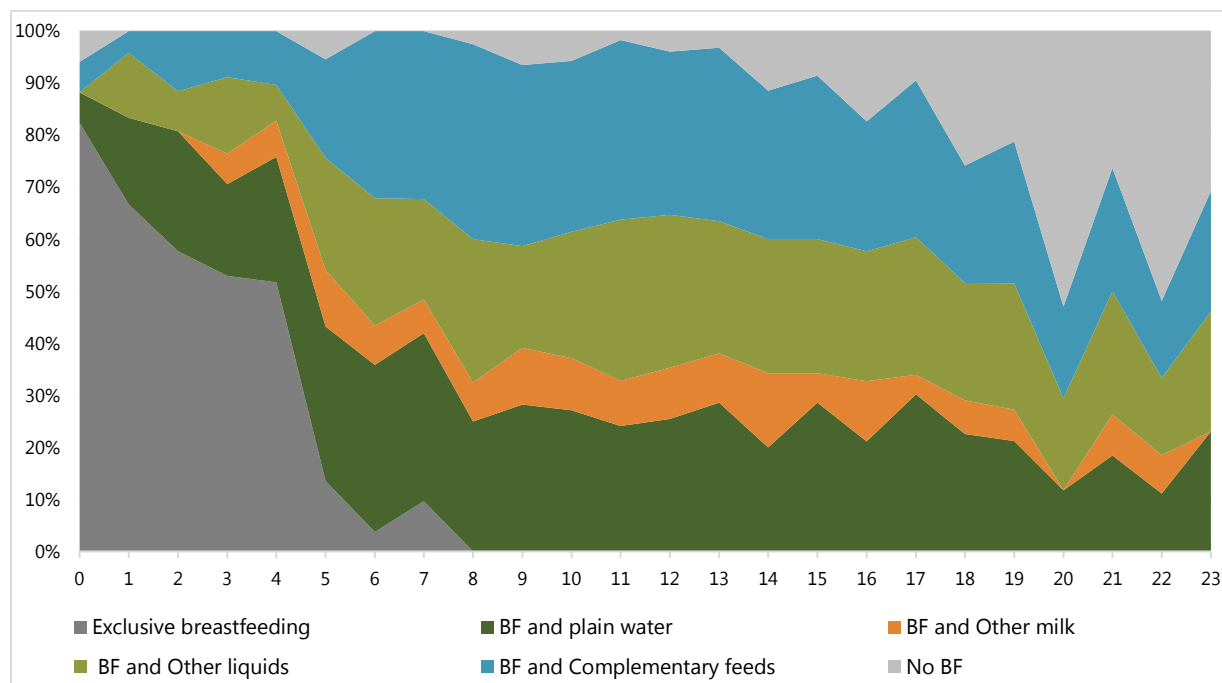


Figure 8.6 Feeding Structure of Children by Age, by Type of Food—Jalalabad Endline



Dietary Characteristics for Children Ages 6–23 Months

For children 6–23 months of age, having a diverse diet with enough feeds during the day is essential for achieving good nutrition. Dietary diversity interventions are interventions that change food consumption at the household level, such as increasing the consumption of vegetables and fruits as well as animal-source foods. In most resource-poor settings, starch-based diets with limited access to meats, dairy, fruits, or vegetables, are the dominant diets. The objective in changing household diet is to increase the variety and quantity of nutrient-rich foods consumed. SPRING attempted to achieve this objective through social and behavior change activities, working through both the health system and community activists. SPRING provided a range of in-field trainings on infant and young child feeding (IYCF) and supportive supervision. A strong supportive supervisory system allowed the government to address gaps early on through regular monitoring and reporting.



To measure the change in children’s dietary diversity, enumerators asked mothers about foods their children had consumed in the previous day. As with women’s dietary diversity, the list-based method was used. Data was collected during baseline and endline surveys only.

Between the baseline and endline surveys, children’s dietary diversity improved in both the intervention and comparison areas, but the improvement was less than with women’s diets. As with women’s diets, the main solid foods consumed by children aged 6–23 months were starches (bread, rice, noodles, and other starches), potatoes, meats, and oils. Table 8.4 shows consumption patterns across regions and across surveys for 13 kinds of foods consumed. Green cells show increases between surveys, and orange cells show decreases. In the intervention area, among foods consumed by at least 10 percent of children at the time of the endline, the biggest increases in consumption were seen in beans/peas/nuts (333 percent increase), orange/yellow vegetables (45 percent), and dairy (26 percent). There were small declines in consumption of orange/yellow fruits and eggs, and a very large decline (35 percent) in consumption of porridge/gruel. In the comparison area, fewer food groups showed increases in consumption, and consumption of some of the groups declined by more than 40 percent.

Overall, consumption of 10 of the 13 food groups increased in the intervention areas, compared 8 of 13 in the comparison area. The magnitude of the changes over time was usually also greater in the intervention areas than in the comparison region. Among nutrient-rich foods, changes between surveys were more favorable (greater increases or smaller declines) in the intervention areas for all vegetables and fruits, and for organ meats and fish (both infrequently consumed). Conversely, flesh meats, eggs, and dairy increased more in Uzgen than in the intervention areas. These changes suggest that children were consuming more nutrient-rich foods at the time of the endline survey, and that a noteworthy change was more consumption of nutrient-rich vegetables and possibly some fruits in the intervention areas of Jalalabad and Naryn.

Table 8.4 Select Food Groups Consumed by Children 6–23 Months of Age in Previous 24 Hours, by Region and Survey

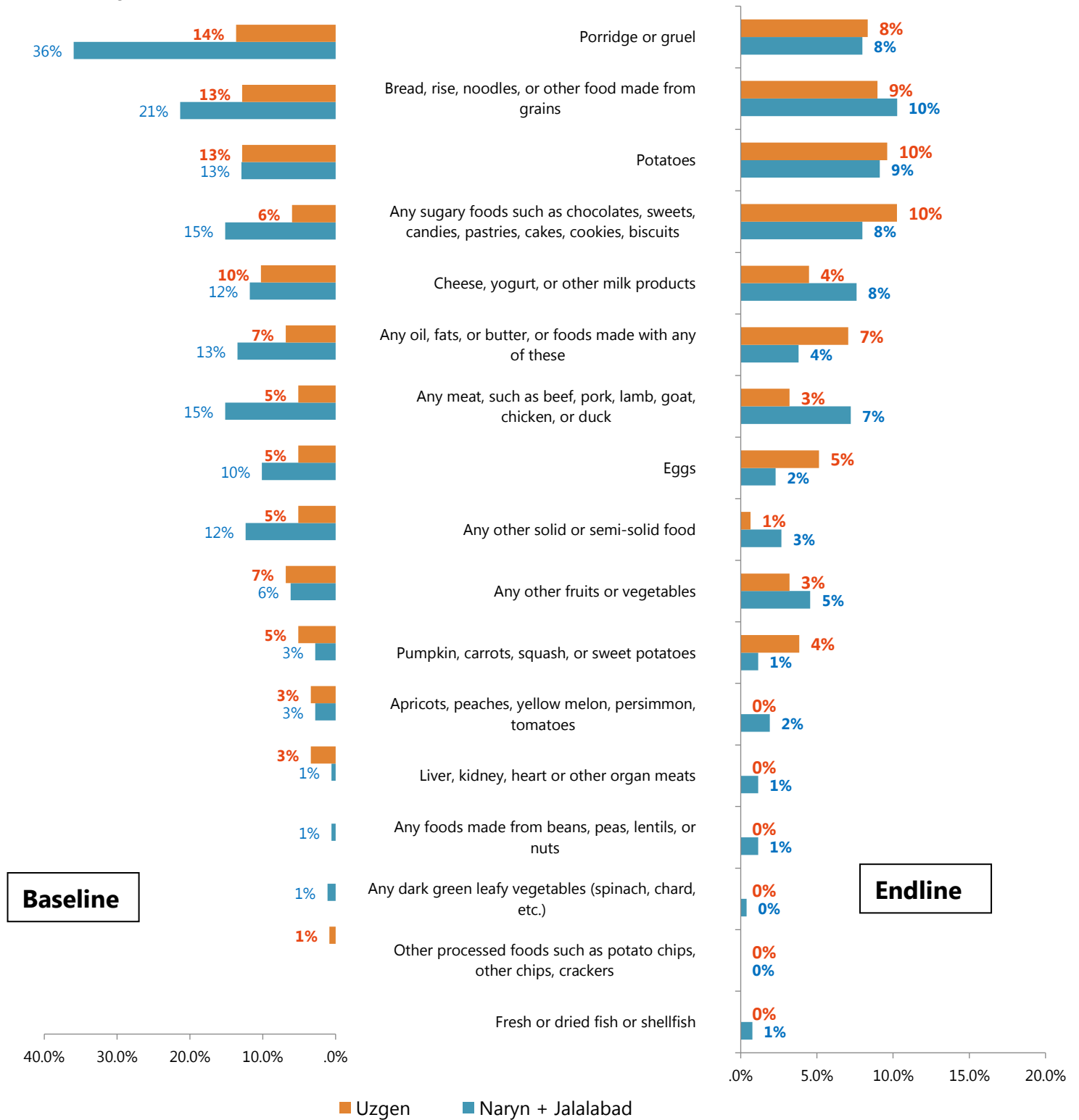
| Type of Food Consumed | Intervention: Naryn + Jalalabad | | | Comparison: Uzgen | | |
|---|------------------------------------|------------------|-------------------------|----------------------|------------------|-------------------------|
| | Baseline N=422 | Endline N=645 | % change BL to EL | Baseline N=183 | Endline N=295 | % change BL to EL |
| Bread, rice, noodles, or other foods made from grains | 85.5% | 87.8% | 2.7% | 78.7% | 84.1% | 6.9% |
| Pumpkin, carrots, squash, or sweet potatoes | 18.5% | 26.8% | 44.9% | 38.3% | 22.7% | -40.7% |
| Potatoes | 66.6% | 76.3% | 14.6% | 65.6% | 68.8% | 4.9% |
| Dark green leafy vegetables (spinach, chard, etc.) | 3.6% | 6.0% | 66.7% | 7.7% | 4.1% | -46.8% |
| Apricots, peaches, yellow melon, persimmon, tomatoes | 6.9% | 6.7% | -2.9% | 16.4% | 3.4% | -79.3% |
| Other fruits or vegetables | 35.8% | 40.3% | 12.6% | 48.6% | 23.4% | -51.9% |
| Liver, kidney, heart, or other organ meats | 5.0% | 8.5% | 70.0% | 4.4% | 5.1% | 15.9% |
| Meats, such as beef, pork, lamb, goat, chicken, or duck | 68.0% | 69.6% | 2.4% | 55.7% | 63.1% | 13.3% |

| Type of Food Consumed | Intervention: Naryn + Jalalabad | | | Comparison: Uzgen | | |
|--|------------------------------------|------------------|-------------------------|----------------------|------------------|-------------------------|
| | Baseline N=422 | Endline N=645 | % change BL to EL | Baseline N=183 | Endline N=295 | % change BL to EL |
| Eggs | 38.4% | 35.5% | -7.6% | 31.7% | 39.7% | 25.2% |
| Fresh or dried fish or shellfish | 1.2% | 3.6% | 200.0% | 3.3% | 3.4% | 3.0% |
| Beans, peas, lentils, or nuts | 2.4% | 10.4% | 333.3% | 5.5% | 7.5% | 36.4% |
| Porridge or gruel | 68.0% | 44.2% | -35.0% | 55.7% | 19.0% | -65.9% |
| Cheese, yogurt, or other milk products | 46.2% | 58.3% | 26.2% | 27.3% | 46.8% | 71.4% |

Because consumption was asked for all age groups, we can also analyze changes in consumption among the youngest children aged 0–5 months. Children of those ages should only receive breastmilk, so in this case, we hope to see *less* consumption over time, not more. Part of SPRING’s work to promote exclusive breastfeeding in that age group involved informing mothers of the benefits of waiting until the child is six months old to begin feeding the child complementary foods.

Figure 8.7 shows food groups consumed by children 0–5 months old in the baseline survey (left side), and the endline (right side), by intervention and comparison groups. Encouragingly, consumption of such foods declined for most food groups between surveys. The declines were especially strong in intervention areas, and for less nutritious food groups.

Figure 8.7 Foods Consumed by Children 0–5 Months of Age in Previous 24 Hours, by Region and Survey



Consumption of Vitamin-Rich Food

Vitamin-rich food has an important place in the daily diet of any child older than six months. Lack of vitamins and minerals 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.¹⁵

The results of this study showed that most categories of vitamin A-rich foods increased between surveys in the intervention areas of Naryn and Jalalabad, while declining in Uzgen (see Table 8.5). Even at endline, however, only about one-third or fewer young children consumed vitamin A-rich foods the day before the survey. The percentage of children receiving iron, on the other hand, was quite high across all regions (over 78 percent in all surveys). Consumption of iron-rich foods declined slightly in the intervention areas while increasing slightly in Uzgen. Iron is mostly received through animal-source foods, while vitamin A is mostly obtained through orange/yellow/red vegetables and fruits.

Table 8.5 Consumption of Vitamin-Rich Food by Children Aged 6–23 Months

| Food Groups | Naryn + Jalalabad | | Uzgen | |
|--|---------------------|--------------------|---------------------|--------------------|
| | Baseline (N=422) | Endline (N=645) | Baseline (N=183) | Endline (N=295) |
| Vitamin A-rich plant food (pumpkin, carrots, squash, sweet potatoes yellow or orange inside, spinach, chard, apricot, peaches, yellow melon, persimmon, tomatoes) | 23% | 34% | 45% | 28% |
| Vitamin A-rich orange vegetables (pumpkin, carrots, squash, sweet potatoes yellow or orange inside) | 18% | 27% | 38% | 23% |
| Vitamin A-rich fruit (apricot, peaches, yellow melon, persimmon, tomatoes) | 7% | 7% | 16% | 3% |
| Iron-rich food (liver, kidney, heart, other organ meats, beef, pork, lamb, goat, chicken, duck, dried fish, shellfish, eggs) | 81% | 78% | 72% | 76% |
| Dark green leafy vegetables (source of vitamin C, iron) (spinach, chard, etc.) | 4% | 6% | 8% | 4% |

Minimum Dietary Diversity

Minimum dietary diversity (MDD) was calculated for children 6–23 months of age as the percentage who receive foods from 4 or more out of a standardized list of seven food groups:

1. Grains, roots and tubers
2. Legumes and nuts

¹⁵ World Health Organization <http://www.who.int/topics/anaemia/en/>

3. Dairy products (milk, yogurt, cheese)
4. Flesh foods (meat, fish, poultry, and liver/organ meats)
5. Eggs
6. Vitamin A-rich fruits and vegetables
7. Other fruits and vegetables

The seven groups were defined by combining some of the 13 food groups presented in Table 8.4. Consumption of any amount of food from each food group is sufficient to “count,” except if an item is only used as a condiment. The cut-off of at least four of the above seven food groups above was selected because consumption of foods from at least four food groups on the previous day would mean that in most populations the child had a high likelihood of consuming at least one animal-source food and at least one fruit or vegetable that day, in addition to a staple food (grain, root ,or tuber).

Survey findings (Table 8.8) showed that children’s MDD improved substantially between baseline and endline. In the intervention areas or Naryn and Jalalabad, the percentage of children who ate from four or more food groups during the last 24 hours increased significantly from 42 percent to 54 percent, while in the comparison area, the figure actually fell slightly, from 46 percent to 41 percent, between surveys.

Table 8.8 Percentage of Children Aged 6–23 Month who Consumed Four or More Food Groups

| Indicator | Intervention | | | | Comparison | | | |
|---|--------------|-----|-----|-----|------------|-----|-----|-----|
| | BL | | EL | | BL | | EL | |
| | % | N | % | N | % | N | % | N |
| % of children 6-23 months, who ate foods from four or more food groups in the previous 24 hours | 42% | 422 | 54% | 645 | 46% | 183 | 41% | 295 |

It should be noted, however, that almost all of the increase in MDD in the intervention areas came from an extremely large improvement (29 percent to 66 percent) among non-breastfed children in Naryn (not shown, as intervention areas were combined for this category). Among breastfed children in Naryn, the improvement was slight (64 percent to 69 percent). In Jalalabad, MDD actually declined slightly between surveys.

Minimum Feeding Frequency

In addition to consuming a diverse diet with all essential nutrients, it is important for young children to be fed at regular intervals throughout the day. Minimum feeding frequency (MFF) is the proportion of breastfed and non-breastfed children 6–23 months of age who received a minimum number of feeds of solid, semi-solid, or soft foods during the previous day. The indicator needs to be calculated separately for breastfed and non-breastfed children, as follows:

$$\frac{\text{Breastfed children 6–23 months of age who received solid, semi-solid, or soft foods the minimum number of times or more during the previous day}}{\text{Total Number of Breastfed children 6–23 months of age}}$$

and

$$\frac{\text{Non-breastfed children 6–23 months of age who received solid, semi-solid, or soft foods or milk feeds the minimum number of times or more during the previous day}}{\text{Total Number of Non-breastfed children 6–23 months of age}}$$

The minimum number was defined as:

- 2 times for breastfed infants 6–8 months
- 3 times for breastfed children 9–23 months
- 4 times (including milk feeds) for non-breastfed children 6–23 months

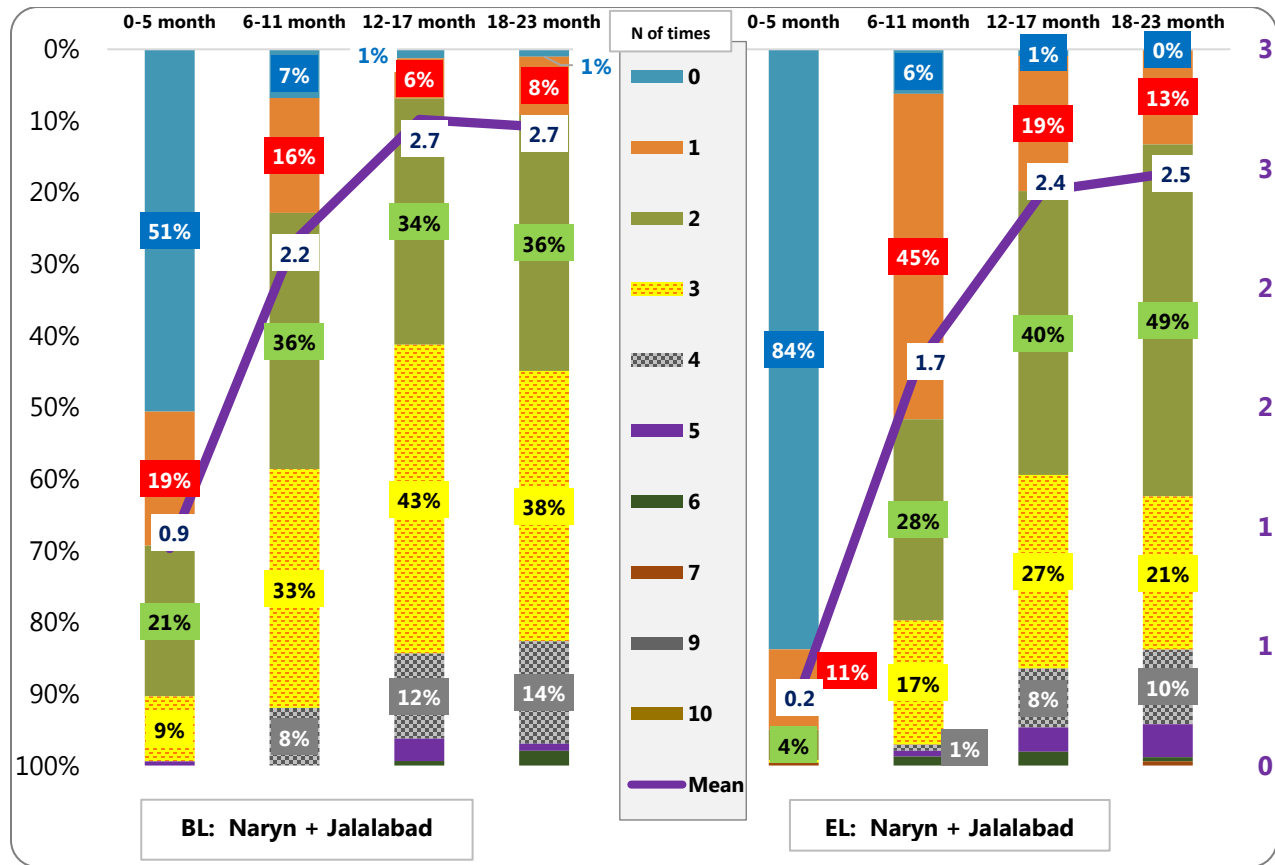
“Meals” include both meals and snacks (other than trivial amounts), and frequency is based on mother’s report.

This indicator is intended as a proxy for energy intake from foods other than breast milk.¹⁶ Feeding frequency for breastfed children includes only non-liquid feeds. Feeding frequency for non-breastfed children includes both milk feeds and solid/semi-solid feeds.

Figure 8.9 shows a detailed breakdown of survey results related to feeding frequency. The stacked bars show the percentage of children receiving different numbers of feeds, by sub-age group, and the lines show the mean number of feeds for each sub-age group. Discouragingly, feeding frequency appears to have declined substantially in both intervention and comparison areas. This was a surprising result, and SPRING subsequently carried out focus group discussions and key informant interviews to try to determine possible reasons for these negative findings.

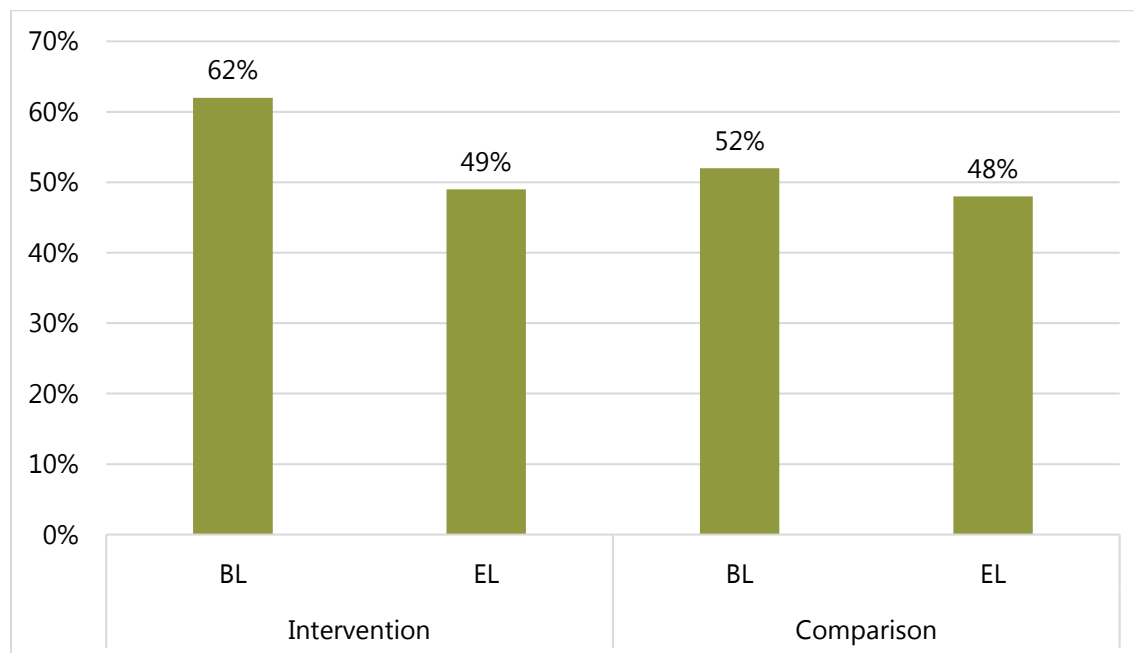
¹⁶ True energy intake is impossible to capture in simple surveys.

Figure 8.9 Percentage Breakdown of the Number of Times a Child Ate Solid, Semi-solid, or Soft Foods Yesterday during the Day or Night, among Children Aged 6–23 Months



Findings are further summarized in Figure 8.10. In the figure, we see that the percentage of children receiving the recommended number of feeds declined substantially in the intervention areas, while the comparison area only decreased slightly.

Figure 8.10 Children Aged 6–23 Months Receiving Minimum Feeding Frequency



As mentioned previously, SPRING was surprised by the steep declines in this indicator, and carried out qualitative research to understand potential reasons. Among the findings from the qualitative research was a belief that there could be seasonal patterns related to meal frequency that have their basis in food availability. Some FGD participants mentioned that in summer and fall, when fruits and vegetables are more widely available, especially in their own gardens, mothers will give children “light meals” with those fresh crops, which were felt to be digested rapidly. Conversely, in winter, the kinds of foods given to young children are often “heavier,” possibly with larger portions, and that was felt to be one reason why children receive fewer meals in winter. Thus, it is possible that the decline observed in feeding frequency was mostly due to seasonal variation and not to negative national trends.

Minimum Acceptable Diet

Minimal acceptable diet (MAD) is a composite indicator for overall diet quality among children aged 6–23 months. Based on the two indices calculated above (MDD and MFF), the minimum acceptable diet (MAD) indicator is the proportion of children 6–23 months of age who receive a minimum acceptable diet (apart from breastmilk). This indicator was calculated from the following two fractions:

Breastfed children 6–23 months of age who had at least the minimum dietary diversity and the minimum meal frequency during the previous day

Total Number of Breastfed children 6–23 months of age

and

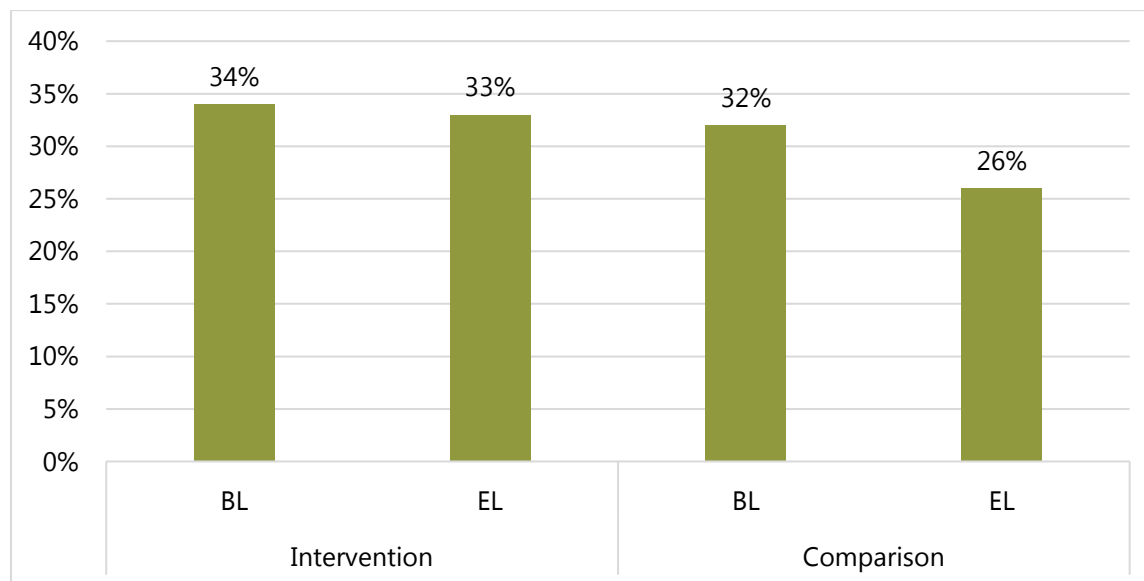
Non-breastfed children 6–23 months of age who received at least 2 milk feedings and had at least the minimum dietary diversity not including milk feeds and the minimum meal frequency during the previous day

Total Number of Non-breastfed children 6–23 months of age

The definition of “minimum dietary diversity” is like the definition of the previous indicator, but milk feeds are excluded from the diversity score for non-breastfed children when calculating “minimum acceptable diet.” Exclusion of milk feeds from the diversity score here avoids “double counting” of this food group and allows use of this indicator in comparisons—across space and time—between populations with different rates of continued breastfeeding.

Minimum acceptable diet stayed almost unchanged in SPRING-supported areas between baseline and endline surveys (Figure 8.11). This was because the decline in feeding frequency balanced and offset the strong increase in dietary diversity. In the comparison area, on the other hand, MAD declined, because both MDD and MFF declined.

Figure 8.11 Minimal Acceptable Diet, by Intervention and Comparison Group, Over Time



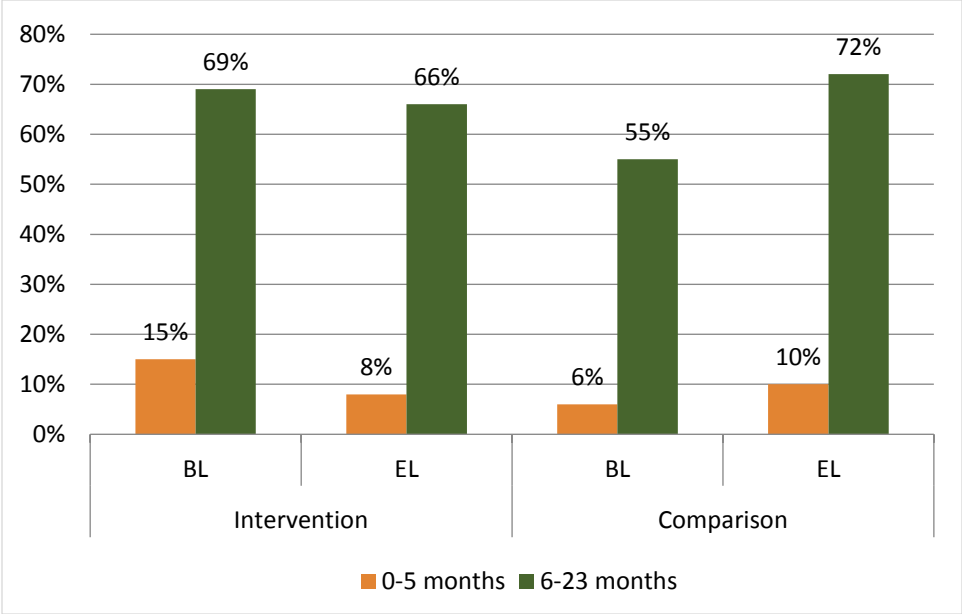
Junk Food Consumption

Some of the foods commonly eaten by young children are very low in nutrient content. To assess the extent to which children under two years of age ate sugary and processed foods (junk foods), the baseline survey collected data on the consumption of such foods. Results are presented in Figure 8.12 and Table 8.6, by region. Sugary foods in particular, such as chocolates, sweets, candies, pastries, cakes, cookies, or biscuits, were reported to be the sixth-most consumed type of food among children aged 6–23 months,

and the fifth-most commonly consumed food among children aged 18–23 months. SPRING sought to improve nutrition through messages at community level and in health facilities that discouraged all people but especially young children, from consuming large quantities of junk foods.

Figure 8.12 summarizes the main results related to sugary and processed foods. As seen in the figure, consumption of such foods increased among children aged 12–23 months in both the intervention and comparison areas (the increase was more in the comparison area). Encouragingly, among the youngest children aged 0–11 months, junk food consumption declined substantially in the intervention areas, but increased by more than 50 person in the comparison zone. This suggests that, although consumption of those foods is popular and possibly increasing through the country and indeed globally, SPRING’s work may be stemming the tide somewhat, at least in very young children where the harmful effects of sugary and processed foods may be especially severe.

Figure 8.12 Consumption of Junk Foods (Sugary or Processed) among Children, by Age, Region, and Survey



More details on junk food consumption are shown in Table 8.6. The table shows the percentage of children consuming sugary foods by age group, and the number of times per day they eat sweets or processed foods, by age group. Again, among the youngest children (in this case, 0–5 months), consumption declined sharply in SPRING intervention areas, but increased equally sharply in Uzgen. There were insignificant differences between Naryn and Jalalabad. There were also impressive declines in all three regions in the mean number of times respondents fed their child junk foods.

Table 8.6 Junk Food Consumption by Children Aged 0–23 Months

| Junk Food Consumption | Baseline | | | Endline | | |
|------------------------------------|----------|-----------|-------|---------|-----------|-------|
| | Naryn | Jalalabad | Uzgen | Naryn | Jalalabad | Uzgen |
| 0–5 months | N=78 | N=100 | N=117 | N=131 | N=132 | N=156 |
| Sugary foods or processed foods | 19% | 12% | 6% | 8% | 8% | 10% |
| Mean num. of times consumed sugary | 1.5 | 1.5 | 1.6 | 0.1 | 0.1 | 0.1 |
| 6–23 months | N=221 | N=200 | N=183 | N=322 | N=323 | N=295 |
| Sugary foods or processed foods | 47% | 50% | 33% | 46% | 47% | 47% |
| Mean num. of times consumed sugary | 1.6 | 1.7 | 1.5 | 0.5 | 0.4 | 0.5 |

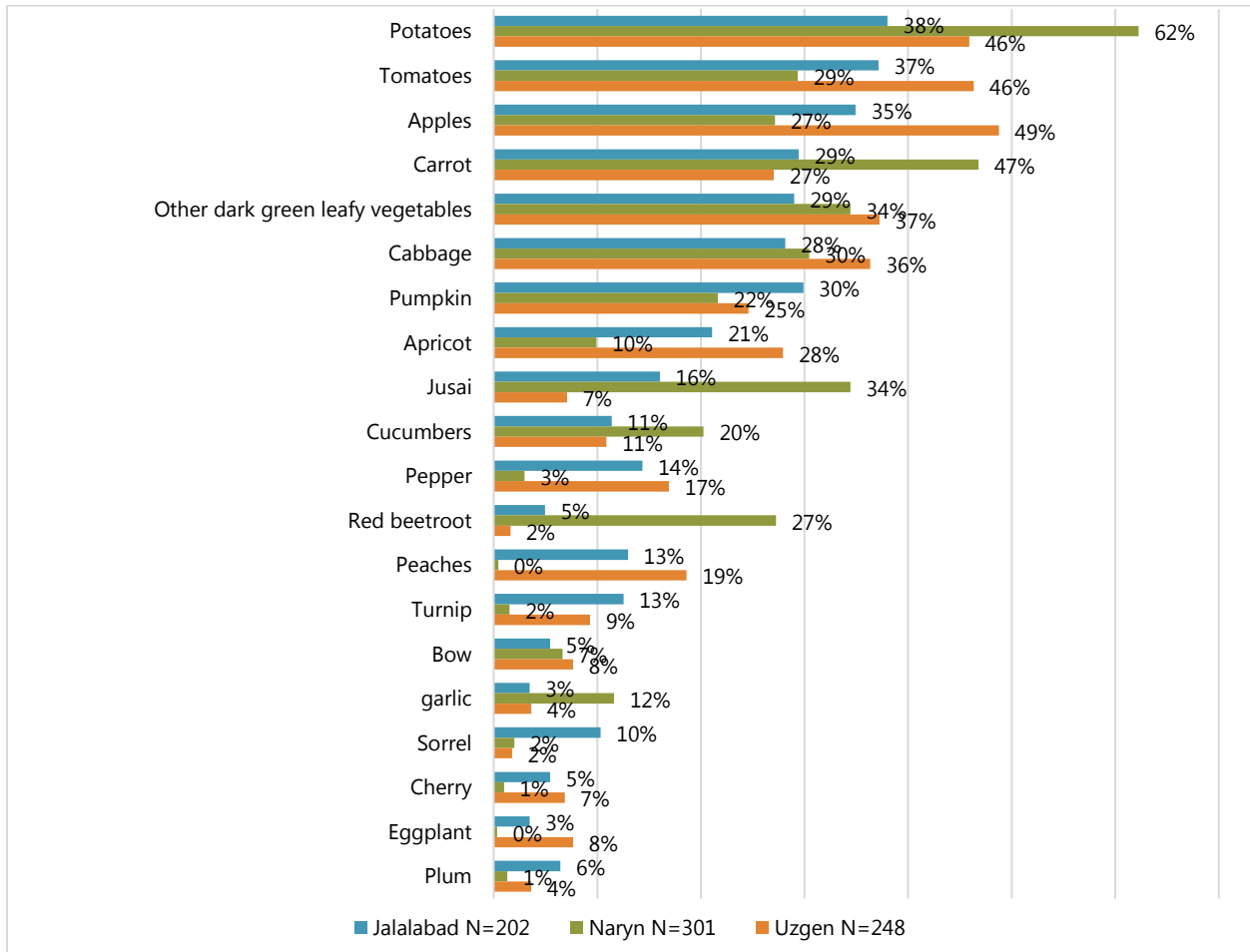
9. Sources of Foods

One of the interesting findings from WDD1, which occurred in late winter/early spring less than six months after the baseline survey, was that women reported consuming more of certain kinds of fruits and vegetables in late winter than they had soon after the fall harvest season. SPRING was curious as to why that was, as the hypothesis underlying all the surveys was that fresh foods would be harder to come by during the winter months. To better understand why that was not the case in the WDD1, SPRING commissioned qualitative research using focus groups to determine what factors influenced the food that women consume at various times of the year. Some findings from that are presented later in this section. Secondly, the questionnaires for the WDD2 and the endline survey were expanded to ask where households were obtaining foods, to try to ascertain whether fresh produce was available on farms by that time of year, or whether they were obtained from local markets or greenhouses, or stored/preserved in respondents' households. This section of the report provides results from those expanded sections of the endline survey.

Foods Grown on Farms

Figure 9.1 provides a detailed breakdown of the percentages of households that reported growing various types of vegetables and fruits on their farms at any time during the past year, by region. The most commonly grown foods were potatoes, tomatoes, apples, and carrots, though there were substantial differences between the regions. Potatoes and carrots were more commonly grown in Naryn, whereas tomatoes and apples were more commonly grown in Uzgen. This figure shows the potential for households to obtain at least some foods from their own farms.

Figure 9.1 Percentage of Households That Reported Growing Any of the Following Types of Food at Their Homes or Nearby Land (Endline)



If we collapse these individual foods into groups and focus on nutrient-rich groups, we see a somewhat different pattern (Figure 9.2). In this case, households in Jalalabad and Uzgen were more likely to grow at least one crop in the nutrient-rich groups. More varieties of crops were reported in Jalalabad and Uzgen than in Naryn, so they fare better when grouped as in Figure 9.2. Encouragingly, over one-half of respondents reported growing at one crop in most of the groups, so most households have access to at least some nutritious foods directly from their farms. The food group grown by the fewest households was beans/peas/lentils/nuts in Naryn; only 12 percent of Naryn households reported growing them.

Figure 9.2 Percentage of Households That Reported Growing Any of the Following Types of Food at Their Homes or Nearby Land (Endline, Grouped)

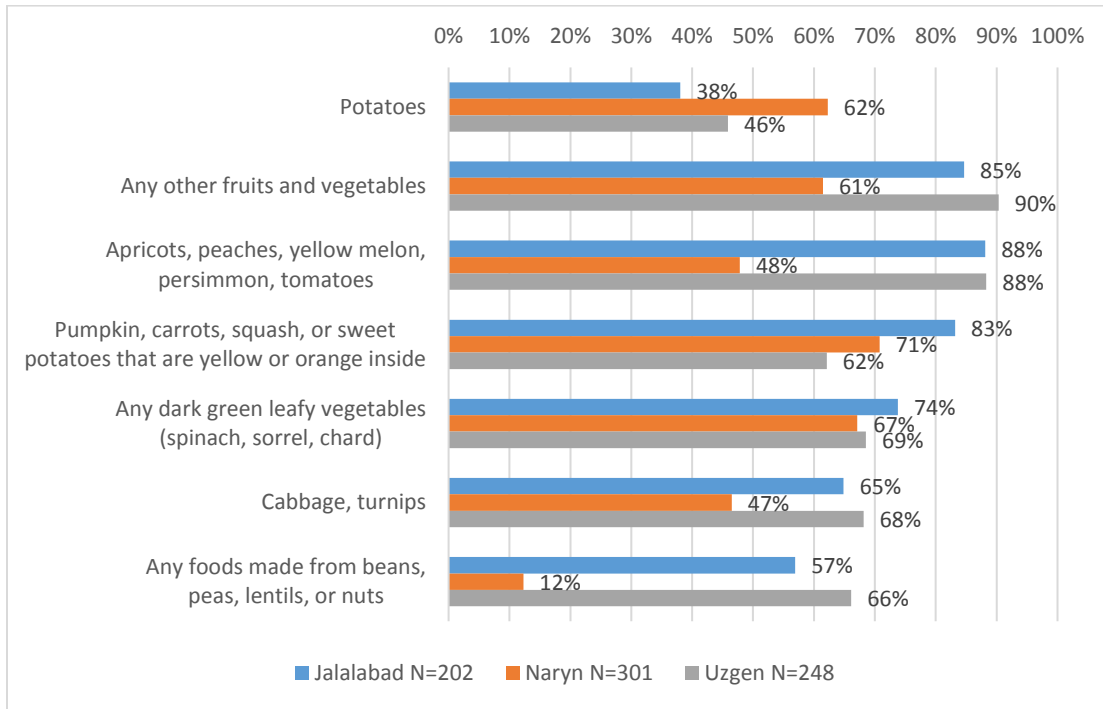
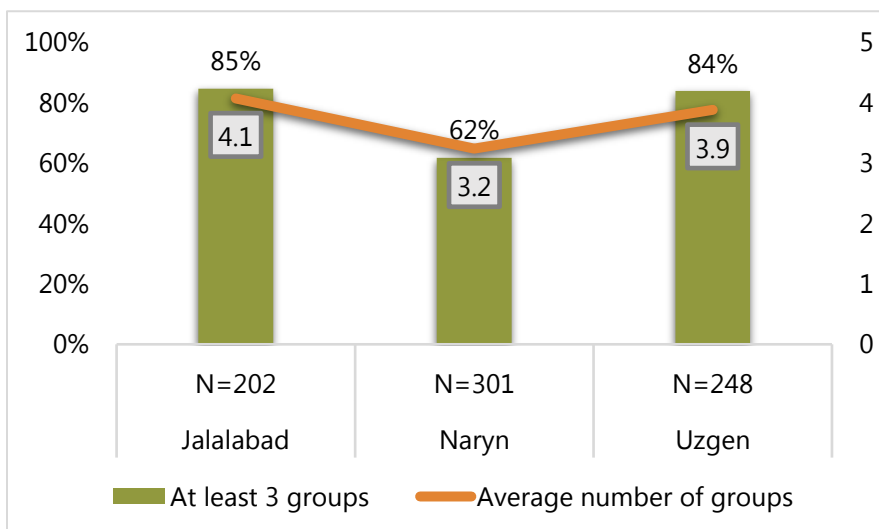


Figure 9.3 shows that the large majority of households in Jalalabad and Uzgen reported growing crops from at least three categories of Figure 6.2 (85 percent and 84 percent, respectively), compared to 62 percent in Naryn. The average number of food groups grown was 4.1 in Jalalabad, 3.9 in Uzgen, and 3.2 in Naryn.

Figure 9.3 Percentage of Households That Reported Growing at Least Three of the Food Groups from Figure 9.2, and Mean Number of Food Groups Grown (Endline)



Availability of Foods in Nearby Markets

When considering why consumption of fresh produce could increase during winter, one potential explanation is that fresh foods are available for purchase at local markets. Therefore, the survey included questions on how often people use local food markets, and what foods are available. As seen in Figure 9.4, a majority of women in both Jalalabad and Naryn had purchased foods at a local market during the last week, and large majorities (68 percent and 86 percent, respectively) had done so during the past four weeks. Levels were substantially lower in Uzgen. In general, Figure 9.4 suggests that local markets are an important source of foods for women in these regions

Figure 9.4 Percentage of Women Who Reported Purchasing Food at Local Markets during the Past Week/Four Months (Endline)

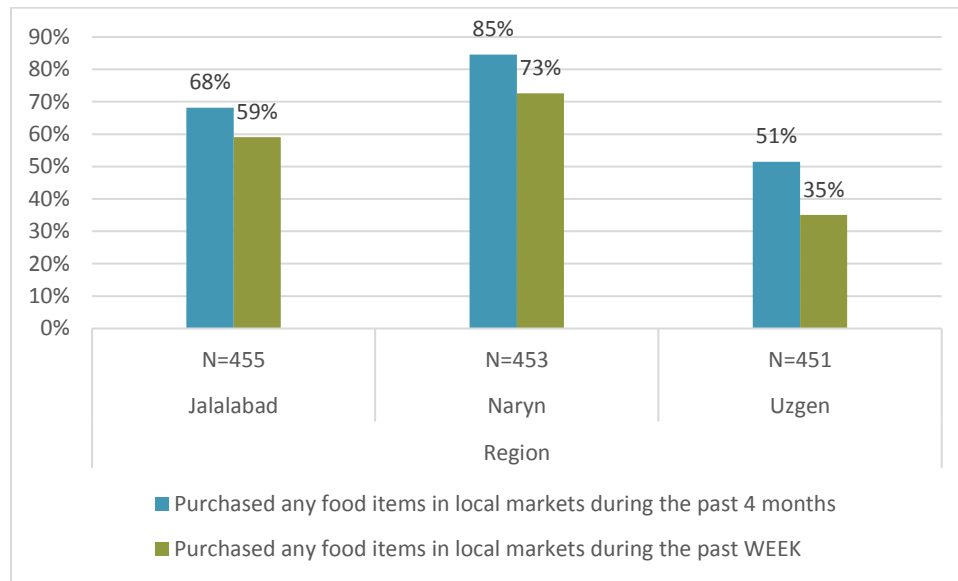
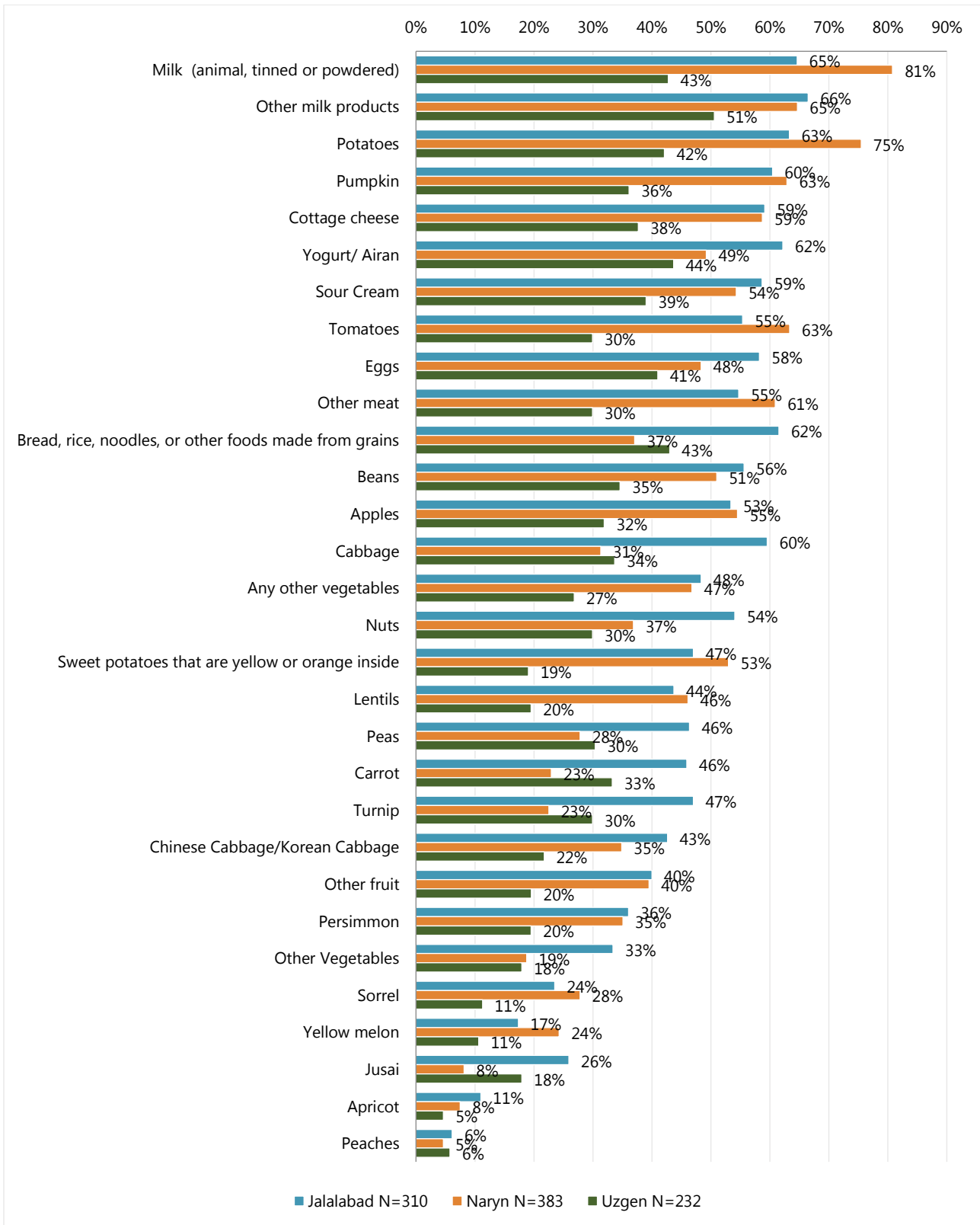


Figure 9.5 shows a detailed picture of all foods mentioned as available in local markets, by region. There were substantial differences between the regions. The most frequently mentioned foods in Jalalabad (mentioned by over 60 percent of respondents) were milk/milk products, potatoes, pumpkin, yogurt, starches, and cabbage, with several others mentioned by just under 60 percent. In Naryn, the most frequently named foods were milk/milk products, potatoes, pumpkin, tomatoes, and some meats. Uzgen residents seemed to rely less on local markets (Figure 9.4), and also less frequently mentioned as available foods.

Figure 9.5 What Foods Are Available at Nearby Markets/Shops? (Endline)



Availability of Foods in the Household

Foods consumed by women are likely to vary heavily according to what foods are available in the household. Household availability, in turn, likely depends both on what is grown on the farm (available year-round or stored) and what is available in local markets.

Figure 9.6 provides a detailed breakdown of foods available in the woman's household at the time of the survey. The most widely available foods are similar to other figures on foods consumed, grown on farms, and available at markets, with some differences. The main difference is that perishable foods such as some fruits and vegetables that cannot be stored for long periods of time tended not to be widely available in households, compared with levels of consumption in the previous 24 hours. The reason for that could be that if such foods are purchased from a local market, they may be bought for consumption and consumed right away. There are some striking differences between the regions, with foods such as milk, mutton, and sour cream much more apt to be available in Naryn, and eggs, apples, beef, nuts, pumpkin, turnips, and others more available in Jalalabad or Uzgen, or both. Jalalabad stands out as reporting much higher availability of pumpkin and sweet potatoes than the other regions. Some differences may be due to climate in late winter/early spring, and what foods are available locally at that time.

Figure 9.6 Foods Available in Respondents' Households (Endline)

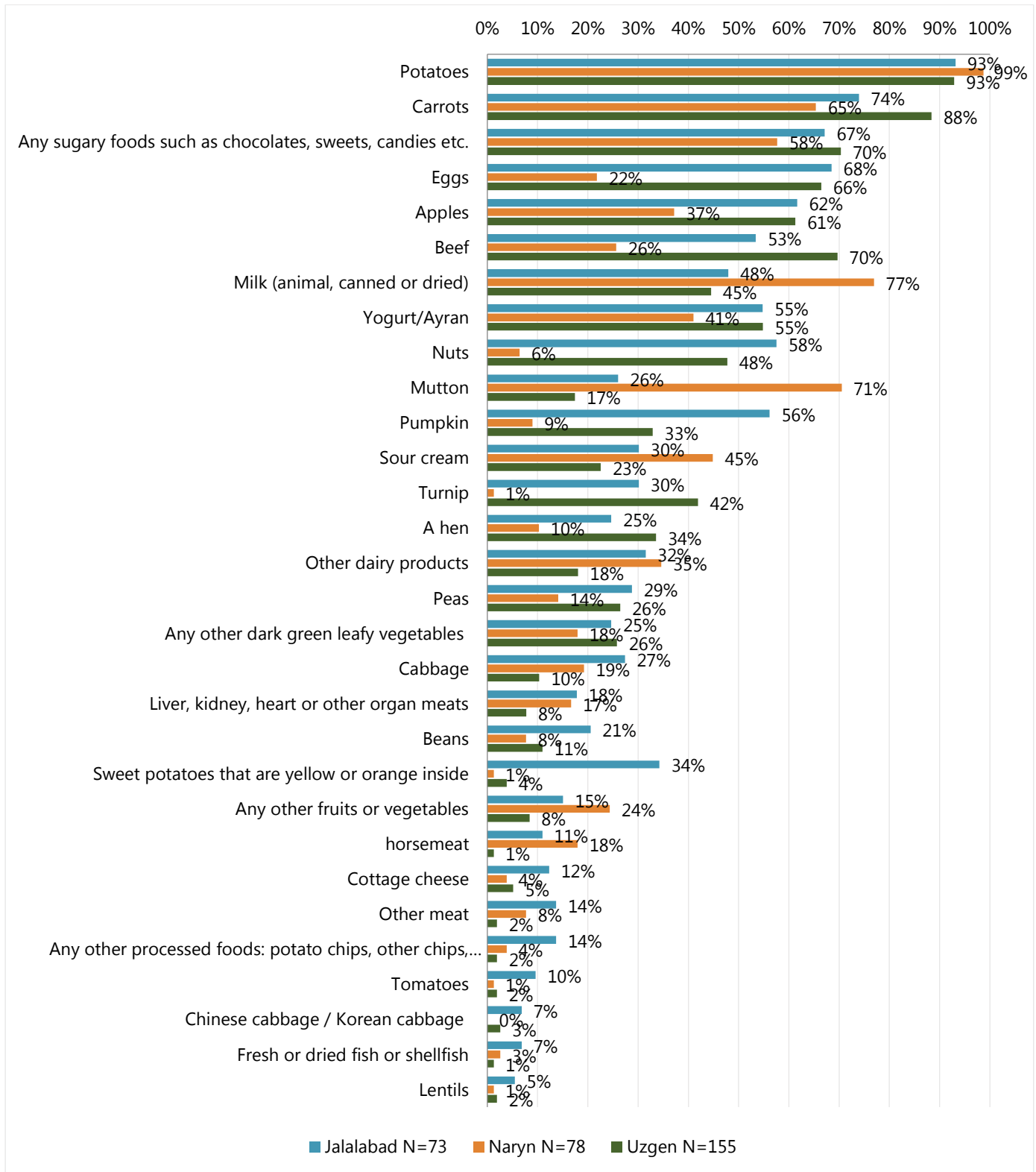
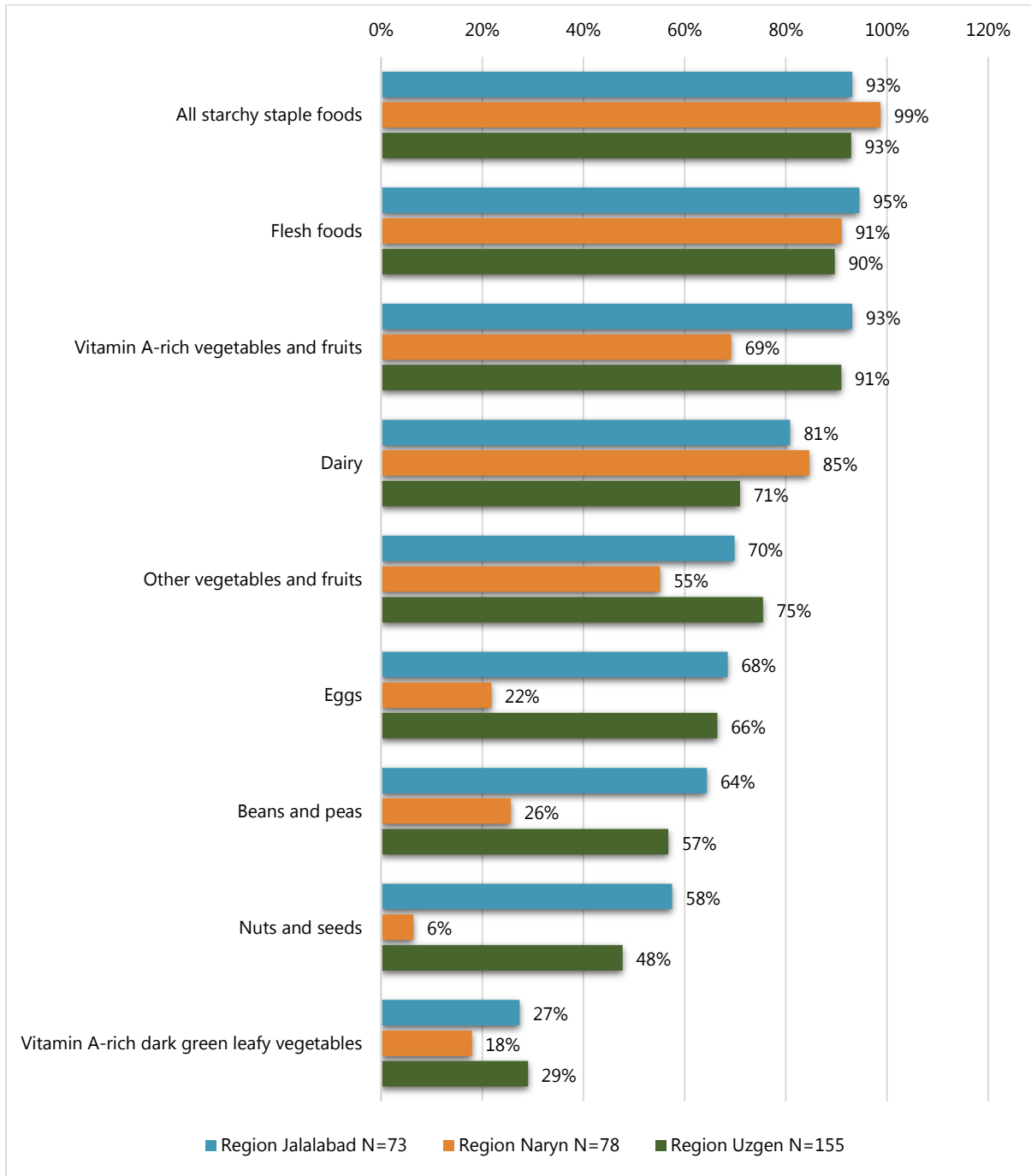


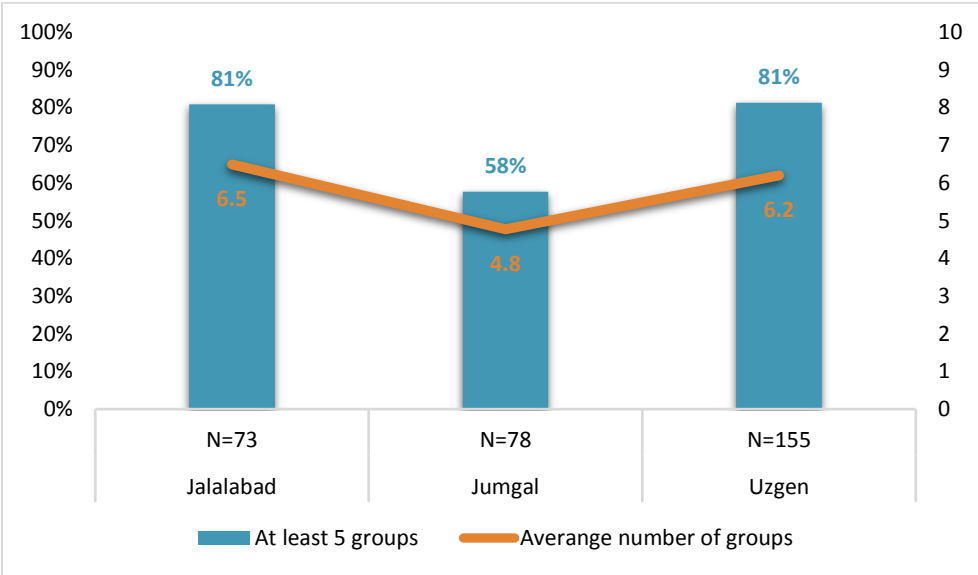
Figure 9.7 shows the same information collapsed into the nine food groups used for women’s dietary diversity. The most available food groups, not surprisingly, were grains and starches, flesh foods, other vitamin A–rich vegetables and fruits, and dairy products. There were some noteworthy differences between regions, especially in the groups that were the least available.

Figure 9.7 Foods Available in Respondents’ Households (9 Food Groups, Endline)



Similarly, Figure 9.8 shows the percentage of households with at least five of the above food groups, and the mean number of food groups available in households, by region. Availability was more diverse in Jalalabad and Uzgen than in Naryn. In Jalalabad, 81 percent of households had at least five food groups available, with an average of 6.5. In Naryn, 58 percent of households have five or more food groups, with an average of 4.8 groups available. And in Uzgen, 81 percent had five or more groups available, with an average of 6.2 groups.

Figure 9.8 Mean Number of Food Groups Available in Respondent’s Homes, and Percentage of Homes with 5 or more Food Groups (Endline)



Source of Foods Consumed

Tales 9.1–9.3 take the analysis one step further. Every time a woman mentioned eating a specific food in the previous 24 hours, she was asked where she obtained that food. The following tables show the sources of all foods mentioned, including whether they came from the respondents’ own farm, from relatives/neighbors/friends, from a local market, or other source. A separate table is provided for each region.

The main result of note is that most fresh vegetables and fruits were obtained from local markets, and most animal-source foods were obtained from the respondents’ households’ farm, at least in Naryn. The exception to that rule in Naryn was potatoes, and to a lesser extent carrots, which were mostly grown on the respondents’ farms, and available in winter because they can be stored for long periods. In Jalalabad and Uzgen, even potatoes and carrots were mainly obtained in local markets, though a sizable percentage of respondents did store those products from their own farms. In Jalalabad, from among those foods consumed by at least 100 women (right-hand column), only eggs, nuts, and pumpkins were more apt to be grown or raised on the farm than purchased at market. A full range of vegetables (carrots, cabbage, tomatoes, turnip, peas, and beans) are widely available in bazaars and other markets.

The picture in Uzgen is mixed, but still holds to the general result of animal-source foods and other foods easily stored being obtained from the farm, while fruits and vegetables were more likely to be purchased at market.

In summary, as shown in Tables 9.1, 9.2, and 9.3, the results suggest that residents in Jalalabad especially, and to a lesser extent Uzgen, obtain substantial quantities of fruits and vegetables from local markets in the late winter. Naryn residents appeared to depend more heavily on markets to obtain such foods in winter, and those foods do find their way to many markets in that region. This is likely one reason that women’s consumption of some nutritious fruits and vegetables increased in Naryn between baseline and endline. Nevertheless, perhaps because supplying local food markets in Naryn is a challenge in winter, the diversity of available foods in Naryn households is lower than in the other two regions.

Table 9.1 Source of Food Products That the Respondent Ate/Drank in the Previous 24 Hours Naryn, Endline (Foods in Red Were Consumed by at Least 30 Women)

| Products | Own Farm/ from Household Stocks | From Relatives, Friends, or Neighbors | In the Market or Store | Other | Total |
|--|--|--|------------------------------|-------|-------|
| Potatoes | 90% | 2% | 9% | 0% | 648 |
| Carrots | 32% | 4% | 64% | 0% | 443 |
| Mutton | 90% | 4% | 6% | 0% | 428 |
| Apples | 3% | 7% | 89% | 1% | 418 |
| Yogurt | 79% | 7% | 14% | 0% | 374 |
| Other milk product | 84% | 6% | 9% | 1% | 249 |
| Eggs | 80% | 4% | 16% | 0% | 244 |
| Sour cream | 90% | 5% | 5% | 0% | 234 |
| Beef | 55% | 11% | 33% | 1% | 201 |
| Any dark green leafy vegetables (spinach, chard, etc.) | 42% | 4% | 54% | 1% | 158 |
| Cabbage (<i>kapusta</i>) | 14% | 8% | 77% | 0% | 154 |
| Any other vegetables | 11% | 5% | 83% | 1% | 105 |
| Any other fruit | 1% | 7% | 90% | 2% | 96 |
| Nuts | 4% | 14% | 80% | 1% | 91 |
| Horsemeat | 56% | 27% | 17% | 0% | 78 |
| Peas | 7% | 12% | 83% | 0% | 60 |
| Tomatoes | 2% | 20% | 73% | 4% | 49 |
| Cottage cheese (<i>tvorog</i>) | 78% | 2% | 18% | 2% | 49 |
| Chicken | 70% | 2% | 25% | 2% | 44 |
| Pumpkin | 79% | 15% | 6% | 0% | 33 |
| Beans (<i>fasol</i>) | 23% | 6% | 65% | 6% | 31 |
| Zhusai/spinach | 37% | 4% | 59% | 0% | 27 |

| Products | Own Farm/ from Household Stocks | From Relatives, Friends, or Neighbors | In the Market or Store | Other | Total |
|--|--|--|------------------------------|-------|-------|
| Persimmon (<i>hurma</i>) | 0% | 8% | 92% | 0% | 24 |
| Apricot | 7% | 21% | 71% | 0% | 14 |
| Chinese cabbage/Korean cabbage/spring | 0% | 0% | 100% | 0% | 13 |
| Fresh or dried fish or shellfish | 0% | 11% | 89% | 0% | 9 |
| Turnip | 0% | 14% | 86% | 0% | 7 |
| Lentils (<i>chechevitsa</i>) | 0% | 14% | 71% | 14% | 7 |
| Peaches | 0% | 20% | 80% | 0% | 5 |
| Sorrel (<i>shavel</i>) | 100% | 0% | 0% | 0% | 1 |
| Yellow melon | 0% | 0% | 100% | 0% | 1 |
| Sweet potatoes that are yellow or orange inside | 0% | 0% | 0% | 0% | 0 |

Table 9.2 Source of Food Products That the Respondent Ate/Drank in the Previous 24 Hours
Jalalabad, Endline (Foods in Red Were Consumed by at Least 30 Women)

| Products | Own Farm/from Household Stocks | From Relatives, Friends, or Neighbors | In the Market or Store | Other | Total |
|--|--------------------------------|---------------------------------------|------------------------|-------|-------|
| Potatoes | 28% | 1% | 71% | 0% | 674 |
| Carrots | 12% | 0% | 88% | 0% | 580 |
| Beef | 5% | 3% | 93% | 0% | 469 |
| Apples | 34% | 4% | 62% | 0% | 429 |
| Yogurt | 37% | 15% | 50% | 0% | 409 |
| Eggs | 49% | 5% | 46% | 0% | 364 |
| Other milk product | 33% | 15% | 53% | 0% | 275 |
| Mutton | 39% | 4% | 58% | 0% | 249 |
| Cabbage (<i>kapusta</i>) | 7% | 0% | 92% | 0% | 248 |
| Tomatoes | 7% | 1% | 91% | 0% | 150 |
| Any dark green leafy vegetables (spinach, chard, etc.) | 26% | 2% | 72% | 0% | 148 |
| Nuts | 60% | 15% | 25% | 0% | 131 |
| Turnip | 15% | 1% | 85% | 0% | 124 |
| Sour cream | 45% | 3% | 52% | 0% | 122 |
| Pumpkin | 60% | 9% | 31% | 0% | 100 |
| Any other fruit | 14% | 3% | 87% | 0% | 90 |
| Chicken | 56% | 6% | 40% | 0% | 88 |
| Any other vegetables | 14% | 0% | 86% | 0% | 78 |
| Peas | 4% | 0% | 96% | 0% | 73 |
| Cottage cheese (<i>tvorog</i>) | 19% | 6% | 76% | 0% | 70 |
| Beans (<i>fasol</i>) | 13% | 2% | 85% | 0% | 54 |
| Apricot | 44% | 2% | 54% | 0% | 50 |
| Persimmon (<i>hurma</i>) | 18% | 3% | 79% | 0% | 39 |
| Sweet potatoes that are yellow or orange inside | 39% | 5% | 55% | 0% | 38 |
| Horsemeat | 24% | 20% | 56% | 0% | 25 |
| Fresh or dried fish or shellfish | 0% | 4% | 96% | 0% | 23 |
| Zhusai/spinach | 16% | 0% | 84% | 0% | 19 |
| Chinese cabbage/Korean cabbage/spring | 6% | 0% | 94% | 0% | 18 |
| Sorrel (<i>shavel</i>) | 76% | 6% | 18% | 0% | 17 |
| Peaches | 53% | 7% | 40% | 0% | 15 |
| Lentils (<i>chechevitsa</i>) | 0% | 0% | 100% | 0% | 6 |
| Yellow melon | 0% | 0% | 0% | 0% | 0 |

Table 9.3 Source of Food Products That the Respondent Ate/Drank in the Previous 24 Hours, Uzgen, Endline (Foods in Red Were Consumed by at Least 30 Women)

| Products | Own Farm/from Household Stocks | From Relatives, Friends, or Neighbors | In the Market or Store | Other | Total |
|--|--------------------------------|---------------------------------------|------------------------|-------|-------|
| Potatoes | 40% | 1% | 60% | 0% | 376 |
| Carrots | 23% | 2% | 74% | 1% | 317 |
| Beef | 1% | 1% | 98% | 0% | 306 |
| Apples | 48% | 3% | 48% | 0% | 299 |
| Yogurt | 64% | 9% | 27% | 0% | 198 |
| Eggs | 82% | 1% | 17% | 1% | 191 |
| Turnip | 8% | 2% | 90% | 0% | 131 |
| Chicken | 92% | 2% | 6% | 0% | 125 |
| Mutton | 31% | 3% | 66% | 0% | 119 |
| Sour cream | 70% | 8% | 23% | 0% | 105 |
| Nuts | 90% | 3% | 6% | 1% | 97 |
| Any dark green leafy vegetables (spinach, chard, etc.) | 8% | 1% | 91% | 0% | 88 |
| Other milk product | 58% | 6% | 35% | 0% | 77 |
| Cabbage (<i>kapusta</i>) | 10% | 0% | 90% | 0% | 61 |
| Pumpkin | 58% | 11% | 31% | 0% | 55 |
| Peas | 17% | 2% | 81% | 0% | 42 |
| Any other fruit | 3% | 0% | 97% | 0% | 36 |
| Any other vegetables | 18% | 0% | 82% | 0% | 34 |
| Cottage cheese | 52% | 13% | 35% | 0% | 23 |
| Horsemeat | 24% | 33% | 38% | 5% | 21 |
| Tomatoes | 40% | 0% | 60% | 0% | 15 |
| Persimmon (<i>hurma</i>) | 0% | 7% | 93% | 0% | 15 |
| Zhusai/spinach | 8% | 0% | 92% | 0% | 12 |
| Beans | 18% | 0% | 82% | 0% | 11 |
| Fresh or dried fish or shellfish | 0% | 0% | 90% | 10% | 10 |
| Chinese cabbage/Korean cabbage/spring | 0% | 0% | 1% | 0% | 8 |
| Apricot | 57% | 0% | 43% | 0% | 7 |
| Sweet potatoes that are yellow or orange inside | 0% | 17% | 83% | 0% | 6 |
| Sorrel (<i>shavel</i>) | 0% | 0% | 1% | 0% | 1 |
| Lentils (<i>chechevitsa</i>) | 0% | 100% | 0% | 0% | 1 |
| Peaches | 0% | 0% | 0% | 0% | 0 |
| Yellow melon | 0% | 0% | 0% | 0% | 0 |

10. Food Storage and Preservation

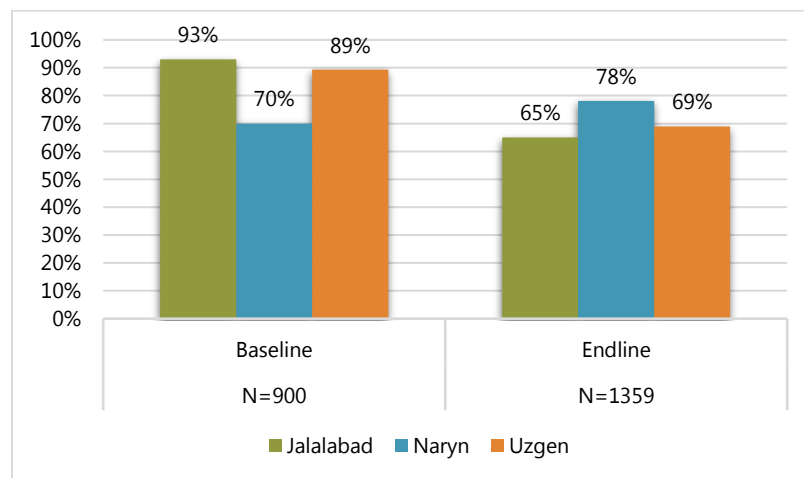
Despite some of the findings presented earlier showing that winter dietary diversity improved for several food groups over the time between the baseline and endline surveys, clearly most fruits and vegetables are not available on people's homesteads during the long winter season. Thus, food storage and preservation have been traditional practices in the Kyrgyz Republic, to enable families to have access to some fruits and vegetables throughout the year. SPRING sought to encourage these practices and promote storage and preservation of nutrient-rich foods in particular.

Questions on food storage and preservation were asked in only the baseline and endline surveys, not in WDD1 or WDD2.

Food Storage

Figure 10.1 shows that the large majority of households were storing foods even at the time of the baseline survey. The percentage who reported that they stored any foods increased somewhat in Naryn but, surprisingly, this percentage declined in both Jalalabad and Uzgen.

Figure 10.1 Percentage of Households That Stored Any Products during the Previous Fall



Encouragingly, though the percentage of households storing foods declined between surveys, the number of foods stored increased, suggesting that families may be diversifying what they store and gaining access to a wider variety of fruits and vegetables during the winter season. Figures 10.2 and 10.3 show the number of stored fruits and vegetables, by region, at baseline and endline, respectively. The mean number of foods stored increased between surveys in all three regions. The increase was greatest in Naryn (1.8–2.5 types of foods stored), but Jalalabad was the region with the most different foods stored (3.8 food types at endline).

Figure 10.2 Mean Number of Stored Types of Vegetables and Fruits, Baseline (in Percentage and Mean Number of Groups)

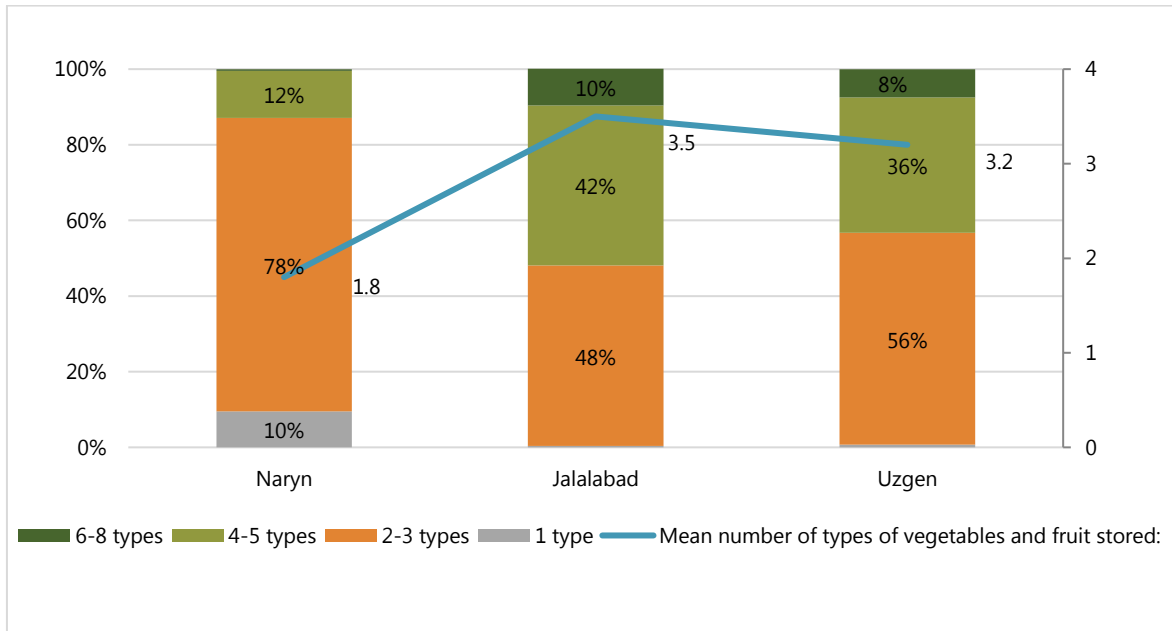


Figure 10.3 Mean Number of Stored Types of Vegetables and Fruits, Endline (in Percentage and Mean Number of Groups)

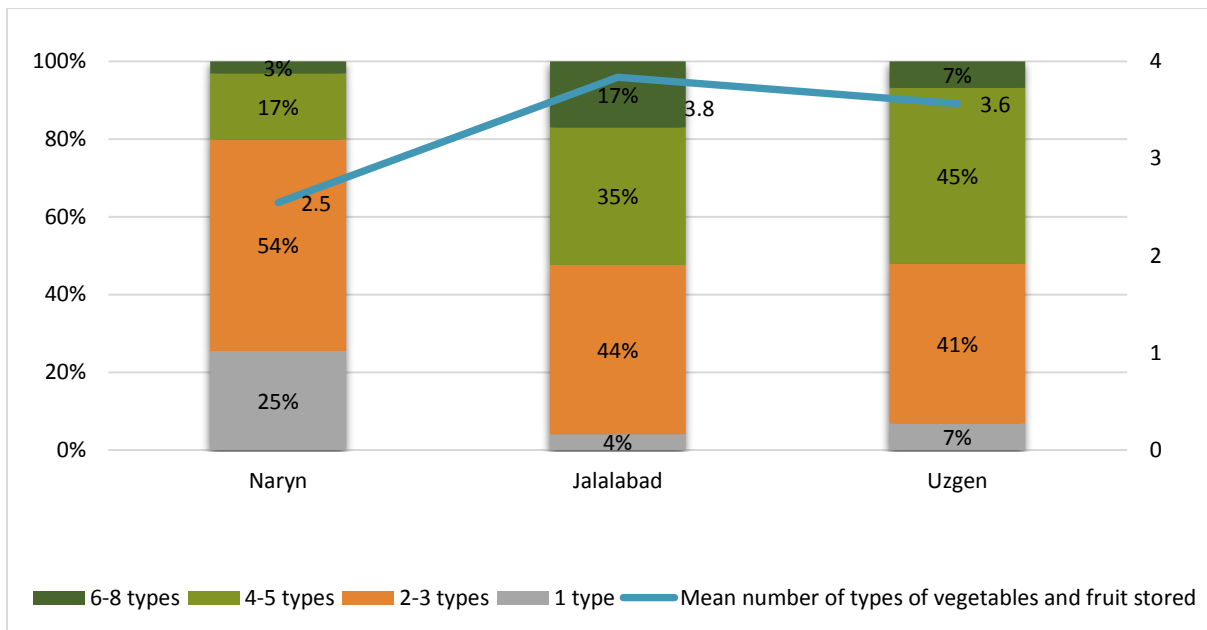


Figure 10.4 shows the main types of food stored in fall 2014 (baseline) and in winter 2016. Potatoes, onions, and carrots were the most commonly stored foods at baseline, and that shifted to potatoes, apples/pears/persimmon, and melons in the endline. Major changes between surveys included fewer people storing onions and carrots at endline, and many more people eating apples/pears/persimmon.

Figure 10.4 Types of Foods Stored (Baseline vs. Endline)

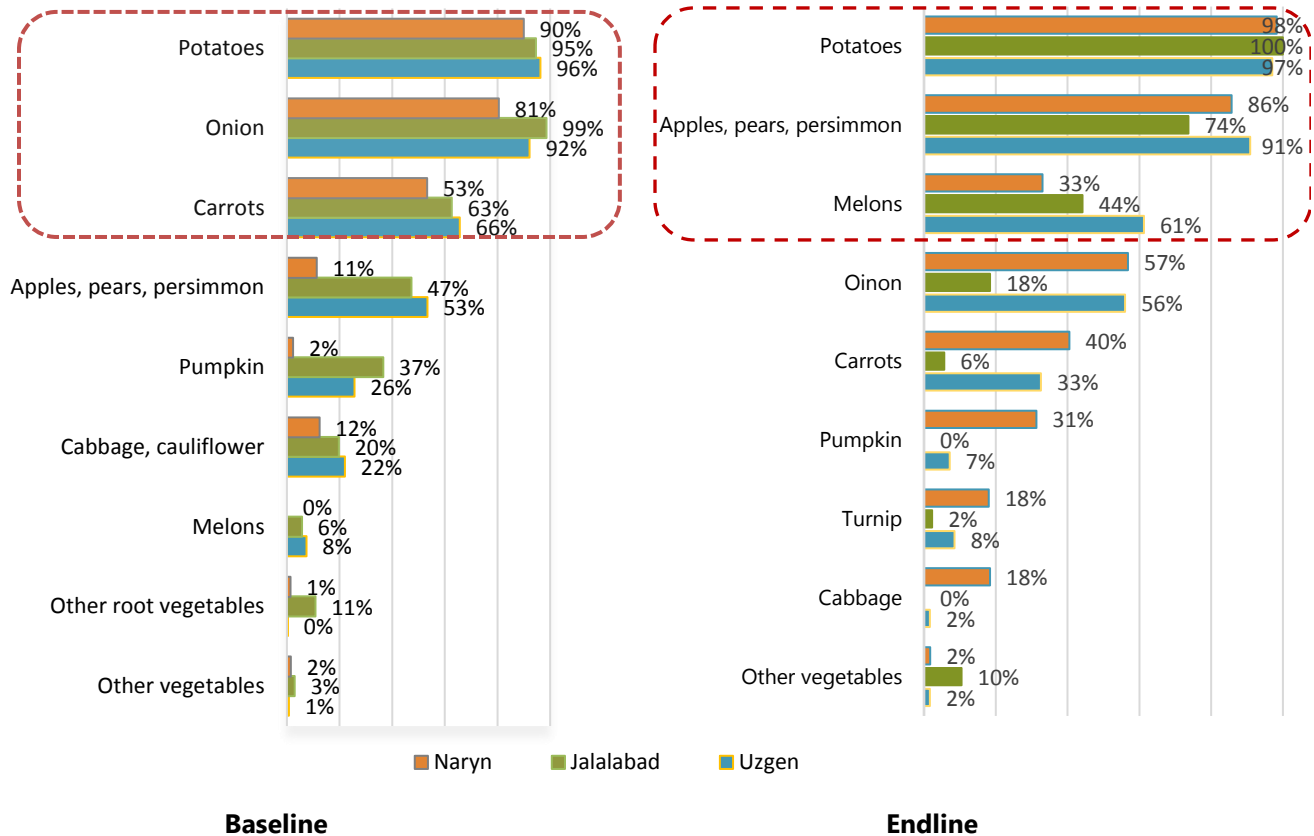
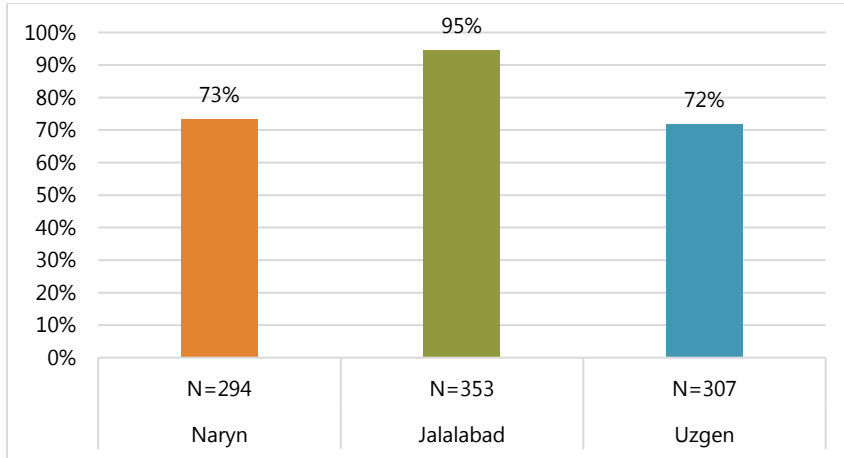


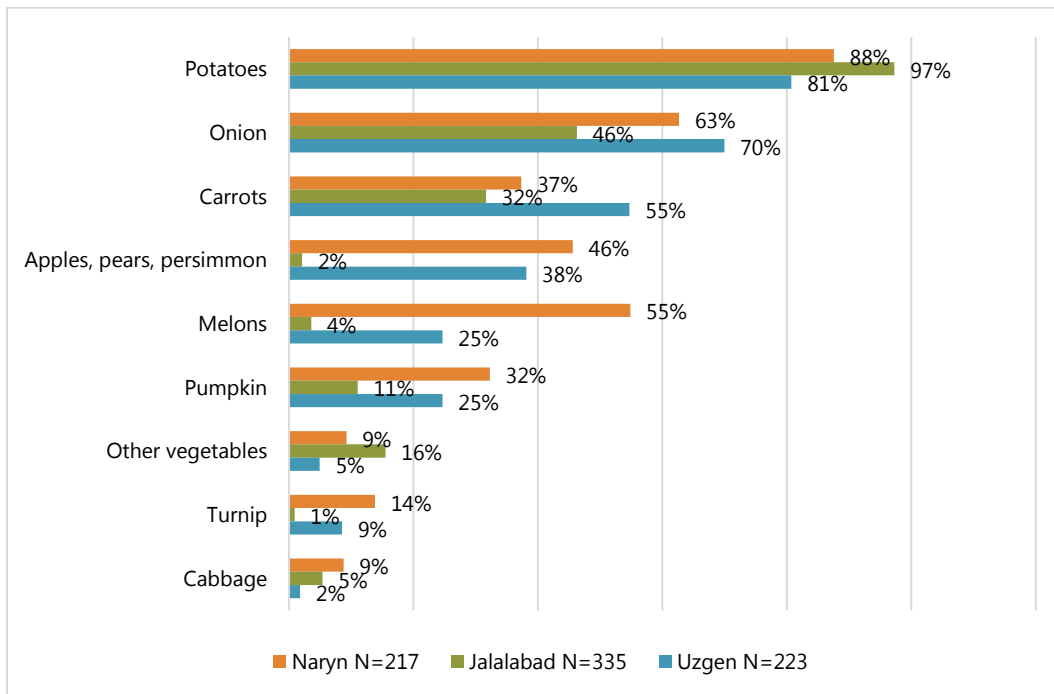
Figure 10.5 shows the percentage of respondents who reported still having any stored food items. It is encouraging to note that the large majority of households still had any stored foods available, even in late winter.

Figure 10.5 Of Foods You Stored, Do You Have Any Left Now?



Among those who still had some stored foods, Figure 10.6 shows which types were still available at the time of the endline survey. Potatoes, onions, carrots, apples/pears/persimmons, and melons were the items most often still available, with some differences between regions as shown. One should interpret the figure with caution, because people may draw down on the supplies they like the most first, or those that do not last the entire winter may have just run out, or market availability could affect what is eaten first, et cetera.

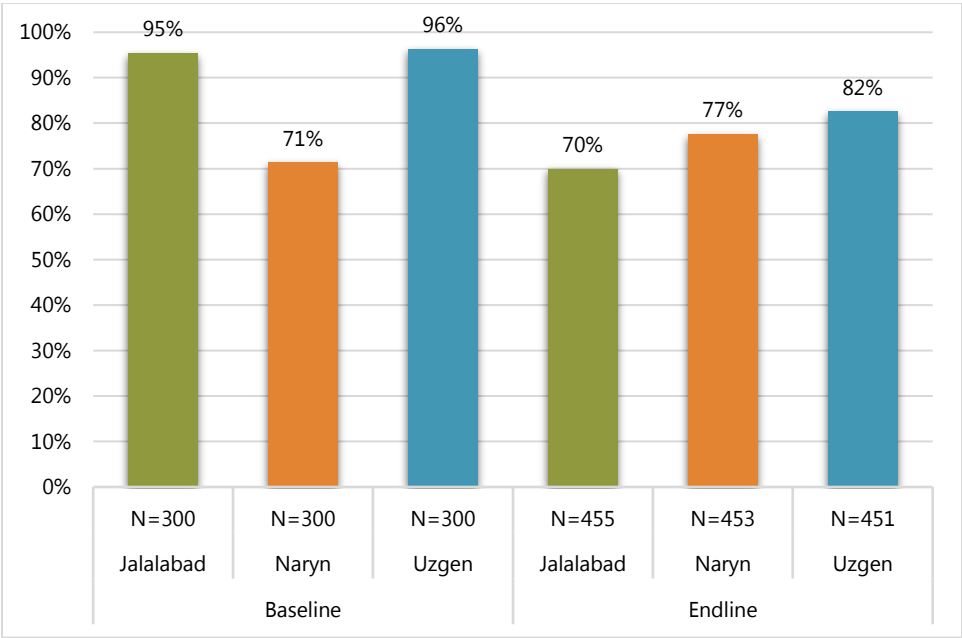
Figure 10.6 Of Foods You Stored, Do You Have Any Left Now? (Endline Only; Yes, in Percentage)



Food Preservation

Figure 10.7 shows the percentages of households preserving any food items between the baseline and endline. Similar to the results for food storage, the percentage of households preserving foods was relatively high in all regions and both surveys. In Jalalabad, the percentage of households preserving foods decreased by 25 percentage points, and it also declined in Uzgen (by 14 percentage points). In Naryn, it increased by 6 percentage points. Further research would be needed to understand the differences between the regions, for both storage and preservation. When considering these figures, it is important to realize that SPRING was just beginning to roll out its module on food storage and preservation while the survey was underway, so community activists were only beginning to talk about those topics with community members through their outreach activities, and activists had not yet been trained in all SPRING-supported areas of Naryn and Jalalabad. That may partly explain why results did not show much change.

Figure 10.7 Percentage of Households That Preserved Any Foods Last Fall? (Endline Only, Percentage That Preserve)



The mean number of vegetables and fruits that were preserved increased in Naryn and Uzgen between surveys, but decreased substantially in Jalalabad (Figure 10.8). Again, more research would be needed to determine reasons for the differences by region.

Figure 10.8 Mean Number of Preserved Types of Vegetables and Fruits (Baseline vs. Endline)

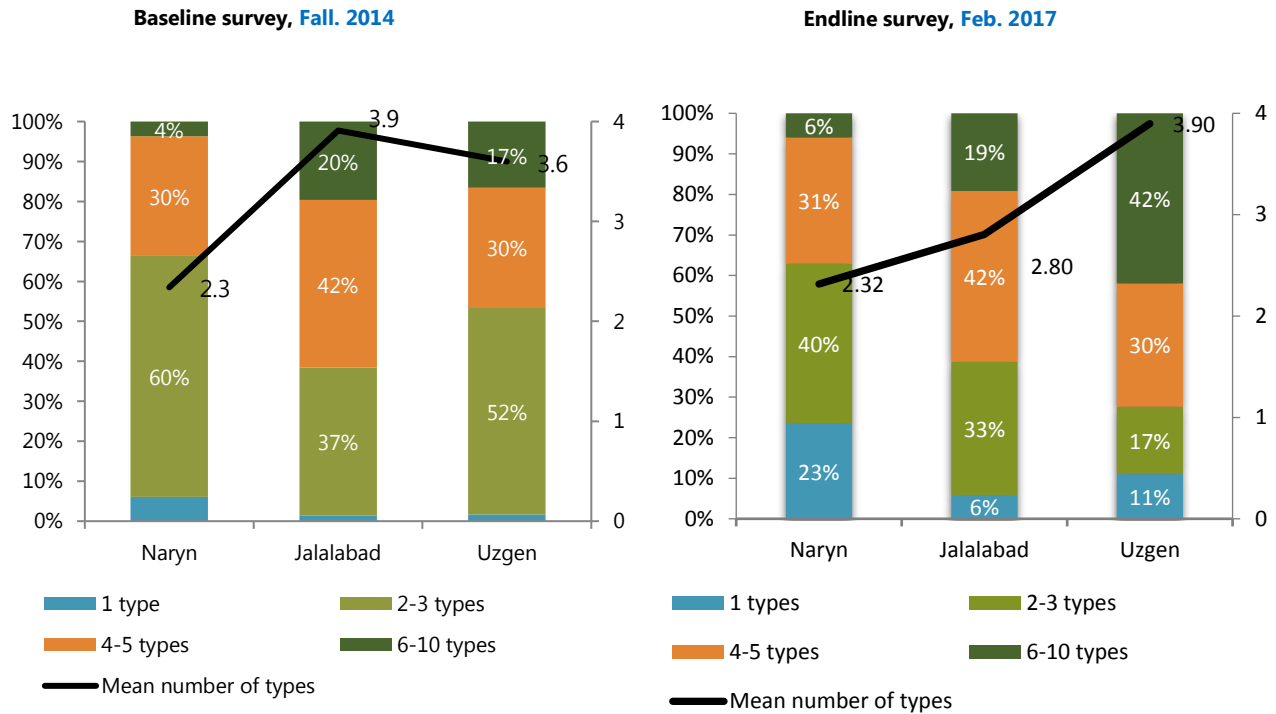
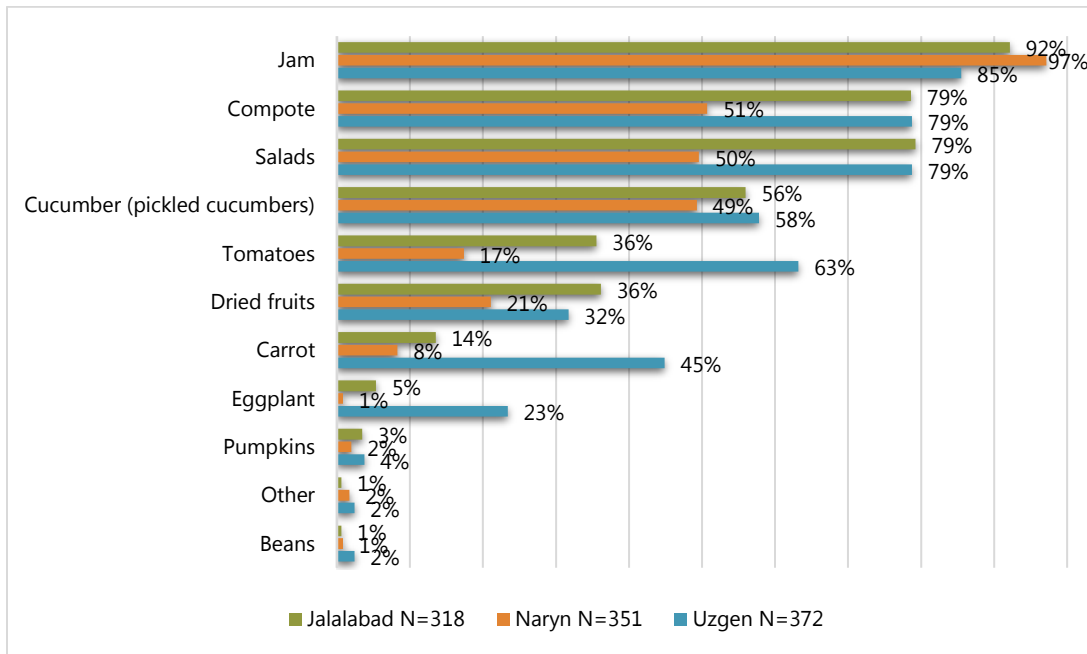


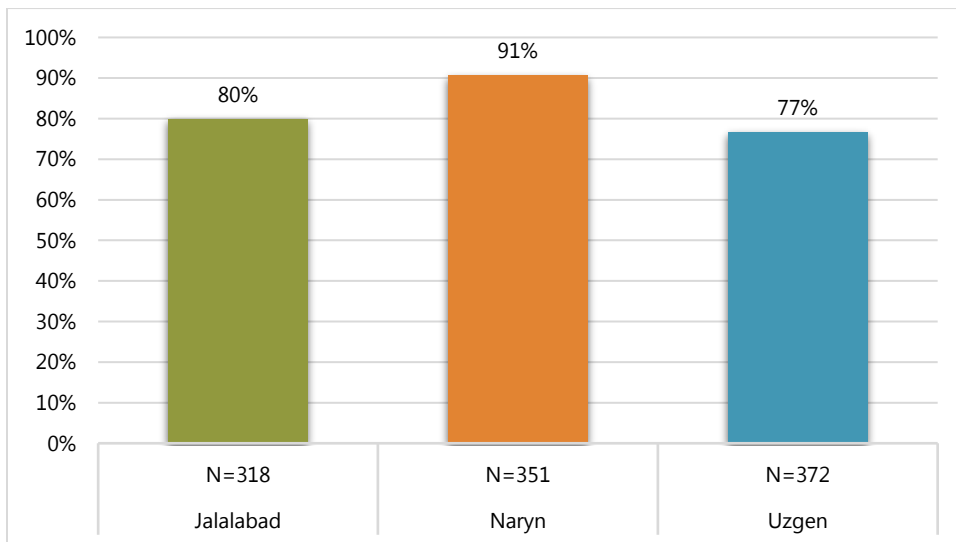
Figure 10.9 shows the most common foods to be preserved in winter 2017. These included jams, compote, and salads. Again, there were some interesting differences between regions. The figure shows sizable percentages of households preserving different kinds of nutritious foods.

Figure 10.9 Types of Foods Preserved by Households (Endline)



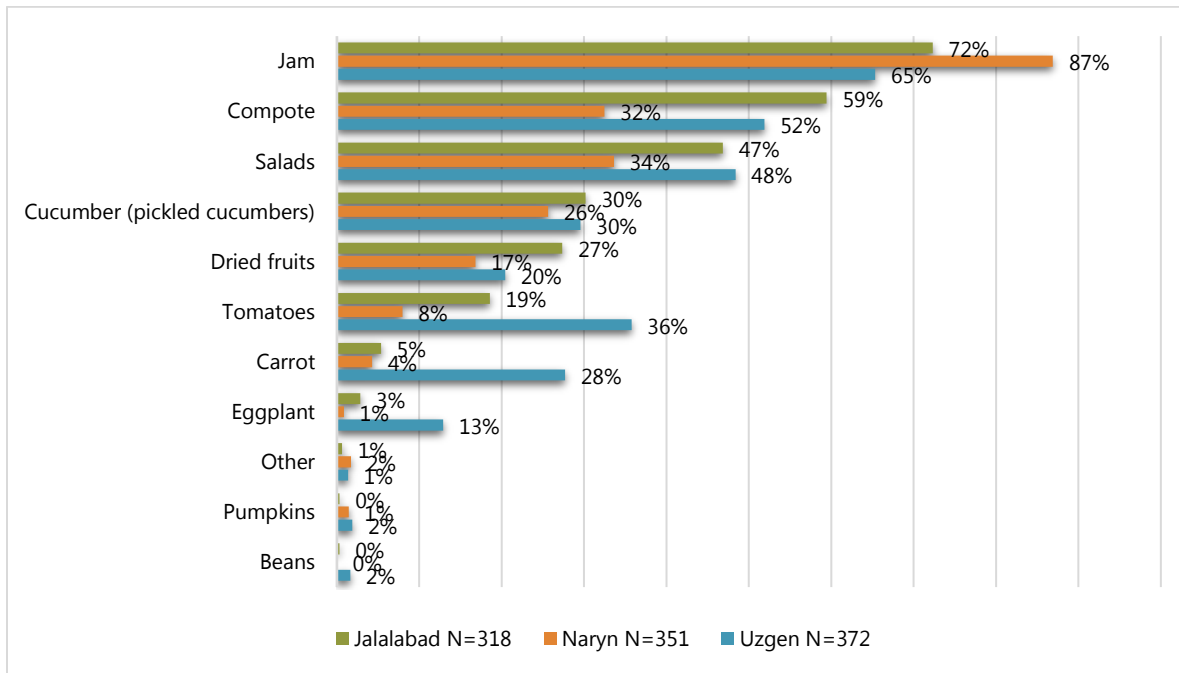
As with stored foods, most households still had preserved foods available at the time of the endline (Figure 10.10). Figure 10.11 shows which preserved foods were more likely to be available.

Figure 10.10 Of Food You Preserved, Do You Have Any Left Now? (Endline)



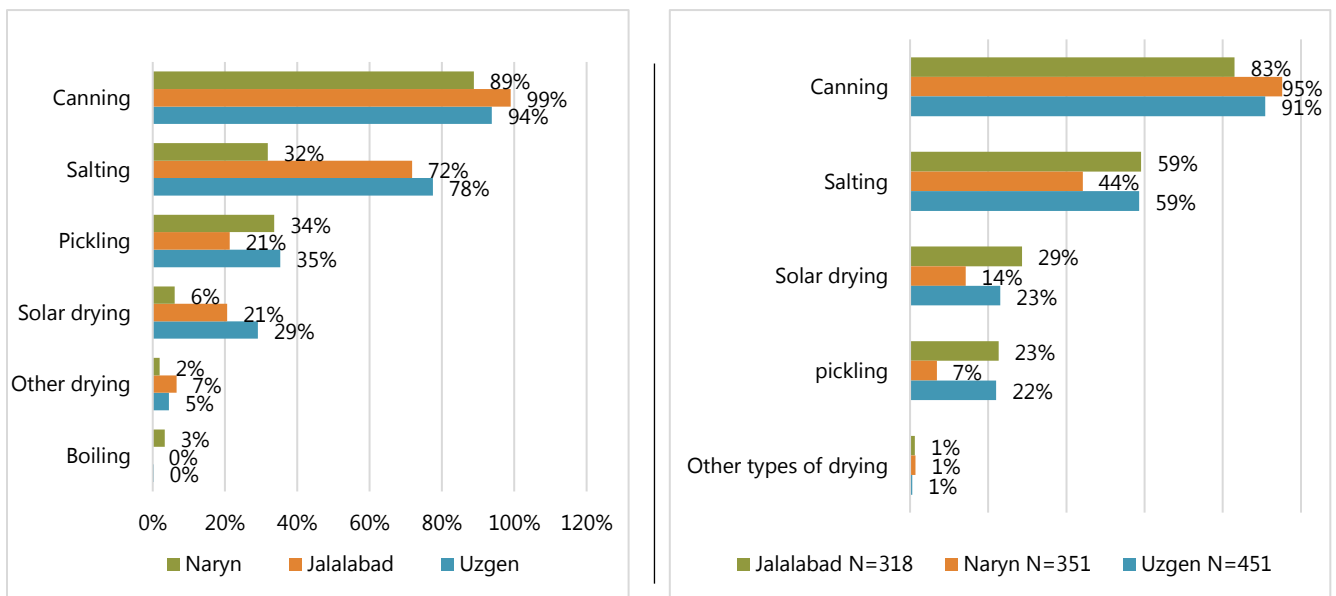
In Figure 10.11, we see that the preserved foods that were available at the time of the survey are similar to the list that were preserved in general (Figure 10.9). Jams, compotes, and salads were the most commonly preserved items.

Figure 10.11 Of Food You Preserved, Which Ones Do You Have Left Now? (Endline)



The main method for preserving foods was canning at both baseline and endline, used by over 80 percent of households in all regions and all surveys (Figure 10.12). Salting was the next most common method, increasing in use in Naryn between surveys, but declining in Jalalabad and Uzgen. Solar drying increased substantially between surveys in the intervention areas.

Figure 10.12 Methods of Food Preservation (Baseline vs. Endline)



Baseline survey, Fall. 2014

Endline survey, Feb. 2017

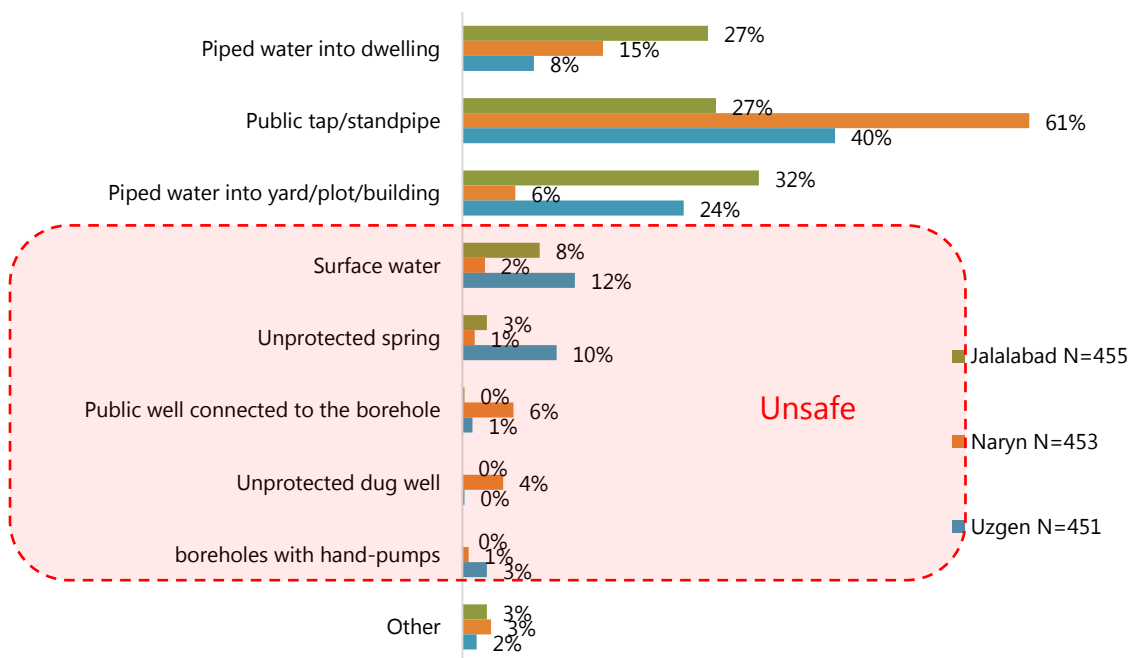
11. Water, Sanitation, and Hygiene

Having access to clean drinking water and adequate sanitation, and effective hygiene practices, are essential for good nutrition, mainly because of their role in preventing illness and infections that can occur when any one of the WASH elements are inadequate. Such conditions include diarrhea, environmental enteropathy, and other intestinal infections. Resulting illnesses can adversely affect children’s ability to properly absorb nutrients, resulting in undernutrition, including stunting.¹⁷ For these reasons, some of SPRING’s community outreach work focused on improving various aspects of WASH.

Safe Drinking Water Sources

SPRING did not carry out infrastructure projects related to safe water sources, but the project did promote the importance of safe water and treatment. Figure 11.1 shows that the most common sources of drinking water in the endline were piped water into dwelling, public tap or standpipe, and piped water into the yard or building. These were classified as “safe” sources, though it is possible that not all were completely free of contaminants. Naryn and Uzgen respondents tended to mainly use public taps or standpipes, while use of those top three sources was fairly evenly spread in Jalalabad. Encouragingly, “unsafe” sources (surface water, unprotected spring, etc.), were used by small minorities of respondents. Overall, 86 percent of all households surveyed used drinking water sources that were considered safe, however in Naryn alone, 82 percent used safe sources.

Figure 11.1 Main Sources of Drinking Water, by Region (Endline)



¹⁷ World Health Organization. 2015. Improving Nutrition Outcomes with Better Water, Sanitation and Hygiene: Practical Solutions for Policies and Programmes. Geneva: WHO.

Sanitation

As with safe drinking water, SPRING did not engage in infrastructure projects or activities such as latrine construction, but the project did promote the use of improved latrines and provided guidance on aspects such as slabs, ventilation, and keeping latrines clean. Figures 11.2 and 11.3 show changes in the types of latrines used in the three regions at the time of the baseline and endline surveys. When viewing the graphs, it is important to note that in the baseline there were only three categories (flush toilet, improved, and unimproved), while in the endline, there were four (flush toilet, improved with slab, improved with ventilation, and unimproved). To make the results from the two surveys comparable, the orange-colored slices in the baseline graphs could be considered roughly equivalent to the orange-plus-gray slices of the endline. Looked at in that way, the main findings are that the use of improved latrines increased significantly in Naryn, but decreased slightly in Jalalabad. In Naryn, the percentage of households using improved latrines or flush toilets increased from 11 percent to 80 percent. In Jalalabad, the percentage using improved latrines declined slightly, and in the comparison area of Uzgen, the percentage using improved latrines declined substantially, from 98 percent to 67 percent.

Figure 11.2 Type of Toilet Facility Used (Baseline)

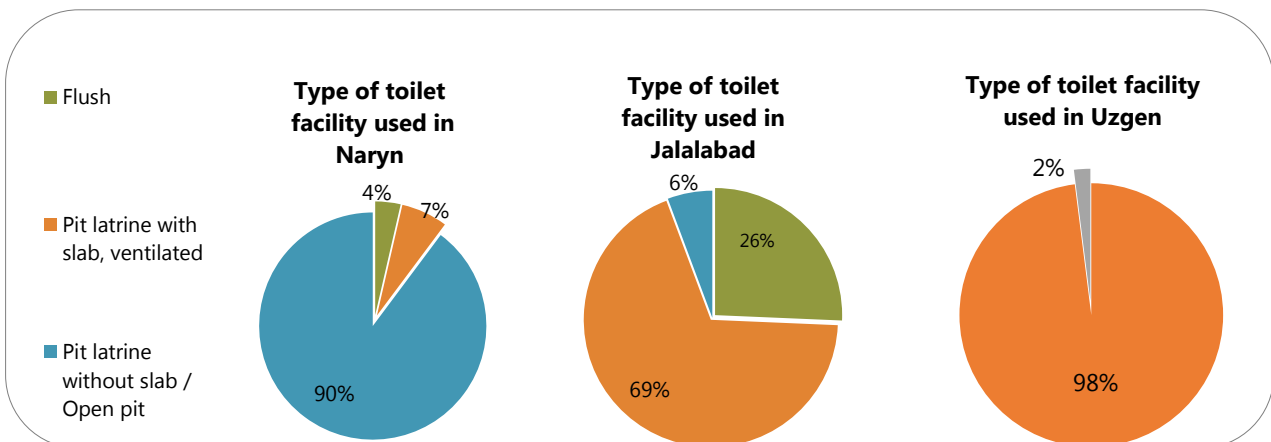
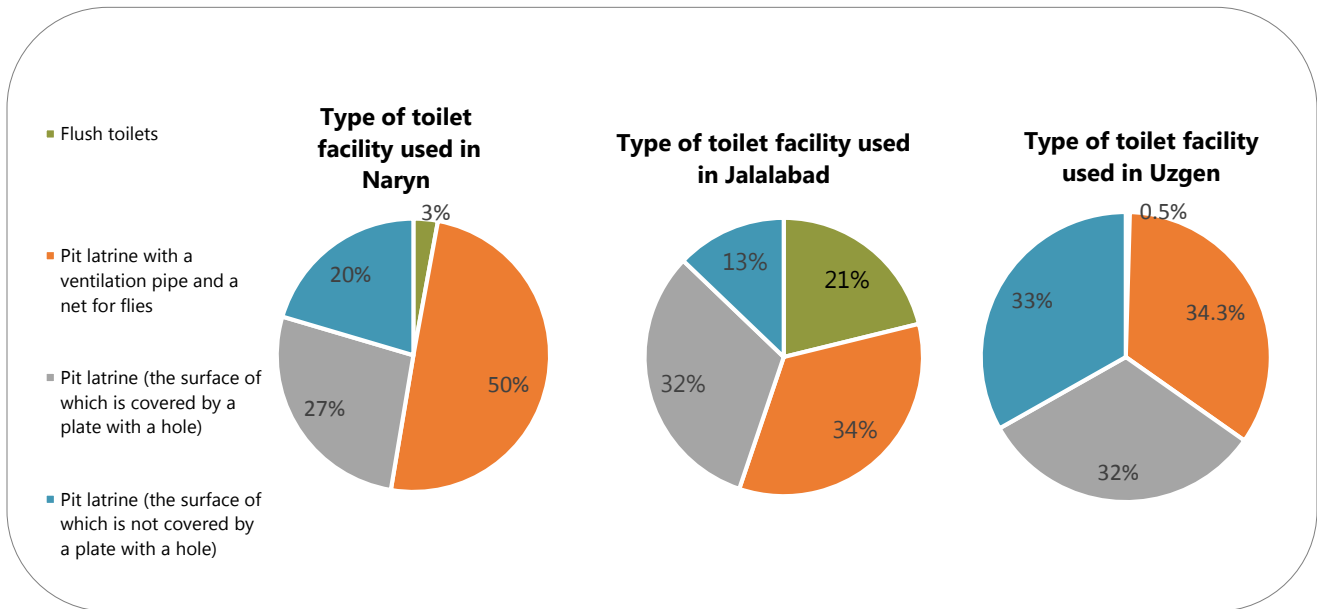
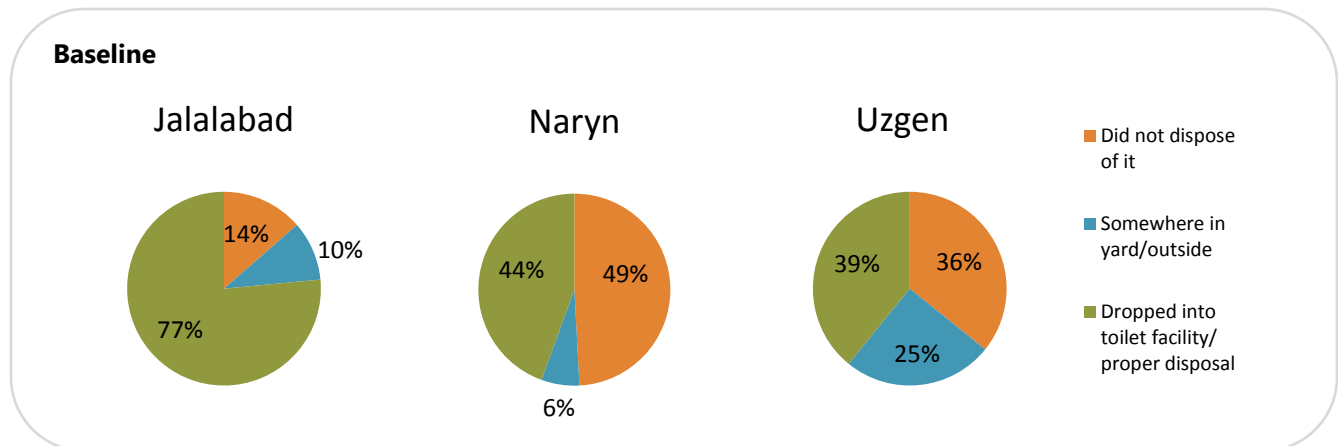


Figure 11.3 Type of Toilet Facility Used (Endline)

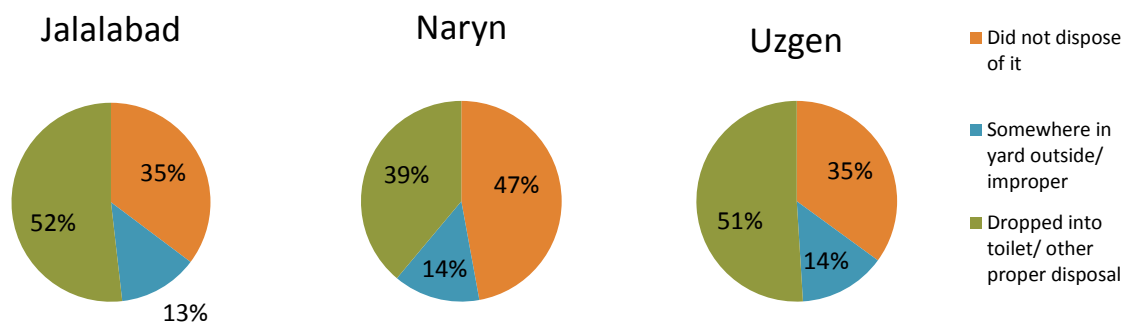


SPRING also promoted proper disposal of child feces. Here results were mixed, as seen in Figure 11.4. At the time of the baseline, over three-quarters of residents in Jalalabad disposed of child feces in a proper way, either by disposing into a toilet facility or burying. In Naryn and Uzgen, however, less than one-half of respondents disposed of feces properly. Unfortunately, between the baseline and endline surveys, the situation in Jalalabad worsened, with only 52 percent reporting that they disposed of infants' feces in a satisfactory way. In Naryn, there was a slight improvement in that more respondents reported disposing than not disposing, but the proportion disposing properly declined relative to baseline. The comparison area of Uzgen showed virtually no change in disposing versus not disposing, but there was a substantial improvement in the proportion disposing properly.

Figure 11.4 What Mother Did with Feces Last Time Child Passed Stools



Endline



Handwashing

Having clean hands and practicing other good hygiene measures is also important for preventing infections and undernutrition in infants. SPRING promoted handwashing through community activists, who carried out household visits and community events.

As seen in Figures 11.5 and 11.6, women were significantly less likely to report handwashing in the endline survey than in the baseline. Women were asked “When do you usually wash your hands?” with prompting for multiple responses, in both surveys. The only difference was that the endline allowed for six response categories while the baseline allowed for five. In the endline, a response category was added for “after handling livestock.”



Baseline results in Figure 11.5 show that Jalalabad and Uzgen had very similar patterns except for “before eating.” The most common time for handwashing in all three regions was “after defecation,” with over 95 percent of respondents in Jalalabad and Uzgen reporting that they washed their hands at that time. Next highest was “before eating” in Jalalabad and Naryn, though that was only mentioned by 66 percent Uzgen. The least often mention time in all three regions was “after attending to a child who has defecated.” Handwashing was less reported in Naryn than in the other regions for all the critical handwashing times except “before eating.”

In the endline survey (Figure 11.6), levels of reported handwashing were lower than at baseline for almost all critical moments and regions. For example, at baseline, 98 percent of Jalalabad residents, 95 percent in Uzgen, and 79 percent in Naryn reported washing hands after defecation. By endline, these figures had fallen to 48 percent, 40 percent, and 37 percent, respectively. Steep declines were also reported for the other critical moments, the one exception being “after attending a child who has defecated” which was mentioned significantly more often at endline than at baseline.

Figure 11.5 Percentage Reporting That They Usually Wash Their Hands, by Critical Moment (Baseline)

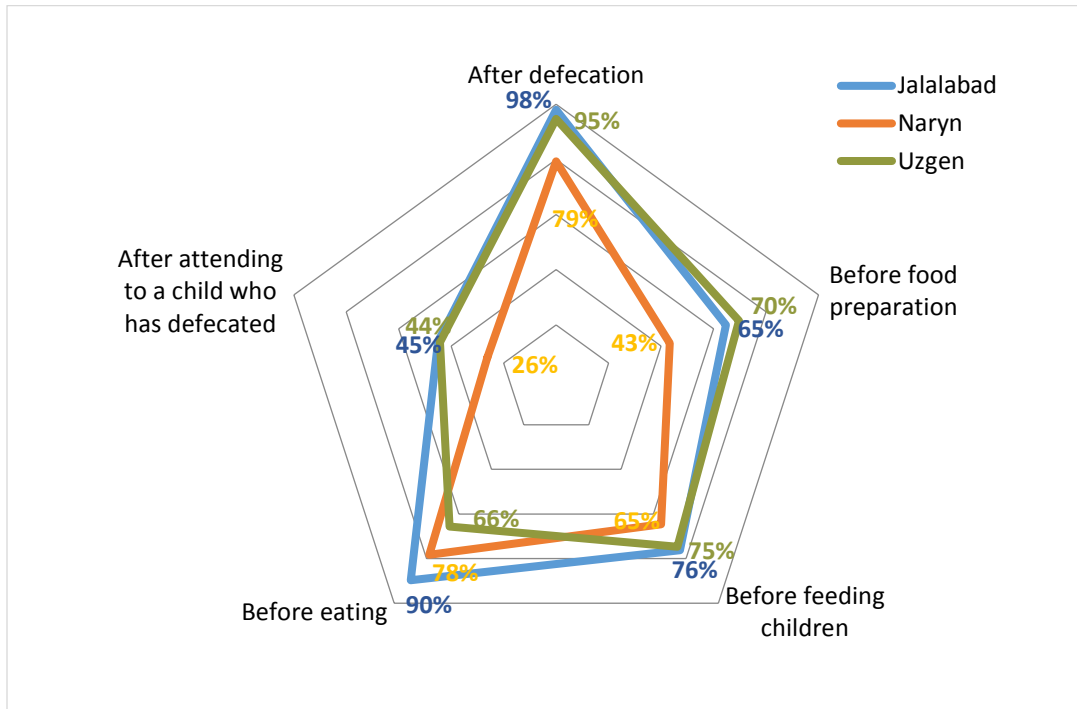
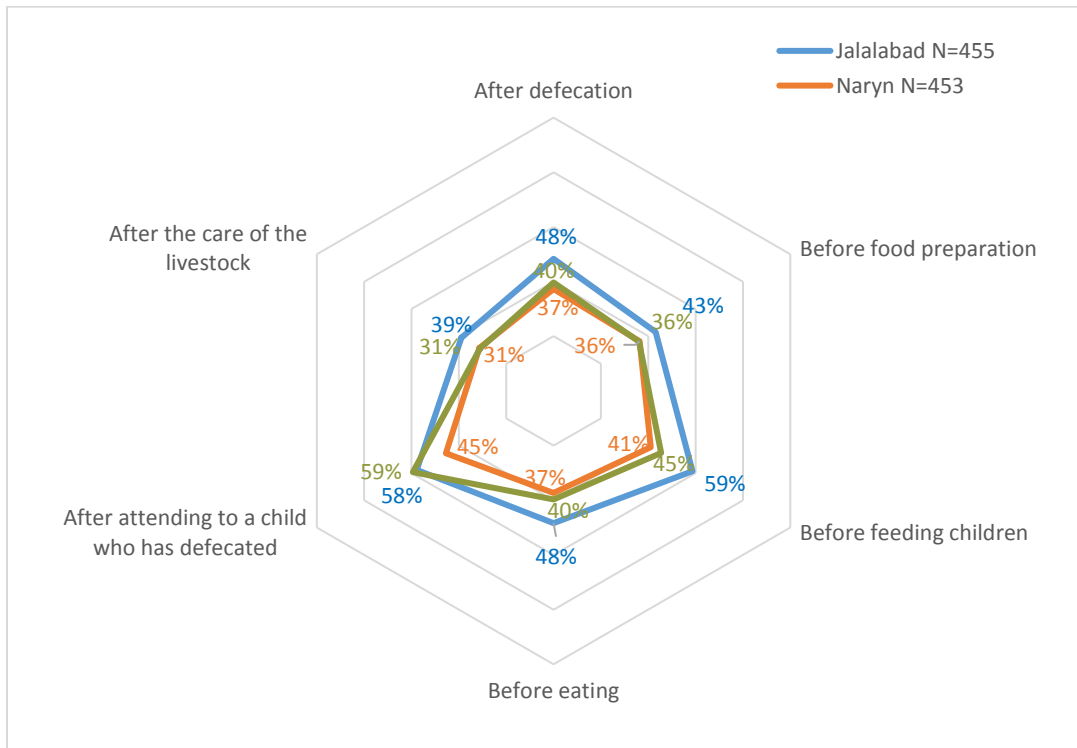


Figure 11.6 Percentage Reporting That They Usually Wash Their Hands, by Critical Moment (Endline)



Figures 11.7 and 11.8 show the results analyzed in terms of the number of critical moments mentioned by the mother. In Jalalabad, 92 percent at baseline named three or more critical moments, and the mean number mentioned was 3.2. In Naryn, 47 percent named three or more moments, and the mean number mentioned was 2.9. In Uzgen, the figures were 90 percent and 3.5. All of those figures declined by the endline (Figure 11.8). In Jalalabad, 53 percent named three or more critical moments, and the mean number mentioned was 2.8. In Naryn, 47 percent named three or more moments, and the mean number mentioned was 2.4, and in Uzgen, the figures were 38 percent and 2.4.

Figure 11.7 Number of Critical Times When Mothers Report Washing Their Hands (Baseline, from among Those Who Named at Least One Method)

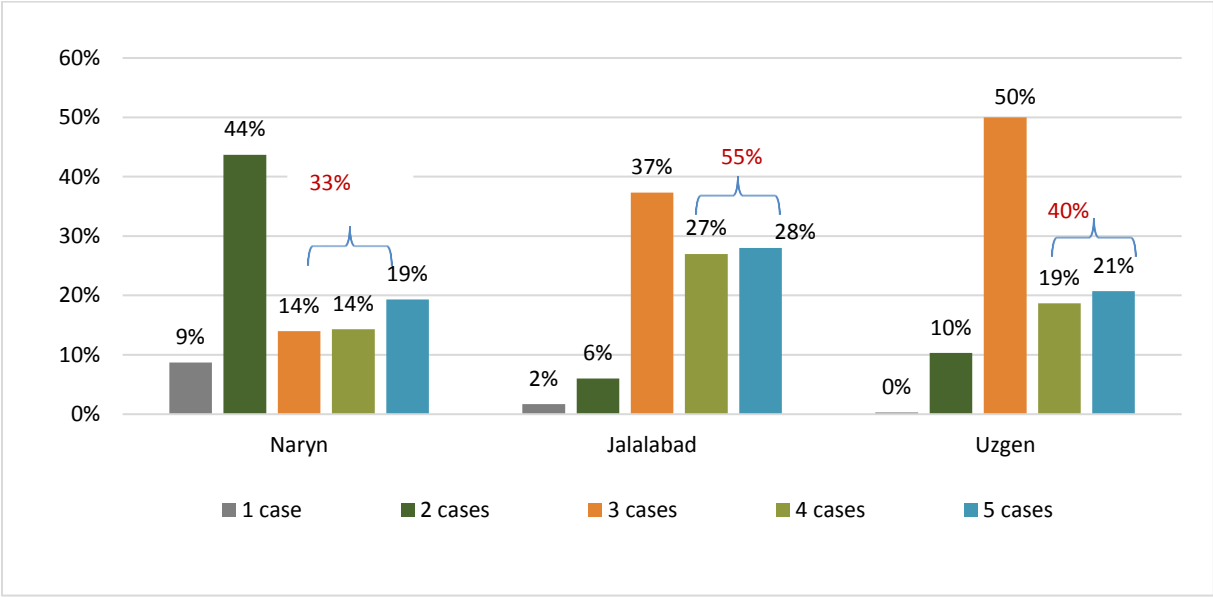
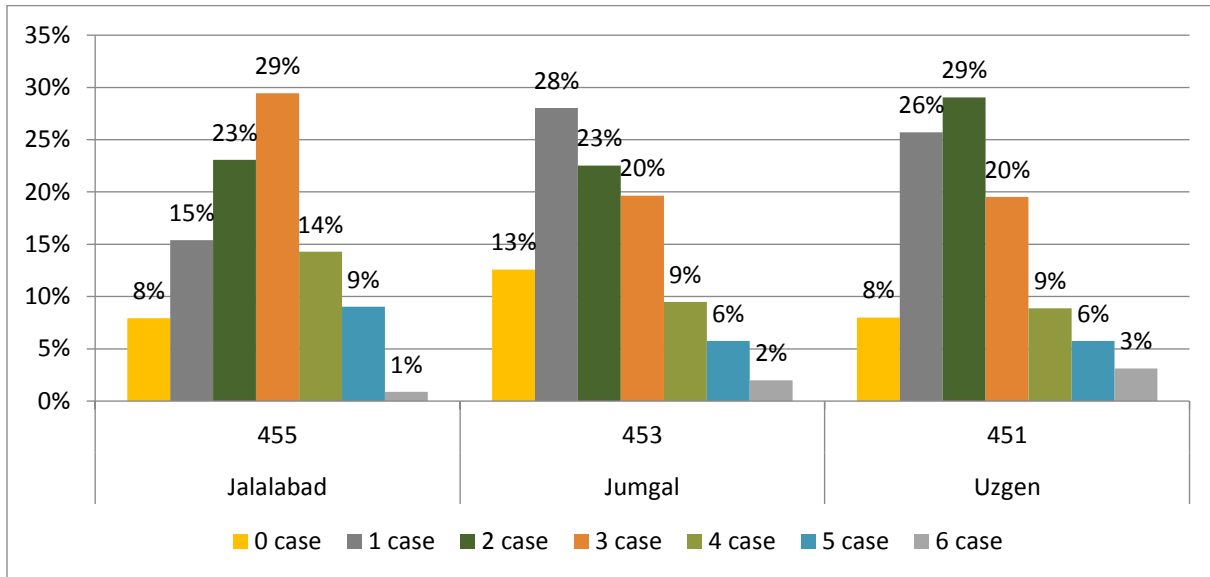
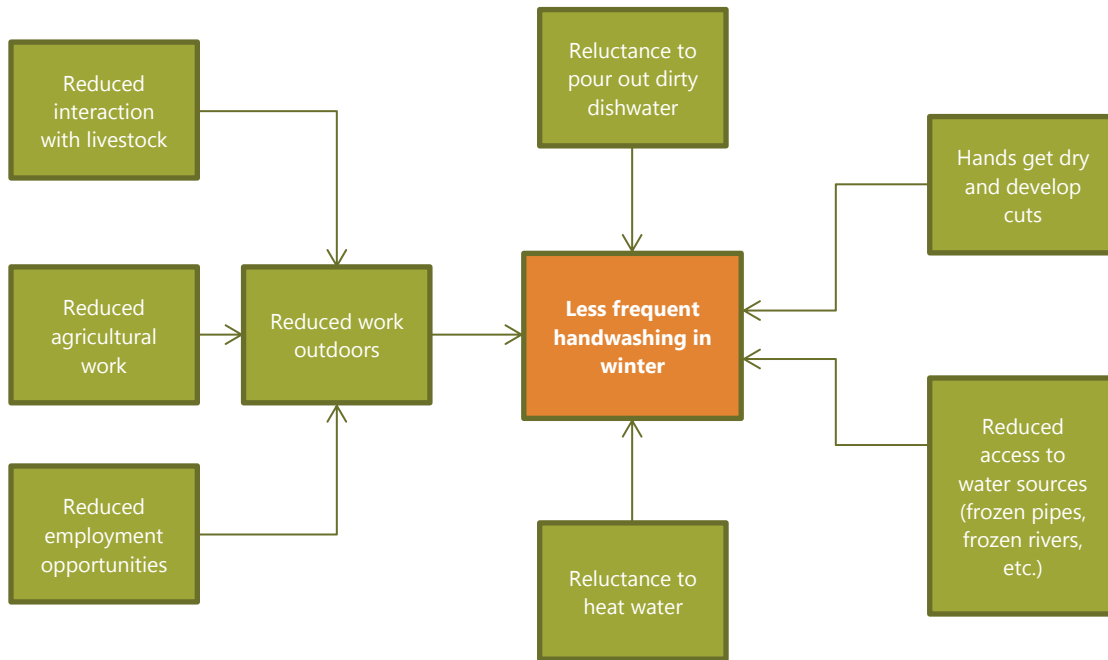


Figure 11.8 Number of Critical Times When Mothers Report Washing Their Hands (Endline, from among Those Who Named at Least One Method)



SPRING was surprised by declines in reported handwashing, and carried out qualitative research to explore potential reasons. The research consisted of FGDs with residents in communities where SPRING worked, and key informant interviews with community activists, health workers, and other stakeholders. One of the main issues the research investigated was whether handwashing may be affected by seasonal change—in particular, whether the cold winter climate would make people less likely to wash hands, especially in rural areas where households might have outdoor toilets and outdoor water sources. That could explain some of the unfavorable results, given that the baseline took place in October/November, before the winter turns cold, and the endline was in February/early March, when winter is especially cold. The qualitative research did reveal many reasons why women may wash hands less often in the winter. Figure 11.9 summarizes some of the main explanations given by FGD participants and key informants.

Figure 11.9 Factors Affecting Handwashing in Winter (from SPRING Qualitative Research)



From the figure, we see that there are many likely reasons why handwashing declines in winter. Some are directly related to cold weather (frozen pipes, frozen rivers), while others are indirectly related (less employment). Other negative and positive factors were mentioned that were not necessarily seasonal, such as knowing that handwashing is beneficial to health (positive), Islamic religion (positive), forgetfulness/neglectfulness (negative), and reluctance of older household members to be instructed about actions such as handwashing. In general, results of the qualitative research suggested it should not be surprising that the SPRING surveys showed less handwashing in winter. From the perspective of interpreting the meaning of the survey results, it is somewhat encouraging that declines in handwashing practices in the SPRING areas were less steep than in the comparison area, suggesting that SPRING interventions may have had an ameliorating effect on a process that was happening anyway.

12. Deworming

Soil-transmitted helminths (worms) can adversely affect nutrition and health of pregnant women and children. The worms can cause intestinal infections, diarrhea, and internal bleeding, potentially leading to anemia, impaired digestion, intake and absorption of nutrients. WHO therefore recommends deworming for pregnant women after the first trimester, and others at risk, including preschool and school-aged children.^{18,19}

To address the issues caused by helminth infection, SPRING supported the National Deworming Working Group in revising the clinical protocol on prevention and treatment of parasitic diseases, which was endorsed by the Ministry of Health in January 2017. The new protocol specifically recommends presumptive deworming for children and pregnant women. SPRING also supported some aspects of implementation of the new protocol, including roundtable events with national and regional stakeholders in Bishkek and Jalalabad, support for curriculum development, training of trainers and cascade training on the new protocol for health workers, training and promotional materials for schoolteachers, and training of community activists to promote proper hygiene and deworming. Although some of these activities began before the endline survey, most of the training occurred after data collection had taken place. Therefore, given that timing, unfortunately, only minimal impact can be expected on this component of SPRING's nutrition programming.

There were only two questions related to deworming in the endline questionnaire, one on whether the respondent received information on deworming during her most recent pregnancy, and the second on whether her youngest child received any deworming medications in the previous six months. Table 12.1 shows results for these two questions.

Table 12.1 Deworming Information for Pregnant Women, and Medications Received by Children

| Indicator | Jalalabad | | Naryn | | Uzgen | |
|---|---------------------|--------------------|---------------------|--------------------|---------------------|--------------------|
| | Baseline (N=300) | Endline (N=455) | Baseline (N=300) | Endline (N=453) | Baseline (N=300) | Endline (N=451) |
| Percentage of women who received advice to take deworming medication during pregnancy | 12% | 33% | 7% | 37% | 5% | 23% |
| Percentage of children 0–23 months who received deworming medication in the past 6 months | 10% | 3% | 19% | 4% | 12% | 3% |

¹⁸ World Health Organization. 2018. "Deworming Pregnant Women." http://www.who.int/elena/titles/deworming_pregnancy/en/

¹⁹ World Health Organization. 2018. "Soil-Transmitted Helminth Infections." <http://www.who.int/en/news-room/fact-sheets/detail/soil-transmitted-helminth-infections>

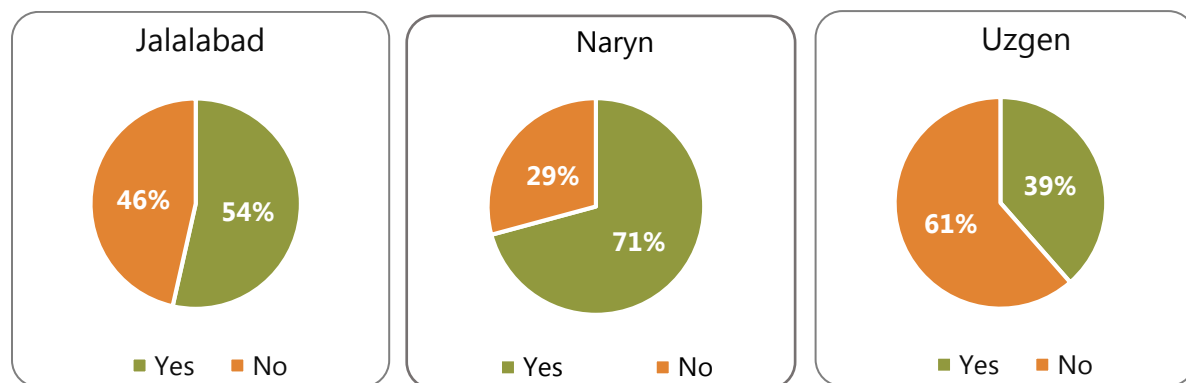
Interestingly, the percentage of women receiving information on deworming increased significantly between baseline and endline in all three regions, but receipt of drugs for deworming by young children declined steeply. There could be many reasons for this, including that the new policy was just being rolled out at the time of the survey, and information provision within the health system may have been easier to initiate than actual provision of medications. Other possible explanations could be related to supply issues, or the timing of drug administration days for children. In any case, the results should be viewed with caution, because as mentioned above, SPRING rolled out most deworming activities after the endline survey was completed.

13. SPRING Exposure Questions

At the end of the endline survey, several questions were asked about exposure to SPRING interventions. Women were asked whether they had heard of SPRING, what messages they had heard and from whom, and their knowledge and practices on select nutrition topics. Figure 13.1 below shows that more than one-half of women in Jalalabad and Naryn had heard of SPRING, and surprisingly, over one-third of women in Uzgen had heard of SPRING. One of the surprising findings of the endline survey was that on many topics, results in Uzgen were almost as positive as in the intervention areas. Further research is needed to know with certainty why that was, including the extent to which non-SPRING nutrition activities were taking place in Uzgen during the time of the project, but spillover of SPRING activities from nearby Jalalabad is one possibility. For example, SPRING had anecdotal reports of project materials being shared in health facilities beyond project areas. The project also broadcast some messages over mass media, and did national-level policy work. If more than one-third of Uzgen residents had actually heard of SPRING, this could be further evidence of a potential spillover effect, and that some SPRING messages may have beyond project intervention regions.

When viewing these results in aggregate, one should also remember that this was a population-based survey, so some dilution can be expected, as SPRING was able to reach only a certain portion of the population in each intervention area.

Figure 13.1 Have You Ever Heard about the SPRING Project? (Endline Only, in Percentage)



One of SPRING's main approaches was outreach through community-based activists. The activists conducted household visits (emphasizing the first 1,000-day households, those with pregnant women or children under two) and community meetings, raising awareness and promoting a few simple key messages and behaviors. They also helped to generate demand for the services of health workers, promoting health facilities as an important source of information and care. Activists disseminated messages around 10 themes, including: exclusive breastfeeding; complementary feeding (including reduced consumption of junk food); dietary diversity for the household (including reduced consumption of junk food); maternal nutrition and anemia; handwashing and clean latrines; anemia, preservation, and storage techniques to increase access to a diverse diet; and other nutritional messages.

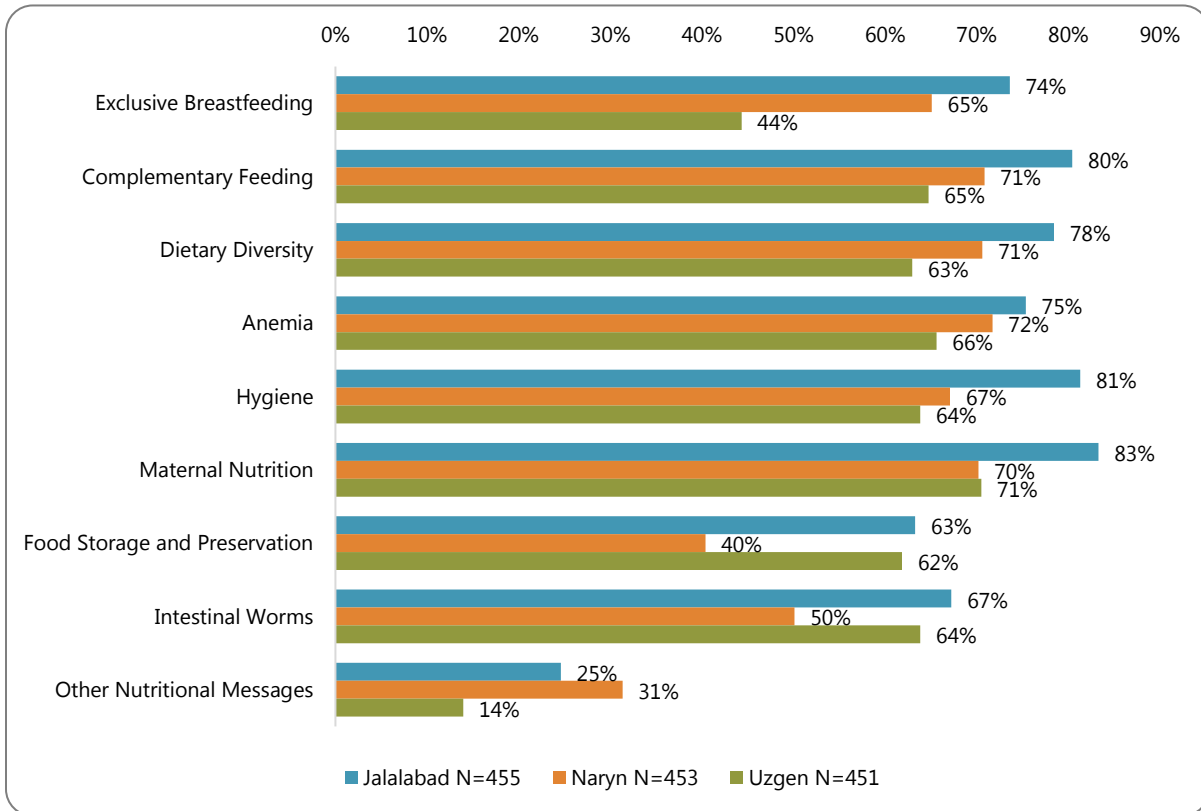
Table 13.1 shows percentages of mothers who heard key messages and the main sources of information. Results are shown for all regions combined; detailed results by region are shown in Annex 4. For most topics, the main single source of information was health facilities, but household visits and community meetings were also important source for all topics except breastfeeding. For breastfeeding, the large majority (88 percent) got information from health facilities during antenatal care or postnatal care visits. For food storage and preservation, the large majority (67 percent) got information from community meetings, and very few from health facilities, which is not surprising given the topic.

Table 13.1 Percentage of Mothers Who Reported Receiving Information on the Main SPRING Nutrition Messages, by Source of Information (Endline, among Those Who Heard Messages)

| Key Nutrition Messages Disseminated by SPRING | Household Visits | Community Meetings | Health Facility | Other Sources |
|---|------------------|--------------------|-----------------|---------------|
| Exclusive breastfeeding | 7% | 0% | 88% | 3% |
| Complementary feeding | 37% | 26% | 57% | 1% |
| Dietary diversity | 35% | 31% | 50% | 2% |
| Anemia | 28% | 33% | 55% | 1% |
| Hygiene | 36% | 30% | 50% | 1% |
| Maternal nutrition | 36% | 25% | 58% | 2% |
| Food storage and preservation | 17% | 67% | 14% | 6% |

Figure 13.2 shows the percentage of women who reported hearing messages on key nutrition topics by region. In most cases, women in Jalalabad were more apt to have heard a message on the topic, and Uzgen least likely, but there were two cases (food storage/preservation and deworming), where Uzgen residents were more likely to report hearing the message than women in Naryn. This may be explained by the fact that the SPRING food storage/preservation module was in the process of being rolled out at the time of the survey, and the deworming module had yet to be rolled out.

Figure 13.2 Key Nutrition Messages Heard, by Region (Endline)



The survey also asked respondents about their knowledge on key nutrition topics. Figures 13.3–13.5 and Table 13.2 show the main results, by question. Figures 13.3 and 13.4 show results for exclusive breastfeeding and complementary feeding, respectively. The results may be considered very encouraging or not so much, depending on what the category of “more than six months” includes based on the exact words of the respondent and how the interviewer interpreted them. If, by “more than six months,” it means “up to just after six months,” then the results are quite positive, meaning that very large majorities of women know to exclusively breastfeed up to six months and then introduce complementary foods. There is some evidence that this is indeed the case, because in practice, it was seen to be very unlikely that women reported exclusive breastfeeding beyond six months, and in fact, conversely, fairly common for them to introduce complementary foods before the child turned six months.

For the question on exclusive breastfeeding, knowledge was substantially better in the SPRING intervention areas than in Uzgen, perhaps showing some benefit of SPRING’s efforts to train health facility staff and community activists in that topic. For complementary feeding, results varied little by region.

Figure 13.3 To What Age Should the Child Receive Breastmilk Only? (Percentage Breakdown of Responses)

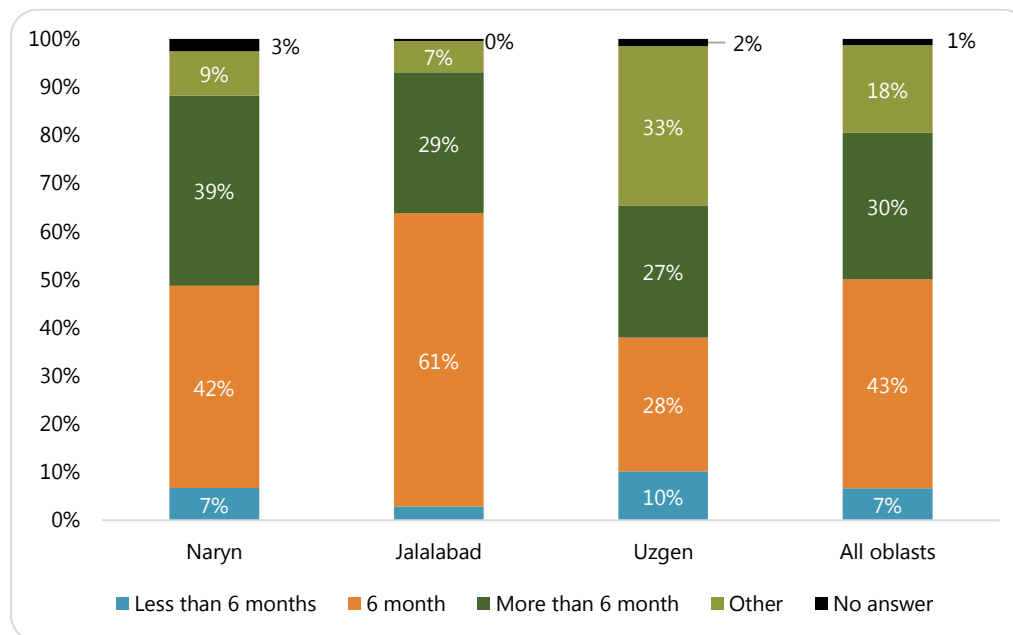


Figure 13.4 At What Age Should You Enter Soft, Semi-solid Foods Other than Breastmilk, for a Variety of Diets? (Percentage Breakdown of Responses)

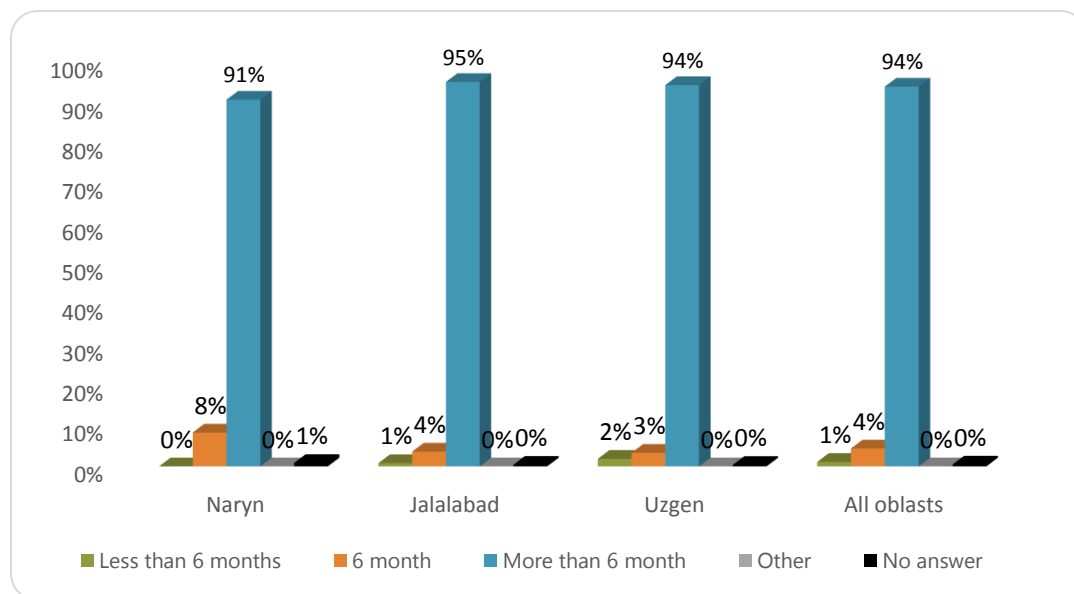


Figure 13.5 shows knowledge of vitamin A, and particularly which kind of vitamin is provided by yellow/orange/red fruit and yellow/orange vegetables. Results show that only a minority answered correctly (vitamin A) in all three regions. Results were particularly disappointing in Naryn, where only 19

percent answered correctly. Results were similar in Jalalabad and Uzgen, with slightly more women answering correctly in Jalalabad. It is possible that there was a measurement issue with this question, because consumption of vitamin A-rich fruits and vegetables has been increasing significantly during the time of the SPRING project in all three regions, so it is possible that people know of the value of the foods but not the specific vitamin providing the value.

Figure 13.5 What Kind of Vitamin is Provided by Yellow/Orange/Red Fruit and Yellow/Orange Vegetables? (Percentage Breakdown of Responses)

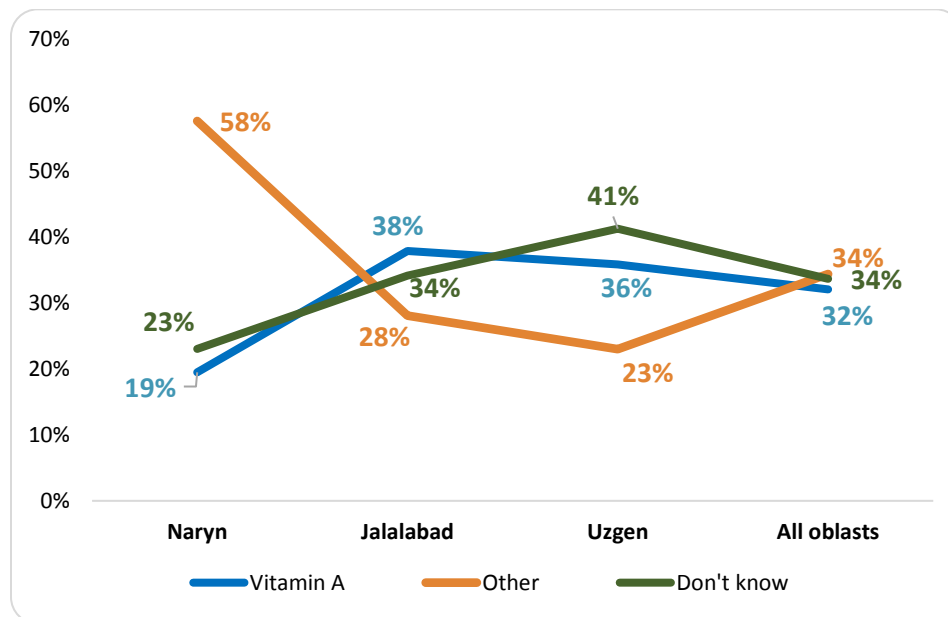


Table 13.2 shows results for questions on anemia, handwashing, and nutrition during pregnancy. Substantially larger percentages of women had heard of anemia in the intervention areas than in Uzgen. Among those who had heard of it, two ways to prevent it (iron-rich foods and iron supplements) were mentioned by at least 40 percent of respondents in all three regions. Interestingly, respondents in Jalalabad and Naryn demonstrated a deeper knowledge than in the comparison area of Uzgen, as 55 percent of women in Jalalabad (among those who had heard of anemia) and 48 percent in Naryn mentioned that good hygiene can help prevent anemia, compared to only 31 percent in Uzgen. Similarly, 10 percent of women in Jalalabad and 14 percent in Naryn mentioned that deworming can help prevent anemia. Although SPRING community activists had not yet been trained in deworming some health providers had. These results further show potential impact of SPRING on women’s nutrition knowledge.

The next question was about handwashing. The five most mentioned critical moments are shown. Four out of those five were mentioned most often by women in Jalalabad. Responses were similar among women in Naryn and Uzgen, with women in Uzgen substantially more likely to mention “after visiting the toilet” and those in Naryn more apt to mention “after disposing of child’s feces.”

Finally, the survey asked about nutrition during pregnancy. Here, the results were disappointing, as only a small minority in each region answered correctly (that a woman should eat more during pregnancy). Furthermore, the region most likely to provide the correct answer was the comparison area of Uzgen.

Table 13.2 Questions on Anemia and Deworming, by Region

| Health Behavior Perception | | Naryn | | Jalalabad | | Uzgen | | Total |
|--|---------------------------------|-------|-----|-----------|-----|-------|-----|-------|
| | | N | % | N | % | N | % | N |
| Have you ever heard of anemia? | Yes | 232 | 51% | 238 | 52% | 168 | 37% | 638 |
| | No | 56 | 12% | 108 | 24% | 145 | 32% | 309 |
| | No answer | 165 | 36% | 109 | 24% | 138 | 31% | 412 |
| What are the ways you know how to treat/prevent anemia among women? | Getting enough iron-rich foods | 105 | 43% | 135 | 56% | 123 | 71% | 363 |
| | Deworming | 35 | 14% | 25 | 10% | 3 | 2% | 63 |
| | Take iron supplements | 134 | 55% | 167 | 69% | 70 | 40% | 371 |
| | Hygiene/ handwashing | 118 | 48% | 132 | 55% | 53 | 31% | 303 |
| | Other | 29 | 12% | 8 | 3% | 7 | 4% | 44 |
| | No answer | 7 | 3% | 5 | 2% | 6 | 3% | 18 |
| What are the critical moments when it is important to wash your hands? | After visiting the toilet | 170 | 40% | 250 | 57% | 265 | 62% | 685 |
| | Before cooking | 204 | 47% | 236 | 54% | 192 | 45% | 632 |
| | Before feeding the baby | 216 | 50% | 284 | 65% | 216 | 50% | 716 |
| | Before taking meals | 169 | 39% | 241 | 55% | 202 | 47% | 612 |
| | After disposal of child's feces | 151 | 35% | 178 | 41% | 101 | 24% | 430 |
| | Other | 179 | 42% | 83 | 19% | 139 | 32% | 401 |
| | No answer | 1 | 0% | 0 | 0% | 1 | 0% | 2 |
| During pregnancy, should women eat more, less, or as usual? | Less | 242 | 53% | 133 | 29% | 99 | 22% | 474 |
| | As usual | 137 | 30% | 201 | 44% | 212 | 47% | 550 |
| | More | 73 | 16% | 120 | 26% | 140 | 31% | 333 |
| | No answer | 1 | 0% | 1 | 0% | 0 | 0% | 2 |

14. Conclusions and Recommendations

This report summarizes findings from an endline survey carried out in February–March 2017, among 1,359 women in Jumgal in Naryn oblast, parts of Jalalabad oblast, and Uzgen (Osh oblast). Results are compared against a baseline survey carried out in October–November 2014, and two streamlined surveys focused on dietary diversity that were carried out in late winter/early spring of 2015 and 2016. SPRING also carried out two rounds of qualitative research, the first in 2016 to explore reasons for unexpected increases in consumption of certain fresh fruits and vegetables during winter months, and then in 2018 to investigate why handwashing and child feeding were significantly less practiced in the endline compared to baseline. Select results from the qualitative research are provided where appropriate.

Overall, results of the endline survey showed that many key nutrition practices improved significantly between baseline and endline. Notable results included the following.

Iron during pregnancy. Many indicators related to anemia prevention and iron supplementation during pregnancy improved significantly between surveys. Women in intervention areas reported making more ANC visits during their most recent pregnancy and did so earlier in the pregnancy. As a topic during ANC visits, the percentage of women who said they discussed iron during pregnancy increased from 55 percent to 78 percent in Jalalabad, 20 percent to 73 percent in Naryn, and 49 percent to 59 percent in Uzgen. The increase in both intervention areas was significantly greater than in the comparison region. More women reported receiving and taking iron during pregnancy, and a greater percentage said that the formulation was IFA, the formulation promoted by SPRING. Most importantly, the percentage of women who reported taking iron for 90 or more days almost doubled, from 16 percent to 31 percent in intervention areas, compared to a smaller increase in Uzgen. These positive results suggest that SPRING interventions likely had a positive effect on this important nutrition practice.

Women’s dietary diversity. Several aspects of women’s diet also improved significantly between surveys. Of note, the percentage of women consuming foods from five or more food groups in the previous 24 hours increased from 38 percent at baseline to 71 percent at endline. Especially encouraging was that the increase was driven by greater consumption of the most nutrient-rich food groups, especially dark green leafy vegetables, vitamin A-rich fruits and vegetables, and legumes, seeds, and nuts. The results are impressive because the baseline took place soon after the harvest season in October–November, while the endline took place in the middle of winter, in February–March. Interestingly, dietary diversity improved almost as much in Uzgen as in the intervention areas. Qualitative research provided some insights as to why dietary diversity increased even during winter months, including better awareness of the importance of nutritious foods throughout the year, storing a wider variety of foods, and the fact that foods are widely available in local markets, even in winter. The magnitude of the improvements suggests that SPRING probably had some impact in this area, perhaps with spillover to Uzgen from nearby Jalalabad or due to national efforts. However, because of substantial improvements in the comparison area, it is not possible to attribute all of the improvements to SPRING. In any case, the strong improvement seen in this nutrition practice is a positive and welcome result for women in all three regions.

Infant and young child feeding—breastfeeding. SPRING measured several IYCF indicators in this survey, including early initiation of breastfeeding and provision of colostrum, current breastfeeding and

continued breastfeeding at two years, and exclusive breastfeeding for children 0–5 months. Breastfeeding is very widely practiced in the Kyrgyz Republic, so most indicators were at high levels at baseline and remained high at endline. The most notable improvement came with exclusive breastfeeding. In intervention areas, the percentage of babies being exclusively breastfed increased from 29 percent to 63 percent between surveys, significantly more than the improvement in Uzgen (37 percent to 51 percent). This is a notable result where SPRING appears to have had positive impact on an important nutrition practice.

Infant and young child feeding—diet of children aged 6–23 months. Other IYCF indicators measured included appropriate introduction of complementary foods for children aged 6–8 months, and dietary diversity, feeding frequency, and minimum acceptable diet for children aged 6–23 months. Results were mixed with these indicators. With regard to the appropriate introduction of complementary foods, levels were very high at baseline and mostly experienced small improvements between baseline and endline. The main aspect that changed was that premature introduction on complementary foods (before six months) decreased dramatically in both SPRING intervention areas, from 67 percent down to 18 percent in Naryn, and 35 percent to 14 percent in Jalalabad. In Uzgen, the percentage declined only slightly, from 32 percent to 28 percent, suggesting therefore that SPRING interventions may have influenced mothers to delay introducing solid and semi-solid foods until their child reaches six months.

Changes in diet for children aged 6–23 months painted a mixed picture. Overall, SPRING appears to have had a positive effect on children’s dietary diversity, which increased significantly, from 42 percent to 54 percent, between surveys, while decreasing slightly in Uzgen. However, the improvement in the SPRING intervention areas was almost entirely due to improvements among non-breastfed children in Naryn. Dietary diversity actually declined in Jalalabad. Feeding frequency declined between surveys in all three regions. Qualitative research carried out after the endline survey established some reasons for possible declines, including some that were due to seasonality and cold climate. Some FGD participants mentioned that the composition of children’s diets changes in the winter, with larger portions and foods such as meats and pasta that are more filling, therefore needing fewer feedings. Because of these mixed results the composite indicator of MAD was nearly unchanged in intervention areas, and declined from 32 percent to 26 percent in Uzgen.

One positive note is that SPRING seems to have had an impact on consumption of junk food (sweet/sugary and processed foods) among the youngest children (0–5 months). In intervention areas, junk food consumption declined from 15 percent to 8 percent among that age group, significantly better than in the comparison area, where it increased from 6 percent to 10 percent. Results suggest that SPRING may be making some gains in getting mothers to avoid feeding very young children non-nutritious foods, in the face of trends going the opposite way in the Kyrgyz Republic and in many parts of the world.

Source of foods. The study looked at where women obtained the foods that they ate. Because of different climate and topography, there were some regional differences in the kinds of foods grown on farms and available in local markets. Over 20 different fruits and vegetables were mentioned as being grown on farms at some point during the year. In Jalalabad, potatoes, tomatoes, apples, carrot, cabbage, and dark green leafy vegetables were reported most often as grown on farms (30–38 percent of responses), while in Naryn, the main crops grown were potatoes, carrots, cabbage, *jusai*, and other dark

green leafy vegetables (34–62 percent of responses). Respondents reported that a wide variety of foods was available in local markets, even in winter. In Naryn, 11 foods were mentioned by at least 50 percent of respondents as being currently available if they needed them, while in Jalalabad, 15 foods were mentioned by at least 50 percent. Most foods were more apt to be available in Jalalabad than in either Naryn or Uzgen. Some of these results (fewer women saying they grew foods on farms and more market availability) were likely influenced by the fact that the Jalalabad sample was more urban.

Food storage and preservation. Results were mixed with regard to these practices. For the most part, the percentage of households storing and preserving foods was quite high across all surveys, in most cases decreasing slightly between baseline and endline. Encouragingly, the mean number of foods that people store or preserve increased in most regions across surveys. A large majority of women reported still having at least some stored/preserved foods left at the time of the endline survey.

WASH. SPRING's scope of work did not include infrastructure improvements related to drinking water and sanitation, and perhaps as a result, little or no change was seen in those indicators between surveys. Reported practice of handwashing unfortunately declined significantly in all three regions. Qualitative research revealed that there are many reasons why people wash hands less often during the winter (endline) compared with warmer months (baseline). Among the main reasons were that outside water freezes, and also that people spend less time outside with animals during winter, there is less outside employment, and washing hands in cold water causes them to get dry and have cracked skin. Declines in reported practices in SPRING areas were not as severe as declines in Uzgen, so SPRING may have had some positive effect on the practice, though because the baseline and endline seasons were different, it is not possible to say that with certainty.

Exposure to SPRING messages. The survey asked what nutrition messages respondents had heard, and from where. It also asked a series of knowledge questions to see how well people understood select basic nutrition concepts. One interesting finding was that 39 percent of women in the comparison area of Uzgen reported that they had heard of SPRING, which could indicate some benefits from regional and national level work through mass media, social media, and policy work through the health system, or possibly spillover from SPRING's work in nearby Jalalabad. Large majorities of respondents said they had heard nutrition messages on various topics, and the main source for most messages was health facilities.

In terms of basic knowledge of nutrition concepts, most respondents answered correctly about correct timing for exclusive breastfeeding and complementary feeding, with more correct knowledge on exclusive breastfeeding in Jalalabad and Naryn than in Uzgen. Knowledge of vitamin-A rich foods was low (19–38 percent) in all three regions, especially in Naryn (19 percent). Question wording asked for more specificity in the response on the vitamin-A question and could therefore have caused high levels of responses of "don't know" (23–41 percent). Significantly more women had heard of anemia in SPRING intervention areas than in Uzgen, and women's knowledge of both anemia and hygiene was also higher in SPRING areas than in Uzgen. Knowledge of women's nutrition during pregnancy was low in all regions but was lower in intervention areas than in the comparison zone.

Overall, results of the endline survey were very positive, showing improvements in many key nutrition practices over the course of SPRING's work. Of note, results suggest that SPRING had significant positive impact on iron supplementation during pregnancy, women's diet, exclusive breastfeeding, and junk food

consumption among young children. Results on children’s diet, food storage and preservation, and WASH were mixed, with both positive and negative or neutral results. Finally, even for those indicators where results improved significantly, in some cases the percentage of women reporting healthy practices was low. For example, despite significant improvements in women taking iron during pregnancy, with the percentage of women who took iron for at least 90 days almost doubling, only 31 percent at endline reported taking it for 90-plus days, so there is still substantial room for improvement. Similarly, although women’s dietary diversity improved significantly, reported absolute consumption levels of several nutrient-rich foods still remains low.

In sum, results show many impressive nutrition outcomes in the areas where SPRING worked, but areas for further improvement still remain. Key indicators across all surveys are shown in Table 1.1 in the Executive Summary.

Recommendations

The positive results from this survey suggest that SPRING’s overall approach was successful and should be continued in future programs and expanded to other oblasts as feasible. This includes building capacity in the health system, using community outreach, advocating for improved nutrition policies, and using various types of media, including social media, to widen the reach of nutrition messaging. The first recommendation, therefore, suggests continuity, while the ones that follow seek to improve areas that did not improve in this series of surveys.

- Explore ways to continue SPRING activities in project areas, and where possible expand to other oblasts and rayons. This is especially true for topical areas such as iron supplementation and women’s diet where, despite improvements, levels of good practice remain low.
- Continue existing interventions and develop new and innovative ones to address areas that did not improve and where levels of good practices are low. These include handwashing, feeding frequency, introducing complementary foods only after six months, continued breastfeeding among children older than 16 months, nutrition during pregnancy, and certain aspects of WASH and food storage/preservation.
- Consider the role of seasons in future programs. SPRING initially thought that the winter season would mainly affect dietary diversity (and affect it negatively), but these surveys suggest something very different—that women’s dietary diversity may actually rise under some circumstances during winter, and winter may have a greater effect on aspects such as handwashing and possibly feeding frequency. Future programs could explore ways to overcome barriers to improving certain practices, especially by giving consideration to how changes in the practice could vary in different seasons throughout the year.

Annex 1. List of Settlements Replaced during Fieldwork, and Reasons

| Region | Inaccessible Village | Village Used as a Replacement | Reasons for Replacement | Principles of Replacement |
|--------------------------------|------------------------------|-------------------------------|--|---|
| Uzgen | Osturu | Jalaldy | Most of the children under 24 months were left under grandmother's care. A lot of mothers were abroad working. Visiting the whole village, interviewers could not find an appropriate number of mothers to fulfill quota (20 successful interviews). | The remaining 10 interviews were implemented in nearby village (Jalaldy) via random walk protocol. |
| Naryn oblast (Jumgal district) | Min-Kush | Chaek | Due to heavy snowfall, the road to the villages of Min-Kush and Ornok was closed. Travel to those villages was considered too dangerous for interviewers and supervisors. | According to SPRING team and researchers' opinion—it was decided to increase the sample size in Chaek and Bayzak villages (large ones in the region), excluding Min-Kush and Ornok. |
| | Ornok | Bayzak | | |
| | Diykan/ Bash- Kuugandy | Chon-Dobo | One village was erroneously sampled twice because of different old and new naming—Diykan (old version) and Bash—Kuugandy (new version). Chon-Dobo was used to replace one of the duplicate villages. | The village for replacement was selected randomly from the list of project villages within Jumgal district. |
| | Besh-Terek | Aral, Ak-Tatyr | There were only 19 households in Besh-Terek village that had children less than 24 months of age, and only 9 of them agreed to take part in the survey. To collect the remaining 21 interviews, we selected Aral, which consists of two villages: Kichi Aral and Chon Aral. The selection of respondents was conducted randomly according to the lists provided by SPRING partners. From the list of children born in these villages interviewers managed to conduct 12 successful interviews. The remaining 9 interviews were conducted in the village of Ak-Tatyr, | The villages were selected randomly from the list of project villages provided by SPRING. |

| | | | | |
|--|--|--|--|--|
| | | | also from the list of children provided by SPRING. | |
|--|--|--|--|--|

Annex 2. Supplemental Notes on Sampling

M-Vector used census data to construct the sampling frames. The sampling frames were lists of each settlement (city, town, or village) with the following information:

- Top-level administrative units (oblasts and districts/jurisdictions). The oblasts and districts/jurisdictions surveyed were identified by SPRING as being within their areas of intervention.
- Urban or rural classification.
- The settlement's population size.

A multistage sample design was utilized, as described below. A similar approach was used in all four surveys, with the differences being that only the baseline and endline used a comparison group, and the endline sample size was larger.

Selection Approach for Primary Sampling Units

Villages and sectors/clusters of towns were the primary sampling units (PSUs). PSUs were selected using simple random sampling. Settlements (*aiyls*) within these substrata were selected by a probabilistic approach. The logic frame used a database of all settlements in selected regions 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 for the survey. A similar approach was applied to urban settlements. 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. To ensure representativeness of the sample and territorial coverage, 15–30 respondents were surveyed (minimum PSU size) in each PSU. There were 15 PSUs in Uzgen and Naryn, and 28 PSUs in Jalalabad in the endline survey. Jalalabad town contained seven PSUs (based on larger population size); in all other villages, there was one PSU per village. The necessary number of PSUs to select was calculated using the formula of “estimated value of the population proportion” of a representative sample in oblasts:

$$n = \left[\frac{1}{N} + \frac{N-1}{N} \frac{1}{P(1-P)} \left(\frac{k}{z_{1-\alpha/2}} \right)^2 \right]^{-1}$$

Where n = the final sample size

N = the size of the general population / the population

P = proportion of the population under settlement in the total population of the area

K = desired level of accuracy

$z_{1-\alpha/2}$ = value of normal coordinates for the desired level of confidence interval

Sample size was determined using 95 percent confidence and a 7 percent margin of error at the oblast level.

Sector/Cluster Selection

Within selected areas, all settlements were divided into sectors/clusters. 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 because of the larger size and population of the town. Ten respondents were interviewed in each sector of the villages in Uzgen and Jumgal (Naryn oblast): 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 oblast. In Jalalabad city, 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.

Household Selection

Within selected settlements, households were selected for interview via a “random walk” technique, a form of systematic sampling that approximates a simple random sample. The survey was conducted using face-to-face interviews of mothers with children aged 0–23 months. The random walk method for selecting houses and apartments was carried out as follows:

1. *Determination of the starting point and walking directions direction in Jalalabad town:*

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

2. *Determination of starting points and walking directions in villages:*

Three starting points were provided in each village: one each at the center and at two boundary points. Interviewers stood with their backs to the main entrance of the selected 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

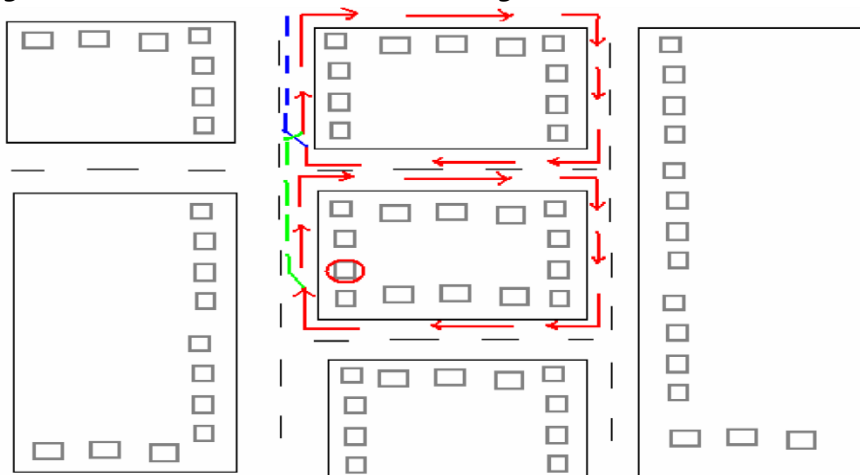
If from the point of departure and/or the direction of the route (the right of the starting point), the interviewer saw private houses, they chose the first house, located closest to the address from which they started and tried to contact its residents.

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 (right of the starting point). When approaching a crossroad, interviewers turned to the right.

The process is shown in Figure A2.1.

Figure A2.1 Illustrative Route for Selecting Households to Interview in a Selected Village



If the interviewer made a circle and returned to a point where he/she had already been (e.g., the circled house in the picture above), he/she moved on (green arrow) and did not turn again until the next crossroad.

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 into 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 1, 2, 3, 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.

Respondent Selection

If there was more than one eligible woman in a household, one woman was selected using the “last birthday method,” in which interviewers chose the mother whose birthday had occurred most recently. Similarly, if the selected 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, meaning the child whose birthday was closest to the day of the interview.

Annex 3. Detailed Results on Women's Dietary Diversity

Percentage of Women Reporting Consuming Each Type of Food, by Region and Survey

| | Baseline (Fall 2014) | | | | | | | | | | WDD1 (April 2015) | | | | | | WDD2 (April 2016) | | | | | | Endline (February–March 2017) | | | | | | | | | |
|--|----------------------|-----|-------|-----|-------|-----|-------|-----|-----|-----|-------------------|-----|-------|------|-----|-----|-------------------|-----|-------|-----|-----|-----|-------------------------------|-----|-------|-----|-------|-----|-------|-----|-----|-----|
| | Region | | | | | | | | | | Region | | | | | | Region | | | | | | Region | | | | | | | | | |
| | N +J | | Uzgen | | Total | | Naryn | | Jal | | N +J | | Naryn | | Jal | | N +J | | Naryn | | Jal | | N +J | | Uzgen | | Total | | Naryn | | Jal | |
| | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | n | % | n | % |
| Milk, such as tinned, powdered, animal milk | 414 | 69% | 94 | 31% | 508 | 56% | 277 | 92% | 137 | 46% | 247 | 41% | 126 | 42% | 121 | 40% | 460 | 77% | 268 | 89% | 192 | 64% | 585 | 64% | 171 | 38% | 756 | 56% | 364 | 80% | 221 | 49% |
| Tea or coffee? | 584 | 97% | 293 | 98% | 877 | 97% | 287 | 96% | 297 | 99% | 590 | 98% | 299 | 100% | 291 | 97% | 571 | 95% | 282 | 94% | 289 | 96% | 876 | 96% | 436 | 97% | 1312 | 97% | 439 | 97% | 437 | 96% |
| Bread, rice, noodles, or other foods made from grains? | 557 | 93% | 285 | 95% | 842 | 94% | 269 | 90% | 288 | 96% | 574 | 96% | 292 | 97% | 282 | 94% | 589 | 98% | 298 | 99% | 291 | 97% | 892 | 98% | 442 | 98% | 1334 | 98% | 445 | 98% | 447 | 98% |
| Pumpkin | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 18 | 3% | 3 | 1% | 15 | 5% | 116 | 13% | 55 | 12% | 171 | 13% | 30 | 7% | 86 | 19% |
| Carrots | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 402 | 67% | 162 | 54% | 240 | 80% | 622 | 69% | 317 | 70% | 939 | 69% | 281 | 62% | 341 | 75% |
| Sweet potatoes that are yellow or orange inside | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 2 | 0% | 0 | 0% | 2 | 1% | 36 | 4% | 6 | 1% | 42 | 3% | 0 | 0% | 36 | 8% |
| Baseline and WDD1 has combined vegetables: pumpkin, carrots, squash, or sweet potatoes that are yellow or orange inside? | 195 | 33% | 143 | 48% | 338 | 38% | 45 | 15% | 150 | 50% | 190 | 32% | 100 | 33% | 90 | 30% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| Potatoes | 477 | 80% | 249 | 83% | 726 | 81% | 194 | 65% | 283 | 94% | 536 | 89% | 273 | 91% | 263 | 88% | 536 | 89% | 249 | 83% | 287 | 96% | 787 | 87% | 376 | 83% | 1163 | 86% | 399 | 88% | 388 | 85% |
| Cabbage (kapusta) | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 213 | 36% | 57 | 19% | 156 | 52% | 190 | 21% | 61 | 14% | 251 | 18% | 97 | 21% | 93 | 20% |
| Turnip (repa) | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 17 | 3% | 1 | 0% | 16 | 5% | 114 | 13% | 131 | 29% | 245 | 18% | 6 | 1% | 108 | 24% |
| WDD1 has it grouped: cabbage, turnips | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 124 | 21% | 53 | 18% | 71 | 24% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| Zhusai/spinach | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 3 | 1% | 0 | 0% | 3 | 1% | 43 | 5% | 12 | 3% | 55 | 4% | 27 | 6% | 16 | 4% |
| Sorrel (shavel) | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 16 | 3% | 0 | 0% | 16 | 5% | 2 | 0% | 1 | 0% | 3 | 0% | 1 | 0% | 1 | 0% |
| Chinese cabbage/ Korean cabbage/ spring | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 31 | 3% | 8 | 2% | 39 | 3% | 13 | 3% | 18 | 4% |
| Any dark green leafy vegetables (spinach, chard, etc.) | 45 | 8% | 34 | 11% | 79 | 9% | 15 | 5% | 30 | 10% | 70 | 12% | 11 | 4% | 59 | 20% | 127 | 21% | 82 | 27% | 45 | 15% | 179 | 20% | 88 | 20% | 267 | 20% | 76 | 17% | 103 | 23% |
| Any other vegetables | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 183 | 20% | 34 | 8% | 217 | 16% | 105 | 23% | 78 | 17% |
| Apricot, ONLY FRESH FRUITS | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 18 | 3% | 1 | 0% | 17 | 6% | 46 | 5% | 7 | 2% | 53 | 4% | 13 | 3% | 33 | 7% |
| Peaches, ONLY FRESH FRUITS | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 4 | 1% | 0 | 0% | 4 | 1% | 16 | 2% | 0 | 0% | 16 | 1% | 5 | 1% | 11 | 2% |
| Yellow melon | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 1 | 0% | 1 | 0% | 0 | 0% |

| | Baseline (Fall 2014) | | | | | | | | | | WDD1 (April 2015) | | | | | | WDD2 (April 2016) | | | | | | Endline (February–March 2017) | | | | | | | | | |
|--|----------------------|-----|-------|-----|-------|-----|-------|-----|-----|-----|-------------------|-----|-------|-----|-----|-----|-------------------|-----|-------|-----|-----|-----|-------------------------------|-----|-------|-----|-------|-----|-------|-----|-----|-----|
| | Region | | | | | | | | | | Region | | | | | | Region | | | | | | Region | | | | | | | | | |
| | N + J | | Uzgen | | Total | | Naryn | | Jal | | N + J | | Naryn | | Jal | | N + J | | Naryn | | Jal | | N + J | | Uzgen | | Total | | Naryn | | Jal | |
| | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | n | % | n | % |
| Persimmon (<i>hurma</i>) | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 14 | 2% | 5 | 2% | 9 | 3% | 48 | 5% | 15 | 3% | 63 | 5% | 18 | 4% | 30 | 7% |
| Baseline and WDD1 has combined fruits: apricots, peaches, yellow melon, persimmon, tomatoes? | 150 | 25% | 104 | 35% | 254 | 28% | 27 | 9% | 123 | 41% | 45 | 8% | 17 | 6% | 28 | 9% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| Tomatoes | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 150 | 25% | 31 | 10% | 119 | 40% | 49 | 5% | 15 | 3% | 64 | 5% | 18 | 4% | 31 | 7% |
| Apples | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 194 | 32% | 103 | 34% | 91 | 30% | 652 | 72% | 299 | 66% | 951 | 70% | 314 | 69% | 338 | 74% |
| Any other fruits | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 186 | 20% | 36 | 8% | 222 | 16% | 96 | 21% | 90 | 20% |
| Baseline, WDD1 and WDD2 has only: any other fruits or vegetables? | 280 | 47% | 180 | 60% | 460 | 51% | 53 | 18% | 227 | 76% | 196 | 33% | 77 | 26% | 119 | 40% | 160 | 27% | 60 | 20% | 100 | 33% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| Liver, kidney, heart, or other organ meats | 65 | 11% | 29 | 10% | 94 | 10% | 36 | 12% | 29 | 10% | 91 | 15% | 64 | 21% | 27 | 9% | 84 | 14% | 46 | 15% | 38 | 13% | 137 | 15% | 40 | 9% | 177 | 13% | 71 | 16% | 66 | 15% |
| Beef | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 227 | 38% | 42 | 14% | 185 | 62% | 442 | 49% | 306 | 68% | 748 | 55% | 158 | 35% | 284 | 62% |
| Pork | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| Horsemeat | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 103 | 11% | 21 | 5% | 124 | 9% | 78 | 17% | 25 | 5% |
| Mutton/lamb (<i>baran</i>) | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 266 | 44% | 161 | 54% | 105 | 35% | 410 | 45% | 119 | 26% | 529 | 39% | 266 | 59% | 144 | 32% |
| Goat | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 19 | 3% | 14 | 5% | 5 | 2% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| Chicken | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 34 | 6% | 11 | 4% | 23 | 8% | 98 | 11% | 125 | 28% | 223 | 16% | 33 | 7% | 65 | 14% |
| Duck | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 3 | 1% | 0 | 0% | 3 | 1% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| Duck, pork, goats, and other meat products | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 31 | 3% | 3 | 1% | 34 | 3% | 18 | 4% | 13 | 3% |
| Baseline and WDD1 has combined meat: Any meat, such as beef, pork, lamb, goat, chicken, or duck? | 510 | 85% | 221 | 74% | 731 | 81% | 241 | 80% | 269 | 90% | 469 | 78% | 240 | 80% | 229 | 76% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| Eggs | 241 | 40% | 86 | 29% | 327 | 36% | 149 | 50% | 92 | 31% | 322 | 54% | 174 | 58% | 148 | 49% | 313 | 52% | 157 | 52% | 156 | 52% | 294 | 32% | 191 | 42% | 485 | 36% | 86 | 19% | 208 | 46% |
| Fresh or dried fish or shellfish? | 36 | 6% | 12 | 4% | 48 | 5% | 24 | 8% | 12 | 4% | 20 | 3% | 7 | 2% | 13 | 4% | 0 | 0% | 0 | 0% | 0 | 0% | 32 | 4% | 10 | 2% | 42 | 3% | 9 | 2% | 23 | 5% |
| Fresh fish | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 16 | 3% | 4 | 1% | 12 | 4% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| Canned fish | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 15 | 3% | 5 | 2% | 10 | 3% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| Dried fish | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 4 | 1% | 0 | 0% | 4 | 1% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| Beans (<i>fasol</i>) | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 30 | 5% | 9 | 3% | 21 | 7% | 55 | 6% | 11 | 2% | 66 | 5% | 22 | 5% | 33 | 7% |
| Peas (<i>goroh</i>) | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 40 | 7% | 15 | 5% | 25 | 8% | 93 | 10% | 42 | 9% | 135 | 10% | 45 | 10% | 48 | 11% |
| Lentils (<i>chechevitsa</i>) | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 6 | 1% | 2 | 1% | 4 | 1% | 7 | 1% | 1 | 0% | 8 | 1% | 5 | 1% | 2 | 0% |
| Nuts | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 65 | 11% | 33 | 11% | 32 | 11% | 157 | 17% | 97 | 22% | 254 | 19% | 58 | 13% | 99 | 22% |
| Baseline and WDD1 has combined: any foods made from beans. | 63 | 11% | 36 | 12% | 99 | 11% | 27 | 9% | 36 | 12% | 45 | 8% | 4 | 1% | 41 | 14% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |

| | Baseline (Fall 2014) | | | | | | | | | | WDD1 (April 2015) | | | | | | WDD2 (April 2016) | | | | | | Endline (February–March 2017) | | | | | | | | | |
|--|----------------------|-----|-------|-----|-------|-----|-------|-----|-----|-----|-------------------|-----|-------|-----|-----|-----|-------------------|-----|-------|-----|-----|-----|-------------------------------|-----|-------|-----|-------|-----|-------|-----|-----|-----|
| | Region | | | | | | | | | | Region | | | | | | Region | | | | | | Region | | | | | | | | | |
| | N+J | | Uzgen | | Total | | Naryn | | Jal | | N+J | | Naryn | | Jal | | N+J | | Naryn | | Jal | | N+J | | Uzgen | | Total | | Naryn | | Jal | |
| | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % | n | % | n | % |
| peas, lentils, or nuts? | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cottage cheese (tvorog) | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 33 | 6% | 6 | 2% | 27 | 9% | 86 | 9% | 23 | 5% | 109 | 8% | 43 | 9% | 43 | 9% |
| Yogurt ayran | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 330 | 55% | 176 | 59% | 154 | 51% | 454 | 50% | 198 | 44% | 652 | 48% | 199 | 44% | 255 | 56% |
| Sour cream (smetana) | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 355 | 39% | 105 | 23% | 460 | 34% | 234 | 52% | 121 | 27% |
| Other milk products | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 302 | 50% | 133 | 44% | 169 | 56% | 223 | 25% | 77 | 17% | 300 | 22% | 116 | 26% | 107 | 24% |
| Baseline and WDD1 has combined: cheese, yogurt, or other milk products? | 204 | 34% | 57 | 19% | 261 | 29% | 110 | 37% | 94 | 31% | 272 | 45% | 182 | 61% | 90 | 30% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| Any sugary foods such as chocolates, sweets, candies, pastries, cakes, cookies, or biscuits? | 337 | 56% | 108 | 36% | 445 | 49% | 177 | 59% | 160 | 53% | 344 | 57% | 179 | 60% | 165 | 55% | 388 | 65% | 184 | 61% | 204 | 68% | 548 | 60% | 261 | 58% | 809 | 60% | 286 | 63% | 262 | 58% |
| Only baseline, WDD1 and WDD2 has: any oil, fats, or butter, or foods made with any of these? | 478 | 80% | 251 | 84% | 729 | 81% | 223 | 74% | 255 | 85% | 536 | 89% | 273 | 91% | 263 | 88% | 540 | 90% | 269 | 90% | 271 | 90% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| Any other processed foods such as potato chips, other chips, crackers? | 23 | 4% | 18 | 6% | 41 | 5% | 9 | 3% | 14 | 5% | 71 | 12% | 31 | 10% | 40 | 13% | 32 | 5% | 12 | 4% | 20 | 7% | 46 | 5% | 13 | 3% | 59 | 4% | 21 | 5% | 25 | 5% |
| Any other solid or semi-solid food? | 202 | 34% | 126 | 42% | 328 | 36% | 74 | 25% | 128 | 43% | 0 | 0% | 0 | 0% | 0 | 0% | 17 | 3% | 11 | 4% | 6 | 2% | 25 | 3% | 10 | 2% | 35 | 3% | 15 | 3% | 10 | 2% |

Annex 4. Detailed Results on Exposure to SPRING and Basic Knowledge on Nutrition Topics

Main Nutrition Messages Heard, and the Main Source of Information

| Key Messages vs. Sources of Information | | Naryn | | Jalalabad | | Uzgen | | Naryn + Jalalabad | | Total | |
|--|--|------------|-------------|------------|-------------|------------|-------------|-------------------|-------------|------------|-------------|
| | | N | % | N | % | N | % | N | % | N | % |
| BREASTFEEDING INFORMATION Last Year | Household was visited by public workers/health workers | 32 | 11% | 9 | 3% | 4 | 2% | 41 | 7% | 45 | 5% |
| | Public meetings/city meetings | 3 | 1% | 0 | 0% | 0 | 0% | 3 | 0% | 3 | 0% |
| | When visiting the medical institution | 246 | 83% | 306 | 91% | 189 | 95% | 552 | 88% | 741 | 89% |
| | Friends/neighbors/relations | 9 | 3% | 8 | 2% | 6 | 3% | 17 | 3% | 23 | 3% |
| | Newspapers | 3 | 1% | 3 | 1% | 0 | 0% | 6 | 1% | 6 | 1% |
| | Internet | 1 | 0% | 7 | 2% | 0 | 0% | 8 | 1% | 8 | 1% |
| | Radio | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | TV | 0 | 0% | 2 | 1% | 1 | 1% | 2 | 0% | 3 | 0% |
| | Other types of sources | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| | Total | 295 | 100% | 335 | 100% | 200 | 100% | 630 | 100% | 830 | 100% |
| What exact information was the most useful for you on the topic? | Breastfeed up to 2 years | 41 | 13% | 43 | 13% | 16 | 9% | 84 | 13% | 100 | 12% |
| | Feed every 2 hours/often constantly even if you are sick | 38 | 12% | 31 | 9% | 19 | 10% | 69 | 11% | 88 | 11% |
| | Breastfeed up to 6 months, then you can give another food | 14 | 5% | 21 | 6% | 9 | 5% | 35 | 5% | 44 | 5% |
| | Breastfeed up to 6 months/do not give any other food until | 91 | 29% | 30 | 9% | 31 | 17% | 121 | 19% | 152 | 18% |
| | From 7 months/up to 1 year of breastfeeding | 1 | 0% | 0 | 0% | 4 | 2% | 1 | 0% | 5 | 1% |
| | How to position a baby while feeding | 12 | 4% | 36 | 11% | 10 | 5% | 48 | 8% | 58 | 7% |
| | Utility of breast milk/colostrum | 28 | 9% | 49 | 15% | 11 | 6% | 77 | 12% | 88 | 11% |
| | Proper feeding of the child/meal schedule | 33 | 11% | 48 | 15% | 43 | 23% | 81 | 13% | 124 | 15% |

| Key Messages vs. Sources of Information | | Naryn | | Jalalabad | | Uzgen | | Naryn + Jalalabad | | Total | |
|---|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------------|-------------|-------------|-------------|
| | | N | % | N | % | N | % | N | % | N | % |
| | Need more vitamins to eat/fruit vegetables/dairy product | 32 | 10% | 35 | 11% | 18 | 10% | 67 | 10% | 85 | 10% |
| | Hold the navel firmly | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Mother should eat less vegetables and fruits until 6 months | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Frequent feeding improves immunity/health/only breastfeed | 8 | 3% | 32 | 10% | 17 | 9% | 40 | 6% | 57 | 7% |
| | Before feeding, wash your hands clean/wipe your nipples | 4 | 1% | 1 | 0% | 1 | 1% | 5 | 1% | 6 | 1% |
| | More breastfeeding less give a supplementary feeds | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| | Wash your eyes/nose with breast milk | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| | No answer | 7 | 2% | 3 | 1% | 5 | 3% | 10 | 2% | 15 | 2% |
| | Total | 311 | 100% | 329 | 100% | 184 | 100% | 640 | 100% | 824 | 100% |
| INFORMATION ABOUT FEEDING THE 6–8-MONTH-OLD CHILD | Household was visited by public workers/health workers | 120 | 37% | 134 | 37% | 82 | 28% | 254 | 37% | 336 | 34% |
| | Public meetings/city meetings | 53 | 17% | 125 | 34% | 187 | 64% | 178 | 26% | 365 | 37% |
| | When visiting the medical institution | 186 | 58% | 209 | 57% | 97 | 33% | 395 | 57% | 492 | 50% |
| | Friends / Neighbours / Relations | 6 | 2% | 4 | 1% | 5 | 2% | 10 | 1% | 15 | 2% |
| | Newspapers | 1 | 0% | 4 | 1% | 0 | 0% | 5 | 1% | 5 | 1% |
| | Internet | 2 | 1% | 5 | 1% | 1 | 0% | 7 | 1% | 8 | 1% |
| | Radio | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| | TV | 0 | 0% | 1 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Other types of sources | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| | No answer | 1 | 0% | 1 | 0% | 0 | 0% | 2 | 0% | 2 | 0% |
| Total | 321 | 100% | 366 | 100% | 292 | 100% | 687 | 100% | 979 | 100% | |
| What exact information was the most useful | Feed three times a day/give warm food (soups, etc.) | 26 | 8% | 20 | 8% | 7 | 6% | 46 | 8% | 53 | 8% |
| | Giving porridge/mashed potatoes with fruits, vegetables | 28 | 9% | 23 | 9% | 5 | 4% | 51 | 9% | 56 | 8% |

| Key Messages vs. Sources of Information | | Naryn | | Jalalabad | | Uzgen | | Naryn + Jalalabad | | Total | |
|---|---|-------------|------------|-------------|------------|-------------|------------|-------------------|------------|-------------|-----|
| | | N | % | N | % | N | % | N | % | N | % |
| for you on the topic? | After 6 months start of giving supplementary nutrition | 65 | 21% | 55 | 22% | 42 | 33% | 120 | 21% | 162 | 23% |
| | More vitamins to give/food is rich in vitamins i.e. fruits | 62 | 20% | 54 | 21% | 27 | 21% | 116 | 21% | 143 | 21% |
| | Give children more peas, fish, meat, meat products | 20 | 6% | 10 | 4% | 3 | 2% | 30 | 5% | 33 | 5% |
| | Correctly feed the child/do not overfeed/normalize portions | 23 | 7% | 40 | 16% | 19 | 15% | 63 | 11% | 82 | 12% |
| | Give milk, breastfeed more | 6 | 2% | 3 | 1% | 6 | 5% | 9 | 2% | 15 | 2% |
| | Give soft, light food, slowly accustom to food | 10 | 3% | 16 | 6% | 9 | 7% | 26 | 5% | 35 | 5% |
| | How many times to feed the child | 0 | 0% | 1 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Do not give greasy food/tea/semolina/sweet | 8 | 3% | 6 | 2% | 1 | 1% | 14 | 2% | 15 | 2% |
| | To give iron-containing food | 6 | 2% | 3 | 1% | 0 | 0% | 9 | 2% | 9 | 1% |
| | <i>Gulazyk</i> (being careful and clean) | 4 | 1% | 5 | 2% | 4 | 3% | 9 | 2% | 13 | 2% |
| | Do not give dairy food for up to 9 months | 1 | 0% | 0 | 0% | 1 | 1% | 1 | 0% | 2 | 0% |
| | Give children cooked food, boiled water | 5 | 2% | 0 | 0% | 1 | 1% | 5 | 1% | 6 | 1% |
| | Giving a tongue/an animal's <i>fagot</i> | 1 | 0% | 1 | 0% | 0 | 0% | 2 | 0% | 2 | 0% |
| | Giving children crushed food | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Do not feed from a bottle/do not give a pacifier | 0 | 0% | 2 | 1% | 0 | 0% | 2 | 0% | 2 | 0% |
| | No answer | 44 | 14% | 16 | 6% | 2 | 2% | 60 | 11% | 62 | 9% |
| Total | 310 | 100% | 255 | 100% | 127 | 100% | 565 | 100% | 692 | 100% | |
| INFORMATION ON DIVERSITY OF FOOD AND FOOD PRODUCTS BY | Household was visited by public workers/health workers | 119 | 37% | 121 | 34% | 30 | 11% | 240 | 35% | 270 | 28% |
| | Public meetings/city meetings | 65 | 20% | 144 | 40% | 237 | 83% | 209 | 31% | 446 | 46% |
| | When visiting the medical institution | 164 | 51% | 172 | 48% | 37 | 13% | 336 | 50% | 373 | 39% |
| | Friends/neighbors/relations | 6 | 2% | 7 | 2% | 2 | 1% | 13 | 2% | 15 | 2% |
| | Newspapers | 1 | 0% | 5 | 1% | 0 | 0% | 6 | 1% | 6 | 1% |

| Key Messages vs. Sources of Information | | Naryn | | Jalalabad | | Uzgen | | Naryn + Jalalabad | | Total | |
|--|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------------|-------------|-------------|-------------|
| | | N | % | N | % | N | % | N | % | N | % |
| NUTRIENT SUBSTANCES | Internet | 3 | 1% | 3 | 1% | 2 | 1% | 6 | 1% | 8 | 1% |
| | Radio | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| | TV | 2 | 1% | 6 | 2% | 2 | 1% | 8 | 1% | 10 | 1% |
| | Other types of sources | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| | No answer | 4 | 1% | 0 | 0% | 1 | 0% | 4 | 1% | 5 | 1% |
| | Total | 320 | 100% | 357 | 100% | 284 | 100% | 677 | 100% | 961 | 100% |
| What exact information was the most useful for you on the topic? | After six months, give different food | 2 | 1% | 2 | 1% | 0 | 0% | 4 | 1% | 4 | 1% |
| | More fruits/dried fruits, vegetables, nuts | 61 | 23% | 51 | 23% | 8 | 17% | 112 | 23% | 120 | 23% |
| | Different foods to give, rich in vitamins/eat foods on the pyramid | 107 | 40% | 114 | 52% | 26 | 57% | 221 | 46% | 247 | 47% |
| | Eat fortified flour/meal | 10 | 4% | 0 | 0% | 0 | 0% | 10 | 2% | 10 | 2% |
| | Milk products should be given | 4 | 2% | 6 | 3% | 0 | 0% | 10 | 2% | 10 | 2% |
| | Fishy food more | 2 | 1% | 1 | 0% | 2 | 4% | 3 | 1% | 5 | 1% |
| | With calcium | 2 | 1% | 0 | 0% | 0 | 0% | 2 | 0% | 2 | 0% |
| | Need to give cooked food | 2 | 1% | 2 | 1% | 0 | 0% | 4 | 1% | 4 | 1% |
| | Give food more often/frequently | 0 | 0% | 0 | 0% | 2 | 4% | 0 | 0% | 2 | 0% |
| | Give Iron food | 15 | 6% | 6 | 3% | 2 | 4% | 21 | 4% | 23 | 4% |
| | Do not give tea, better to give boiled water | 4 | 2% | 5 | 2% | 1 | 2% | 9 | 2% | 10 | 2% |
| | Do not overeat it leads to obesity | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Do not give salty, fried, sweet food to children | 5 | 2% | 1 | 0% | 0 | 0% | 6 | 1% | 6 | 1% |
| | Drink vitamins | 3 | 1% | 0 | 0% | 0 | 0% | 3 | 1% | 3 | 1% |
| | Use iodized salt | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Calcium containing food to give | 0 | 0% | 1 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Cooking according to a prescription | 2 | 1% | 0 | 0% | 0 | 0% | 2 | 0% | 2 | 0% |
| | Eat more than 4 times a day | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Do not let sleep after eating | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Found out what vitamin is in which product | 0 | 0% | 2 | 1% | 0 | 0% | 2 | 0% | 2 | 0% |
| No answer | 43 | 16% | 28 | 13% | 5 | 11% | 71 | 15% | 76 | 14% | |
| Total | 266 | 100% | 218 | 100% | 46 | 100% | 484 | 100% | 530 | 100% | |

| Key Messages vs. Sources of Information | | Naryn | | Jalalabad | | Uzgen | | Naryn + Jalalabad | | Total | |
|--|--|------------|-------------|------------|-------------|------------|-------------|-------------------|-------------|------------|-------------|
| | | N | % | N | % | N | % | N | % | N | % |
| INFORMATION ON METHODS OF PREVENTION OR REDUCTION OF ANEMIA | Household was visited by public workers/health workers | 96 | 30% | 92 | 27% | 60 | 20% | 188 | 28% | 248 | 26% |
| | Public meetings/city meetings | 61 | 19% | 161 | 47% | 208 | 70% | 222 | 33% | 430 | 45% |
| | When visiting the medical institution | 210 | 65% | 157 | 46% | 84 | 28% | 367 | 55% | 451 | 47% |
| | Friends/neighbors/relations | 5 | 2% | 2 | 1% | 1 | 0% | 7 | 1% | 8 | 1% |
| | Newspapers | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Internet | 2 | 1% | 2 | 1% | 1 | 0% | 4 | 1% | 5 | 1% |
| | Radio | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| | TV | 3 | 1% | 5 | 1% | 0 | 0% | 8 | 1% | 8 | 1% |
| | Other types of sources | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| | No answer | 1 | 0% | 3 | 1% | 1 | 0% | 4 | 1% | 5 | 1% |
| | Total | 325 | 100% | 343 | 100% | 296 | 100% | 668 | 100% | 964 | 100% |
| What exact information was the most useful for you on the topic? | Prevention of anemia/anemia/check the level of hemoglobin | 18 | 7% | 11 | 6% | 21 | 24% | 29 | 6% | 50 | 9% |
| | More to eat beets, vegetables, fruits rich in vitamins | 45 | 17% | 25 | 14% | 12 | 14% | 70 | 15% | 82 | 15% |
| | Increased hemoglobin level in the blood, before conception | 3 | 1% | 0 | 0% | 1 | 1% | 3 | 1% | 4 | 1% |
| | Drink <i>bozo</i> | 15 | 6% | 0 | 0% | 0 | 0% | 15 | 3% | 15 | 3% |
| | Eat food (not fruits, vegetables) rich in vitamins, proteins | 55 | 20% | 67 | 37% | 21 | 24% | 122 | 27% | 143 | 26% |
| | Take vitamins/iron-containing tablets | 52 | 19% | 22 | 12% | 18 | 20% | 74 | 16% | 92 | 17% |
| | Timely referring to doctors | 3 | 1% | 0 | 0% | 2 | 2% | 3 | 1% | 5 | 1% |
| | Iron-containing food | 19 | 7% | 20 | 11% | 4 | 5% | 39 | 9% | 43 | 8% |
| | Do not drink tea | 28 | 10% | 5 | 3% | 5 | 6% | 33 | 7% | 38 | 7% |
| | Do not eat fried | 0 | 0% | 2 | 1% | 0 | 0% | 2 | 0% | 2 | 0% |
| | After giving birth, give birth next in 5 years | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Proper nutrition | 11 | 4% | 11 | 6% | 0 | 0% | 22 | 5% | 22 | 4% |
| | No answer | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| No answer | 22 | 8% | 17 | 9% | 4 | 5% | 39 | 9% | 43 | 8% | |

| Key Messages vs. Sources of Information | | Naryn | | Jalalabad | | Uzgen | | Naryn + Jalalabad | | Total | |
|---|--|------------|-------------|------------|-------------|------------|-------------|-------------------|-------------|------------|-------------|
| | | N | % | N | % | N | % | N | % | N | % |
| | Total | 272 | 100% | 180 | 100% | 88 | 100% | 452 | 100% | 540 | 100% |
| INFORMATION ON SANITATION AND HYGIENE, INCLUDING WASHING HANDS AND PERSONAL HYGIENE | Household was visited by public workers/health workers | 109 | 36% | 133 | 36% | 47 | 16% | 242 | 36% | 289 | 30% |
| | Public meetings/city meetings | 73 | 24% | 130 | 35% | 222 | 77% | 203 | 30% | 425 | 44% |
| | When visiting the medical institution | 147 | 48% | 190 | 51% | 59 | 20% | 337 | 50% | 396 | 41% |
| | Friends/neighbors/relations | 4 | 1% | 5 | 1% | 2 | 1% | 9 | 1% | 11 | 1% |
| | Newspapers | 1 | 0% | 3 | 1% | 0 | 0% | 4 | 1% | 4 | 0% |
| | Internet | 2 | 1% | 8 | 2% | 4 | 1% | 10 | 1% | 14 | 1% |
| | Radio | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| | TV | 3 | 1% | 5 | 1% | 0 | 0% | 8 | 1% | 8 | 1% |
| | Other types of sources | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| | No answer | 3 | 1% | 4 | 1% | 0 | 0% | 7 | 1% | 7 | 1% |
| | Total | 304 | 100% | 370 | 100% | 288 | 100% | 674 | 100% | 962 | 100% |
| What exact information was the most useful for you on the topic? | Wash hands for more than 20 seconds/handwashing rules | 99 | 40% | 133 | 55% | 22 | 32% | 232 | 48% | 254 | 46% |
| | Use special nutrition against allergies | 2 | 1% | 1 | 0% | 0 | 0% | 3 | 1% | 3 | 1% |
| | Observe the hygiene of you and your child, often wash your | 106 | 43% | 71 | 29% | 29 | 43% | 177 | 36% | 206 | 37% |
| | Throw the child's feces into the toilet | 2 | 1% | 4 | 2% | 2 | 3% | 6 | 1% | 8 | 1% |
| | To iron things of children | 1 | 0% | 3 | 1% | 0 | 0% | 4 | 1% | 4 | 1% |
| | Protect from infectious diseases/worms prevention | 2 | 1% | 5 | 2% | 3 | 4% | 7 | 1% | 10 | 2% |
| | Disinfect the toilet | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Use alcohol wipes | 0 | 0% | 0 | 0% | 1 | 1% | 0 | 0% | 1 | 0% |
| | Wash toys | 2 | 1% | 1 | 0% | 0 | 0% | 3 | 1% | 3 | 1% |
| | Ventilate the house | 0 | 0% | 2 | 1% | 0 | 0% | 2 | 0% | 2 | 0% |
| | Care cattles wirh gloves | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Lead the pipe from the toilet/put washbasin next to the to | 1 | 0% | 0 | 0% | 1 | 1% | 1 | 0% | 2 | 0% |
| Keep clean house/washbasin/toilet | 4 | 2% | 2 | 1% | 3 | 4% | 6 | 1% | 9 | 2% | |

| Key Messages vs. Sources of Information | | Naryn | | Jalalabad | | Uzgen | | Naryn + Jalalabad | | Total | |
|--|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------------|-------------|-------------|-------------|
| | | N | % | N | % | N | % | N | % | N | % |
| | Wash fruits before consumption | 0 | 0% | 2 | 1% | 0 | 0% | 2 | 0% | 2 | 0% |
| | Wash hands before feeding the baby | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| | About brucellosis prevention | 0 | 0% | 0 | 0% | 2 | 3% | 0 | 0% | 2 | 0% |
| | The liver of the slaughtered cattle is to be buried | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Boil water for consumption | 0 | 0% | 1 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Away from the toilet | 3 | 1% | 0 | 0% | 0 | 0% | 3 | 1% | 3 | 1% |
| | Use chlorine | 3 | 1% | 4 | 2% | 0 | 0% | 7 | 1% | 7 | 1% |
| | No answer | 17 | 7% | 12 | 5% | 5 | 7% | 29 | 6% | 34 | 6% |
| | Total | 245 | 100% | 241 | 100% | 68 | 100% | 486 | 100% | 554 | 100% |
| INFORMATION ABOUT THE NUTRITION OF PREGNANT WOMEN / MOTHERS | Household was visited by public workers/health workers | 118 | 37% | 136 | 36% | 106 | 33% | 254 | 36% | 360 | 35% |
| | Public meetings/city meetings | 52 | 16% | 124 | 33% | 163 | 51% | 176 | 25% | 339 | 33% |
| | When visiting the medical institution | 182 | 57% | 220 | 58% | 143 | 45% | 402 | 58% | 545 | 54% |
| | Friends/neighbors relations | 7 | 2% | 4 | 1% | 3 | 1% | 11 | 2% | 14 | 1% |
| | Newspapers | 0 | 0% | 2 | 1% | 0 | 0% | 2 | 0% | 2 | 0% |
| | Internet | 2 | 1% | 6 | 2% | 1 | 0% | 8 | 1% | 9 | 1% |
| | Radio | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | TV | 3 | 1% | 4 | 1% | 1 | 0% | 7 | 1% | 8 | 1% |
| | Other types of sources | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| | No answer | 2 | 1% | 0 | 0% | 0 | 0% | 2 | 0% | 2 | 0% |
| Total | 318 | 100% | 379 | 100% | 318 | 100% | 697 | 100% | 1015 | 100% | |
| What exact information was the most useful for you on the topic? | Eat warm food three times a day | 8 | 3% | 6 | 2% | 2 | 1% | 14 | 3% | 16 | 2% |
| | Do not eat too much of doughy products | 5 | 2% | 4 | 2% | 5 | 3% | 9 | 2% | 14 | 2% |
| | Anemia cases and prevention | 0 | 0% | 1 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Varied nutrition/nutrition rich in vitamins and glands | 136 | 50% | 137 | 54% | 67 | 43% | 273 | 52% | 340 | 50% |
| | Eating healthy food for an intrauterine baby | 7 | 3% | 5 | 2% | 4 | 3% | 12 | 2% | 16 | 2% |
| | Must eat more frequently | 10 | 4% | 9 | 4% | 7 | 5% | 19 | 4% | 26 | 4% |

| Key Messages vs. Sources of Information | | Naryn | | Jalalabad | | Uzgen | | Naryn + Jalalabad | | Total | |
|--|--|------------|-------------|------------|-------------|------------|-------------|-------------------|-------------|------------|-------------|
| | | N | % | N | % | N | % | N | % | N | % |
| | Eat iron-containing foods | 7 | 3% | 8 | 3% | 10 | 6% | 15 | 3% | 25 | 4% |
| | Do not get sick during pregnancy/monitor health | 6 | 2% | 3 | 1% | 2 | 1% | 9 | 2% | 11 | 2% |
| | To drink more vitamins | 6 | 2% | 1 | 0% | 5 | 3% | 7 | 1% | 12 | 2% |
| | Do not drink alcohol/coffee/tea/fried foods/salty foods | 12 | 4% | 1 | 0% | 4 | 3% | 13 | 2% | 17 | 2% |
| | Drinking more fluids | 1 | 0% | 0 | 0% | 1 | 1% | 1 | 0% | 2 | 0% |
| | Special diet/proper nutrition/timely eating on schedule | 34 | 13% | 63 | 25% | 40 | 26% | 97 | 18% | 137 | 20% |
| | Eat boiled food | 2 | 1% | 1 | 0% | 0 | 0% | 3 | 1% | 3 | 0% |
| | How to handle the desire to eat a certain product in pregnancy | 1 | 0% | 2 | 1% | 0 | 0% | 3 | 1% | 3 | 0% |
| | Avoid being hungry | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Take more rest | 0 | 0% | 1 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Drink more dried fruit | 0 | 0% | 1 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Visit doctors timely | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Do not drink drugs during pregnancy | 2 | 1% | 1 | 0% | 0 | 0% | 3 | 1% | 3 | 0% |
| | Decrease diet before giving birth | 0 | 0% | 0 | 0% | 1 | 1% | 0 | 0% | 1 | 0% |
| | No answer | 32 | 12% | 12 | 5% | 7 | 5% | 44 | 8% | 51 | 7% |
| | Total | 271 | 100% | 256 | 100% | 155 | 100% | 527 | 100% | 682 | 100% |
| INFORMATION ON METHODS OF PRESERVATION OF FOOD AND CONSERVATION PRODUCTS | Household was visited by public workers/health workers | 43 | 23% | 38 | 13% | 13 | 5% | 81 | 17% | 94 | 13% |
| | Public meetings/city meetings | 101 | 55% | 215 | 75% | 252 | 90% | 316 | 67% | 568 | 76% |
| | When visiting the medical institution | 31 | 17% | 34 | 12% | 10 | 4% | 65 | 14% | 75 | 10% |
| | Friends/neighbors/relations | 15 | 8% | 12 | 4% | 7 | 3% | 27 | 6% | 34 | 5% |
| | Newspapers | 4 | 2% | 3 | 1% | 1 | 0% | 7 | 1% | 8 | 1% |
| | Internet | 1 | 1% | 8 | 3% | 2 | 1% | 9 | 2% | 11 | 1% |
| | Radio | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| | TV | 8 | 4% | 8 | 3% | 6 | 2% | 16 | 3% | 22 | 3% |
| | Other types of sources | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |

| Key Messages vs. Sources of Information | | Naryn | | Jalalabad | | Uzgen | | Naryn + Jalalabad | | Total | |
|--|--|------------|-------------|------------|-------------|------------|-------------|-------------------|-------------|------------|-------------|
| | | N | % | N | % | N | % | N | % | N | % |
| | No answer | 3 | 2% | 1 | 0% | 1 | 0% | 4 | 1% | 5 | 1% |
| | Total | 183 | 100% | 288 | 100% | 279 | 100% | 471 | 100% | 750 | 100% |
| What exact information was the most useful for you on the topic? | How to store the pumpkin correctly | 0 | 0% | 1 | 1% | 0 | 0% | 1 | 1% | 1 | 1% |
| | How to properly salt cucumber | 2 | 2% | 1 | 1% | 4 | 15% | 3 | 2% | 7 | 4% |
| | Need to boil the jar for sterilization | 1 | 1% | 8 | 10% | 4 | 15% | 9 | 5% | 13 | 7% |
| | Prevention of botulism | 5 | 6% | 7 | 9% | 6 | 23% | 12 | 7% | 18 | 9% |
| | Preservation without salt | 0 | 0% | 2 | 3% | 0 | 0% | 2 | 1% | 2 | 1% |
| | When storing, observe one temperature | 6 | 7% | 2 | 3% | 0 | 0% | 8 | 5% | 8 | 4% |
| | Need to bury in the sand vegetables | 1 | 1% | 0 | 0% | 0 | 0% | 1 | 1% | 1 | 1% |
| | Need to boil properly | 4 | 4% | 0 | 0% | 1 | 4% | 4 | 2% | 5 | 3% |
| | Storage in a cool place, in a dark/dry | 17 | 19% | 7 | 9% | 2 | 8% | 24 | 14% | 26 | 14% |
| | Do not fry products | 2 | 2% | 0 | 0% | 0 | 0% | 2 | 1% | 2 | 1% |
| | Do not exceed the shelf-life /do not eat too much | 6 | 7% | 11 | 14% | 0 | 0% | 17 | 10% | 17 | 9% |
| | Close the covers correctly | 3 | 3% | 0 | 0% | 2 | 8% | 3 | 2% | 5 | 3% |
| | Proper preservation/conservation path | 22 | 25% | 25 | 32% | 5 | 19% | 47 | 28% | 52 | 27% |
| | Ensure food/products for canning are washed clean | 3 | 3% | 3 | 4% | 1 | 4% | 6 | 4% | 7 | 4% |
| | You cannot consume a lot of preserved food | 5 | 6% | 2 | 3% | 0 | 0% | 7 | 4% | 7 | 4% |
| | Preservation is useful for health | 0 | 0% | 1 | 1% | 0 | 0% | 1 | 1% | 1 | 1% |
| | How to dry fruits, vegetables | 0 | 0% | 1 | 1% | 0 | 0% | 1 | 1% | 1 | 1% |
| | No answer | 12 | 13% | 6 | 8% | 1 | 4% | 18 | 11% | 19 | 10% |
| | Total | 89 | 100% | 77 | 100% | 26 | 100% | 166 | 100% | 192 | 100% |
| HOW INFORMATION RECEIVED ON METHODS OF PREVENTION | Household was visited by public workers/health workers | 59 | 26% | 57 | 19% | 44 | 15% | 116 | 22% | 160 | 19% |
| | Public meetings/city meetings | 101 | 44% | 196 | 64% | 231 | 80% | 297 | 56% | 528 | 64% |
| | When visiting the medical institution | 74 | 33% | 92 | 30% | 50 | 17% | 166 | 31% | 216 | 26% |
| | Friends/neighbors relations | 4 | 2% | 2 | 1% | 0 | 0% | 6 | 1% | 6 | 1% |
| | Newspapers | 1 | 0% | 4 | 1% | 0 | 0% | 5 | 1% | 5 | 1% |

| Key Messages vs. Sources of Information | | Naryn | | Jalalabad | | Uzgen | | Naryn + Jalalabad | | Total | |
|--|---|------------|-------------|------------|-------------|------------|-------------|-------------------|-------------|------------|-------------|
| | | N | % | N | % | N | % | N | % | N | % |
| OF INTESTINAL/ PARASITES | Internet | 1 | 0% | 1 | 0% | 1 | 0% | 2 | 0% | 3 | 0% |
| | Radio | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| | TV | 8 | 4% | 4 | 1% | 2 | 1% | 12 | 2% | 14 | 2% |
| | Other types of sources | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| | No answer | 3 | 1% | 1 | 0% | 0 | 0% | 4 | 1% | 4 | 0% |
| | Total | 227 | 100% | 306 | 100% | 288 | 100% | 533 | 100% | 821 | 100% |
| What exact information was the most useful for you on the topic? | Information about ascarid/echinococcus | 1 | 1% | 0 | 0% | 3 | 5% | 1 | 0% | 4 | 1% |
| | Need to take albendazole, drink medicines against worms/eat | 16 | 11% | 9 | 8% | 3 | 5% | 25 | 10% | 28 | 9% |
| | Compliance with hygiene, wash hands with soap/cutting nail | 55 | 39% | 56 | 50% | 26 | 41% | 111 | 44% | 137 | 43% |
| | Wash fruit, vegetables | 10 | 7% | 12 | 11% | 7 | 11% | 22 | 9% | 29 | 9% |
| | Vaccinate animals | 4 | 3% | 7 | 6% | 6 | 10% | 11 | 4% | 17 | 5% |
| | After the slaughter of livestock, the entrails must be buried | 8 | 6% | 0 | 0% | 0 | 0% | 8 | 3% | 8 | 3% |
| | Do not eat the insides of livestock | 7 | 5% | 0 | 0% | 0 | 0% | 7 | 3% | 7 | 2% |
| | Trebuche must be cleaned thoroughly cooked | 2 | 1% | 1 | 1% | 0 | 0% | 3 | 1% | 3 | 1% |
| | Meat of livestock check through sanitary station | 1 | 1% | 2 | 2% | 0 | 0% | 3 | 1% | 3 | 1% |
| | Drink boiled water only | 7 | 5% | 10 | 9% | 5 | 8% | 17 | 7% | 22 | 7% |
| | Long boil the meat of livestock | 1 | 1% | 2 | 2% | 0 | 0% | 3 | 1% | 3 | 1% |
| | Accustom the child to the toilet | 0 | 0% | 1 | 1% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Do not drink water from the irrigation ditch | 1 | 1% | 0 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Prevention of intestinal worms | 4 | 3% | 0 | 0% | 6 | 10% | 4 | 2% | 10 | 3% |
| | Do not touch cattle/cats/dogs | 6 | 4% | 3 | 3% | 4 | 6% | 9 | 4% | 13 | 4% |
| | Do not give the insides of cattle to cats/dogs | 1 | 1% | 0 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| Do not eat meat of dead animals | 1 | 1% | 0 | 0% | 0 | 0% | 1 | 0% | 1 | 0% | |
| Throw feces of the child in the toilet | 0 | 0% | 2 | 2% | 0 | 0% | 2 | 1% | 2 | 1% | |

| Key Messages vs. Sources of Information | | Naryn | | Jalalabad | | Uzgen | | Naryn + Jalalabad | | Total | |
|--|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------------|-------------|-------------|-------------|
| | | N | % | N | % | N | % | N | % | N | % |
| | Eating pumpkin seeds | 0 | 0% | 1 | 1% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Toilet to put further away from home | 0 | 0% | 1 | 1% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Do not eat Chinese food | 0 | 0% | 1 | 1% | 0 | 0% | 1 | 0% | 1 | 0% |
| | No answer | 17 | 12% | 4 | 4% | 3 | 5% | 21 | 8% | 24 | 8% |
| | Total | 142 | 100% | 112 | 100% | 63 | 100% | 254 | 100% | 317 | 100% |
| INFORMATION ON NUTRITION | Household was visited by public workers/health workers | 70 | 30% | 69 | 22% | 21 | 8% | 139 | 25% | 160 | 19% |
| | Public meetings/city meetings | 86 | 36% | 193 | 61% | 244 | 88% | 279 | 50% | 523 | 63% |
| | When visiting the medical institution | 80 | 34% | 83 | 26% | 25 | 9% | 163 | 29% | 188 | 23% |
| | Friends/neighbors/relations | 3 | 1% | 6 | 2% | 2 | 1% | 9 | 2% | 11 | 1% |
| | Newspapers | 2 | 1% | 4 | 1% | 0 | 0% | 6 | 1% | 6 | 1% |
| | Internet | 1 | 0% | 12 | 4% | 3 | 1% | 13 | 2% | 16 | 2% |
| | Radio | 2 | 1% | 0 | 0% | 0 | 0% | 2 | 0% | 2 | 0% |
| | TV | 10 | 4% | 5 | 2% | 2 | 1% | 15 | 3% | 17 | 2% |
| | Other types of sources | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| | No answer | 5 | 2% | 0 | 0% | 1 | 0% | 5 | 1% | 6 | 1% |
| Total | 237 | 100% | 316 | 100% | 277 | 100% | 553 | 100% | 830 | 100% | |
| What exact information was the most useful for you on the topic? | Diversity of food/proper nutrition/more to eat food rich | 87 | 57% | 90 | 70% | 19 | 59% | 177 | 63% | 196 | 63% |
| | Do not eat spoiled food | 4 | 3% | 0 | 0% | 1 | 3% | 4 | 1% | 5 | 2% |
| | More to eat legumes/vegetables/fruits | 8 | 5% | 9 | 7% | 0 | 0% | 17 | 6% | 17 | 5% |
| | How many times a day need to eat hot food | 5 | 3% | 0 | 0% | 0 | 0% | 5 | 2% | 5 | 2% |
| | No fried food, not spicy, not fatty, no soda | 9 | 6% | 3 | 2% | 2 | 6% | 12 | 4% | 14 | 4% |
| | More meat to eat/high-calorie food | 2 | 1% | 1 | 1% | 0 | 0% | 3 | 1% | 3 | 1% |
| | Eating iodized salt | 0 | 0% | 0 | 0% | 1 | 3% | 0 | 0% | 1 | 0% |
| | To consume iron-containing products | 8 | 5% | 2 | 2% | 0 | 0% | 10 | 4% | 10 | 3% |
| Eat often but little/do not overeat | 1 | 1% | 3 | 2% | 1 | 3% | 4 | 1% | 5 | 2% | |

| Key Messages vs. Sources of Information | | Naryn | | Jalalabad | | Uzgen | | Naryn + Jalalabad | | Total | |
|---|--|------------|-------------|------------|-------------|-----------|-------------|-------------------|-------------|------------|-------------|
| | | N | % | N | % | N | % | N | % | N | % |
| | More dairy products | 0 | 0% | 3 | 2% | 1 | 3% | 3 | 1% | 4 | 1% |
| | Eat fortified foods | 1 | 1% | 0 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Eat steamed/boiled food | 3 | 2% | 2 | 2% | 0 | 0% | 5 | 2% | 5 | 2% |
| | Consume vitamins | 3 | 2% | 1 | 1% | 0 | 0% | 4 | 1% | 4 | 1% |
| | After eating, you cannot drink liquid | 1 | 1% | 0 | 0% | 1 | 3% | 1 | 0% | 2 | 1% |
| | More grain to eat | 1 | 1% | 0 | 0% | 0 | 0% | 1 | 0% | 1 | 0% |
| | Do not eat Chinese food | 0 | 0% | 0 | 0% | 1 | 3% | 0 | 0% | 1 | 0% |
| | No need to heat the food, you need to eat freshly prepared | 0 | 0% | 2 | 2% | 0 | 0% | 2 | 1% | 2 | 1% |
| | No answer | 19 | 13% | 12 | 9% | 5 | 16% | 31 | 11% | 36 | 12% |
| | Total | 152 | 100% | 128 | 100% | 32 | 100% | 280 | 100% | 312 | 100% |

Detailed responses on knowledge questions, by region and urban/rural residence

| | | Urban/Rural | | | | Region | | | | | | | |
|---|--------------------|-------------------|-------|-------|-------|--------|-------|-----------|-------|-------|-------|-------|-------|
| | | Urban (city/town) | | Rural | | Naryn | | Jalalabad | | Uzgen | | Total | |
| | | n | % | n | % | n | % | n | % | n | % | n | % |
| To what age should the child receive breast milk only? | Less than 6 months | 6 | 4.7% | 36 | 7.2% | 8 | 6.7% | 7 | 2.8% | 27 | 10.2% | 42 | 6.7% |
| | 6 month | 83 | 64.3% | 191 | 38.0% | 50 | 42.0% | 150 | 61.0% | 74 | 27.8% | 274 | 43.4% |
| | More than 6 months | 32 | 24.8% | 160 | 31.9% | 47 | 39.5% | 72 | 29.3% | 73 | 27.4% | 192 | 30.4% |
| | Other | 8 | 6.2% | 107 | 21.3% | 11 | 9.2% | 16 | 6.5% | 88 | 33.1% | 115 | 18.2% |
| | No answer | 0 | .0% | 8 | 1.6% | 3 | 2.5% | 1 | .4% | 4 | 1.5% | 8 | 1.3% |
| At what age should you enter soft, semi-solid foods other than breast milk, for a variety of diets? | Less than 6 months | 1 | .8% | 6 | 1.2% | 0 | .0% | 2 | .8% | 5 | 1.9% | 7 | 1.1% |
| | 6 month | 5 | 3.9% | 23 | 4.6% | 10 | 8.4% | 9 | 3.7% | 9 | 3.4% | 28 | 4.4% |
| | More than 6 months | 123 | 95.3% | 470 | 93.6% | 108 | 90.8% | 234 | 95.1% | 251 | 94.4% | 593 | 94.0% |
| | Other | 0 | .0% | 0 | .0% | 0 | .0% | 0 | .0% | 0 | .0% | 0 | .0% |

| | | Urban/Rural | | | | Region | | | | | | | |
|---|---------------------------------|----------------------|-------|-------|-------|--------|-------|-----------|-------|-------|-------|-------|-------|
| | | Urban (city/town) | | Rural | | Naryn | | Jalalabad | | Uzgen | | Total | |
| | | n | % | n | % | n | % | n | % | n | % | n | % |
| | No answer | 0 | .0% | 3 | .6% | 1 | .8% | 1 | .4% | 1 | .4% | 3 | .5% |
| What kind of vitamin is provided by: yellow / orange / red fruit, and yellow / orange vegetables? | Vitamin A | 68 | 46.9% | 194 | 28.8% | 44 | 19.5% | 112 | 37.8% | 106 | 35.8% | 262 | 32.0% |
| | Other | 29 | 20.0% | 252 | 37.4% | 130 | 57.5% | 83 | 28.0% | 68 | 23.0% | 281 | 34.4% |
| | Don't know | 48 | 33.1% | 227 | 33.7% | 52 | 23.0% | 101 | 34.1% | 122 | 41.2% | 275 | 33.6% |
| Have you ever heard of anemia? | Yes | 123 | 57.5% | 515 | 45.0% | 232 | 51.2% | 238 | 52.3% | 168 | 37.3% | 638 | 46.9% |
| | No | 56 | 26.2% | 253 | 22.1% | 56 | 12.4% | 108 | 23.7% | 145 | 32.2% | 309 | 22.7% |
| | No answer | 35 | 16.4% | 377 | 32.9% | 165 | 36.4% | 109 | 24.0% | 138 | 30.6% | 412 | 30.3% |
| What are the ways you know how to treat / prevent anemia among women? | Getting enough iron-rich foods | 69 | 56.1% | 294 | 54.9% | 105 | 42.9% | 135 | 56.0% | 123 | 71.1% | 363 | 55.1% |
| | Deworming | 15 | 12.2% | 48 | 9.0% | 35 | 14.3% | 25 | 10.4% | 3 | 1.7% | 63 | 9.6% |
| | Take iron supplements | 98 | 79.7% | 273 | 50.9% | 134 | 54.7% | 167 | 69.3% | 70 | 40.5% | 371 | 56.3% |
| | Hygiene and hand washing | 79 | 64.2% | 224 | 41.8% | 118 | 48.2% | 132 | 54.8% | 53 | 30.6% | 303 | 46.0% |
| | Other | 3 | 2.4% | 41 | 7.6% | 29 | 11.8% | 8 | 3.3% | 7 | 4.0% | 44 | 6.7% |
| | No answer | 0 | .0% | 18 | 3.4% | 7 | 2.9% | 5 | 2.1% | 6 | 3.5% | 18 | 2.7% |
| What are the critical moments when it is important to wash your hands | After visiting the toilet | 132 | 64.4% | 553 | 50.8% | 170 | 39.5% | 250 | 57.5% | 265 | 61.8% | 685 | 52.9% |
| | Before cooking | 129 | 62.9% | 503 | 46.2% | 204 | 47.4% | 236 | 54.3% | 192 | 44.8% | 632 | 48.8% |
| | Before feeding the baby | 141 | 68.8% | 575 | 52.8% | 216 | 50.2% | 284 | 65.3% | 216 | 50.3% | 716 | 55.3% |
| | Before taking meals | 135 | 65.9% | 477 | 43.8% | 169 | 39.3% | 241 | 55.4% | 202 | 47.1% | 612 | 47.3% |
| | After disposal of child's faces | 79 | 38.5% | 351 | 32.2% | 151 | 35.1% | 178 | 40.9% | 101 | 23.5% | 430 | 33.2% |
| | Other | 24 | 11.7% | 377 | 34.6% | 179 | 41.6% | 83 | 19.1% | 139 | 32.4% | 401 | 31.0% |
| | No answer | 0 | .0% | 2 | .2% | 1 | .2% | 0 | .0% | 1 | .2% | 2 | .2% |
| | Less | 43 | 20.1% | 431 | 37.6% | 242 | 53.4% | 133 | 29.2% | 99 | 22.0% | 474 | 34.9% |

| | | Urban/Rural | | | | Region | | | | | | | |
|--|--|----------------------|-------|-------|-------|--------|-------|-----------|-------|-------|-------|-------|-------|
| | | Urban (city/town) | | Rural | | Naryn | | Jalalabad | | Uzgen | | Total | |
| | | n | % | n | % | n | % | n | % | n | % | n | % |
| During pregnancy, should women eat more, less, or as usual? | As usual | 119 | 55.6% | 431 | 37.6% | 137 | 30.2% | 201 | 44.2% | 212 | 47.0% | 550 | 40.5% |
| | More | 51 | 23.8% | 282 | 24.6% | 73 | 16.1% | 120 | 26.4% | 140 | 31.0% | 333 | 24.5% |
| | No answer | 1 | .5% | 1 | .1% | 1 | .2% | 1 | .2% | 0 | .0% | 2 | .1% |
| Have you heard of intestinal worms? | Yes | 79 | 36.9% | 439 | 38.3% | 171 | 37.7% | 177 | 38.9% | 170 | 37.7% | 518 | 38.1% |
| | No | 81 | 37.9% | 235 | 20.5% | 51 | 11.3% | 132 | 29.0% | 133 | 29.5% | 316 | 23.3% |
| | No answer | 54 | 25.2% | 471 | 41.1% | 231 | 51.0% | 146 | 32.1% | 148 | 32.8% | 525 | 38.6% |
| What should I do to prevent the appearance of worms and parasites? | Wash hands with soap | 41 | 51.9% | 174 | 38.8% | 48 | 27.0% | 89 | 50.0% | 78 | 45.6% | 215 | 40.8% |
| | Wash vegetables and fruits well with boiled water before use | 39 | 49.4% | 121 | 27.0% | 50 | 28.1% | 63 | 35.4% | 47 | 27.5% | 160 | 30.4% |
| | Thoroughly cook meat and fish | 23 | 29.1% | 45 | 10.0% | 18 | 10.1% | 31 | 17.4% | 19 | 11.1% | 68 | 12.9% |
| | Use cleaned toilet | 15 | 19.0% | 36 | 8.0% | 10 | 5.6% | 25 | 14.0% | 16 | 9.4% | 51 | 9.7% |
| | Take medicine for deworming | 12 | 15.2% | 42 | 9.4% | 17 | 9.6% | 27 | 15.2% | 10 | 5.8% | 54 | 10.2% |
| | Boil water for drinking/cooking | 37 | 46.8% | 87 | 19.4% | 31 | 17.4% | 54 | 30.3% | 39 | 22.8% | 124 | 23.5% |
| | Annually implement deworming of pets and livestock | 10 | 12.7% | 27 | 6.0% | 10 | 5.6% | 12 | 6.7% | 15 | 8.8% | 37 | 7.0% |
| | Other | 9 | 11.4% | 141 | 31.5% | 63 | 35.4% | 36 | 20.2% | 51 | 29.8% | 150 | 28.5% |
| | No answer | 3 | 3.8% | 29 | 6.5% | 11 | 6.2% | 11 | 6.2% | 10 | 5.8% | 32 | 6.1% |
| Did you or your family receive information brochures or materials on the above topics? | Yes, received, SPRING | 21 | 9.8% | 329 | 28.7% | 212 | 46.8% | 114 | 25.1% | 24 | 5.3% | 350 | 25.8% |
| | Yes, received, NOT SPRING | 23 | 10.7% | 71 | 6.2% | 35 | 7.7% | 29 | 6.4% | 30 | 6.7% | 94 | 6.9% |
| | Yes, but not sure | 8 | 3.7% | 42 | 3.7% | 9 | 2.0% | 21 | 4.6% | 20 | 4.4% | 50 | 3.7% |
| | Not received | 107 | 50.0% | 355 | 31.0% | 58 | 12.8% | 170 | 37.4% | 234 | 51.9% | 462 | 34.0% |

| | | Urban/Rural | | | | Region | | | | | | | |
|---|------------------------------|----------------------|-------|-------|-------|--------|-------|-----------|-------|-------|-------|-------|-------|
| | | Urban (city/town) | | Rural | | Naryn | | Jalalabad | | Uzgen | | Total | |
| | | n | % | n | % | n | % | n | % | n | % | n | % |
| | No answer | 55 | 25.7% | 348 | 30.4% | 139 | 30.7% | 121 | 26.6% | 143 | 31.7% | 403 | 29.7% |
| Have you ever shared information brochures or materials on the above topics with your family members? | Yes | 47 | 22.0% | 389 | 34.0% | 217 | 47.9% | 150 | 33.0% | 69 | 15.3% | 436 | 32.1% |
| | No | 4 | 1.9% | 61 | 5.3% | 43 | 9.5% | 12 | 2.6% | 10 | 2.2% | 65 | 4.8% |
| | No answer | 163 | 76.2% | 695 | 60.7% | 193 | 42.6% | 293 | 64.4% | 372 | 82.5% | 858 | 63.1% |
| With whom did you share information? ³ | Husband | 33 | 68.8% | 227 | 54.0% | 133 | 54.3% | 93 | 61.2% | 34 | 47.9% | 260 | 55.6% |
| | Children | 20 | 41.7% | 263 | 62.6% | 156 | 63.7% | 75 | 49.3% | 52 | 73.2% | 283 | 60.5% |
| | My parents / Husband parents | 6 | 12.5% | 76 | 18.1% | 44 | 18.0% | 30 | 19.7% | 8 | 11.3% | 82 | 17.5% |
| | Other relatives | 2 | 4.2% | 38 | 9.0% | 29 | 11.8% | 7 | 4.6% | 4 | 5.6% | 40 | 8.5% |
| | No answer | 0 | .0% | 1 | .2% | 0 | .0% | 1 | .7% | 0 | .0% | 1 | .2% |
| Have you ever shared the information brochures or materials on the above topics in your community? | Yes | 11 | 5.1% | 108 | 9.4% | 52 | 11.5% | 44 | 9.7% | 23 | 5.1% | 119 | 8.8% |
| | No | 18 | 8.4% | 88 | 7.7% | 43 | 9.5% | 48 | 10.5% | 15 | 3.3% | 106 | 7.8% |
| | No answer | 185 | 86.4% | 949 | 82.9% | 358 | 79.0% | 363 | 79.8% | 413 | 91.6% | 1134 | 83.4% |
| With whom did you share information? | Neighbors | 7 | 58.3% | 59 | 51.8% | 26 | 46.4% | 23 | 51.1% | 17 | 68.0% | 66 | 52.4% |
| | Friends | 7 | 58.3% | 52 | 45.6% | 25 | 44.6% | 20 | 44.4% | 14 | 56.0% | 59 | 46.8% |
| | Colleagues | 1 | 8.3% | 18 | 15.8% | 12 | 21.4% | 6 | 13.3% | 1 | 4.0% | 19 | 15.1% |
| | Other | 0 | .0% | 14 | 12.3% | 6 | 10.7% | 5 | 11.1% | 3 | 12.0% | 14 | 11.1% |
| Have you ever heard about SPRING project? | Yes | 89 | 41.6% | 647 | 56.5% | 320 | 70.6% | 243 | 53.4% | 173 | 38.4% | 736 | 54.2% |
| | No | 125 | 58.4% | 494 | 43.1% | 132 | 29.1% | 211 | 46.4% | 276 | 61.2% | 619 | 45.5% |
| | No answer | 0 | .0% | 4 | .3% | 1 | .2% | 1 | .2% | 2 | .4% | 4 | .3% |
| How many hours a day do you watch television? GROUPS (BL only) | 1-2 | 69 | 58.0% | 335 | 51.8% | 144 | 52.9% | 149 | 60.3% | 111 | 44.9% | 404 | 52.7% |
| | 3-5 | 46 | 38.7% | 225 | 34.8% | 68 | 25.0% | 93 | 37.7% | 110 | 44.5% | 271 | 35.4% |
| | 6-8 | 4 | 3.4% | 73 | 11.3% | 47 | 17.3% | 5 | 2.0% | 25 | 10.1% | 77 | 10.1% |
| | More than 8 | 0 | .0% | 14 | 2.2% | 13 | 4.8% | 0 | .0% | 1 | .4% | 14 | 1.8% |

| | | Urban/Rural | | | | Region | | | | | | | |
|---|----------------|----------------------|-------|-------|-------|--------|-------|-----------|-------|-------|-------|-------|-------|
| | | Urban (city/town) | | Rural | | Naryn | | Jalalabad | | Uzgen | | Total | |
| | | n | % | n | % | n | % | n | % | n | % | n | % |
| At what time of a day do you watch television (BL only) | In the morning | 33 | 27.7% | 84 | 13.0% | 7 | 2.6% | 53 | 21.5% | 57 | 23.1% | 117 | 15.3% |
| | At noon | 25 | 21.0% | 111 | 17.2% | 32 | 11.8% | 41 | 16.6% | 63 | 25.5% | 136 | 17.8% |
| | At afternoon | 33 | 27.7% | 187 | 28.9% | 105 | 38.6% | 72 | 29.1% | 43 | 17.4% | 220 | 28.7% |
| | In the evening | 114 | 95.8% | 583 | 90.1% | 242 | 89.0% | 234 | 94.7% | 221 | 89.5% | 697 | 91.0% |
| | Late at night | 24 | 20.2% | 177 | 27.4% | 33 | 12.1% | 82 | 33.2% | 86 | 34.8% | 201 | 26.2% |
| At what time of a day do you watch television most often? (BL only) | In the morning | 2 | 1.7% | 3 | .5% | 1 | .4% | 2 | .8% | 2 | .8% | 5 | .7% |
| | At noon | 3 | 2.5% | 18 | 2.8% | 9 | 3.3% | 5 | 2.0% | 7 | 2.8% | 21 | 2.7% |
| | At afternoon | 1 | .8% | 32 | 4.9% | 13 | 4.8% | 5 | 2.0% | 15 | 6.1% | 33 | 4.3% |
| | In the evening | 103 | 86.6% | 466 | 72.0% | 222 | 81.6% | 189 | 76.5% | 158 | 64.0% | 569 | 74.3% |
| | Late at night | 10 | 8.4% | 128 | 19.8% | 27 | 9.9% | 46 | 18.6% | 65 | 26.3% | 138 | 18.0% |
| Channels (BL only) | OTRK | 93 | 78.2% | 487 | 75.3% | 194 | 71.3% | 189 | 76.5% | 197 | 79.8% | 580 | 75.7% |
| | 1-st channel | 53 | 44.5% | 409 | 63.2% | 161 | 59.2% | 109 | 44.1% | 192 | 77.7% | 462 | 60.3% |
| | ELTR | 65 | 54.6% | 265 | 41.0% | 54 | 19.9% | 102 | 41.3% | 174 | 70.4% | 330 | 43.1% |
| | 5- th channel | 13 | 10.9% | 108 | 16.7% | 33 | 12.1% | 20 | 8.1% | 68 | 27.5% | 121 | 15.8% |
| | RTR-Russia | 37 | 31.1% | 81 | 12.5% | 15 | 5.5% | 61 | 24.7% | 42 | 17.0% | 118 | 15.4% |
| | NTS+NTV | 14 | 11.8% | 62 | 9.6% | 25 | 9.2% | 22 | 8.9% | 29 | 11.7% | 76 | 9.9% |
| | Piramida | 0 | .0% | 84 | 13.0% | 1 | .4% | 6 | 2.4% | 77 | 31.2% | 84 | 11.0% |
| | Mir | 5 | 4.2% | 84 | 13.0% | 3 | 1.1% | 11 | 4.5% | 75 | 30.4% | 89 | 11.6% |
| | STS | 8 | 6.7% | 19 | 2.9% | 2 | .7% | 12 | 4.9% | 13 | 5.3% | 27 | 3.5% |
| | NBT | 3 | 2.5% | 7 | 1.1% | 2 | .7% | 3 | 1.2% | 5 | 2.0% | 10 | 1.3% |
| | Echo Manasa | 3 | 2.5% | 68 | 10.5% | 0 | .0% | 3 | 1.2% | 68 | 27.5% | 71 | 9.3% |
| | Cultura | 0 | .0% | 53 | 8.2% | 7 | 2.6% | 0 | .0% | 46 | 18.6% | 53 | 6.9% |
| | Sary Ozon TNT | 0 | .0% | 16 | 2.5% | 0 | .0% | 1 | .4% | 15 | 6.1% | 16 | 2.1% |
| | 7- th channel | 26 | 21.8% | 92 | 14.2% | 0 | .0% | 42 | 17.0% | 76 | 30.8% | 118 | 15.4% |
| | RTR Vesti | 1 | .8% | 13 | 2.0% | 2 | .7% | 1 | .4% | 11 | 4.5% | 14 | 1.8% |
| | Kabar | 0 | .0% | 28 | 4.3% | 0 | .0% | 0 | .0% | 28 | 11.3% | 28 | 3.7% |
| | KTK | 29 | 24.4% | 38 | 5.9% | 11 | 4.0% | 29 | 11.7% | 27 | 10.9% | 67 | 8.7% |
| | Oshlar | 19 | 16.0% | 74 | 11.4% | 0 | .0% | 66 | 26.7% | 27 | 10.9% | 93 | 12.1% |
| | DTV | 0 | .0% | 9 | 1.4% | 4 | 1.5% | 0 | .0% | 5 | 2.0% | 9 | 1.2% |
| | Osh TV | 5 | 4.2% | 99 | 15.3% | 0 | .0% | 5 | 2.0% | 99 | 40.1% | 104 | 13.6% |

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